

Family Studies

Nutrition 2102 and 3102

Interim Edition



Government of Newfoundland and Labrador
Department of Education

Curriculum Guide

2007

Table of Contents

Acknowledgements

Introduction

Rationale	1
Curriculum Overview	1
Essential Graduation Learnings	2
General Curriculum Outcomes & Key-Stage Curriculum Outcomes	2
Specific Curriculum Outcomes	3
Curriculum Components	4
Curriculum Organization	6

Teaching, Learning, Assessment & Evaluation

The Learning Environment	9
Role of the Teacher	10
Role of the Student	11
Key Concepts, Skills, and Abilities	12
Learning Skills	12
Personal Management Skills	13
Leadership and Teamwork Skills	14
Career Development	14
Gender Equity	14
The Teaching & Learning Process & Suggested Strategies	15
Key Points About Some Strategies	16
Implementation	21
Time Allocations	21
Getting Started	22
Ground Rules	23
Handling Sensitive Issues	23
Assessment and Evaluation	25
Identifying the Activity	26
Setting the Criteria	26

Specific Curriculum Outcomes

Nutrition 2102	
Unit 1: Food Choices and Nutritional Needs	27
Unit 2: Food Selection, Preparation and Storage	59
Unit 3: Menu and Meal Planning	83
Nutrition 3102	
Unit 1: Food, Nutrition and Health	95
Unit 2: Food Technology and Production	117
Unit 3: Food Security	135

Resources

Summary of Resources	
Food Choices and Nutrition Needs	155
Food Selection, Preparation and Storage	156
Menu and Meal Planning	157
Food, Nutrition and Health	157
Food Technology and Production.....	158
Food Security.....	159
Bibliography	160

Appendices

A: Food Choices and Nutrition Needs	161
B: Food Selection, Preparation and Storage	195
C: Menu and Meal Planning	237
D: Food, Nutrition and Health	241
E: Food Technology and Production	265
F: Food Security	311
G: General.....	319

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Introduction

Rationale

As youth journey towards adulthood, there will be an increasing need for the acquisition of knowledge, skills, behaviors and attitudes that will help them create, live in and promote a culture of wellness. A culture of wellness embodies the key concepts of eating healthy, being active and staying smoke free. Nutrition 2102 and 3102 engages students in a course of study that enables them to acquire and apply nutritional knowledge and skills both in the classroom and in their own day-to-day living. The first decade of the 21st century is identifying overweight and obesity as a major concern because of the associated health related risks that have the potential to worsen with age. “Healthy eating not only plays a role in the prevention and control of chronic disease but is also a key determinant of human health and development through the life course.” (Frank, J. and Finegood, D., p. S5).

Educators have a responsibility to promote a cultural shift toward enhanced wellness. Even though Health Canada reported that “88% of Canadians said nutrition is an important consideration for choosing the food they eat...”, at the same time, “less than half of Canadians who consider themselves to be knowledgeable about nutrition could correctly name all four food groups” of Canada’s Food Guide to Healthy Eating. According to Improving the Health of Canadians: Promoting Healthy Weights, schools can play an important role in reaching children, parents, and the significant proportion of the workforce working in or near schools. In particular, skills-oriented nutrition education has an impact on healthy eating.

Curriculum Overview

Nutrition 2102 and Nutrition 3102 provide the learner with an opportunity to acquire nutritional knowledge and skills that can be used to improve overall health. Food is a basic but integral part of our daily lives. Nutritional knowledge and skills that are central to making sound decisions regarding food and its relation to our health are emphasized in these two courses. An analytical examination of the issues dealing with the food supply, the safety and security of it, raises awareness of food related issues at a local, national and international level.

This curriculum guide is for two courses: Nutrition 2102 and Nutrition 3102. While Nutrition 2102 is not a prerequisite for Nutrition 3102, the learner will have a better appreciation of the content of the latter when both courses are taken. Food laboratories are part of each course with a minimum of eight lab experiences per course. Labs are to be chosen in accordance with the guidelines outlined in the appendix. The curriculum units for

Nutrition 2102 are Food Choices and Nutritional Needs, Food Selection, Preparation and Storage, and Menu and Meal Planning. The units for Nutrition 3102 are Food, Nutrition and Health, Food Technology and Production, and Food Security.

Through Nutrition 2102, students will closely examine the role of nutrients in food and how they affect overall growth and development. They will also gain skills in how to choose the healthiest food based on lifecycle needs, health status, economic circumstances and lifestyle. A focus on preparation techniques will better prepare students for the time in their lives when food choices become their responsibility.

Nutrition 3102 draws the learner toward an examination of overall health and how a variety of factors come into play. Such influences as media, lifestyle and medical history are examined. From a national and global perspective, food is studied in terms of its production, technological advances and security. The learner will be able to see the role that he/she can play locally, nationally and internationally to help manage resources and to action plans to ensure a safe, secure food system.

Essential Graduation Learnings

Essential Graduation Learnings (EGLs) are statements that describe the knowledge, skills and attitudes expected of all students who graduate from high school. These graduation learnings describe expectations not in terms of individual school subjects, but in terms of knowledge, skills and attitudes developed throughout the curriculum. They confirm that students need to make connections and develop abilities across and through subject boundaries if they are to meet the changing and ongoing demands of life, work and lifelong learning. The Essential Graduation Learnings serve as the framework for the curriculum development process.

The Essential Graduation Learnings are

Aesthetic Expression
Citizenship
Communication
Personal Development
Problem Solving
Technological Competence
Spiritual and Moral Development

General Curriculum Outcomes

Three General Curriculum Outcomes (GCOs) form the basis for Home Economics/Family Studies curriculum guides. These GCOs are organized under the following headings: *Knowledge and Understandings*, *Skills and Abilities* and *Attitudes and Behaviours*. (Home Economics/Family Studies Foundation [2003]).

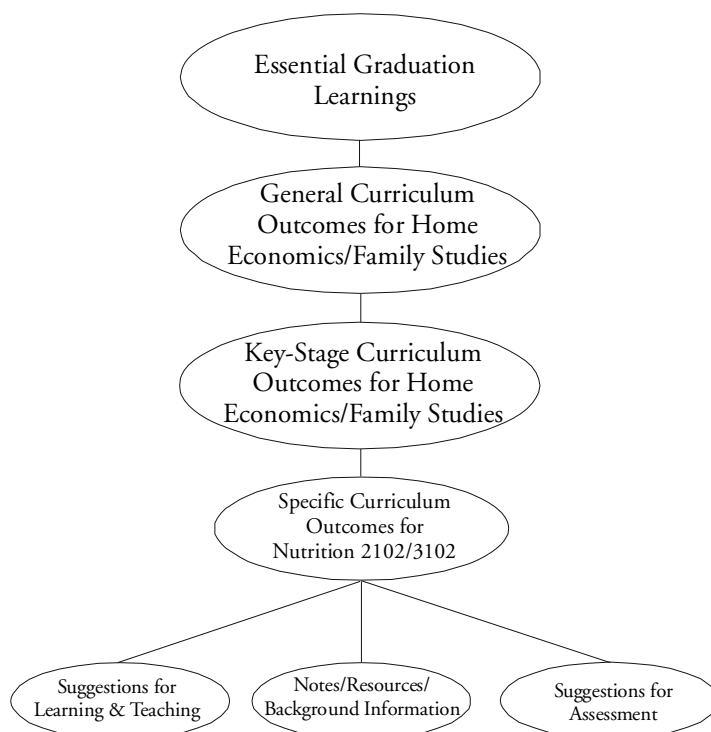
Key-Stage Curriculum Outcomes

The Key-Stage Curriculum Outcomes (KSCOs), derived from the General Curriculum Outcomes for Home Economics/Family Studies, identify what students should be able to demonstrate at the end of intermediate and senior high. Key-stage outcomes have been identified for each of the five dimensions of Home Economics/Family Studies. The dimensions that are addressed in this curriculum guide are Human Development (HD), Foods and Nutrition (FN) and Financial Management (FM). See *Home Economics/Family Studies Education Foundation*, pp. 7-15 for the KSCOs for these dimensions.

Specific Curriculum Outcomes

Specific Curriculum Outcomes (SCOs) are statements that describe what students will know, value and be able to do as a result of study in the curriculum, *Nutrition 2102 and 3102*. The SCOs for each of the components link to General Curriculum Outcomes and Key-Stage Curriculum Outcomes for the dimensions already identified on pages 2 and 3. The Specific Curriculum Outcomes are listed and addressed in each of the components for the curriculum guide: Food Choices and Nutritional Needs, Food Selection, Preparation and Storage, and Menu and Meal Planning for Nutrition 2102 and Food Nutrition and Health, Technology and Production, and Food Security for Nutrition 3102.

Curriculum Design



Curriculum Components for Nutrition 2102

Food Choices and Nutritional Needs (20 hours)

This unit is intended to provide students with a basic knowledge of nutrients, Canada's Food Guide, and the interplay between these and our health throughout the lifecycle. Lab experiences will give students an opportunity to prepare nutrient-rich foods using methods that preserve nutrient content. As students are faced with food decisions on a daily basis, and will continue to be as they approach adulthood, they should have the competency to make reasoned decisions regarding food and their effect on one's health.

Food Selection, Preparation and Storage (20 hours)

The knowledge and skills needed to make healthy food choices and store food safely are highlighted in this unit through practical applications. Some examples are, using nutrition labels to select nutrient dense foods that coincide with nutritional needs and preparing food using appropriate techniques and safe food practices. Students also critically examine the broader concepts of food marketing and messaging.

Menu and Meal Planning (15 hours)

This unit focuses on the skill of planning and preparing healthy meals using appropriate, available resources. Career explorations are identified as a specific curriculum outcome in this unit but there are many opportunities throughout the course of study to highlight the diversity of career options in the food industry. As in previous units, the food preparation labs are not limited to this unit. Food preparation may be incorporated into the other units as appropriate topics arise.

Note: A minimum of eight labs are required for Nutrition 2102. Please refer to Appendix G for details on the lab component.

Curriculum Components for Nutrition 3102

Food, Nutrition and Health (25 hours)

This unit examines on a broader level the relationship of nutrition to health. Prevention and management of disease, lifestyle and corresponding nutritional needs are explored.

Food Technology and Production (15 hours)

Topics covered in this unit will engage students in an examination of issues affecting the Canadian food supply. The role of the consumer and consumer trends influence product development and the role consumers play in obtaining and maintaining a safe, secure food supply.

Food Security (15 hours)

The security of the food supply locally, nationally and internationally is the focus of this unit. The complexity of the issues affecting a safe, secure food supply and its relationship to poverty lead students to examine interventions to better manage resources related to the food supply.

Note: A minimum of eight labs are required for Nutrition 3102. Please refer to Appendix G for details on the lab component.

Note: The career component is incorporated throughout all 6 units of study rather than being taught as a separate unit of study

Curriculum Organization

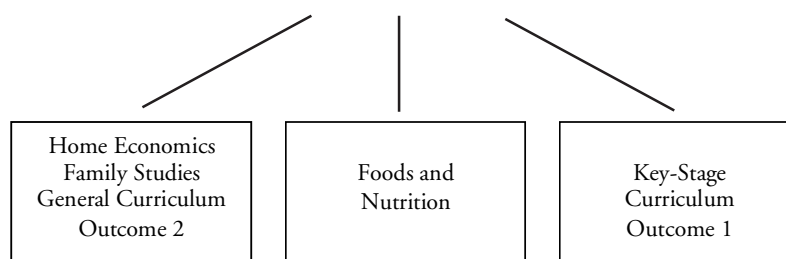
(Introductory Page)

All components comprise an introductory page followed by a two-page layout of four columns. The introductory page is a listing of all the Specific Curriculum Outcomes (SCOs) for the component with notes to the teacher at the bottom. SCOs for the component are listed under three headings: Knowledge and Understandings, Skills and Abilities, and Attitudes and Behaviours.

Each of the outcomes is linked to Key-Stage Outcomes which are indicated by letters and numbers that appear in brackets following the SCOs statement. In this curriculum guide, the SCOs are linked to KSCOs in Foods and Nutrition (FN) in Home Economics/Family Studies Foundation, pp. 13-15.

Sample Specific Curriculum Outcome:

Propose and evaluate strategies for making improvements in current eating practices and food habits
(GCO2, FN-KSCO1)



Two-page spread

The top of each page of the two-page spread begins with one of the three headings listed above and a related General Curriculum Outcome.

Column One: Specific Curriculum Outcomes

The first column in the two-page layout lists one or more Specific Curriculum Outcomes related to the GCO at the top of the page. These outcomes (SCOs) form the basis for designing, implementing and assessing learning activities for the curriculum.

Column Two: Suggestions for Learning and Teaching

The second column provides suggestions for the learning environment and experiences that support student's achievement of the outcomes listed in column one.

The suggestions in this column are intended to provide approaches to instruction and learning. These suggestions, while linked to one outcome, may also address outcomes under the same or other headings in the guide.

*Column Three:
Notes/Resources/Background
Information*

The third column identifies sources of information, provides links to student and teacher resources, and gives direction that may assist in the learning and teaching related to the outcomes. These do not address the entire scope of the curriculum. As a resource-based learning approach is espoused, teachers are encouraged to use other resources that will contribute to the achievement of the intended outcomes.

*Column Four:
Suggestions for Assessment*

The fourth column provides suggestions on how student achievement of the outcomes may be assessed. These suggestions reflect a variety of assessment techniques that include, but are not limited to, informal/formal observation, performance, journals, interviews, presentations and portfolios. Some assessment tasks may be used to assess student learning in relation to a single outcome while others to assess student learning in relation to more than one outcome.

Teaching, Learning, Assessment And Evaluation

The Learning Environment

The learning environment must respond to and respect a variety of learners' needs and abilities and be conducive to the incorporation of a range of strategies that encourage and support learning. Such an environment

- accommodates diversity in students' backgrounds, learning styles, personal assets and abilities
- fosters the involvement of students in meaningful learning activities
- supports the effective use of a wide range of resources, including technology and the media
- allows for active, interactive and collaborative learning
- is respectful of and fosters respect for divergent views, values and beliefs
- supports research and inquiry, evidence-based decision making, and planning and evaluation
- encourages and fosters learner responsibility and accountability for demonstrating stated learning outcomes

The classroom environment is critical to personal and social skill building. An atmosphere that recognizes and supports individual differences, that enhances self-esteem and that encourages differing opinions will encourage students to share and participate in learning activities. An open, supportive environment fosters a sense of security, belonging, respect, caring, worth and efficacy. Teachers should concentrate on establishing an atmosphere which invites student interaction, is respectful of the feelings, ideas and opinions of others and can be described as caring, collaborative and supportive. A way to facilitate this is to use activities which allow students to get to know each other, are non-threatening and enjoyable.

Role of the Teacher

Consideration needs to be given to the setup and organization of the physical space to foster individual and small group work, engage in some activities anonymously, display ongoing projects and finished work, accommodate learning centers and encourage creativity.

The teacher plays a critical role in structuring and managing an effective and efficient learning environment. The primary role of the teacher is to guide and facilitate learning and to assist students with the acquisition of the skills and abilities required to demonstrate outcomes. In contributing to the learning process, the teacher can

- assist students in the attainment of skills and abilities that enable them to take responsibility for and make reasoned decisions about food as it relates to health
- provide direction and encouragement to students as they engage in individual and collaborative learning activities
- act as a mentor and as a resource person as students make decisions about their own learning and the kinds of activities that will assist them in that process
- recognize and plan for diversity in students' backgrounds, learning styles, personal assets and abilities
- gauge students' awareness of issues related to nutrition and assist them to build on this awareness
- help students establish and negotiate codes of conduct regarding individual and group behaviours that promote learning
- help students set limits and establish parameters for individual, class and lab behaviour
- provide opportunities to integrate knowledge, skills, attitudes and behaviours related to nutrition and health and to life-long learning
- record and report on student progress

Role of the Student

The student plays a critical role in contributing to an effective and efficient learning environment and to the achievement of learning outcomes. The primary role of the student is to take responsibility for learning and to demonstrate achievement of curriculum outcomes. Students can

- strive to acquire skills and abilities that enable them to take responsibility for and make reasoned decisions
- build on knowledge and awareness of issues related to personal and family nutrition
- engage in learning activities that support personal learning styles and incorporate personal assets and abilities
- respect and contribute to a learning environment that supports diverse values, beliefs and opinions
- engage in individual and collaborative learning activities aimed at achieving course outcomes
- work with others to establish and employ codes of conduct regarding individual and group behaviours that promote learning
- respect the set limits and established parameters for individual and class, and lab behaviour
- engage in opportunities to integrate knowledge, skills, attitudes and behaviours related to personal and family nutrition
- take responsibility for directing their own learning, completing tasks and monitoring progress
- evaluate their progress and develop new strategies and plans for continuous learning and improvement

Note: High school should be viewed and promoted as a critical step in preparing for a career. Nutrition 2102 and 3102 introduces students to a variety of career opportunities related to food, nutrition and wellness. This exposure to career exploration will aid students in their personal career planning.

Key Concepts, Skills, and Abilities

This curriculum guide has been developed around a set of key concepts, skills and abilities. It focuses on concepts that are central to easing and facilitating the transition from early adolescence to adulthood and thereby becoming autonomous with regard to personal health and wellness. The curriculum is intended to assist young people to assess their current skills and abilities, and build on those that contribute to and support healthy food choices.

Learning Skills

Communication, Critical Thinking, Problem Solving and Decision Making

Generic learning skills such as the communication skills of listening, speaking, reading and writing are critical to success in this course and in life. Thinking skills such as accessing and applying knowledge, problem solving and evaluating are key to addressing the decisions that are made every day.

Students will be engaged in the assessment, promotion and enhancement of their personal development. This requires critical reasoning regarding food issues that impact their lives. An integral part of a learning process intended to lead to behavioural change is the ability to solve problems and to generate reasonable approaches and strategies in addressing challenging situations or circumstances. The result should be evidence-based decision making and its application to personal growth and development.

Goal Setting, Planning and Organization

A discussion of goal setting helps students realize the importance of setting goals that are realistic and attainable. Goals, the articulation of dreams, are most effectively met with planning and organization. This involves applying skills related to the management of resources including time and finances, personal attributes and capabilities, and social supports. Creating plans and time lines for the acquisition of goals keeps them in view and more likely to be achieved. Students will be encouraged throughout the course to assess, re-assess and modify plans on a regular basis.

Research

There are various sources of information that students can access such as school resource centres, internet or world wide web, professionals, media (newspapers, television, magazines, etc.), friends, family and community members, including groups and

organizations. Methods of gathering information can include in-depth reviews of personal and family issues identified by students; class, school, community interviews carried out by students on specific issues or a range of issues; self-administered questionnaires and surveys and literature searches.

Lifelong Learning

This course is intended to help students acquire skills and abilities that, when applied throughout their lifetime, contribute to their ability to effectively engage in lifelong learning. Regular personal reflection and creation of plans, periodically reviewed, promote continuous personal development and learning. The outcomes under GCO3 are intended to promote and lead to lifelong learning.

Personal Management Skills

This broad category encompasses those skills that contribute to the effective management of ones' personal health and help define the personal role to be played as the global community strives toward a food secure system. Decision making and goal setting are also linked to these skills. This curriculum promotes the acquisition and use of personal and social skills in the learning environment and ultimately throughout life. Social competence is necessary in successful interpersonal relationships at home, in the community and at work.

Specific personal-management skills highlighted in this course include

Positive Attitudes and Behaviours

These are exemplified by self-esteem and confidence; honesty, integrity and personal ethics; positive attitude towards learning, growth and personal development; and initiative, energy and persistence to complete tasks.

Responsibility

This is demonstrated by the ability to set goals and priorities; plan and manage time, money, and other resources to achieve goals and be accountable to self, school, family and community for actions taken.

Leadership and Teamwork Skills

Adaptability

This skill is evident in a positive attitude towards change, the recognition of and the respect for diversity and individual differences, and the ability to identify and suggest new ideas to address challenges creatively and effectively.

The skill of working with others is evident in the ability to understand and contribute to group goals, understand and work with the culture of the group, plan and make decisions with others and support the outcomes of those decisions, respect the thoughts and opinions of others in the group, exercise “give and take” to achieve group results, seek a team approach where appropriate, lead when appropriate and mobilize the group for high performance.

(Source: *Conference Board of Canada*)

Career Development

Learning skills, personal management and resource management skills, and leadership and teamwork skills form the basis for career development. Career exploration and career development learning activities are infused into the components of the curriculum guide. Students are provided with opportunities to assess personal knowledge, skills and attitudes; gain new understandings and abilities and consider these in relation to specific careers and career planning.

Gender Equity

Gender equality and gender equity are often used interchangeably but they are not the same. Equality refers to the equality of rights and entitlements whereas equity refers to ensuring the fairness of outcomes. Gender equity is a principle of applying a fair approach, not necessarily the same approach, to females and males. It addresses identified societal imbalances by redressing practices that create barriers to equal participation of males and females. For example, because equal opportunity may not lead to equitable results, sports activities have weight classes and divisions. These are used as a means to level the playing field and arrive at fair outcomes. In an effort to achieve fair outcomes, it is critical to look at and analyze situations from a gender perspective. Gender analysis is a process that considers the differences between women's and men's lives including roles, responsibilities, current status and access to resources and how these aspects influence outcomes. This process helps increase awareness and understanding, identify problems and lead to conscious informed decisions resulting in gender equity.

The Teaching and Learning Process and Suggested Strategies

Instruction and learning approaches should focus on empowerment, not the transfer of information; on the development of skills, not on learning about skills. Learning activities should fully engage the learner and place responsibility on the learner to demonstrate personal progress. Students should

- acquire and demonstrate capability and efficacy
- practise and acquire skill sets
- take responsibility for personal improvement

In this curriculum, students will start from where they are and, through activities, develop and demonstrate a range of understandings, capabilities, attitudes and behaviours.

A. Knowledge and Understanding

It is expected that students will

1. assess what they know and how they feel about the issue or topic being examined
2. research the issue or topic and get the facts

Suggested Strategies: anonymous questions; bulletin boards; simulations; classroom displays; engaging community groups, organizations and professionals; researching newspapers, magazines, television and the internet; analyzing films and videos; using diagrams and charts; field trips; individual and small group presentations; demonstrations; games; lectures; group and panel discussions; product and service analysis; surveys and inventories; rating scales and cooperative small group learning.

B. Skills and Abilities

It is expected that students will

3. engage in learning activities that take them beyond the facts and that allow them to experience and analyze an issue for personal relevancy
4. determine their skills and abilities
5. determine what resources and skills they need to acquire

Suggested Strategies: personal assets inventory and assessment, collages, models, product and service analysis, drawings, skits, role plays, drama, videotaping, creative writing, brainstorming, group and panel discussions, debates, cooperative small group learning, role modeling, behavioural rehearsal (practising an anticipated response), peer coaching and support, simulations, demonstrations, food laboratory work, personal journals, surveys and inventories, case studies, worksheets, checklists.

C. Attitudes and Behaviours

Students will be encouraged to

6. based on information, attitudes, skills, needs, wants, goals and values, assess personal strengths and limitations and make plans to avail of opportunities and meet challenges

Suggested Strategies: journals, personal analysis and reflection, case studies, personal contracts, peer coaching and support, rating scales, time lines and action plans.

Key Points About Some Strategies

Brainstorming Session

- a process of rapidly generating ideas or responses
- encourages participation because all contributions are accepted without judgement or comment (this includes nods of agreement) and without editing the words of the contributor (this includes “you mean to say.....,” or “this is the same as....”)
- draws on group’s knowledge and experience
- one idea can spark and generate other ideas
- a means of extending boundaries and encouraging creative ideas
- a means of quickly getting a wide range of ideas on a topic or issue
- can be used as a precursor to refining or categorizing ideas/ responses
- is intended to capitalize on the varied experiences, knowledge and ideas of the group
- can be playful with impromptu ideas encouraged and accepted

Cautions:

- participants may have difficulty getting away from known reality
- if not facilitated well, criticism and evaluation of ideas may occur
- should be limited to 5-10 minutes

Case Studies

- are short descriptions of events or circumstances in the lives of hypothetical people
- can be spontaneously created from actual experiences
- provide a context for real-life situations in which individuals and families may find themselves
- allow students to discuss difficult situations which they, or others they know personally, encounter without facing the risk of disclosure
- provide a means of presenting positions and values and is a means of hearing and listening to the positions and values of others
- are a means of presenting alternatives, making decisions and evaluating choices

Cooperative Small Group Learning

- an approach to organizing classroom activity so that students can work with each other and build on one another's strengths and ideas
- group members share clearly defined roles and are interdependent in achieving the main goal
- students learn the importance of respecting individual views and maintaining group harmony
- students must be working towards a common goal
- success at achieving the goal depends on the individual learning of all group members
- the teacher's role is primarily that of facilitator in guiding students as social groups and learning teams as they engage in activities such as identifying problems, generating solutions and practising skills
- successful use of this method is assisted with professional development and practise

Interviews and Surveys

- involve individuals, pairs or small groups in collecting information from peers, younger students, older students and adults
- involve focused thought and active thinking to develop questions and explore ideas
- require interpersonal and listening skills as the student must listen respectfully, react to and interpret the views and experiences of others
- use language to articulate and clarify one's thoughts, feelings and ideas
- allow exchanges of ideas, increased understanding and new awareness of previous knowledge
- promote the development of organizational skills related to the collection and representation of data
- involve follow-up such as reporting and interpretation of data

Projects

- include assigned tasks that provide an opportunity for learners to consolidate/synthesize learning from a number of disciplines or experiences
- usually involve learners, alone or in small groups, working on a task for an extended time period (the actual time frame may depend to some degree on the ages of the learners involved), usually to produce a tangible product such as a model, a demonstration, a report or a presentation
- may be used to relate knowledge to their own experiences and/or to the broader community
- may involve research
- usually involve extending/enriching/reinforcing learning
- should be focused (e.g., subject matter concept, interdisciplinary theme, action projects)
- should include clearly defined task descriptions such as interview, compare opinions, make a model, find contrasting views on, create a dramatic presentation

- should include criteria for planning and evaluation
- students should clearly understand the requirements of the project
- should include clear time lines and ongoing progress reports

Problem Solving

- application of knowledge, skills, ideas, resources and processes to generate one or many solutions to a problem
- may follow the scientific method
- can be a practical skill
- may include strategies such as “trial and error”, brainstorming, “what if/ I suppose”, attribute listing, forced relationships, idea check list and imaging

Inquiry

- elements of inquiry include thinking, reflecting, developing relevant questions and planning appropriate strategies for generating answers and explanations
- allows students to experience and acquire processes through which they can gather information about the world in a variety of ways from a variety of sources
- allows for a high level of interaction among the learner, teacher, the area of study, available resources and the learning environment
- allows students to act upon their curiosity and interests
- encourages students to formulate questions and analyze situations/problems/information
- calls upon prior learning
- encourages hypothesis development and testing (new questions and hypotheses often emerge as the inquiry continues)
- allows students to make inferences and propose solutions
- leads students to realize that there is often more than one answer to a question and more than one approach to a challenge

Learning Centres

- allow students to work independently as individuals or in small groups
- encourage independent as well as collaborative work
- allow for effective use of single or limited copies of resources
- require detailed planning with clear directions
- can accommodate a variety of learning styles
- can be used where students are required to master material as background information or skills

(See Appendix A for “Guidelines for Designing and Managing Learning Centres”.)

Thought Webs

- demonstrate multiple connections of topics and issues to one another
- provide opportunities for students to think about health and make connections
- are a means of categorizing and grouping concepts and ideas

Class Discussion

- allows for full and open sharing of ideas and opinions
- has the potential to engage all learners at the same time
- encourages critical thinking
- provides an opportunity to practise listening skills and oral communication

Labs/Demonstrations

- reinforce concepts covered in class
- allow students to participate in the planning of food to be prepared on lab day and have a meaningful role to play in the lab group
- allow students to adopt an independent role and demonstrate appropriate behaviour in lab environment

Personal or Self-reflection/Journaling

- allows individuals to think about their level of knowledge, their beliefs and values
- facilitates personal goal setting and planning
- supports privacy
- respects the personal quality and uniqueness of the individual
- allows students to reflect on what they have learned or are about to learn
- allows students to pose questions and react to learning experiences

Implementation

There are many factors that need to be considered regarding the planning and delivery of a course at the school and classroom level. The following are suggestions for the implementation of *Nutrition 2102 and 3102*

Time Allocations

Each course is designed to be offered in 55 instructional hours. The percentage and hourly breakdown is:

Nutrition 2102

Food Choices and Nutrition Needs: 20 hours, 36%

Food Selection, Preparation and Storage: 20 hours, 36%

Menu and Meal Planning: 15 hours, 28%

Nutrition 3102

Food, Nutrition and Health: 25 hours, 46%

Food Technology and Production: 15 hours, 27%

Food Security: 15 hours, 27%

The division of time allotments for each component is to be used as a guideline for planning and should be adjusted based on factors such as learner needs and abilities, interests of students, availability of resources, and school and community context and culture. Primary attention should be given to the achievement and demonstration of attitudes, skills and abilities as stated in the outcomes for the course.

Getting Started

Nutrition 2102

Unit One, *Food Choices and Nutritional Needs*, provides a comprehensive study of the nutrients, their food sources, function within the body and their effect on health. It stresses the importance of food, rather than supplements, as a source of nutrients. An additional study of the philosophy of Canada's Food Guide set against a backdrop of striving for health and wellness at every stage of the lifecycle provides students with a strong foundation to critically analyze food intake and its effect on health. In this unit, the teacher may decide to engage students in two of the eight lab experiences. For example, in an effort to increase fruit and vegetable consumption, a lab focusing on fruit and vegetable dishes may be planned to coincide with the outcome "demonstrate an understanding of the Guidelines for Healthy Eating."

Unit Two, *Food Selection, Preparation and Storage* follows logically from Unit One with the culmination of knowledge and skills in Unit Three, *Menu and Meal Planning*.

Over the course of the three units, students should have completed eight lab experiences. The teacher should refer to Appendix G for specific guidelines.

Nutrition 3102

While Nutrition 2102 is not a prerequisite for 3102, it is recommended that, as a minimum, students coming into 3102 having not taken 2102 should be directed to complete a personal study of the nutrients. This will provide the learner with a basic foundation. For the benefit of the students who have completed Nutrition 2102, unit one should be completed first. Because the outcomes in unit two and three are not sequential, the order of completion is left to the teacher. As in Nutrition 2102, eight labs are dispersed into the units according to the guidelines in Appendix G.

When introducing the course, students could be asked to generate a list of their expectations: what they expect to learn and do. This will help establish participatory, interactive student involvement and the incorporation of everyone's ideas.

When choosing activities and strategies to further student learning, it is important to recognize diversity in student learning styles and abilities; cultural, religious and family background and economic status; belief system and values and to consider sensitivities related to these.

Ground Rules

Setting and maintaining ground rules will allow sharing, exploring and learning in an accepting, safe environment. It is important that class members consider and establish ground rules before any discussion of sensitive issues or participation in lab activities. These ground rules need to be reinforced consistently throughout the course(s) and assimilated into all learning activities. With ground rules, students will know what to expect of the teacher, of themselves and of each other. Ground rules usually include

- no put-downs
- no personal questions
- no question is stupid or silly
- the right to pass
- listening to and hearing others' comments and opinions
- confidentiality
- emphasizing safety of person and food preparation practices
- speaking for yourself and others speaking for themselves
- absolute adherence to all safety standards and procedures during lab activities

The teacher and students should be involved in reinforcing ground rules and in reviewing and revising them as needed.

Handling Sensitive Issues

This course requires a supportive, non-judgmental classroom climate because of issues of a personal nature that may arise. In establishing such a climate, the element of trust is critical. One of the ways to build trust is to maintain confidentiality. The teacher should discuss the issue of privacy and confidentiality with the class early in the year. Such a climate will help prevent some students from withdrawing into passivity or from expressing defensiveness in inappropriate ways. The confidentiality of students must be protected and no student or teacher should be placed in a position of feeling pressured to give an opinion or express a viewpoint.

Students should be aware that if they divulge information related to physical and/or sexual abuse, the teacher has a legal responsibility to report it in accordance with the Act Respecting Child, Youth and Family Services. (See Appendix G: An Act Respecting Child, Youth and Family Services.)

Teachers should talk to the class about the kinds of behaviour that is expected in class as well as how to respond to emotions and feelings that some discussions might invoke. Teachers could

1. Remind the class that non-violent behaviour is the expected practice and that an effort will be made to practise non-violence. The class should talk about not agreeing and how to do this. Discuss the practice of ‘making fun’, verbally or otherwise, and why this is not acceptable in class or out of class.
2. Acknowledge that there will be things talked about in class that might make some students uncomfortable. If a discussion is painful, it is OK to “shut down”, to not participate, to take care of oneself in this manner.
3. Discuss the fact that some people handle uncomfortable situations by making jokes or by laughing. Therefore, it would be a good idea to set some ground rules. For example, students could be invited to take a few minutes to talk about how *they* feel about others’ remarks or reactions. Encourage students to say “I feel” or “I felt...” not “you made me feel” or “you degrade me”. Students should be encouraged to speak from an “I” perspective, not a “you” perspective. Ask students if it is OK to accept laughter and what other rules they would like to make.
4. Talk to students about the difference between safety and comfort. It is OK to be uncomfortable knowing there is support of the group. It is important to set personal boundaries. Ask students to articulate these boundaries. Remind them that pushing beyond the comfort level allows for personal growth. It is necessary to take risks and that people will generally take risks to learn and develop if they feel it is safe to do so. Following this discussion of setting boundaries, check with students to see if there is anything they would like to add.
5. Set up a safe place or make arrangements with a person for students to go to when the need arises.

Assessment and Evaluation

In the context of this curriculum guide, assessment is defined as the act of determining progress and measuring achievement while evaluation refers to making interpretations and judgements about student progress and achievement.

Assessment and evaluation are intended to determine performance in relation to the stated outcomes for the course. The stated outcomes provide the framework for teacher and student planning with respect to learning and are the basis for judging student progress and achievement. The stated outcomes for *Nutrition 2102/3102* are the basis, the starting point, for creating assessments strategies. Outcomes should be clearly communicated to students. Student self-evaluation and peer evaluation can be better accomplished when intended outcomes, the GCOs, are known and understood.

Guiding Principles for Assessment and Evaluation

- Assessment and evaluation processes and techniques should be designed to determine whether the outcomes have been achieved.
- Assessment and evaluation should reflect the stated outcomes for the course.
- Assessment and evaluation should be an integral part of the teaching and learning process and of each component of the course.
- Assessment and evaluation should give all students the opportunity to demonstrate the achievement of outcomes.
- Assessment and evaluation should provide positive, instructive and supportive feedback to students.
- Assessment and evaluation should invite and encourage student self-assessment and active participation.
- Assessment and evaluation should allow for a range of options to accommodate students' abilities to demonstrate the achievement of outcomes.

In the *Components* section of this curriculum guide there are specific suggestions for teaching and learning as well as suggestions for assessment. Many of these suggestions can be interchanged and used either as learning activities or assessment activities or both.

Identifying the Activity

To check for full acquisition, opportunities for students to practise and illustrate skills through such activities as role plays, individual or small group work, demonstrations and case studies.

In planning for assessment the key question is “What is the student expected to accomplish?” The answer to this question enables the teacher to choose or design appropriate means that allow the student to demonstrate this. The student will be expected to demonstrate knowledge, skills and abilities. The means can be multiple and varied: presentations; producing videos; writing essays or plays; charting or graphing information; locating and displaying information; demonstrating a skill; designing a product or a plan; drawing or graphing a concept, a process or an idea. The choice of means will depend on available resources including time and the type of learners and their strengths.

Setting the Criteria

At the outset, students need to know what is expected, what they must do and to what degree they must do it, what they must produce in order to demonstrate that knowledge has been gained and skills learned. The criteria must be specific and clear. Providing an example of the caliber of work assists students in preparing for assessment.

Nutrition 2102

Unit 1

Food Choices and Nutritional Needs
20 hours

Key-Stage Curriculum Outcomes: Food Choices and Nutritional Needs

Knowledge and Understanding

Students will be able to

- KSCO 1: demonstrate an understanding of how personal and social needs, values and beliefs influence food choices.
- KSCO 2: demonstrate an understanding of nutritional needs/ requirements of family members at the various stages of development.
- KSCO 3: demonstrate an understanding of how food choices and eating habits impact health and well-being.

Skills and Abilities

Students will be able to

- KSCO 1: propose solutions to a range of problems related to foods and nutrition.

Attitudes and Behaviours

Students will be able to

- KSCO 1: evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.
- KSCO 2: evaluate their skill development related to food production, resource management, and the ability to work cooperatively.
- KSCO 3: identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes

Knowledge and Understanding

Students will be able to

1. identify personal and family influences on food choices. (KSCO 1)
2. identify societal and media influences on food choices. (KSCO 1)
3. demonstrate an understanding of the role of nutrients and their food sources. (KSCO 3)
4. demonstrate an understanding of the role of supplements. (KSCO 3)
5. demonstrate an understanding of the key concepts of *Eating Well with Canada's Food Guide* (2007)
6. demonstrate an understanding of food sources to meet nutritional requirements at various stages of the life cycle. (KSCO 2)

Skills and Abilities

Students will be able to

1. evaluate foods and/or menus for nutritional content. (KSCO 1)
2. propose and evaluate strategies for making improvements in current eating practices and food habits. (KSCO 1)
3. create a healthy eating plan for various stages of the lifecycle. (KSCO 1)

Attitudes and Behaviours

Students will be able to

1. set healthy eating goals and develop plans to achieve these. (KSCO 1, 2, and 3)

Note 1: The above outcomes should be clearly communicated to students, noting that the outcomes under Attitudes and Behaviours are not intended for evaluation by the teacher.

Note 2: The suggested teaching and learning activities on the following two-page spread are presented as a range from which to choose. It is not intended that all the activities be implemented. Activities can be selected, modified or added so that all outcomes are addressed in the time frame specified on pp. 4-5 and 21 of this curriculum guide.

Note 3: In many cases, the activities under **Suggestions for Learning and Teaching** can be used as is or modified for student assessment. The reverse is also true: The suggested assessment activities can be used as learning and teaching activities.

Knowledge and Understandings

GCO 1: Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.1 identify personal and family influences on food choices (KSCO 1)</p> <p>1.2 identify societal and media influences on food choices (KSCO 1)</p> <p>1.3 demonstrate an understanding of the function of nutrients and their food sources (KSCO 3)</p>	<ul style="list-style-type: none"> Through personal reflection, small group or whole class discussion, students should consider questions provided in Appendix A: Influences on Food Choices. Answers to these questions will provide some insight into why we eat what we eat. Using the answers to the questions, categorize the major influences on our food choices. Students can take the questions from activity 1 and conduct an interview either at school or in their community. (e.g., students, possibly in a language class, where the interview process may be part of the curriculum, or a senior living in the community) Responses can be recorded for use in follow-up discussion with the full class about the influences on food choices. Complete Blackline Masters 1-5, 1-6 and 1-7 found in the Food For Today Teacher Resource Students could explore the functions and sources of nutrients by using <ul style="list-style-type: none"> learning centres. Sample centres are provided on the NLTA Virtual Teacher Centre (VTC). Note: To get access to these learning centres a teacher must be registered as a user on the VTC. Activity 1-3 “Nutrients” in Food and Nutrition Sciences Lab Manual In small groups, students could prepare a bulletin board display, poster/chart or pamphlet on one or more of the nutrients. Each bulletin board, poster/chart or pamphlet should include the following: function, food sources, Dietary Reference Intakes or Recommended Daily Intakes (provided in Appendix A), deficiency, excess, or other pertinent information. Student work should be accompanied by a brief summary of the information provided, to be supplied to other students in the class. <p>(Cartoons, music, video, board games or poetry may be used as a medium for completing the above activity.)</p>

KSCO 1: Demonstrate an understanding of how personal and social needs, values and beliefs influence food choices.

KSCO 3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information	Suggestions for Assessment
<p><u>Food For Today</u>, Chapter 1 and 2</p> <p>Suggested categories for influences on food choices include:</p> <ul style="list-style-type: none"> Family Influences Peer Influences Personal Influences (food preferences, lifestyle, etc.) Psychological Influences (emotional associations with food) Cultural Influences Note: Include NL and aboriginal peoples in culture Ethnic Influences Religious Influences Media Influences (Note: body image, self esteem in relation to weight control will be addressed in greater detail in Nutrition 3102) <p>Nutrient Notes</p> <p>Types, functions and sources of the following nutrients are to be covered in this outcome:</p> <ul style="list-style-type: none"> - carbohydrates (sugar, starch and fiber) - fat (saturated including trans fatty acids, mono and polyunsaturated) - protein (complete and incomplete) - vitamins (fat soluble A,D,E,K and water-soluble B complex and C) - Minerals (calcium, phosphorus, sodium, potassium, iron, fluoride, iodine and trace elements) - Water <p>Nutrient Resources</p> <p><u>Food For Today</u>, Chapter 11</p> <p><u>Nutrient Value of Some Common Foods (Health Canada)</u></p> <p>Fiber resource: www.kelloggs.ca</p> <p><i>Guidelines for Learning Centres are on the VTC under Nutrition 2102 and in the appendix.</i> www.virtualteachercentre.ca</p>	<ul style="list-style-type: none"> • Use the questions from Activity Sheet 1.1 and interview three people, different ages and genders. Summarize the responses, commenting on what was learned from the interview process. • Journal Entry: How has your family influenced your personal eating habits? Have your habits changed as you gain more independence? • Use <u>Nutrient Value of Some Common Foods</u> to draw bar graph representations of nutrient content of common foods. <p>Students may create a</p> <ul style="list-style-type: none"> • Bulletin Board Display • Poster/Chart • Pamphlet <p>demonstrating the role of a specific nutrient in our diet. The function and food source must be clearly communicated to the audience.</p>

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.3 demonstrate an understanding of the function of nutrients and their food sources (KSCO 3) (cont'd)</p> <p>1.4 demonstrate an understanding of the role of supplements (KSCO 3)</p>	<ul style="list-style-type: none"> Use “Nutrition Jeopardy” as a pre-test or review of the nutrients. Determine categories such as Carbohydrates, Fat, Water-soluble Vitamins, etc. Generate questions for each category, create teams, set up a scoreboard and award points. The questions may be student or teacher generated. Use “Nutrient Toss” activity with tennis balls. Label tennis balls with a nutrient name. The teacher tosses the ball to a student and makes a statement in reference to the nutrient. The student responds “true” or “false” and then tosses the ball back to the teacher. Teacher then repeats the process. <p>OR</p> <p>The teacher says “state one fact about a nutrient” and tosses a ball</p> <p>OR</p> <p>Use “The Picture of Health” activities on p. 96 of this guide</p> <p>Nutritional Supplement Search</p> <ul style="list-style-type: none"> Students will bring a sample of a supplement (empty package, box or label) or visit, if possible, the pharmacy section of a store and note the content, variety, availability and cost of nutritional supplements. Compare content of products to the Dietary Reference Intakes. (<i>See Appendix A for sheet and notes</i>) <p>OR</p> <ul style="list-style-type: none"> In small groups, students will conduct research on at least two supplements. <p>Consider composition of supplement, possible side effects, nutritional/health claims, as endorsed by a health professional and/or scientific research.</p> <ul style="list-style-type: none"> Guest speaker: Dietitian/Nutritionist <p>Invite a regional nutritionist from the Regional Integrated Health Authority or a local dietitian to discuss health risks associated with nutritional supplements</p> <p>(Teacher note: Any time a guest speaker is involved, focus on career opportunities in foods and nutrition)</p>

KSCO 3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Supplement Notes</p> <p>Care should be taken that information is factual, not promotional. “Taking a daily vitamin/mineral supplement is common among Canadians. Despite this, eating a healthy diet is more important than taking antioxidants, vitamins, and minerals in pill or powder form. Healthy foods have much more to offer than supplements alone.” (Dieticians of Canada, Resource Centre: “Should I be taking a vitamin & mineral supplement?”)</p> <p>Nutrient supplements:</p> <ul style="list-style-type: none"> - Vitamins, minerals and protein powders <p>Non-nutrient supplements</p> <ul style="list-style-type: none"> - Glucosamine, Echinacea, etc. <p>Validity of information and reliability of websites are an issue especially when researching information on nutritional supplements.</p> <p>Supplement Resources</p> <p><u>Food for Today</u>, pp. 382-388</p> <p><u>Food for Today Teacher Resource</u>, 3-5, 3-6</p> <p>www.hc-sc.gc.ca (Health Canada: A Consumer’s Guide to the DRI’s - Dietary Reference Intakes, search “dietary reference intakes”)</p>	<p>Advertising is informational, providing information to the consumer and or emotional, playing on the emotions of the consumer. Using an advertisement for a supplement or a food product as an example, explain how the advertisement is informational and/or emotional.</p> <p>Research and present findings on two supplements. Compare the percentage of the DRI that would be obtained by using the supplement to the amount of the nutrient you would get from food intake for one day.</p>

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

- 1.5 demonstrate an understanding of the key concepts in *Eating Well With Canada's Food Guide (2007)* (KSCO 3)

Suggestions for Learning and Teaching

- CFG Relay

(Students are introduced to food groups, while being physically active.) This activity is borrowed from the Healthy Living 1200 curriculum guide.

Each student will provide several food packages (at least 3) and/or food models. The class is divided into groups of 5-7 students. Each student in the group places his packages into a grocery bag. The number of items in each bag must be the same. Each group acts as a relay team, with members travelling the length of the room/gym, to place a food container in the appropriate food group indicated at a station set up for that group. (There will be five stations, one for each food group and one titled "Other" which would be for items with little nutritional value, such as soft drinks, candy, cake, etc.) Some foods, such as lasagna, may be placed in more than one group. Do this as quickly as possible. The placed containers should be checked and a small time penalty could be applied for those incorrectly placed. Keep a record of the time each group uses to place the food. Note: If space is an issue a paper version of this may be done instead.

Personal reflection

Questions would be asked of students:

- How confident were you in placing the foods in their correct group?
- How much variety do you see within each group?
- What contributions do foods from the other groups make to the diet?
- Were you surprised with the placement of certain foods?
- What are the adverse side effects of consuming too many foods from the "other" category" (high sugar, acidity and dental health)
- Were you introduced to any new foods?
- What did you learn, from doing this activity?

KSCO 3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information

Canadian Government regulations regarding supplements.
www.hc-sc.gc.ca/dhp-mps/prodratur/index_e.html

CFG Notes

For CFG Relay, the teacher should have extra food packages for those who have forgotten packages. Have some packages which belong in the “other” category (chocolate bars, margarine, soft drinks).

Emphasize the key messages of *Eating Well with Canada's Food Guide* as noted in the Health Canada publication *Eating Well with Canada's Food Guide A Resource for Educators and Communicators* (variety, moderation, lower fat, whole grains, dark green and orange vegetables and fruits, leaner meats). Pay particular attention to serving sizes. Where possible, demonstrate what an actual serving size looks like using

- real food with various sizes of everyday glasses, plates and bowls.
- food models
- single serving sizes of actual foods (cereal, rice, spaghetti)

CFG Resources

Food For Today, pp. 293-294, 271-280, 585-591

Eating Well with Canada's Food Guide and *Eating Well with Canada's Food Guide - First Nations, Inuit and Métis*, the interactive web resource “Create my Food Guide” and other related resource materials available on-line at www.healthcanada.ca/nutrition or from the Regional Integrated Health Authority.

Suggestions for Assessment

Given a list of foods, identify the category of the food guide to which each food belongs.

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

- 1.5 demonstrate an understanding of Canada's Guidelines for Healthy Eating (KSCO 3) (cont'd)

Suggestions for Learning and Teaching

- Bar Graph Detective (Group work)
Provide students with nutrient bar graphs of "Unidentified" foods (cover food name). Ask students to determine the best placement of the bar graph cards into food groups, based on nutrient content. Each group will analyse the graphs and give rationale for the placement of the foods.
or
Complete "Connecting Nutrients and Canada's Food Guide" (3-9) in Food for Today Teacher Resource.
- Divide class into 5 or 6 groups, giving each group an envelope containing several pictures of food or food packages. Ask them to separate the items under headings for the food groups (which are posted on the bulletin board.) Ask students to pin the cards under the appropriate headings. For example, rice would go under "Grain Products", banana under "Vegetables and Fruits", pizza under a group called "Combination Foods". Discuss nutrient commonalities of the foods placed in each group. At the end of the activity, students should better understand why certain foods belong to each food group, based on their nutrient content. The "combination foods" can be broken down to identify ingredients and the corresponding food group.
- Items such as baseball/tennis ball (vegetable/fruit), white eraser (cheese), deck of cards (meat or fish), computer mouse, etc, are put on clear view for students. The teacher distributes index cards with foods written on them. Each student takes a food card and places it with the appropriate sized item.

Teacher leads discussion about the rationale for the serving size for particular foods.
- Complete "Investigating Canada's Guidelines for Healthy Eating" (3-10) in Food for Today Teacher Resource.

NUTRITION 2102 CURRICULUM GUIDE 37

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

- 1.6 demonstrate an understanding of food sources to meet nutritional requirements at various stages of the life cycle (KSCO 2)

Suggestions for Learning and Teaching

Learning strategies include the use of learning centers for the various stages of the life cycle. Centers may be developed around any or all stages of the life cycle. See note on learning centers on the Virtual Teacher Centre website or in Appendix A.

- Brainstorm the nutrients that students feel are important at each stage of the life cycle. Focus should be placed on healthy growth and development at each stage, and the nutrients required for this.

Pregnancy

- View the video: *Closing the Gap* (folic acid) or complete the Learning Centre “Folic Acid”.
- Case Studies

If the case studies are not used for assessment, they may be used for class discussion about the importance of specific nutrients important during pregnancy. Discuss the possible consequences of each person’s behaviours.

- A. Janet is a young mother, who has a very active lifestyle. While pregnant with her second child, she continues to be very active with erratic eating habits. She often skips meals, or eats on the run.
- B. Nancy has decided to eliminate all animal products from her diet during her pregnancy. She uses the remaining food groups to plan meals with an adequate protein intake.
- C. Anne enjoys snacking, especially on potato chips, cheesies, chocolate bars and soft drinks. While she is staying close to her proper weight, she often skips meals because she is so full from all her snacking. She is satisfied with her eating habits because she is not gaining weight.

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Students should use their knowledge of the nutrients and their respective food sources to guide them in placing bar graph cards into food groups.</p> <p>Teacher resource: Comparison cards (bargraphs)</p> <p>Lifecycle General Notes</p> <p>All nutrients are essential for health, but at certain stages of the life cycle, the requirement for specific nutrients is increased, and as such, should be emphasized. The intention of this section is to highlight specific nutrients that are important at each stage of the life cycle. Through discussion and activities, students should know why these nutrients are critical during this stage of the lifecycle.</p> <p>Background information for this section should include the Dietary Reference Intakes or Recommended Nutrient Intakes for each of the nutrients. (Based on guidelines for Canadians as established by Health Canada, www.hc-sc.gc.ca or see Appendix A.)</p> <p>Guest speakers from the Regional Integrated Health Authority may be invited to supplement learning.</p> <p>Pregnancy Notes</p> <p>Students should know which nutrients are of particular concern for the healthy development of the fetus:</p> <ul style="list-style-type: none"> Folic acid Calcium and Vitamin D Iron Protein Essential fatty acids (background on fatty acids) <p>Concerns to address:</p> <ul style="list-style-type: none"> Nutrient supplements, dietary concerns, healthy maternal weight gain, weight reducing diets, intake of sugar, fat and sodium, medications, use of alcohol, caffeine and nicotine, teen pregnancy, “Eating for two” fallacy and poverty <p>Pregnancy continued on p. 43.</p>	<p>Choose one stage of the lifecycle and create a powerpoint presentation detailing</p> <ul style="list-style-type: none"> - expected development at that stage - nutritional needs - implications for nutrient deficiencies at this stage <p>Assign the case studies on p. 40 as an individual or group assignment. Provide a rationale for each consequence.</p> <p>For each case study on pregnancy, identify the nutritional area of concern, stating why it needs to be addressed. Propose solutions for each person’s dietary concern.</p>

Specific Outcomes

Suggestions for Learning and Teaching

Breastfeeding

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- NUTRITION 2102 CURRICULUM GUIDE

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Pregnancy Resources</p> <p><u>Food For Today</u>, pp. 254-256</p> <p><i>Eating Well with Canada's Food Guide: A Resource for Educators and Communicators</i>, p. 42</p> <p>Learning Centers found at www.virtualteachercentre.ca</p> <p>Video “<i>Closing the Gap</i>” and accompanying booklet (previously provided with Nutrition 3100)</p> <p>Real Care Baby II teacher resource binder (Available at the school as part of the resources for Human Dynamics 2201)</p> <p>A package of booklets and pamphlets are available from Health and Community Services focusing on maternal nutrition and pamphlets on pregnancy.</p> <p>www.hc-sc.gc.ca. “<i>Nutrition for a Healthy Pregnancy National Guidelines for the Childbearing Years</i>” (Health Canada), (Go to Food & Nutrition, then Reports & Publications)</p> <p>www.beststart.org <i>The Maternal Newborn and Child Health Promotion Network</i></p> <p>www.dietitians.ca “<i>Thinking About Having a Baby</i>”</p> <p>Breastfeeding Notes</p> <p>Nutrients especially important during breastfeeding include:</p> <ul style="list-style-type: none"> Iron Protein Calcium Vitamin D supplement for baby <p>Nutrients important for a breastfeeding mom include those similar to during pregnancy, with increased caloric intake and increased fluid intake.</p> <p>Breastfeeding continued on p. 45.</p>	

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

1.6 demonstrate an understanding of food sources to meet nutritional requirements at various stages of the life cycle (KSCO 2) (cont'd)

Suggestions for Learning and Teaching

Infant Feeding

- Research the cost of formula feeding a baby for a year. Compare the cost to breastfeeding. See www.infactcanada.ca. What are the health benefits of breastfeeding for an infant?
- Contrast various infant formulas for nutritional content.
- Lab opportunity:
Baby food taste test: provide samples of a vegetable and a fruit, one pureed at home, the other commercially prepared.
 - a) Vegetable vs fruit: Students sample each, stating preference. Relate this to introducing infant foods in proper order.
 - b) Compare homemade and commercial baby food for taste and cost

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Breastfeeding Resources</p> <p><u>Food For Today</u> pp. 256</p> <p>Real Care II baby and its resources: Human Dynamics 2201</p> <p>www.dietitians.ca “Feeding Your Baby”</p> <p>www.hc-sc.gc.ca “Exclusive Breastfeeding Duration”. Go to Food & Nutrition, then Reports & Publications, under Infant Feeding see:</p> <ul style="list-style-type: none"> - “Exclusive Breastfeeding Duration” - “Vitamin D Supplementation for Breastfed Infants” - “Recommendations for Breastfed Infants” <p>Health and Community Services Nutritionist.</p> <p>“Go with the Flow” (available from regional Integrated Health Authority).</p> <p>“Nutrition for Healthy Term Infants” (see Appendix A for URL and topics available)</p> <p>Infant Feeding Notes</p> <p>Good nutrition is crucial for optimal growth and development, especially during the first year of life.</p> <p>Concerns to address:</p> <ul style="list-style-type: none"> - breastfeeding - formula feeding - required supplementation - the introduction of solid foods - when to introduce - the sequence of foods introduced - types (homemade, commercial) - foods to encourage: foods high in fibre, low sugar and salt - appropriate portion sizes <p>Infant Feeding continued on p. 47.</p>	

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

1.6 demonstrate an understanding of food sources to meet nutritional requirements at various stages of the life cycle (KSCO 2) (cont'd)

Suggestions for Learning and Teaching

Preschool Age Children (1-3 toddler)

- Design a snack menu that would be used at a preschool or day care centre. Two snack choices would be provided each day. The choices should be healthy ones. Consider making the food appear attractive, as likes and dislikes of young children develop at this stage.
- Make a list of snack foods targeted at young children (examples: yogurt tubes, fun fruits, granola bars, cheese strings etc.) Research nutrient content. Assess the nutritional value of the snack food.

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Infant Feeding Resources</p> <p><u>Food For Today</u>, pp.256-257</p> <p><i>Eating Well with Canada's Food Guide</i></p> <p>www.hc-sc.gc.ca "Nutrition for Healthy Term Infants" (Go to Food & Nutrition, then Reports & Publications)</p> <p>www.dietitians.ca "Feeding Your Baby"</p> <p>www.infactcanada.ca "Breastfeeding: The Best Investment Pricing Exercise" activity sheet</p> <p>www.infactcanada.ca "Complimentary Feeding: Starting Solids"</p> <p>www.hc-sc.gc.ca <i>Revised Recommendations for Breastfed Infants</i>, Health Canada 2004, Office of Nutrition Policy and Promotion (deals with vitamin D supplementation)</p> <p>Preschool Age Children Notes</p> <p>Nutrients especially important during this stage of growth and development:</p> <ul style="list-style-type: none"> Protein Calcium Iron Vitamins <p>Concerns to address:</p> <ul style="list-style-type: none"> Development of a positive attitude towards food Likes and dislikes of young children (taste, texture, color, aroma) Fluctuations in appetite related to growth spurts Providing a variety of foods from <i>Eating Well with Canada's Food Guide</i> Appropriate portion sizes Healthy snacks <p>Preschool Age Children continued on p. 49.</p>	<p>Students will research guidelines which may be in place for nutrition standards in day cares. Identify and prepare sample snacks explaining how young children could be involved in the preparation process. What is the benefit of involving children in food preparation?</p>

Specific Outcomes

Suggestions for Learning and Teaching

Early Childhood (4-8 years)

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- NUTRITION 2102 CURRICULUM GUIDE

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Preschool Age Children Resources</p> <p><u>Food For Today</u>, p. 258</p> <p>Canada's Food Guide to Healthy Eating: Focus on Preschoolers</p> <p>www.cps.ca (Canadian Paediatric Society, "Caring for Kids")</p> <p>www.kraftcanada.ca for recipe ideas</p> <p><i>Partnering for Health: Standards and guidelines for Health in Child Care Settings</i> (Health and Community Services)</p> <p>Early Childhood Notes</p> <p>This is the time when good eating habits can be reinforced.</p> <p>Concerns to address:</p> <ul style="list-style-type: none"> Eating breakfast Nourishing snacks Serving size of foods Peer influences <p>Early Childhood Resources</p> <p>www.gohealthy.ca (Government of Newfoundland and Labrador Wellness website)</p> <p>www.cps.ca (Canadian Paediatric Society, "Caring for Kids")</p> <p>www.hc-sc.gc.ca (Health Canada)</p>	<p>Lab Evaluation:</p> <p>Invite a group of younger students to help make healthy snacks. Nutrition students should plan what food will be made and the role the younger students will play in the preparation.</p> <p>Journal Entry:</p> <p>Identify your favorite meal and the nutritional content of it. How often would you have this meal on a weekly, monthly basis? How does this contribute to your healthy eating plan?</p>

Specific Outcomes

1.6 demonstrate an understanding of food sources to meet nutritional requirements at various stages of the life cycle (KSCO 2) (cont'd)

Suggestions for Learning and Teaching

Puberty (9-13 years)/Adolescence (14-18 years)

- Students can record a meal they have eaten recently. List the foods that are good sources of the specific nutrients listed in Column 3. If the meal is lacking a nutrient(s), suggest foods that could be replaced or added to improve the meal.
- Students can develop and administer a survey to determine eating habits of teens in the school population. Results can be compared with recommendations in *Eating Well with Canada's Food Guide*. Publish the results in the school.

Adulthood (Young Adulthood 19-30 years, Middle Age 31-50 years)

- Ask the student, an adult and an elderly person to complete the “Calcium Calculator” found in the pamphlet “Calcium for Life”. State whether or not calcium requirements are met by each person and the rationale for variance in age requirements.

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information

Puberty/Adolescence Notes

This a period of rapid growth second only to that experienced in infancy.

Concerns to address:

- Skipping meals.
- Peer influence on eating habits.
- Media influences.
- Specific nutrients: folic acid, iron, vitamin A, calcium and protein.
- Energy balance as it relates to physical activity.
- Fast food and serving size

Puberty/Adolescence Resources

Food for Today, p. 259

www.schoolmilk.nf.ca

www.cps.ca

www.beefinfo.org "Iron... teen girls need to pump almost 30% more than boys" (pamphlet)

Adulthood Notes

Nutrient needs remain constant throughout the adult years; however, as the metabolic rate decreases caloric needs are less.

Concerns to address:

- Lifestyle: activity level, smoking and alcohol, caffeine.
- Convenience foods and eating out.
- Energy balance

Health concerns – obesity, hypertension, heart disease, diabetes will be dealt with in detail in Nutrition 3102.

Adulthood continued on p. 53.

Suggestions for Assessment

Calculate personal daily energy requirements using the "Equations to Estimate Energy Requirements" provided in Appendix A. Students may do their own or be provided with a case study.

Survey and Analysis: Using the collected data, discuss the findings and make recommendations about changes/improvements needed.

Complete the Calcium Calculator Activity. Suggest changes to reflect your results.

Specific Outcomes

Suggestions for Learning and Teaching

Seniors (Adulthood 51-70 years, Older Adults 70+ years)

- Identify and discuss nutrition related issues and challenges for seniors.

KSCO 2: Demonstrate an understanding of nutritional needs/requirements of family members at the various stages of development.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Adulthood Resources</p> <p><u>Food for Today</u>, p. 260</p> <p>www.dietitians.ca</p> <p>www.dairygoodness.ca “Calcium for Life” pamphlet.</p> <p>Seniors Notes</p> <p>Concerns to address:</p> <ul style="list-style-type: none"> Health issues - deteriorating health, decreased appetite, dental health Mobility - ability to purchase and prepare food Fixed income and poverty Living alone - preparing nutritious meals for one person <p>Seniors Resources</p> <p><u>Food for Today</u>, pp. 260-261</p> <p>www.dietitians.ca</p>	<p>Interview a senior regarding his or her eating habits and challenges. A set of guideline questions should be composed as a class prior to the interview.</p> <p>Compile a collection of recipes suitable for seniors. Adjust the yield to 2 servings. Provide copies to a senior’s group.</p>

Skills and Abilities

GCO 2. Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>2.1 Evaluate foods and /or menus for nutritional content (KSCO 1)</p>	<ul style="list-style-type: none"> Ask students to plan three lunches, one that would be: <ul style="list-style-type: none"> a) prepared at home b) purchased at school c) bought if you ate out Based on nutritional content, ask students <ul style="list-style-type: none"> -Which meal is considered healthier? Why? -Which meal is more in line with the recommended percentages for carbohydrate, protein and fat? -Which meal most closely follows the recommendations of <i>Eating Well with Canada's Food Guide</i>? Why? In communities where there are several eating establishments, students could be assigned the task of borrowing a menu or making a copy of the menu from a variety of restaurants. (National fast-food chains are available on the Internet.) Ask students to evaluate a number of menus for variety and nutritional content. Are there any glaring nutritional imbalances associated with eating out? Ask students to keep a food diary of what is eaten over a period of time (5 days). Accurately record the number of servings consumed and the serving sizes. Compare these to the recommended daily number of servings from each of the four food groups in <i>Eating Well with Canada's Food Guide</i>. Suggest improvements which could be made in current eating habits. Choose foods that are good sources of specific nutrients. <p>In analysing food diaries, students would be prompted with questions such as:</p> <p>When do you eat?</p> <p>Why do you eat?</p> <p>Where do you eat?</p> <p>Portion size?</p> <p>Variety?</p> <p>Fluid intake?</p> <p>A glaring lack or oversupply of___?</p> <p>Note:</p> <p>Results of this activity will be used again in Units 2 and 3. The teacher is strongly urged to hold these assignments for use in future activities.</p>

KSCO 1: Propose solutions to a range of problems related to foods and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Nutritional Content Notes</p> <p>For energy-yielding nutrients (carbohydrate, fat and protein), students should know that 1 gram of carbohydrate or protein = 4 calories, and 1g fat=9 calories; alcohol 7 kcal/g. Using information provided on food labels, students should be able to calculate the percentage of the calories provided by carbohydrate, protein and fat.</p> <p>The average recommended percentages for distribution of calories according to the Nutrition Recommendations for Canadians in the diet is as follows:</p> <p>Carbohydrate 55%</p> <p>Fat maximum 30%</p> <p>Protein 15%</p> <p>See “Dietary Reference Intakes: Reference Values for Macronutrients” in the appendix.</p> <p>Nutritional Content Resources</p> <p>www.schoolmilk.nf.ca</p> <p>www.dietitians.ca</p> <p>www.crfa.ca (Canadian Restaurant and Food Services Association)</p> <p>www.ascension.k12.nf.ca/grassroots “<i>Rate Your Eating Habits</i>”</p> <p><i>Canada’s Guide to Healthy Eating and Physical Activity</i> (Health Canada)</p>	<p>Students may submit their five-day Personal Food Diary reflecting</p> <ol style="list-style-type: none"> 1. accurate number of servings based on measurements provided 2. accurate placement of foods in food groups 3. suggestions for improvement if needed, or acknowledgement of good eating habits <ul style="list-style-type: none"> • Menu Planning: Using the guidelines provided for the recommended number of servings from food groups at breakfast, lunch and supper, design a 3-day menu for a teenager. Include a Saturday or Sunday as one of your days. A guideline for meal planning is to include foods from at least 3 food groups for breakfast, and 4 food groups for both lunch and supper.

Skills and Abilities

GCO 2. Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>2.2 Propose and evaluate strategies for making improvements in their current eating practices and food habits (KSCO 1)</p> <p>2.3 Create a healthy eating plan for various stages of the lifecycle (KSCO 1)</p>	<p>Ask students to</p> <ul style="list-style-type: none"> Assess food items available for sale at school to determine the nutritional value of these items. Devise a lunch menu that would meet the recommendations of <i>Eating Well With Canada's Food Guide</i>, that could be offered at a school tournament/event. Design a bulletin board display highlighting existing healthy snack or lunch alternatives that can be brought to school. (Focus on nutrient content.) Use the information about the nutrients and the lifecycle to devise a healthy eating plan for a stage of the lifecycle.

NUTRITION 2102 CURRICULUM GUIDE

Attitudes and Behaviours

GCO 3. Students will be encouraged to evaluate knowledge, attitudes, and capabilities; monitor progress; and set new learning goals as an individual and as a family member.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>3.1 Set healthy eating goals and develop plans to achieve these</p>	<p>Ask students to refer to their Five Day Personal Food Diary and</p> <ul style="list-style-type: none"> • identify foods eaten that could be replaced with healthier choices (e.g., replacing soft drinks with fruit juice, milk or water) • identify foods from your diary which were not healthy choices. • make a list of foods that you like that could replace the less healthy choices you have made, which would bring your overall dietary intake more in line with <i>Eating Well with Canada's Food Guide</i>. • present your revised Personal Food Plan

- KSCO 1:** Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.
- KSCO 2:** Evaluate their skill development related to food production, resource management, and the ability to work cooperatively.
- KSCO 3:** Identify and assess goals related to foods and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Note: In this follow-up activity, encourage students to be realistic when setting goals and outlining steps to achieve them.</p>	<p>In a brief paragraph analyze the 5-day intake. Identify the problem areas and suggest improvement strategies.</p>

Nutrition 2102

Unit 2

Food Selection, Preparation and Storage
20 hours

Key-Stage Curriculum Outcomes: Food Selection, Preparation and Storage

Knowledge and Understanding

Students will be able to

KSCO 4: demonstrate a knowledge of food selection, preparation and storage.

Skills and Abilities

Students will be able to

KSCO 2: apply basic safety and sanitation practices to food storage, preparation and service.

KSCO 5: apply basic principles of consumerism to the purchase of food and nutrition products.

Attitudes and Behaviours

Students will be able to

KSCO 1: evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.

KSCO 2: evaluate their skill development related to food production, resource management, and the ability to work cooperatively.

KSCO 3: identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes: Food Selection, Preparation and Storage

Knowledge and Understanding

Students will be able to

1. demonstrate an understanding of basic principles of grocery shopping. (KSCO 4)
2. identify the advantages and disadvantages of fresh, frozen, canned and processed foods. (KSCO 4)
3. demonstrate an understanding of food labelling. (KSCO 4)
4. demonstrate an understanding of the importance of proper storage. (KSCO 4)
5. demonstrate an understanding of how to preserve or maximize nutritional content of foods. (KSCO 4)
6. demonstrate an understanding of some basic food preparation techniques. (KSCO 4)

Specific Curriculum Outcomes

Skills and Abilities

Students will be able to

1. analyse food storage practices for safety, preservation of nutritional value and avoidance of waste. (KSCO 2)
2. have the ability to apply sanitation practices to food preparation and services. (KSCO 2)
3. use a food label as a tool in making food choices. (KSCO 5)
4. choose a range of foods to meet nutritional requirements. (KSCO 5)
5. propose strategies to address daily challenges to healthy eating. (KSCO 5)
6. critically analyse some common food marketing practices and techniques. (KSCO 5)
7. critically analyse the impact of the messages about food portrayed in the media. (KSCO 5)
8. propose strategies to address the negative effects of food advertising on healthy eating. (KSCO 5)

Attitudes and Behaviours

Students will be able to

1. set healthy eating goals and develop plans to achieve these. (KSCO 1, 2, 3)

Note 1: The above outcomes should be clearly communicated to students, noting that the outcomes under Attitudes and Behaviours are not intended for evaluation by the teacher.

Note 2: The suggested teaching and learning activities on the following two-page spread are presented as a range from which to choose. It is not intended that all the activities be implemented. Activities can be selected, modified or added so that all outcomes are addressed in the time frame specified on pp. 4-5 and 21 of this curriculum guide.

Note 3: In many cases, the activities under **Suggestions for Learning and Teaching** can be used as is or modified for student assessment. The reverse is also true: The suggested assessment activities can be used as learning and teaching activities.

Knowledge and Understandings

GCO 1: Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.1 demonstrate an understanding of basic principles of grocery shopping (KSCO 4)</p>	<ul style="list-style-type: none"> Using a minimal amount of money, ask students to provide a meal for a family of four. Staple items such as margarine and mayonnaise do not need to be priced. Make a list of staple foods commonly found at home (flour, sugar, bread, etc.). Ask students to find the cost of these foods at <ul style="list-style-type: none"> a) a grocery store b) a convenience store <p>Compare the prices and discuss. Questions for discussion include:</p> <ul style="list-style-type: none"> a) Which type of store offers the best prices? Why? b) What is the link between where you buy your groceries and the family's food budget? Grocery store visit <p>A class visit can be arranged to a local grocery store. Students can use charts provided to do comparative studies (see Appendix B). This visit can be used to address information listed in the "At the store" in teacher notes.</p>
<p>1.2 identify the advantages and disadvantages of fresh, frozen, canned and processed foods (KSCO 4)</p>	<p>Refer ahead to 1.4 for proper storage and food safety.</p> <ul style="list-style-type: none"> As an opener, brainstorm to identify the forms in which food is sold (fresh, frozen, canned and dried, as well as food which has undergone further processing, such as frozen entrees). The goal should be to have the students realize that the least amount of processing done to a food product, the better it is for the health of the consumer. Information obtained in the grocery store visit can be used here.

(continued on p. 62)

KSCO 4: Demonstrate a knowledge of food selection, preparation and storage.

Notes/Resources/Background Information

Food for Today, Chapter 10

Food for Today Teacher Resource, Blackline Master 2-20

The teacher may find it useful to have food flyers from local stores, or price lists of food available for student use.

Key concepts to address in this section are:

Grocery shopping

The law of maximum nutrition /minimum expenditure states that foods can be chosen at a minimum cost, while providing maximum nutrition.

Before you shop, consider the following:

- Grocery list (use of flyers, planning menus for week)
- Choice of store (national chains, local grocery stores, convenience stores)
- Time of day (not shopping when hungry or tired)
- Time of the week (Specials start on Sunday, so shopping late on Saturday may mean items may be sold out)
- Who is doing the shopping

At the store, consider the following:

- Unit pricing (cost per gram or ml or single unit)
- Brand comparison (nationally advertised brands vs. “no-name” and store brands)
- Food grades (base choice on intended use, for example, potatoes for scalloped potatoes do not have to be the same grade as potatoes for baking)
- Form of food (fresh, frozen and canned)
- “Impulse” purchase

When discussing the advantages and disadvantages of each form of food, the following should be taken into account: color, flavor, texture, convenience, price intended use, and commonly used additives such as sodium.

Suggestions for Assessment

Weekly Grocery Budget

You have a weekly budget of \$125.00 for groceries. These groceries are to feed your family of four. Your family is made up of two parents, both aged 38, a 15 year old son and 10 year old daughter. You want to feed your family foods that they will like but which are as nutritional as possible. Prepare a grocery list of what you would purchase.

Provide prices for the items on your list.

Once you have your groceries you are, then, to prepare a weekly menu with these groceries. The menu is to include three meals plus one snack per day. (You can assume that some basics are already at your disposal: flour, sugar, salt, teabags, etc.)

To conclude the assignment, explain how your choices meet the weekly requirements for each member of the family.

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.2 identify the advantages and disadvantages of fresh, frozen, canned and processed foods (KSCO 4) (cont'd)</p> <p>1.3 demonstrate an understanding of food labelling (KSCO 4)</p>	<ul style="list-style-type: none"> Ask students to develop a list of processed foods which are high in salt, and commonly used in the students' homes (spaghetti sauce, canned soup, packaged soups, rice and pasta mixes, potato chips). Students can be provided with the daily recommended intake for sodium, and either use labels or a web site to research the amount of sodium in these foods. Compare the amount of sodium in a fresh potato with that found in potato chips, or a fresh tomato with processed tomato soup or spaghetti sauce. Examine five different food packages and identify the pieces of information provided on the label. Ask students to determine commonalities among the labels. In group discussion, mandatory pieces of information should be identified. (See student activity sheet "What's on the label??" in Appendix B.) How could a consumer use the ingredient list in making food purchases? Compare nutrition labels of two brands of crackers, cereal (or other food). How does each compare based on serving size, number of grams of carbohydrate, fat, protein, sodium, etc? Poll the class to determine their knowledge of nutritional claims (low fat, light, low salt etc.). Discuss how knowing this information can benefit the consumer. Does a nutritional claim mean that the product is nutritionally sound? Additives: From a collection of food labels, ask students to identify ingredients they believe to be additives. Working in groups, each group can display their list, indicating the food product in which the additive is placed. The teacher can then guide the class through the lists, identifying known additives and their functions.

KSCO 4: Demonstrate a knowledge of food selection, preparation and storage.

Notes/Resources/Background Information

Notes:

- Health Canada states that the Tolerable Upper Level for sodium is 2300 mg per day, for adults. See notes in Appendix B.
- It should be emphasized that processed foods are generally high in salt. www.hc-sc.gc.ca (Health Canada)
- Food Label Note: Ingredients listed in order from greatest to least.

Resources:

www.hc-sc.gc.ca/hpfb-dgpsa/onpp-bppn/diet_ref_e.html *Dietary Reference Intakes*, published report, 2004.

Healthy Eating: Canada's Guide to Healthy Eating and Physical Activity www.eatwellbeactive.gc.ca

Nutrition Labelling Toolkit for Educators (available on-line) at www.hc-sc.gc.ca. Search the title. The CD is provided as a resource but supplemental material is available at this site.

“Ready to Go” slide presentation from the *Nutrition Labelling Toolkit for Educators*.

Nutritional claims information provided in the “Nutrition Labelling Toolkit for Educators” and at www.dietitians.ca (FAQ sheet #1), nutrient content claims.

Food for Today, labelling: pp. 201, 214, 607; grading: pp. 203-213; nutritional claims: p. 608

Functions of Additives

Functions include improving the color, appearance, texture, flavour, preservation and nutrition of food.

Food for Today, pp. 326-334

Suggestions for Assessment

You have been hired as a summer student by a local grocery store that is frequented by seniors. Your job is to help consumers use labels to make informed choices. Design a series of flyers that would help this age group use labels more effectively. Lifecycle concerns should be reflected in the flyers.

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.4 demonstrate an understanding of the importance of proper storage (KSCO 4)</p>	<ul style="list-style-type: none"> Through personal reflection, small group or whole class discussion, students could consider the following questions: <ul style="list-style-type: none"> What conditions need to exist in order for food to spoil? (oxygen, warmth, food supply). What causes food to spoil? (bacteria, yeast and mold) What defines proper food storage? (room temperature and shelf life, refrigeration and freezing, preserving nutrients, avoiding waste). What are the implications of improper food storage (food-borne illness, cross-contamination)? Develop learning centres dealing with food-borne illness (salmonella, clostridium botulinum, e. coli, etc.). Ask students to create a bulletin board display about safe storage of food. Invite a guest speaker (e.g., from The Canadian Food Inspection Agency to speak to the class.) Case study. Devise a situation where there is a problem with food being improperly handled or stored. Ask students to use problem-solving techniques to identify the problem and present possible solutions to rectify the situation. Using the four food groups of Canada's Food Guide, students could be responsible for listing three or four safe food storage practices for foods in each group.

KSCO 4: Demonstrate a knowledge of food selection, preparation and storage.

Notes/Resources/Background Information

Students could be provided with a temperature chart indicating the Danger Zone for food storage, as well as information on the provincial Sanitation Code.

Food for Today, pp. 83-84, 86-95, bacteria p. 79

“Food Safety” DVD.

HACCP (Hazard Analysis at Critical Control Points)

www.dietitians.ca factsheet “*Handle with Care*”

www.canfightbac.org/cpcfse/en/ *Fight Bac* materials and web sites, poster “*Food Handler’s Storage Guide*”

www.inspection.gc.ca Canadian Food Inspection Agency

Suggestions for Assessment

- Food borne illnesses originate from either bacterias, viruses or parasites. Identify the most common pathogens in these three groups. Develop a “safe food plan” for your household. In your plan, identify the potential hazard, the safe food practice, the person responsible for the practice and the bacteria and/or virus and/or parasite associated when practices become unsafe.
e.g.,
 - hamburger meat (potential hazard)
 - cooking hamburger meat well and avoiding cross contamination (practice)
 - parent or person making the meal with hamburger meat (responsible person)
 - E.coli could be found if hamburger meat is improperly cooked (bacteria)
- What is the HACCP system? How does this system work to protect food service establishments and its patrons from food safety hazards?
- What food safety information is made available to consumers by the provincial and/or federal governments?

Knowledge and Understandings

GCO 1. Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes

It is expected that students will be able to

1.5 demonstrate an understanding of how to preserve or maximize nutritional content of foods (KSCO 4)

1.6 demonstrate an understanding of some basic food preparation techniques (KSCO 4)

Suggestions for Learning and Teaching

- Group work:
Each group or pair is given a food (vegetable, fruit), either the actual food item, a food model, or a picture and asked to name two methods of storing, preparing and cooking the food, to maximize nutrient retention.
- Lab opportunity:
Prepare a stir fry, referring to techniques in Column 3.
OR
Prepare a tray of fresh vegetables and an easy-to-prepare dip.
- Make a list of cooking methods and discuss how each method affects retention of the nutrients.

Student Presentation or Lab Opportunity

- In consultation with the teacher, groups of students can choose a recipe, develop and define a list of basic preparation and cooking techniques. They can demonstrate proper techniques, with teacher providing guidance, when needed.
- Guest speaker- If available, ask a local cook or someone in the food service industry to demonstrate food preparation techniques.

NUTRITION 2102 CURRICULUM GUIDE
69

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>2.1 analyse food storage practices for safety, preservation of nutritional value and avoidance of waste (KSCO 2)</p> <p>2.2 have the ability to apply sanitation practices to food preparation and services (KSCO 2)</p>	<ul style="list-style-type: none"> • Ask students to analyse food storage practices at home as they pertain to food safety, preservation of nutrients and avoidance of waste. How are the domestic techniques different from those of a grocery store, restaurant, school cafeteria, old age home or hospital? • Discuss composting as a means of reducing waste. If possible, invite a guest speaker from Multi Materials Stewardship Board (MMSB), Dept of Environment or a Local Farmer. • Classroom initiative: Collect compost materials and demonstrate how a compost works. • Engage in a role play in which there are obvious violations of storage and sanitation techniques. Students, upon identifying a violation, would say “Stop” and explain what was wrong and the correct action. The “Rewind” directive is given to redo the scene with the corrective action. Continue the role play in this manner. • Sanitation: Rub cooking oil on a student’s hands, a knife, a cutting board. Sprinkle cinnamon liberally over each to simulate bacteria on hands and objects. Wash all with <ol style="list-style-type: none"> a. cold water, no soap, then b. cold water with soap and finally c. warm/hot water with soap <p>This would illustrate how easily cross contamination can occur and the importance of proper washing techniques.</p> • Possible class activity – make a stew. This would combine knowledge and application of both proper sanitation practises in food preparation and storage as well as preservation of nutritional value. (Cross contamination).

KSCO 2: Apply basic safety and sanitation practices to food storage, preparation and service.

Notes/Resources/Background Information

Food for Today, pp. 78-94, 95-98

Food Premises Regulations under the Food and Drug Act
www.hoa.gov.nl.ca/hoa/regulations/rc961022.htm

“The Government Service Canada is a division of the Department of Government Services and Lands. It provides the public and the business community with access to a single Government department for their convenience when applying for various permits, licences, certificates and approvals. One of the services provided by the Government Service Centre is food premises inspection and licensing.

The *Food Premises Regulations* under the *Food and Drug Act* provide for the inspection and licensing of food premises. Food premises is defined as a place where food is prepared, manufactured, handled, cut, processed, packaged, displayed, stored, offered for sale, sold, or served and includes hotels, restaurants, catering vehicles, mobile preparation premises, temporary facilities, retail food stores, tents, booths, ships, cold stores, bakeries, breweries, bottling establishments, drinking establishments, dairies, creameries, pasteurizing plants, meat packing premises, and locker plants and premises.

The Government Service Centre is required to inspect food premises a specified number of times each year, with the frequency of inspection dependent upon the classes of food premises involved. All classes require at least an annual inspection both to minimize health risk and to provide an opportunity to renew the licence originally issued.”

Auditor General’s Report 2004, p. 179
www.ag.gov.nl.ca/ag/prevrpts.htm

Fight Bac Program www.canfightbac.org

Multi Materials Stewardship Board (MMSB)
www.mmsb.nf.ca (1-800-901-MMSB)

Suggestions for Assessment

- Under the Food and Drug Act what are the Food Premises Regulations? (www.gov.nl.ca) How can food establishment operators mobilize employees to actively make the workplace foodsafe?
- Develop a “food safety checklist” for older adults. Students may wish to work with a senior’s organization to familiarize them with food safety issues.
- Using the “Food Safety for Older Adults” information found in Appendix B, develop a plan for your household whereby all members play a role in food safety. Students should identify what kinds of things each person can do to promote food safety.

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

2.3 use a food label as a tool in making food choices (KSCO 5)

2.4 choose a range of foods to meet nutritional requirements (KSCO 5)

Suggestions for Learning and Teaching

- Using the five day diary, students could examine the foods they consumed over a five day period. For one of the days, analyse how they could lower their intake of any one nutrient such as fat, sugar, salt. They should use information found on the labels of those foods to do this analysis. When students view a label of a fat, salt or sugar reduced product, they should be able to calculate how many less grams of a nutrient they would be consuming if they made that change in their healthy eating plan.
- From a collection of labels and packages, students can assess how fat, sugar and salt content can vary within the same product. For example, regular miracle whip, miracle whip light and ultra low fat miracle whip.
- Continuing to work with the five day diary, students could use the DRI's for their age group and gender to analyse whether they have met their daily nutritional requirements. Depending on their results, they could either add new foods to their daily diet or choose a wider range of foods to meet these requirements. Students could be provided with a sample two day intake if the Food Diary is not available.

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.

Notes/Resources/Background Information

Note: The focus is on the skills aspect of using labels here, but the knowledge aspect has been addressed in Unit 2, 1.3.

Food for Today, pp. 416, 214-216

DRI's are included in Appendix A for Unit 1

www.dietitians.ca Register for "Eat Tracker"

Suggestions for Assessment

Students choose a recipe they would like to make for a supper meal for a family. They choose one ingredient in the recipe that is packaged and has a nutrition label. They then demonstrate how the consumer can use the information contained on a nutrition label to alter the amount of fat, sugar, salt in home cooking (*Suggestion: If students have access to a web site which can do detailed nutrient analysis, they can compare the regular recipe with the lower fat/salt, etc. version.*)

Students can register for "Eat Tracker" (at www.dietitians.ca) and enter food intake for a 5-day period. They can compare the analysis provided by this site to that of their own analysis of their food intake.

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

- 2.5 propose strategies to address daily challenges to healthy eating (KSCO 5)

Suggestions for Learning and Teaching

- Using their own experiences, students should reflect on personal challenges to healthy eating. They may wish to contribute their thoughts to a class discussion generating a list of challenges. Example: allergies, diabetes, falling prey to fads diets, seasonal availability of food, financial means to purchase food, peer pressure, lifestyle (time and skill available, etc.)
- **Group/Individual Work**
Students can be provided with case studies whereby they can propose strategies to address the challenge in the case study. Use the decision making process to identify the problem and propose solutions.
- **Role play:**
In groups, students could create a situation based on a healthy eating challenge assigned. In the role play, the challenge should be easily identifiable and the strategy to address the challenge should be obvious to the audience.
- **Lab opportunity:**
Brown Bag lunches: Have students work in teams to create a lunch that could be taken from home to school. Use a brown paper bag on which to record the ideas. Post in the school for students to see.

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.**Notes/Resources/Background Information**

Decision Making: Activities in this section highlight the importance of making sound decisions about food and its relation to health.

Food for Today, pp. 308-310, 317-321

Sample Case Studies

- A. Janet is a young mother, who has a very active lifestyle. While pregnant with her second child, she continues to be very active with erratic eating habits. She often skips meals, or eats on the run.
- B. Nancy has decided to eliminate all animal products from her diet during her pregnancy. She uses the remaining food groups to plan meals with an adequate protein intake.
- C. Anne enjoys snacking, especially on potato chips, cheesies, chocolate bars and soft drinks. While she is staying close to her proper weight, she often skips meals because she is so full from all her snacking. She is satisfied with her eating habits because she is not gaining weight.

Suggestions for Assessment

Individual Assignment: From the healthy eating challenges list, assign each student one challenge to healthy eating. They should propose strategies to address the challenges.

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

- 2.6 critically analyse some common food marketing practices and techniques. (KSCO 5)

Suggestions for Learning and Teaching

- Reflection: Ask students to think of the last purchase they made.
 - What was the purchase?
 - Why did you purchase the item? (need or want)
 - What, if anything, influenced you to make the purchase?
 - Does a cheaper version of the product exist?
 - Did you buy the cheaper or more expensive version? Why?
 - Are you satisfied with your purchase? Why or why not?
- Class Discussion: Ask students to generate a list of common marketing practices. (See column #3) A list of discussion questions follows:
 1. What is the primary objective of advertising?
 2. Who pays for advertising?
 3. Why are no name / store brand products able to be sold at a lower cost than brand name products?
 4. What is a loss leader?
 5. Does the form of packaging affect price? (box, plastic bag, paper package etc.) This can be analysed as packaging in general or with respect to a food product that is available in several different forms of packaging.
 6. Why are some products displayed at eye level or at prominent locations in the store?
 7. Are specific groups of consumers targeted by food marketers? (example: organic products being more expensive)
 8. Why are in store demonstrations done?
 9. Of what benefit are points programs to the store? the consumer?

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.

Notes/Resources/Background Information

Note: Having store flyers and magazines with food advertisements on hand would be helpful for this topic.

Marketing practices:

- Use of medium most beneficial to marketer (TV, radio, newspaper, magazine, etc)
- Loss leaders (sale item used as a drawing card)
- Product placement on store shelves
- Packaging
- Specialty lines of food (low carb, organic etc.)
- Heartsmart Restaurant Program
- Coupons, free samples, in-store demonstrations etc.
- Points programs
- Super Sizing

Food for Today, Chapter 4

Food for Today Teacher Resource: Blackline Master 1-11

Food & Nutrition Sciences Lab Manuel 2-4

www.media-awareness.ca (lesson plans on advertising)

Suggestions for Assessment

- Choose one grocery chain that offers a points program. Explain how this program works. How does it benefit
 - the consumer?
 - the grocery store?

The student should make the analysis that the points program is a form of marketing.
- Design a campaign to raise awareness about the cost of food packaging to
 - a) the consumer
 - b) the environment

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

2.7 critically analyse the impact of the messages about food portrayed in the media

2.8 propose strategies to address negative effects of food advertising on healthy eating (KSCO 5)

Suggestions for Learning and Teaching

- Ask students to record advertisements or bring in print copies of food advertisements. In their analysis of the advertisement they should:
 - State the message portrayed to the consumer
 - Identify it as a healthy or unhealthy message
 - Identify the target audience.
 - Identify whether the advertisement contains any misleading information
 - Evaluate whether or not the product will do what is claimed
 - State whether the advertisement will motivate the consumer to purchase the product. Why or why not?
- Bulletin Board Display: Showcase claims made by advertisements and with the actual food labels as part of the display show how these ads may not tell the whole story. To better inform the school population the bulletin board should be in a high traffic area. Possible examples: Fruit drinks versus fruit juices, fast food nutrient content, or foods commonly targeted at teens.
- Public Service Announcement: Provide information to the public /student body with the intent of educating about the possibility of ads being misleading. Provide information to the public about how to interpret labels to make informed healthy decisions.

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.

Notes/Resources/Background Information	Suggestions for Assessment
<p>A collection of newspaper or magazine food ads would be useful here.</p> <p><u>Food for Today Teacher Resource: Blackline Master 1-12</u></p>	<p>Record or use print copies of food advertisements and analyze each one using the six points provided in the first activity in Column 2.</p>
<p>A collection of actual food labels would be useful.</p> <p>Refer to previous notes on nutrition information and nutritional claims found on labels.</p>	<p>Bulletin Board Display: In using this activity for assessment, the student should highlight the advertising techniques used with the food product. The student should also analyze the ad/claim using sound principles of nutrition and health.</p> <p>Public Service Announcement: Content and Delivery of these announcements can be assessed for being concise, factual and clear.</p>

Attitudes and Behaviours

GCO 3. Students will be encouraged to evaluate knowledge, attitudes, and capabilities; monitor progress; and set new learning goals as an individual and as a family member.

Specific Outcomes

It is expected that students will be able to

- 3.1 set healthy goals and develop plans to achieve these
(KSCO 1, 2 and 3)

Suggestions for Learning and Teaching

- Personal Reflection: Students should revisit their Five Day Food Diary. At this point in the course, have any lifestyle changes been made to realize healthier eating habits?

OR

Students should reflect on their personal eating habits surrounding snack choices and eating patterns (where, when, and what they eat), meal preparation techniques etc. At this point in the course, have any lifestyle changes been made to realize healthier eating habits?

- KSCO 1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.
- KSCO 2: Evaluate their skill development related to food production, resource management, and the ability to work cooperatively.
- KSCO 3: Identify and assess goals related to foods and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p><u>Food for Today</u>, Chapter 21</p>	<p>Journal Entry: Food preparation techniques can contribute to a healthy eating plan. Discuss your current food preparation techniques for their contribution to:</p> <ul style="list-style-type: none"> • nutrition retention • minimizing added fat, oil, sugar, etc. • an overall healthy eating plan

Nutrition 2102

Unit 3

Menu and Meal Planning
15 hours

Key-Stage Curriculum Outcomes: Menu and Meal Planning

Knowledge and Understanding

Students will be able to

KSCO 10: demonstrate an awareness of career choices and opportunities in the food industry.

Skills and Abilities

Students will be able to

KSCO 3: make proficient use of a range of techniques to prepare and serve nutritious and aesthetically appealing food

KSCO 6: manage and use resources effectively, efficiently and safely to satisfy personal and family needs, values and beliefs in relation to foods and nutrition.

Attitudes and Behaviours

Students will be able to

KSCO 1: evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.

KSCO 2: evaluate their skill development related to food production, resource management, and the ability to work cooperatively.

KSCO 3: identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes

Knowledge and Understanding

Students will be able to

1. identify career opportunities in the area of foods and nutrition (KSCO 10)

Skills and Abilities

Students will be able to

1. use a range of food preparation techniques to prepare foods/ recipes for each of the food groups. (KSCO 3 and 6)
2. effectively use the resources available at home, in the school and in the community to prepare and serve food. (KSCO 6)

Attitudes and Behaviours

Students will be able to

1. set healthy eating goals and develop plans to achieve these. (KSCO 1, 2 and 3)

Note 1: The above outcomes should be clearly communicated to students, noting that the outcomes under Attitudes and Behaviours are not intended for evaluation by the teacher.

Note 2: The suggested teaching and learning activities on the following two-page spread are presented as a range from which to choose. It is not intended that all the activities be implemented. Activities can be selected, modified or added so that all outcomes are addressed in the time frame specified on pp. 4-5 and 21 of this curriculum guide.

Note 3: In many cases, the activities under **Suggestions for Learning and Teaching** can be used as is or modified for student assessment. The reverse is also true: The suggested assessment activities can be used as learning and teaching activities.

Knowledge and Understandings

GCO 1: Students will acquire an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>1.1 identify career opportunities in the area of foods and nutrition (KSCO 10)</p>	<p>Students could:</p> <ul style="list-style-type: none"> Identify people in the community working in a food related field, interview and present the findings to the class. Research a food and nutrition related career. Research findings should reflect: <ol style="list-style-type: none"> job duty description educational requirement work environment renumeration demand for employment opportunity for advancement Plan a field trip to a food-related establishment, e.g., hotel, hospital, catering company, etc.) Use a local cook or someone in the food service industry to demonstrate food preparation techniques. Respond to the following question: What can employees involved in menu planning in the food service industry do to help consumers eat according to Canada's Food Guide? As a nutritionist, you are asked to make the menu of a food service establishment appeal to all ages, the health conscious and food sensitive consumers. Suggest what you would do to accommodate these consumer types. Find an example of an existing food service establishment that is attempting to do this.

KSCO 10: Demonstrate an understanding of career choices and opportunities in the food industry.

Notes/Resources/Background Information

NOTE: This unit could be addressed on its own or incorporated into the other outcomes of the course. Careers should be taught in Nutrition 2102 and 3102.

Career opportunities in the food and nutrition industry may include catering, hospitality, restaurants, entrepreneurship, residential food services, health care, and education.

Food for Today, Chapter 5 and “Career Profiles” throughout text.

The Canadian Restaurant and Foodservices Association website is a resource for information on careers and nutrition issues
www.crfa.ca.new-jobs.com

www.crfa.ca Click on “Food and Fitness Facts”.

www.kellogs.ca

Careers Menu Pamphlet (Canadian Restaurant Association)

Guest Speaker Report Form, found in Appendix

www.conferenceboard.ca/education/learning-tools/employability-skills.htm (Employability Skills 2000+)

Choices (Career Computer Program available from your Guidance Counselor)

Suggestions for Assessment

- Present the findings of interviews with food service workers. Students should outline entry level requirements, wages, job duty description, job satisfaction etc.
- Research food and nutrition careers. Students will be assessed on the inclusion of the factors in activity 2, column 2.
- Complete the Guest Speaker Report Form and submit for evaluation.
- Profile the food service industry job market in Newfoundland and Labrador. (www.crfa.ca/issues/byprovince/newfoundlandlabrador/asp)
- Restaurant Simulation:
 Ask students to plan and prepare a meal for a group. Divide the students into teams
 - sales and service team
 - food preparation team
 - sanitation team

Clearly define the role of each based on skill level, size of the group, etc. Students will need the guidance of the teacher but it will give them some insight into the variety of careers in the food service industry.

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

- 2.1 use a range of food preparation techniques to prepare foods/recipes for each of the food groups
(KSCO 3 and 6)

Suggestions for Learning and Teaching

This outcome deals primarily with the practical component of Nutrition 2102. It may be done in isolation or woven throughout. Lab suggestions include:

- **Food Preparation Techniques:**

muffin method, cake method, pastry method, cookie method, stir fry, roux in white sauce, etc.

- **Food Groups:**

Grain products: muffins, biscuits, pancakes, carrot cake (cup cake), oatmeal raisin cookies, yeast dough, pasta dishes, rice dishes, loaf (quick breads such as banana bread)

Fruits and Vegetables: fruit salad, stir-fry, fruit crisp, soup, salads, vegetable platter, fruit fondue

Meat and alternates: tacos, fajitas, burritos (meat or bean), omelette, scrambled eggs, French toast, quiche, goulash, etc.

Milk Products: milkshake (low fat), cheese sauce for broccoli, or other vegetables, yogurt or sour cream dips, etc.

- **Combination Food Suggestions:**

Pizza or pizza pockets, stew, macaroni and cheese, spaghetti

KSCO 3: Make proficient use of a range of techniques to prepare and serve nutritious and aesthetically appealing food.

KSCO 6: Manage and use resources effectively, efficiently and safely to satisfy personal and family needs, values and beliefs in relation to food and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Note to teacher: Because lab facilities will vary from school to school, teachers will have to use discretion in lab activity selection. Safety and sanitation are a priority.</p> <p>Teacher Tips: (see Appendix G)</p> <ol style="list-style-type: none"> 1. Recipe suggestions 2. Lab equipment 3. Lab evaluation sheet 4. Cost-saving ideas <p>Strategies for including the practical component of food preparation:</p> <ul style="list-style-type: none"> – Use of fully equipped Home Economics labs. – Demonstrations by teachers with a range of small appliances with follow-up by students at home – Work with or prepare meals for challenging needs students with use of their facilities – Students could work in small groups to assist in the preparation and/or serving of food in the school cafeteria. – Become involved in gaining skills preparing and serving for school functions <p>Resources include time, money, skill, equipment, recipe books, raw materials, people, community food providers.</p> <p>www.foodroutes.org/harvest-eating.jsp (Video clips of food preparation)</p>	<p>Lab Analysis: Given a recipe, identify skills, terms or procedures and equipment/ utensils necessary to make the food product. Explain the organization needed for completion, including cleanup, in one lab period with a four-person group.</p> <p>Food Laboratory Evaluations</p> <p>Students will complete eight labs in Nutrition 2102. For each lab experience, the teacher should evaluate the student on</p> <ul style="list-style-type: none"> • recipe selection if applicable • familiarity with the recipe on lab day • knowledge of terminology • successful completion of the food product • clean-up of the lab facility • application of a learned knowledge and skills to the lab experience

Skills and Abilities

GCO 2. Students will develop the capability/ability to use skills, resources, and processes; and to create conditions and take actions that support individuals and families.

Specific Outcomes

It is expected that students will be able to

2.2 effectively use the resources available at home, in the school and in the community to prepare and serve food (KSCO 6)

Suggestions for Learning and Teaching

- Using one of the recipes chosen for a lab, complete a cost analysis of the recipe. Students should factor into the total cost of the recipe, their time, equipment needed and skill level required. What is the yield of this recipe and the cost per serving? Would a comparable store bought item be a more effective use of your resources?
- Case Study: Your class has been asked to cater to the graduation. The number you are expected to serve is —. The items to be served are sandwiches, vegetable platters, tea/coffee and juice. Determine the cost of providing this service including food and other materials, your time, skill level, etc. Compare the cost of doing this to hiring an outside agency to provide the same service.
- If a catering opportunity arises in the school, encourage the class to take it on as a project.
- Microwave versus conventional oven: Students could compare a recipe made using the microwave and the same recipe made using a conventional oven. (e.g., macaroni and cheese, banana loaf). Compare baking time and the end result (appearance and taste).
- Family Meal Cost Comparison: Calculate the cost of a home-prepared meal for a family of four. Compare this cost with the same meal served at a restaurant.

KSCO 6: Manage and use resources effectively, efficiently and safely to satisfy personal and family needs, values and beliefs in relation to food and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p>www.teachnutrition.org (meal planning)</p> <p>Where opportunities permit, showcase tools and equipment used in the preparation and serving of food. For example, blender, food processor, electric knife.</p>	<p>Case Study: Graduation catering. Submit a written analysis or do an oral presentation on the knowledge, preparation and planning required to complete the task. Calculations for unit pricing to determine the cost of each platter, etc. is needed to compare these costs to cost of using an outside service. All calculations used to arrive at the decision should be included for evaluation.</p> <p>Family Meal Cost Comparison: Submit a written analysis of findings from this activity. See criteria for the case study assessment.</p> <p>Write an essay on the effective use of a family's resources in meal preparation.</p>

Attitudes and Behaviours

GCO 3. Students will be encouraged to evaluate knowledge, attitudes, and capabilities; monitor progress; and set new learning goals as an individual and as a family member.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>3.1 set healthy goals and develop plans to achieve these (KSCO 1, 2 and 3)</p>	<p>Personal reflection</p> <ul style="list-style-type: none"> Students should reflect on experiences they have had in the course and how they can apply these learnings to their own personal goals for healthy eating and active living. (What have you learned that is helpful? Useful?) Lifestyle is a factor that affects personal eating patterns. Consider the lifestyle of a <ol style="list-style-type: none"> secondary student post secondary student What strategies can be used to ensure nutritional balance for each situation? Keep in mind that a post secondary student may or may not be living at home. A parent or caregiver has an influence on the formation of eating habits of children in their care. Devise a set of parent friendly guidelines for new parents to use in raising their child(ren).

- KSCO 1:** Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.
- KSCO 2:** Evaluate their skill development related to food production, resource management, and the ability to work cooperatively.
- KSCO 3:** Identify and assess goals related to foods and nutrition.

Notes/Resources/Background Information	Suggestions for Assessment
<p>Refer to the Five Day Food Diary to assess progress on healthy eating goals.</p>	<p>Respond to the statement “It’s a valuable exercise to record and assess personal eating habits.”</p>

Nutrition 3102

Unit 1

Food, Nutrition and Health
25 hours

Key-Stage Curriculum Outcomes: Food, Nutrition and Health

Knowledge and Understanding

Students will be able to

KSCO3: Demonstrate an understanding of how good choices and eating habits impact health and well-being.

KSCO5: Demonstrate an appreciation of the aesthetic and social aspects of food.

KSCO9: Demonstrate an awareness of consumer rights and responsibilities

Skills and Abilities

Students will be able to

KSCO1: Propose solutions to a range of problems and challenges related to foods and nutrition.

KSCO5: Apply basic principles of consumerism to the purchase of food and nutrition products.

Attitudes and Behaviours

Students will be able to

KSCO1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.

KSCO2: Evaluate their skill development related to food production, resource management and the ability to work cooperatively.

KSCO3: Identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes

Knowledge and Understanding

Students will be able to:

1. demonstrate a knowledge of the nutrients.
2. demonstrate a knowledge of the role of nutrition in health.
3. demonstrate an understanding of the interplay between the psycho-social environment and food choices.
4. identify the relationship between diet and disease prevention and/or management.
5. demonstrate an understanding of specific lifestyles on nutritional requirements.

Skills and Abilities

Students will be able to:

1. use a range of food preparation techniques to prepare foods/ recipes for several of the special dietary conditions
2. propose healthy eating strategies for prevention and management of chronic diseases and for specific lifestyle choices.
3. propose healthy eating strategies for the management of chronic diseases.
4. propose healthy eating strategies for specific lifestyle choices.

Attitudes and Behaviours

Students will be able to:

1. set healthy eating goals and develop plans to achieve these.

Specific Outcomes

Suggestions for Learning and Teaching

1.1 demonstrate a knowledge of the nutrients. (KSCO3)

- Pretest of the nutrients provided in Appendix D. Once completed, correct as a class. This pretest could be used to establish the knowledge base for 3102.

1.2 demonstrate a knowledge of the role of nutrition in health.
(KSCO3)

The Picture of Health

- Generate a list of traits associated with healthy people. Relate each trait to the role nutrition played in that trait.
- Assign a physical, social or emotional trait to each student or group and connect a nutrient(s) to that trait.

or

Divide the class in half. Assign a nutrient to each student in one half of the class. The other half of the class should be given a physical, social, or emotional trait that is connected to a specific nutrient. Allow time for students to find their match. In cases where students have matched one nutrient with more than one trait, discuss the rationale.

- Use information from activities 1 or 2 and create a bulletin board display.
- Draw a silhouette of a person on brown paper or on the board. Label various body parts (i.e. eyes, bones, muscles, etc). Have the names of nutrients printed on index cards. Give the cards to the students and ask them to place their card on the body part that is most affected by that nutrient.

KSCO3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information

This outcome was addressed in 2102 but needs to be refreshed as a basic understanding. Students who have not taken 2102 should refer to Food for Today, Chapter 11 for a review of the nutrients.

Traits should include:

- physical: condition of skin, eyes, hair, bones, muscles, body organs, blood pressure, energy levels, alertness
- social and emotional traits: attention span, mood

General Note: Key concepts should include food as chief source of nutrients, variety, moderation, quantity and CFG.

Example:

Trait	Nutrient	Connection
Energetic	Iron Carbohydrate	<ul style="list-style-type: none"> • Iron carries oxygen to the cells. • Carbohydrate is the main source of energy.
Mood	B vitamins Iron	<ul style="list-style-type: none"> • Low levels of B vitamins affect mood. • Low levels of hemoglobin can make one irritable.

Suggestions for Assessment

- Pretest of the nutrients.

- Bulletin board display
Bulletin board should communicate a key message about the role of a nutrient in health.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes

Students will be expected to:

- 1.3 demonstrate an understanding of the interplay between the psycho-social environment and food choices. (KSCO1)

Suggestions for Learning and Teaching

- Use the prepared lesson plan "Marketing to Teens: Marketing Tactics" found on the Virtual Teachers' Center website.
- Collect media ads that send strong messages about food and beverage choices. For each ad state the message (overt and covert) that is being sent, the target audience, and whether or not the message is contradictory to "Eating Well with Canada's Food Guide" and healthy lifestyle practices.
- Choose a print ad dealing with food and analyze according to ad techniques commonly used by marketers.
- As a class discuss the following:
 - a. What is body image?
 - b. What forms our personal body image?
 - c. What body image messages come out of ads?
 - d. What skills do consumers need to decipher body image messages in the media so as to not be impacted by the unhealthy messages?
- Demonstrate the indicators of healthy body weight using learning centres.
 For each or several of the healthy body weight indicators, set up a station and have students rotate in small groups to each station. Set a time limit for each station. At each station, the students will
 - a. read a short synopsis of the indicator
 - b. perform the test accurately (including completing any calculations)
 - c. interpret the results

KSCO1: Demonstrate an understanding of how personal and social needs, values and beliefs influence food choices.

Notes/Resources/Background Information

www.media-awareness.ca (In the teacher section, search "Marketing to Teens: Marketing Tactics" or access via the VTC)

Food for Today, Chapter 15

"Marketing to Teens - Advertising Strategies". Media Awareness Network, Appendix D

Body Image Notes/Resources:

Food for Today, Chapter 17, p. 440

www.statcan.ca/english/kits/food/food.htm, lesson plan on food choices and body image of 15 year olds.

Caution: There is a possibility that the topic of eating disorders may surface here. There is no curriculum outcome requiring the teaching of eating disorders. A previously released memo and article are included in Appendix D.

www2.heartandstroke.ca Go to Healthy Living, then Healthy Weight. From this page click on Healthy Tools.

The indicators of a healthy body weight are:

1. BMI and percentile chart
2. percent body fat
3. pinch test
4. mirror test
5. apple/pear body shape
6. waist-to-hip ratio

Height/weight tables not recommended. Stations can be set up in the classroom. Each station should have a written explanation of the indicator and whatever equipment is necessary to perform the test (i.e., measuring tape, ruler, mirror, and BMI chart, etc.), and information on how to interpret the results.

Food for Today, Ch.19

Suggestions for Assessment

- Document the number and type of ads aired during a one hour time period of television. A chart could be used to record the ad, type (food, non-food, etc) target audience, audience appeal etc.
- Create a media advertisement for a new food product. Incorporate positive healthy messages in your use of marketing techniques.
- Create a spoof ad. Include the original ad. See sample lesson "Parody Ads" on the VTC.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.4 identify the relationship between diet and disease prevention and/or management. (KSCO3)</p>	<ul style="list-style-type: none"> • Ask students to brainstorm a list of food related diseases/conditions. • Post the names of some disease/conditions on the board. Also have the names of the nutrients on small pieces of bristol board. Ask each student to place the nutrient next to the disease/condition to which he or she believes it is connected and explain why. • Shape Game: cut a piece of construction paper into interlocking puzzle pieces. The number of pieces depends on the number of nutrients associated with each disease/condition. The game can be made more complex by incorporating management strategies, foods recommended or to be avoided, etc. Students will have to find their partner(s) using puzzle piece shapes and information contained on the puzzle pieces (See appendix D for sample). • Discuss heart disease, high blood pressure, diabetes, cancer or other disease/condition. For each, explore what the disease/condition is, impact on health/lifestyle, food choice implications, management strategies, etc. <p>(This is a knowledge-based outcome. Outcome 2.2 will deal with the skill aspect). At this point, students may be identifying an area of interest for further study with the research paper.</p>

KSCO3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information

Note: Approach to this outcome should be mindful that a major research paper will be the end product. Key concepts to be explored in the nutrition research paper could be incorporated into the formal classroom instruction where possible. This gives students a clear understanding of the task at hand and the depth of research required.

The research paper could be done in conjunction with English Language Arts.

The skill of research paper writing should be emphasized here. Students should be cautioned regarding the practice of "cutting and pasting" from the internet. Resources should be checked for reliability (official associations) See Food for Today p. 312.

Diseases/Conditions

heart disease, cancer, diabetes, osteoporosis, hypertension, conditions related to food and diet (allergies, celiac disease, colitis, gout), spina bifida.

Resources

- Folic acid video: *Closing the Gap* previously supplied to schools
- www.cancer.ca
- www.diabetes.ca
- www2.heartandstroke.ca
- guest speakers

Suggestions for Assessment

Students could develop a research paper and present their findings to the class (PowerPoint, poster, display, etc.). A summary of the condition/disease should be provided to the class.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.5 demonstrate an understanding of the impact of specific lifestyles on nutritional requirements. (KSCO3)</p>	<ul style="list-style-type: none"> Ask students to research the dietary considerations of one of the following: athletes, alcohol use/abuse, vegetarians, fast-paced lifestyles, and weight loss diets. <p>For each of the lifestyles above, identify the special nutrient needs. A rationale should be given for each of those needs.</p> <p>Athletes</p> <ul style="list-style-type: none"> <i>Sport drink analysis:</i> ask students to generate a list of drinks commonly used by athletes for rehydration. Compare the drinks based on content (nutrients such as sugar, caffeine, pH level, electrolytes) and cost. Compare these results to that of milk, juice and water as choices for rehydration. Students could display their findings in a prominent place in the school. <i>Rehydration:</i> Given a case study, determine the amount of fluid needed to maintain hydration. <i>Protein Supplements:</i> Why are athletes susceptible to media influences for performance enhancing products? <i>Caffeine:</i> What are the effects of caffeine on the body? What are the obvious sources of caffeine? What are the less obvious sources commonly consumed? What is a safe amount of caffeine to consume daily? <p>From a provided list of foods, rank them in descending order of caffeine content.</p> <p>Alcohol Use/Abuse</p> <ul style="list-style-type: none"> Class discussion on the effect of alcohol on health. Effects of long-term alcohol abuse.

KSCO3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information

Teachers should emphasize that food is the best source of nutrients for all lifestyles.

Eating Well With Canada's Food Guide

Fact sheet "Fueling the Young Athlete" found at www.dietitians.ca

Nutrition: Concepts and Controversies: (previously supplied)
"Sports Drinks" p. 349 (if available)

Protein supplements: Food for Today, p. 598

Nutrient needs: Food for Today, pp. 595-598

Limit on and Sources of Caffeine: see listing in Appendix D and Food for Today, p. 332

Alcohol Use/Abuse Key Concepts:

Empty calories, malnutrition, absorption and metabolism of alcohol, B vitamins, drug interactions, dehydration, damage to body systems involved in nutrient absorption.

Suggestions for Assessment

A case study may be given for any of the special dietary considerations. In the analysis of the case study, students should discuss the pitfalls of the specific lifestyle, implications on Dietary Reference Intakes for the nutrients and strategies to achieve adequate nutrient intake.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.5 demonstrate an understanding of specific lifestyles on nutritional requirements. (KSCO3) (<i>continued</i>)</p>	<p>Vegetarianism</p> <ul style="list-style-type: none"> • Bring a selection of appropriate foods for viewing (nuts, beans, lentils, soy milk, tofu, meat substitute, etc. as available). • What are the types of vegetarians? What are the health benefits of being vegetarian? What are the nutrients of concern for each type of vegetarian? • In communities where eating establishments exist, discuss the availability of vegetarian choices. • Compare <i>Eating Well With Canada's Food Guide</i> to the Canadian Vegetarian Food Guide. How does each guide foster the health of its users? <p>Fast Paced Lifestyles: (eating out/on the run)</p> <ul style="list-style-type: none"> • If eating out is your only option for supper, how can you apply the guidelines for healthy eating to your menu selection? (small group work) • Using <i>Eating Well With Canada's Food Guide</i>, devise a list of meal and snack suggestions that would be convenient and quick while at the same time providing maximum nutrition. <p>Weight Loss Diets</p> <ul style="list-style-type: none"> • What are the components of a healthy approach to weight loss? • Discuss the current weight loss/ diet programs. Analyze how they compare to the components of a good weight loss diet. <p>Sample weight loss diets:</p> <ul style="list-style-type: none"> • fad diets (e.g., grapefruit diet) • low carbohydrate diet • low calorie diets

KSCO3: Demonstrate an understanding of how food choices and eating habits impact health and well-being.

Notes/Resources/Background Information

Vegetarian Notes/Resources:

Nutrients of concern: complete protein, fat, iron, calcium, B12 & D.

This would be an opportunity for a cooking lab - recipe ideas are available on the VTC

Food for Today, Chapter 14.

Nutrition Concepts & Controversies (previously supplied)

www.vegweb.com, go to "recipes"

www.dietitians.ca - Vegetarian Food Guide or see "A New Food Guide for North American Vegetarians" in Appendix D.

www.dietitians.ca - "A World Food Tour", Fact sheet: Vegetarian Eating

Fast Paced Lifestyle Notes/Resources:

Healthy Food Guidelines:

- lower fat
- serving size
- low salt
- avoidance of foods in the "other" category
- CFG
- fibre
- adequate hydration
- beverage choice
- variety

Food for Today, pp. 400-403

Class may bring in copies of diets found in magazines.

Characteristics of a good reducing diet are found in Appendix D.

Suggestions for Assessment

Modify a day's menu to suit a lacto-ovo or vegan vegetarian.

Nutrition on the Run: As a class, compile recipes into a booklet that cater to the nutrient needs of busy people.

Using the characteristics of a good reduction diet, analyze the pitfalls of a current diet program.

Skills and Abilities

GCO2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>2.1 use a range of food preparation techniques to prepare foods/recipes for several of the special dietary conditions. (KSCO1)</p> <p>2.2 Propose healthy eating strategies for prevention of chronic diseases. (KSCO1)</p>	<ul style="list-style-type: none"> • Labs may be incorporated into appropriate topics as they arise, e.g., vegetarian eating, heart healthy eating, etc. • For each research paper topic, conduct a lab profiling a typical meal appropriate for a person with the researched condition/disease. <p>For the purpose of this outcome, diabetes will be the chronic disease that will be referenced. The same activities can be approached using any of the listed chronic diseases/conditions.</p> <ol style="list-style-type: none"> 1. As a class, brainstorm factors that contribute to the development of diabetes. 2. Assess personal risk factors for development of diabetes. Emphasis should be placed on activity level and food intake. 3. Interview a person with diabetes. With teacher guidance, devise interview questions that will focus on the factors that led to the condition/disease. 4. Assess the role played by schools and the community at large in the prevention of chronic diseases.

KSCO1: Propose solutions to a range of problems and challenges related to foods and nutrition.

Notes/Resources/Background Information

Dietary conditions as listed on p. 103 are: heart disease, cancer, diabetes, osteoporosis, hypertension, conditions related to food and diet (allergies, celiac disease, colitis, gout), spina bifida.

Guidelines for Labs in Appendix G

Eating Well With Canada's Food Guide should underlie all food lifestyles.

Recipe suggestions for Lab should have a focus on:

1. low salt
2. low fat (saturated, unsaturated, trans)
3. low sugar, sugar substitutes (Splenda, etc.)
4. high fiber
5. portion sizes, etc

Factors that contribute to diabetes:

- inactivity
- overweight (carrying weight in mid-section)
- caloric intake, especially sugar
- heredity

Resources:

www.diabetes.ca

www.livinghealthyschools.com

Food for Today, pp. 305-309

guest speaker (dietitian)

Suggestions for Assessment

- Lab evaluations
- Food Demonstration: Present and discuss food preparation techniques, the food selection process and nutrient accommodations for the disease/condition researched in this unit. Presentation will be evaluated on
 - delivery of the information
 - knowledge of the topic
 - food preparation skills
- Analyze the findings of the personal risk factors in activity 2 (Outcome 2.2). Propose healthy eating and physical activity strategies to reduce the risk of the development of the disease/condition.

Skills and Abilities

GCO2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>2.3 Propose healthy eating strategies for the management of chronic diseases. (KSCO1)</p>	<p>The teacher may choose to continue with the focus on diabetes or switch to another disease/condition for this outcome.</p> <ul style="list-style-type: none"> • Special occasions often involve foods which may not be appropriate for people with specific diseases/conditions. Suggest snack or dessert items that would be more suitable for the diet of that person. • Using restaurant menus, analyze the suitability of the items on the menu for a person with a certain disease/condition. • Using several brands of foods that are similar (e.g., crackers), analyze the nutrition labels and ingredient lists for the appropriateness to the diet of each of the diseases/conditions.

KSCO1: Propose solutions to a range of problems and challenges related to foods and nutrition.

Notes/Resources/Background Information

Food for Today: "Special Eating Plans" pp. 307-310.

Use food models when discussing meal planning, portion control and variety as components of healthy eating strategies.

Suggestions for Assessment

Devise a 2-day menu for a person with a specific disease/condition.

Skills and Abilities

GCO2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>It is expected that students will be able to</i></p> <p>2.4 Propose healthy eating strategies for specific lifestyle choices. (KSCO1)</p>	<p>Read the case studies and analyze each one using the directions that follow.</p> <p>a) Bob is a high school teacher, who divides his time between school, practices, games, homework and family. Mealtimes are often rushed.</p> <p>b) Sarah is an alcoholic. She often misses her supper meal, replacing food with alcohol. Breakfast is not often eaten, due to hangovers.</p> <p>c) Don has just decided to become a vegan vegetarian. He has little nutritional knowledge.</p> <p>d) Ruth is a volleyball player who often participates in weekend tournaments. Eating on the road and at irregular times is common.</p> <p>e) Emily, a breastfeeding mom, is trying to return to her pre-pregnancy weight. She has decided to go on a low carbohydrate diet.</p> <p>Prepare dietary and nutritional advice for each of the people in the case studies. Advice should be specific to the circumstances outlined in the case study.</p>

KSCO1: Propose solutions to a range of problems and challenges related to foods and nutrition.

Notes/Resources/Background Information

Refer to the categories of lifestyle choices already covered in this unit for concerns specific to each.

- vegetarians
- athletes
- alcohol use/abuse
- fast-paced lifestyles
- weight loss diets

Suggestions for Assessment

Choose 1 case study and provide a 2-day menu that addresses the dietary concern of that lifestyle.

Attitudes and Behaviors

GCO3: Students will be encouraged to evaluate knowledge, attitudes and capabilities; monitor progress and set new learning goals as an individual and as a family member.

Specific Outcomes

It is expected that students will be able to

- 3.1 Set healthy eating goals and develop plans to achieve these.
(KSCO 1, 2, 3)

Suggestions for Learning and Teaching

- Working with family history and lifestyle factors, evaluate current health status and risk level of developing a disease/condition. Using the knowledge and skills acquired in this unit, develop a healthy eating plan to avert development of a disease/condition later in life.

KSCO1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development. **KSCO2:** Evaluate their skill development related to food production, resource management and the ability to work cooperatively. **KSCO3:** Identify and assess goals related to foods and nutrition.

Notes/Resources/Background Information

<http://www.livinghealthyschools.com>

<http://www.dietitians.ca>

<http://www.healthcanada.ca> (Interactive tool "Create My Food Guide")

Suggestions for Assessment

Family Medical Tree

Complete a family tree, noting medical conditions with which family members are living or from which may have died. Discuss any patterns or trends. How might you use this information to prolong/improve your own health?

Nutrition 3102

Unit 2

Food Technology and Production
15 hours

Key-Stage Curriculum Outcomes: Food Technology and Production

Knowledge and Understanding

Students will be able to

- KSCO6: Demonstrate an understanding of the production of food and nutrition products and their impact on individuals and families.
- KSCO7: Demonstrate an understanding of the production and technological advances in food and nutritional products and their impact on individuals and families.
- KSCO9: Demonstrate an awareness of consumer rights and responsibilities in relation to selecting and purchasing food and nutritional products.
- KSCO11: Demonstrate an understanding of various aspects of food production and food service.

Skills and Abilities

Students will be able to

- KSCO5: Apply basic principles of consumerism to the purchase of food and nutrition products.
- KSCO6: Manage and use resources effectively, efficiently and safely to satisfy personal and family needs, values and beliefs in relation to foods and nutrition.

Attitudes and Behaviours

Students will be able to

- KSCO1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.
- KSCO2: Evaluate their skill development related to food production, resource management and the ability to work cooperatively.
- KSCO3: Identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes

Knowledge and Understanding

Students will be able to:

1. demonstrate an understanding of the origins of food, how it is produced and reaches our table.
2. demonstrate an understanding of how Canada contributes to its own food supply and that of other countries.
3. demonstrate an understanding of which foods are locally produced.
4. demonstrate an understanding of the primary food sources in Canada.
5. demonstrate an understanding of the advances in food production.
6. demonstrate an understanding of trends and societal influences on food production.
7. demonstrate an understanding of the impact of food production trends and technological advances on health.
8. demonstrate an understanding of food biotechnology and its related issues.
9. identify the rights and responsibilities of consumers in selecting and purchasing food and nutritional products.
10. be knowledgeable of the existence of municipal, provincial and federal regulations as they relate to food safety.

Skills and Abilities

1. evaluate the use of technology in food packaging materials and how it has impacted the management and use of family resources.
2. investigate the use of technological advances in the production of convenience foods and how these advances affect the management and use of family resources.
3. assess the impact of purchasing food trend items such as organic food products on the family food budget.

Attitudes and Behaviours

1. incorporate aspects of food technology and production into a personal healthy eating plan.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.1 demonstrate an understanding of the origins of food, how it is produced and reaches our table (KSCO 11)</p> <p>1.2 demonstrate an understanding of how Canada contributes to its own food supply and that of other countries (KSCO 11)</p> <p>1.3 demonstrate an understanding of which foods are locally produced (KSCO 11)</p>	<ul style="list-style-type: none"> Students will discuss the origin of our food. For example, using the produce department of a grocery store, try to determine the origin of some items in this department. Name as many departments of a grocery store as you can. Within each department, develop a list of food products available. Are there any other foods that belong to this group but are stored in the canned or dry goods section? Using the information from the previous activities, choose a food product and trace its path from production to your grocery store. <p>Grocery Store Tour</p> <ul style="list-style-type: none"> Assign food products to groups of students and have them investigate the countries of origin of our available foods. Compare the variety of origins found by each group. Use a map of the world to show countries of origin. What foods are produced and sold in Newfoundland and Labrador? To other provinces? Outside of Canada? Make a list of the provinces and territories and note the foods for which each one is known. <ul style="list-style-type: none"> Determine the key food products that are exported from Newfoundland and Labrador. Identify foods that are produced and sold locally but not exported.

KSCO 11: Demonstrate an understanding of various aspects of food production and food service.

Notes/Resources/Background Information

A map of the world would be a good visual to use with this outcome.

Lesson: What's in your grocery cart? *Canadian Agriculture at a Glance* Teacher's Kit Source: <http://www.statcan.ca>; lesson and article in Appendix E.

Key Concepts are:

- locally produced versus imported
- secondary food processing, e.g., fish products, agricultural products
- relationship of cost to processing and packaging
- form changes of food as degree of processing increases.

Supermarket/local grocery store:

- bakery [fresh baked in store, brand name baked outside the store but frozen dough and pie crusts, dry mixes (muffin, roll, cake) are stored in dry/freezer sections].

Virtual Grocery Store

If a tour of a grocery store is not an option, do the same work with food packages or assign as an individual assignment.

www.nlfa.ca Newfoundland and Labrador Federation of Agriculture lists Commodity Groups in NL See Appendix E
<http://www.statcan.ca> Imports/Exports provinces.

Roadside and local markets, local bakeries, foods associated with Made Right Here Program are examples of locally produced food.

Some exported foods are:

- fish products
- berries
- Purity Factory goods
- savory
- yogourt
- bottled water

Suggestions for Assessment

- **Bulletin Board Display:**
Using a map of the world and a list of commonly eaten foods, affix pictures of the foods to the country of origin on the map.
- **Virtual Greenhouse**
Track the growth of what's growing in the greenhouse via web cam.
Log on to www.stfrancis.k12.nf.ca and record the variety of items growing and the growth progress at specified intervals of time.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.4 demonstrate an understanding of the primary food sources in Canada (KSCO 6)</p> <p>1.5 demonstrate an understanding of the advances in food production (KSCO 6)</p> <p>1.6 demonstrate an understanding of trends and societal influences on food production (KSCO 6)</p> <p>1.7 demonstrate an understanding of the impact of food production trends and technological advances on health (KSCO 6)</p>	<ul style="list-style-type: none"> • What is a staple? a staple food? • How are the regions within Canada different/similar in terms of staple foods? • List some advances in any given food industry (general discussion). • Examine the variety and degree of convenience foods available for use by consumers. • What health effects are associated with the use of highly processed foods? • Complete the lesson "There's more to organic farming than being pesticide free" (Appendix E). • Complete the lesson "Technology on the Farm" and "Dairy Farming Goes High Tech" (Appendix E). • Class Discussion: <ul style="list-style-type: none"> - What is a food trend? - What are some of the current trends in food production and consumption? - Are food trends driven by the consumer? The industry? Media? - To what degree have the developments and advancements in these food products affected individual and family life. • Compare the nutritional content of regular line food products to those that have been altered to reduce fat, carbohydrates, etc. • Demonstration and/or Lab ideas: use meat and or egg replacements, skim milk powder, convenience foods, ethnic foods, etc. as a substitute for a similar generic food.

KSCO 6: Demonstrate an understanding of the production of food and nutrition products and their impact on individuals and families.

Notes/Resources/Background Information

Atlas of Canada: <http://www.atlas.gc.ca>

Food for Today, Chapters 23, 24

Food and Nutrition Sciences Lab Manual 3-4, 3-5

Food industries include, but are not limited to

- grain and oil seeds industry
- dairy industry
- poultry and egg production
- beef industry
- horticulture (fruits, vegetables), source: Canada Federation of Agriculture
- fish harvesting

Agriculture: www.growingcanada.ca (teacher section)

Sample Food Trends for discussion

- aquaculture versus traditional fishing
- traditional family versus agribusiness
- community gardens
- use of additives in food processing
- pesticide use vs organic growing
- meat and egg replacements, nutrition products (sports bars and meal replacements), convenience foods, additives, fortified and enriched foods
- Fat free products, low carbohydrate, vegetarianism

Food For Today Teacher Resource, pp. 222-223 for additional information

www4.agr.gc.ca (Search "Canadian Food Trends to 2020")

Nutrient Value of Some Common Foods

Food for Today, Chapter 29

Farming Technology resource: www.statcan.ca Canadian Agriculture At a Glance Teachers Kit: "Technology on the Farm" and "Dairy Farming Goes High Tech".

Organic farming resource: www.statcan.ca Canadian Agriculture At a Glance Teachers Kit: "There's more to organic farming than being pesticide free" sample lesson in Appendix E.

Suggestions for Assessment

- Devise a grocery list for a university student living on his/her own. Identify the staple foods on the list and explain the diversity of those items in meal preparation.

Food and Nutrition Sciences Lab Manual: "Trends in Food Preparation and Consumption in Canada", p. 153

Research the availability of food products such as soy products, low fat, no fat, fat replacements, calcium fortified juices and egg replacements. Create a bulletin board display or collage showcasing any of the above mentioned food products demonstrating alternate uses in healthy eating plans.

Knowledge and Understandings

GCO1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.8 demonstrate an understanding of food biotechnology and its related issues (KSCO 7)</p>	<ul style="list-style-type: none"> • Activity: Topic Opener <p>Students are provided with food packages/labels; one per person. They are then asked to count the number of times each of the following words appears on the ingredient list: (Teacher lists words on board) canola, sugar, corn, soy, tomato, flax, potato.</p> <p>Teacher will then ask for a total from each student and record numbers on board alongside each food.</p> <p>Discussion ensues about the fact that any, all or none of these ingredients may be genetically modified foods. Key point of discussion: Labeling of Genetically Modified Foods in Canada is Voluntary. We do not know if they are in our foods.</p> <ul style="list-style-type: none"> • Use a cross word or word search to introduce the terms in this section. • Provide students with articles on genetically modified food. Ask students to identify the arguments for and against genetically modified food. <p>Internet Study</p> <ul style="list-style-type: none"> • Given a list of reliable websites, conduct a search that would provide a basic understanding of biotechnology. From a list of starter questions, compile a two page report that demonstrates your understanding of the topic and its implications for the consumer. <ul style="list-style-type: none"> - Why genetically modify food? - To what extent is modification of food being done to food we use on a daily basis? (plants, animals, fish) - What criteria is used to determine the safety of food? - Who assesses the safety of a new product of biotechnology? - Is this food labeled for the consumer? Are there any regulations for labeling? - Are there moral and ethical questions raised by genetically modified organisms (GMOs)? - State the biotechnological uses outside the food industry. (health, forestry, sustainable development, natural resources, environment)

KSCO 7: Demonstrate an understanding of the production and technological advances in food and nutritional products and their impact on individuals and families.

Notes/Resources/Background Information

“Biotechnology can be summarized as the manipulation of living organisms to produce goods and services. Although the technology has received widespread media coverage in the past few years, it is a technology with a long history, dating as far back as 6000 B.C.” (<http://www.biobasics.gc.ca>)

Key terms to understand.

- Biotechnology
- Novel foods
- Genetically modified organisms

Teachers should caution the use of websites that may demonstrate bias.

www.cpma.ca

www.agr.ca

www.foodbiotech.org

www.cfa-fca.ca

www.hc-sc.gc.ca

www.cfia-acia.agr.ca

www.biobasics.gc.ca/english/view.asp?x=577 (comprehensive website)

www.dieteticsatwork.com/index.asp Register to access online prepared slides in Modern Food Biotechnology Principles & Perspectives

www.puzzlemaker.com

Modern Food Biotechnology: Principles and Perspectives.

Suggestions for Assessment

- Letter to the Editor:
Complete activity 4-8 in Food & Nutrition Sciences Lab Manuel

Knowledge and Understandings

GCO 1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.8 demonstrate an understanding of food biotechnology and its related issues (KSCO 7) (cont'd)</p> <p>1.9 identify the rights and responsibilities of consumers in selecting and purchasing food and nutritional products (KSCO 9)</p> <p>1.10 be knowledgeable of municipal, provincial and federal regulations as they relate to food safety (KSCO 9)</p>	<ul style="list-style-type: none"> • Assign a GMO food to each student/group for research. Address the following: <ul style="list-style-type: none"> - In what way is the food genetically modified. - What is the purpose of the modification? - Discuss the nutritional /health issues related to this modified food product. - Identify and discuss one controversial issue related to this modified product. - In your opinion is the modification justified? • Brainstorm the route that food travels from its point of origin to your table. What safety nets are in place to guarantee the safety of the food? (HACCP, refrigeration/storage, transportation, and pesticide use. • How would a consumer communicate a concern to a person who sells or serves food? • What regulations are in place for establishments that serve or sell food to the public? Who enforces these regulations? • What role do federal, provincial and municipal governments play in ensuring food safety?

KSCO 7: Demonstrate an understanding of the production and technological advances in food and nutritional products and their impact on individuals and families.

KSCO9: Demonstrate an awareness of consumer rights and responsibilities in relation to selecting and purchasing food and nutritional products

Notes/Resources/Background Information

Consumers have a right to safe food at good value and confidence in the Canadian food system.

Consumers need simple, accurate, relevant and credible information.

Emphasis should be placed on consumer responsibilities in relation to the safe handling and storage of food (cross contamination, safe fridge and freezer temperature, safe thawing of food, personal hygiene, washing of produce, clean storage, refrigerating immediately upon return from the store, etc.).

<http://www.strategis.ic.gc.ca> (consumer handbook; business and consumer site)

www.health.gov.nl.ca/health/publications (Environmental Health publications, 2003)

www.hc-sc.gc.ca

Food for Today, Chapter 16, pp. 327-329

Suggestions for Assessment

- Create a poster/ad campaign.

A grocery store is having a problem with perishable items being left around the store at unrefrigerated locations. Design a motivational poster/ad to prevent customers from doing this.

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.

KSCO 6: Manage and use resources effectively, efficiently and safely to satisfy personal and family needs, values and beliefs in relation to foods and nutrition.

Notes/Resources/Background Information

Note: Family resources are

- time
- money
- skill level
- knowledge
- food
- equipment

Sample technological advances in food production

- availability of prepared sauces
- frozen lunches
- use of sugar substitutes
- meal replacements
- preseasoned or pre-cooked meats/fish
- health conscious frozen meal vs traditional TV dinner
- baked goods: fresh or frozen
- shelf life of perishables
- nutrient analysis for labels
- irradiation
- use of bottled water

Resources:

Food for Today, pp. 618-620 (Food-Packaging Technology)

www.mmsb.nf.ca : tips for water reduction at home and at school.

Suggestions for Assessment

Survey:

- Devise questions and submit findings regarding generational use of convenience foods.

- Create a management plan for a household to maximize the 3R's (reduce, reuse, recycle).

- Lab evaluation

Knowledge and Understandings

GCO2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes

Students will be expected to:

2.3 Assess the impact of a family's use of food trend products on the family food budget (KSCO 5)

Suggestions for Learning and Teaching

- Compare the taste, appearance and cost of organic versus non organic food items. Without identifying the organic and non organic foods, ask students to compare the food(s). Ask students to determine which food is organic. Discuss the rationale for their choice. The same activity can be useful to compare fat free versus regular products, calcium added juice versus regular juice, etc. At the end of the activity, the teacher should disclose product identities and cost.
- Lab opportunity:
Ask groups of students to prepare foods using food trend products. For example,
 1. Baked potato with fat free sour cream and baked potato with regular sour cream
 2. Grilled cheese sandwich with regular cheese versus fat free cheese.
 3. Vegetarian lasagna using meat substitute (tofu or veggie ground rounds.)
 4. Pizza pockets using vegetarian pepperoni versus regular pepperoni.

KSCO 5: Apply basic principles of consumerism to the purchase of food and nutrition products.

Notes/Resources/Background Information

Sample food trend products

- farmed fish
- organic foods
- meat and egg replacements
- fat free
- low carbohydrate
- convenience foods
- vegetarian foods
- flavored water/bottled water

Resources:

Recipes on the Virtual Teacher Centre site:

<http://www.virtualteachercentre.ca>

Food and Nutrition Sciences Lab Manuel: "Comparing Organic and Non-Organic Foods Lab" p. 158

Suggestions for Assessment

Agriculture and Agri-Food Canada reported in "Canadian Food Trends to 2020" that one of the emerging food trends is "Shifting Expenditures". "It reports the move to spending less of our disposable income on food will continue. Retail food purchases will still dominate, while food service will see only modest growth in expenditures. The real shift will be in prepared meals and takeouts." What impact will this have on your personal

- finances?
- wellness?
- future career path?

Attitudes and Behaviours

GCO3: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>3.1 Incorporate aspects of food technology and production into a personal healthy eating plan. (KSCO 1, 2, 3)</p>	<ul style="list-style-type: none"> • Reflection Students should reflect on their usage of convenience foods and food trend products and the contribution of convenience foods to overall health. • Consider the concept of balance in terms of <ol style="list-style-type: none"> a) nutrition b) finances c) scheduling <p>Students can assess the effect of the use of food technology products on achieving nutritional balance, financial balance and time management in their daily lives.</p> <ul style="list-style-type: none"> • Are food trend products in contradiction of the spirit of <i>Eating Well with Canada's Food Guide</i> ? Explain

KSCO1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development. **KSCO2:** Evaluate their skill development related to food production, resource management and the ability to work cooperatively. **KSCO3:** Identify and assess goals related to foods and nutrition.

Notes/Resources/Background Information

Eating Well with Canada's Food Guide A Resource for Educators and Communicators

Suggestions for Assessment

Use the interactive tool "My Food Guide" (www.healthcanada.ca) to create your own food guide online. Print a copy and explain how it will be useful in your healthy eating plan.

Compile a list of frozen entrées. Evaluate each one for its contribution to a healthy eating plan. At what point does the convenience of these foods contradict healthy eating?

Nutrition 3102

Unit 3

Food Security
15 hours

Key-Stage Curriculum Outcomes: Food Security

Knowledge and Understanding

Students will be able to

KSCO8: Demonstrate an understanding of issues and challenges related to food security.

Skills and Abilities

Students will be able to

KSCO4: Propose strategies and solutions to address challenges of local and global food security.

Attitudes and Behaviours

Students will be able to

KSCO1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.

KSCO2: Evaluate their skill development related to food production, resource management and the ability to work cooperatively.

KSCO3: Identify and assess goals related to foods and nutrition.

Specific Curriculum Outcomes

Knowledge and Understanding

Students will be able to:

1. understand what it means to have a secure food system.
2. have an awareness of the complexity of the issues around food security
3. understand the relationship between poverty and access to/availability of food.
4. develop an understanding of economic influences on food security.

Skills and Abilities

1. propose environmental interventions that contribute to good management of natural resources related to food supply.
2. develop action plans aimed at addressing food security issues as individuals, communities and nations.

Attitudes and Behaviours

1. Realize the important role of food security in the healthy development of family members.
2. Assess skills aimed at increasing food security and their application to personal and family situations.

Knowledge and Understandings

GCO 1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.1 understand what it means to have a secure food system. (KSCO 8)</p> <p>1.2 have an awareness of the complexity of the issues around food security. (KSCO 8)</p>	<ul style="list-style-type: none"> Brainstorm the key ideas that would comprise a definition of food security. Refer to the activity in Unit 2.19 of the curriculum guide where a food was traced from point of origin to the consumer's table. Note government regulatory procedures employed along the way to ensure the safety of the product and in turn security of the food supply. Using a map of the world found at www.feedingminds.org, ask students to interpret the color scheme representing prevalence of undernourished people. To allow students to interpret the colors, conceal the color code and title of the map. Once they have given their input, the teacher will explain the color codes and the percentages of undernourished people in specific countries. <p>AND/OR</p> <p>Inequity of distribution of world food supply</p> <p>Students are divided into 2 groups in one of two ways;</p> <ol style="list-style-type: none"> Group 1 has 25% of the students; group 2 has 75%. Students may also be assigned a country - 25% developed countries; 75% underdeveloped countries. Those from advantaged countries sit apart from those from disadvantaged countries.) <p>A box of cookies/crackers is provided, giving 75% of the food to the smaller group and the remainder to the larger group. This simulates the inequity of distribution of the world food supply. Class discussion ensues.</p> <p>AND/OR</p> <p>Hunger Pizza Demonstration: Activity 14, p. 685, <u>Food for Today</u></p> <ul style="list-style-type: none"> Complete the activity "Environmental Issues in Agriculture - What is "Sustainable" Agriculture?"

KSCO 8: Demonstrate an understanding of issues and challenges related to food security.**Notes/Resources/Background Information**

Definition of food security: having access at all times to the food we need for health and well being. Having access refers to the physical, social and economic access to food.

Food Security key ideas are:

- culturally accepted food
- nutritional value
- affordable
- variety/choice
- safe food and water

The Food Security Network of Newfoundland and Labrador defines food security as follows:

"Food security is when all people have access at all times to sufficient, safe and nutritious food, as well as food which meets any specific dietary needs and cultural preferences. It also means that foods are produced in a way which does not harm the people who grow the food or the environment, and that farmers receive adequate wages for their efforts. From this, we see that food security is an issue that we are already involved in, whenever we open the door to a grocery store in Burgeo, visit a food bank in Gander, or watch food being unloaded from a boat or plane in Nain.

Food Security involves everyone - from the people who buy or eat the food, to grocery store owners, distributors, wholesalers, processors, farmers, fishers, agriculture planners and people involved in emergency food programs, nutrition, public health, education, labour and government policy makers. It reflects issues such as income and the cost of housing, fuel, transportation and other expenditure which leaves less money for food. Even more overwhelming is the fact that most of the food we eat usually comes from outside the province, often from thousands of miles away and is managed by large corporations."

www.foodsecuritynews.com

Food for Today, p 671

Food and Nutrition Science Lab Manual. Environmental Issues in Agriculture - What is "Sustainable" Agriculture?" p 145.

www.beefinfo.org "Nutrition Perspective: Beef Up Food Safety from Gate to Plate" (May 2003)

Suggestions for Assessment

Reflection: Inequity of distribution of world food supply.

How did it feel to be part of the group to which you were assigned? Write a journal entry outlining the thoughts you had about your experience.

How does a family/community/province go from being food secure to food insecure? In an essay, discuss the factors that contribute to food insecurity.

Knowledge and Understandings

GCO 1: Students will demonstrate an understanding of issues and challenges which impact the family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>1.2 have an awareness of the complexity of the issues around food security. (KSCO 8) (continued)</p>	<ul style="list-style-type: none"> • There are three main components to food security: availability, accessibility and management. For each of these, further define what issues may arise. • Pair your class with a nutrition class in another part of Newfoundland and Labrador. To identify a sister class, use the government webpage to determine which schools are offering nutrition. To clearly identify availability and accessibility issues, choose a school located in a community of a different size and location. Using a list of basic grocery items, compare cost and availability. Availability may include form of food (fresh vs frozen). This information may be linked to the nutritious food basket in Outcome 1.3. • Complete "Factors Affecting Food Production and Supply" <u>Food and Nutrition Science Lab Manual</u> p 135 • Using the template provided in Appendix F, ask students to identify the factors that affect the food supply and its sustainability.

KSCO 8: Demonstrate an understanding of issues and challenges related to food security.**Notes/Resources/Background Information**

The three components of food security are:

1. Availability: food being available for purchase (global and domestic food production and distribution, seasonal availability, storage, community access to food stores).
2. Accessibility: being physically and financially able to access food (access to transportation, health and mobility issues, personal finances, market fluctuations).
3. Management: implementing and regulating practices that promote a safe and secure food supply (government regulations, production to meet and not exceed supply and demand, sustainability, environmental issues, i.e., recycling, pesticide/herbicide use and land ownership).

www.gov.nl.ca to access the list of schools offering Nutrition 2102/3102. (Click on departments, education, K-12 more, K-12 School Profile System, year, high schools by course)

Food and Nutrition Sciences Lab Manual "Factors Affecting Food Production and Supply" p 135.

Food for Today pp 671-684

www.virtualteachercentre.ca. From the homepage, click on "Oxfam Canada Multimedia" to access the following presentations:

"Humanitarian Aid" powerpoint presentation

"International Development" powerpoint presentation

"Trading Away the Right to Food" powerpoint presentation

Suggestions for Assessment

Choose a country and research the factors that affect food supply and sustainability in that country. See Appendix F for chart of possible factors.

Specific Outcomes

1.3 understand the relationship between poverty and access to/availability of food. (KSCO 8)

Suggestions for Learning and Teaching

- 1.4 develop an understanding of economic influences on food security. (KSCO 8)

KSCO 8: Demonstrate an understanding of issues and challenges related to food security.**Notes/Resources/Background Information**

Poverty can be defined as the inability to provide for basic needs such as food, shelter, clothing, medical care, transportation, etc.

Terminology associated with poverty: Low income cut-off, poverty line, nutritious food basket, vulnerable populations.

Food for Today, pp. 225, 226, 682

Nutritious Food Basket information found in Appendix F or online at http://www.phac-aspc.gc.ca/publicat/cdic-mcc/24-2/c_e.html (Public Health Agency of Canada)

www.foodsecuritynews.com

www.ccsd.ca (Canadian Council on Social Development)

Guest speaker ideas:

- local food bank
- Oxfam www.oxfam.ca
- Regional Integrated Health Authority
- Family Resource Center (check availability)

www.cafb-acba.ca The Canadian Association of Food Banks

Poverty Reduction Strategy: Gov. of NL, 2006 www.gov.nl.ca

www.statcan.ca Source of average income based on family type

Economic influences:

- family income (EI, minimum wage, social assistance, subsidies to farmers/fishers)
- supply and demand
- commodity prices (gas, oil, electricity)
- crop failures due to weather, infestation etc
- local and global strength of the economy
- allocation of funds by government to address food security
- level of education and employment

Job Card template in Appendix F.

Food Flyers

Suggestions for Assessment

Compare poverty in Canada to that of a developing country. Use the indicators of poverty to give a more relevant picture of poverty: Gross domestic product, life expectancy, education levels, infant mortality, etc. (source: www.childinfo.org). Present your findings in chart form.

Research what is currently being done to address poverty in our province. Your work should give a description of each effort and explain how it affects the recipient.

Skills and Abilities

GCO 2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>2.1 propose environmental interventions that contribute to good management of natural resources related to food supply (KSCO 4)</p>	<ul style="list-style-type: none"> • Brainstorm with students the list of resources related to the food supply and environmental interventions that are related to the resources. • As an individual, what can you do to <ul style="list-style-type: none"> - conserve water? - prevent water and soil contamination? (septic tanks, disposal of hazardous substances such as oil, paint and batteries) - preserve fish and game stocks? (tags, licenses) - reduce greenhouse gases (reduce usage of electricity, gas emissions, etc.) • Debate. Complete the activity as outlined in Blackline Master 6-6 of <u>Food for Today Teacher Resource</u>.

KSCO 4: Propose strategies and solutions to address challenges of local and global food security.

Notes/Resources/Background Information

Environmental Interventions

- pest control
- irrigation
- fertilizers: natural and chemical, composting
- crop rotation
- conservation of water and testing of quality
- environmental regulation to protect environment (fish quotas, Total Allowable Catch, licensing, season, protected agriculture areas and pesticide regulation).

Natural Resources related to food supply

- soil/land
- water
- fish stocks
- wild game stocks

www.mmsb.ca Multi Materials Stewardship Board

Food for Today, Chapter 32

Food for Today Teacher Resource, Blackline Master 6-6 (Debate)

Suggestions for Assessment

Debate: Evolution rubric found in Food for Today Teacher Resource, Blackline Master 6-7.

Skills and Abilities

GCO 2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes

Students will be expected to:

2.2 develop action plans aimed at addressing food security issues as individuals, communities, and nations (KSCO 4)

Suggestions for Learning and Teaching

- **Taking Stock:** If a family is already operating on a restricted budget, what strategies can be employed by all family members to adjust the family budget to ensure food security during known difficult times of the year?
For example, the winter season places financial strain on the family budget due to increased heating costs. Knowing that this increase will happen, the family needs to adjust spending priorities or employ strategies to be able to meet all financial obligations.
- View the newsletter "The Food Security News" produced by The Food Security Network of Newfoundland and Labrador. Write an article for this newsletter highlighting an initiative or concern related to food security in your community.
- Ask students to suggest a snack item they would purchase and price it. As a means of stretching the family food budget suggest an alternate snack, that would cost less while still being nutritious. A bulletin board could be used to display class findings.

KSCO 4: Propose strategies and solutions to address challenges of local and global food security.**Notes/Resources/Background Information**

Students may identify financial strains on families as

- seasonal sports (hockey)
- start of the school year
- Christmas
- winter heating costs
- crisis in the family (illness, death, divorce, unemployment etc)

Strategies to adjust the family budget

- create and follow a budget
- identification of wants versus needs
- being energy conscious (home heat, turning off lights, etc.)
- car insurance
- student part time jobs
- adjusting form of food purchased according to season (canned versus fresh)
- assess monthly bills and how they can be reduced (extra features on your telephone account)

www.foodsecuritynews.com

The Food Security Network of Newfoundland and Labrador
Sample display card for bulletin board in Appendix F.

Grocery Store flyers

Suggestions for Assessment

Newspaper Article: write an article to appear in a school newsletter, that raises the awareness of food security issues.

Skills and Abilities

GCO 2: Students will demonstrate the capability/ability to use skills, resources and processes; and to create conditions and take actions that support individuals and family.

Specific Outcomes	Suggestions for Learning and Teaching
<p><i>Students will be expected to:</i></p> <p>2.2 develop action plans aimed at addressing food security issues as individuals, communities, and nations (KSCO 4) (continued)</p>	<ul style="list-style-type: none"> • As a class, compile a list of food/beverage items commonly consumed for a snack (1 per student). Determine the cost of each item and the total for all items on the list. <ul style="list-style-type: none"> - Analyze the foods for their contribution to nutritional intake. - Ask students to suggest a less expensive and if possible more nutritious food to replace the first one. - Calculate the cost of the revised food/beverage list. - Discuss the savings from the first list to the revised list and what that amount of money could mean for <ul style="list-style-type: none"> a) a financially challenged individual or family b) a food bank or similar organization c) a breakfast program in your school d) a person/family in a developing country • Lab idea: use some of the money students would have spent on a snack item to make an inexpensive, nutritious snack for the class. Donate the savings to a community group.

KSCO 4: Propose strategies and solutions to address challenges of local and global food security.**Notes/Resources/Background Information**

Organizations that provide assistance to countries experiencing food insecurity:

www.oxfam.ca (Educators section includes workshops, presentations, lesson plans, etc.)

www.unicef.ca (Education resources, Statistics & Data

www.childinfo.org

Suggestions for Assessment

Research an organization that assists developing countries. What improvements can be made to the lives of people in developing countries with donations from individuals in developed countries.

Attitudes and Behaviors

GCO 3: Students will be encouraged to evaluate knowledge, attitudes and capabilities; monitor progress and set new learning goals as an individual and as a family member.

Specific Outcomes

Students will be expected to:

3.1 realize the important role of food security in the healthy development of family members (KSCO 1)

3.2 assess skills aimed at increasing food security and apply to personal and family situations. (KSCO2)

Suggestions for Learning and Teaching

- The primary sources of iron are usually the more expensive food purchases made by a family. Assess the sources of iron in your family diet and the cost. Identify less expensive alternative food sources that will meet the DRI for iron.

- Income is a factor that affects one's diet. Consider the income of
 - a college student
 - a retired senior citizen

What strategies can be considered to make sure they have food security?

- Personal Reflection
Reflect on what has been learned in this unit and its application to daily life.
- Keep a record of expenditures made for snacks. Evaluate the cost in relation to the nutritional value of the food.

KSCO 1: Evaluate their knowledge, attitudes and capabilities related to foods and nutrition and the effect these have on individual and family development.

KSCO 2: Evaluate their skill development related to food production, resource management and the ability to work cooperatively

Notes/Resources/Background Information

www.childinfo.org

low birth weight and associated concerns:

- prenatal nutrition
- cognitive development of the child
- supportive environment for the mother

Food for Today p. 674 (Iron Deficiency)
p. 675 (Vitamin A Deficiency)
p. 684 (Question #5)

www.beefinfo.org for pamphlets on iron for babies and teens.

Nutrient Value of Some Common Foods: Health Canada, 2002.

Suggestions for Assessment

Create a fact sheet that identifies for consumers, inexpensive foods to meet the DRIs of family members. For example, the DRI for Vitamin C for a 17-year old is 75mg/day. Purchasing the most inexpensive form of orange juice (frozen concentrate) provides 102mg of Vitamin C in a 250mL serving.

Summary of Resources

Authorized Resources for Nutrition 2102 and 3102

[Food for Today](#), Student and teacher text

[Food for Today Teacher Resource](#)

[Food and Nutrition Sciences Lab Manual](#)

[Food and Nutrition Sciences Answer Key](#)

Food Replicas

[Nutritional Value of Some Common Foods \(Health Canada\)](#)

[Modern Food Biotechnology: Principles and Perspectives](#)

Food Safety DVD

[Dr. Richter's Fresh Produce Guide](#)

Comparison Cards

Recommended Resources by Unit for Each Course

Nutrition 2102, Unit 1: Food Choices and Nutritional Needs

Print Resources:

Partnering for Health: Standards and Guidelines for Health in
Child Care Settings(Health and Community Services)
Calcium for Life (pamphlet)

* At the time of publication the
identified Internet sites were
recommended.

Internet Resources*:

www.virtualteachercentre.ca (learning centres)
www.kelloggs.ca (fiber)
www.healthcanada.ca (DRIs, supplements, Eating Well with
Canada's Food Guide & associated resources, breastfeeding)
www.beststart.org (breastfeeding)
www.dieticians.ca (breastfeeding)
www.infactcanada.ca (infant feeding)
www.cps.ca (Canadian Podiatric Society)
www.kraftcanada.ca
www.gohealthy.ca
www.schoolmilk.nf.ca
www.beefinfo.org
www.dairygoodness.ca
www.crfa.ca (Canadian Restaurant and Food Services Association)

Video:

Closing the Gap (folic acid)

Appendix A:

Activity Sheet: Influences on Food Choices

Dietary Reference Intakes and Related Terminology

Equations to Estimate Energy Requirement

Dietary Reference Intakes

Activity Sheet: Supplement Search

Nutrition for Healthy Term Infants (Outline of Recommendations)

Guidelines for Designing and Managing Learning Centres

Nutrition 2102, Unit 2: Food Selection, Preparation and Storage

* At the time of publication the identified Internet sites were recommended.

VHS/DVD/CD:

Nutrition Labeling Toolkit for Education

Internet Resources*:

www.healthcanada.ca

www.dieticians.ca

www.canfightbac.org

www.inspection.gc.ca (Canada's Food Inspection Therapy)

www.foodtv.com

www.mmsb.nf.ca

www.gov.nl.ca

Appendix B:

Activity Sheets: Comparative Studies

What's On the Label? Checklist

Food Claims on Labels

Fact Sheet: Food Safety Facts on Botulism

E.Coli 0157

Kitchen Food Safety Tips

Fact Sheet: Safe Food Storage

Food Safety for Older Adults

Nutrition 2102, Unit 3: Menu and Meal Planning

Print Resources:

Careers Menu Pamphlet (Canadian Restaurant Association)

VHS/DVD/CD:

Choices (Computer Career Program available from your Guidance Counselor)

* At the time of publication the identified Internet sites were recommended.

Internet Resources*:

www.crfa.ca

www.kellogs.ca

www.conferencebound.ca (employability skills)

Appendix C:

Guest Speaker Report Form

Article/website Report Form

Nutrition 3102, Unit 1: Food, Nutrition and Health

Print Resources:

Eating Well with Canada's Food Guide

Eating Well with Canada's Food Guide – First Nations, Inuit and Métis

Eating Well with Canada's Food Guide – A Resource for Educators and Communicators

Nutrition: Concepts and Controversies (previously supplied)

* At the time of publication the identified Internet sites were recommended.

Internet Resources*:

www.media-awareness.ca

www.statcan.ca

ww2.heartandstroke.ca

www.diabetes.ca

www.cancer.ca

www.vegweb.ca

www.dieticians.ca

www.livinghealthyschools.com

www.healthcanada.ca

Appendix D:

Nutrition Pretest

Advertising Strategies

Puzzle Activity

Caffeine Content of Foods and Drugs

A New Food Guide for North American Vegetarians

A Good Reducing Diet

Nutrition 3102, Unit 2: Food, Technology and Production

* At the time of publication the identified Internet sites were recommended.

Internet Resources*:

www.statcan.ca
www.atlas.gc.ca
www.growingcanada.ca
www.biobasics.gc.ca
www.cpma.ca
www.agr.ca
www.foodbiotech.org
www.cfa-fc.ca
www.healthcanada.ca
www.dieteticsatwork.com
www.puzzlemaker.com
www.strategis.ic.gc.ca
www.health.gov.nl.ca/health/publications
www.mmsb.nf.ca
www.virtualteachercentre.ca

Appendix E:

Lesson: What's In Your Grocery Cart?

Commodity Groups

Lesson: There's More to Organic Farming than Being Pesticide Free

Lesson: Technology on the Farm

Nutrition 3102, Unit 3: Food Security

VHS/DVD/CD:
Food Safety DVD

* At the time of publication the identified Internet sites were recommended.

Internet Resources*:
www.feedingminds.org
www.beefinfo.org
www.gov.nl.ca
www.virtualteachercentre.ca
www.oxfam.ca
www.phac-aspc.gc.ca
www.foodsecuritynews.com
www.ccsd.ca
www.cafb-acba.ca
www.statcan.ca
www.mmsb.ca
www.foodsecuritynews.com
www.childinfo.org

Appendix F :

Factors Affecting Food Safety and Sustainability
Who Is Hungry in Canada?
Deriving and Using the Healthy Food Basket Tool
Job Cards
Snack Item Comparison

Appendix G:

Child, Youth and Family Services Act
Guidelines for the Laboratory Component of Nutrition 2102 and 3102
Lab Evaluation Sheet
Food Lab: Market Order Form
Food Lab: Work Plan Form

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* At the time of publication the identified Internet sites were recommended.

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Frank, J., Finegood, D. "Foreward from the Canadian Institutes of Health Research", p.S5. *Canadian Journal of Public Health*, Volume 96, Supplement 3, July/August 2005.

Government of Newfoundland and Labrador, *Auditor General's Report*, 2000, p. 179, retrieved July 2006 from www.gov.nl.ca

Hart, L. "Summary of Expert Presentations from the Promoting Healthy Weights Workshop", Chronic Disease Prevention Alliance of Canada, May 9, 2006.

Health Canada, "What Do Canadians Do About Nutrition", retrieved February 2006 (from www.healthcanada.ca)

Health Canada, "What Do Canadians Know About Nutrition", retrieved February 2006 (from www.healthcanada.ca)

Health Canada, "What Do Canadians Think About Nutrition", retrieved February 2006 (from www.healthcanada.ca)

Appendix A

Activity 1.1. Influences on Food Choices

Students are encouraged to give complete answers, rather than “yes” or “no” answers.

What is your relationship with food?

What are your favourite foods? Why?

Why do you eat?

Do you eat only because you're hungry?

Under what circumstances do you eat?

Where do you eat?

When do you eat?

With whom do you eat? Do your food choices differ, depending on the people you're with?

Do you ever try a food, just because you see it advertised on TV?

When you see food advertised, does it make you want to eat?

Can eating certain foods become a habit? A strong craving for? An addiction?

Is eating associated with certain activities and/or occasions?

Does food availability affect what you eat? (At home, within the school and in the community?)

Do we, in NL, eat differently from people in other provinces?

Does history play a role in what you eat? Your country of origin?

Does tradition play a role in what you eat?

Thus, what are the major influences on your food choices?

Dietary Reference Intakes

Source: Health Canada, Office of Nutrition Policy and Promotion. (http://www.hc-sc.gc.ca/fn-an/nutrition/reference/table/index_e.html)

Recommendations for nutrient intakes are now called Dietary Reference Intakes (DRIs).

DRIs are based on the amount of vitamins, minerals and other substance like fibre that we need -- not only to prevent deficiencies, but also to lower the risk of chronic disease.

Tolerable Upper Intake Level (UL)

- The UL is the highest average daily nutrient intake level likely to pose no risk of adverse health effects to almost all individuals in a given life-stage and gender group.
- The UL is not a recommended level of intake
- As intake increases above the UL, the potential risk of adverse effects increases.

Estimated Average Requirement (EAR)

- The EAR is the median daily intake value that is estimated to meet the requirement of half the healthy individuals in a life-stage and gender group. At this level of intake, the other half of the individuals in the specified group would not have their needs met.
- The EAR is based on a specific criterion of adequacy, derived from a careful review of the literature. Reduction of disease risk is considered along with many other health parameters in the selection of that criterion.
- The EAR is used to calculate the RDA. It is also used to assess the adequacy of nutrient intakes, and can be used to plan the intake of groups.

Estimated Energy Requirement (EER)

- An EER is defined as the average dietary energy intake that is predicted to maintain energy balance in healthy, normal weight individuals of a defined age, gender, weight, height, and level of physical activity consistent with good health. In children and pregnant and lactating women, the EER includes the needs associated with growth or secretion of milk at rates consistent with good health.
- Relative body weight (i.e. loss, stable, gain) is the preferred indicator of energy adequacy.

Equations To Estimate Energy Requirement

Infants and young children	
<i>Estimated Energy Requirement (kcal/day) = Total Energy Expenditure + Energy Deposition</i>	
0-3 months	$EER = (89 \times \text{weight [kg]} - 100) + 175$
4-6 months	$EER = (89 \times \text{weight [kg]} - 100) + 56$
7-12 months	$EER = (89 \times \text{weight [kg]} - 100) + 22$
13-35 months	$EER = (89 \times \text{weight [kg]} - 100) + 20$
Children and Adolescents 3-18 years	
<i>Estimated Energy Requirement (kcal/day) = Total Energy Expenditure + Energy Deposition</i>	
Boys	
3-8 years	$EER = 88.5 - 61.9 \times \text{age [y]} + PA \times (26.7 \times \text{weight [kg]} + 903 \times \text{height [m]} + 20)$
9-18 years	$EER = 88.5 - 61.9 \times \text{age [y]} + PA \times (26.7 \times \text{weight [kg]} + 903 \times \text{height [m]} + 25)$
Girls	
3-8 years	$EER = 135.3 - 30.8 \times \text{age [y]} + PA \times (10.0 \times \text{weight [kg]} + 934 \times \text{height [m]} + 20)$
9-18 years	$EER = 135.3 - 30.8 \times \text{age [y]} + PA \times (10.0 \times \text{weight [kg]} + 934 \times \text{height [m]} + 25)$
Adults 19 years and older	
<i>Estimated Energy Requirement (kcal/day) = Total Energy Expenditure</i>	
Men	$EER = 662 - 9.53 \times \text{age [y]} + PA \times (15.91 \times \text{weight [kg]} + 539.6 \times \text{height [m]})$
Women	$EER = 354 - 6.91 \times \text{age [y]} + PA \times (9.36 \times \text{weight [kg]} + 726 \times \text{height [m]})$
Pregnancy	
<i>Estimated Energy Requirement (kcal/day) = Non-pregnant EER + Pregnancy Energy Deposition</i>	
1 st trimester	$EER = \text{Non-pregnant EER} + 0$
2 nd trimester	$EER = \text{Non-pregnant EER} + 340$
3 rd trimester	$EER = \text{Non-pregnant EER} + 452$
Lactation	
<i>Estimated Energy Requirement (kcal/day) = Non-pregnant EER + Milk Energy Output – Weight Loss</i>	
0-6 months postpartum	$EER = \text{Non-pregnant EER} + 500 - 170$
7-12 months postpartum	$EER = \text{Non-pregnant EER} + 400 - 0$

These equations provide an estimate of energy requirement. Relative body weight (i.e. loss, stable, gain) is the preferred indicator of energy adequacy.

Recommended Dietary Allowance (RDA)

- The RDA is the average daily dietary intake level that is sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in a particular life-stage and gender group.
- The RDA is the goal for usual intake by an individual.

Adequate Intake (AI)

- If sufficient scientific evidence is not available to establish an EAR on which to base an RDA, an AI is derived instead.
- The AI is the recommended average daily nutrient intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people who are assumed to be maintaining an adequate nutritional state.
- The AI is expected to meet or exceed the needs of most individuals in a specific life-stage and gender group.
- When an RDA is not available for a nutrient, the AI can be used as the goal for usual intake by an individual. The AI is not equivalent to an RDA

Acceptable Macronutrient Distribution Range (AMDR)

- The AMDR is a range of intake for a particular energy source (protein, fat, or carbohydrate), expressed as a percentage of total energy (kcal), that is associated with reduced risk of chronic disease while providing adequate intakes of essential nutrients

Total Fibre

- The sum of Dietary Fibre and Functional Fibre.

Dietary Fibre

- Non-digestible carbohydrates and lignin that are intrinsic and intact in plants.
- Dietary fibre includes plant non-starch polysaccharides (e.g. cellulose, pectin, gums, hemicellulose, ²-glucans, and fibres contained in oat and wheat bran), plant carbohydrates that are not recovered by alcohol precipitation (e.g. inulin, oligosaccharides, and fructans), lignin, and some resistant starch.

Functional Fibre

- Isolated non-digestible carbohydrates that have been shown to have beneficial physiological effects in humans.
- Functional fibre includes isolated non-digestible plant (e.g. resistant starch, pectin, and gums), animal (e.g. chitin and chitosan), or commercially produced (e.g. resistant starch, polydextrose, polyols, inulin, and indigestible dextrins) carbohydrate.

Additional Macronutrients Recommendations

Saturated fatty acids	As low as possible while consuming a nutritionally adequate diet
Trans fatty acids	
Dietary cholesterol	
Added sugars*	
A UL was not set for saturated fatty acids, trans fatty acids, dietary cholesterol, or added sugars.	
* Added sugars are defined as sugars and syrups that are added to foods during processing or preparation. Although there were insufficient data to set a UL for added sugars, this maximal intake level is suggested to prevent the displacement of foods that are major sources of essential micronutrients.	

Physical Activity Level

- The ratio of total energy expenditure to basal energy expenditure.
- The Physical Activity Level categories were defined as sedentary (PAL 1.0-1.39), low active (PAL 1.4-1.59), active (PAL 1.6-1.89), and very active (PAL 1.9-2.5).
- Physical Activity Level should not be confused with the physical activity coefficients (PA values) used in the equations to estimate energy requirement.

Physical Activity Coefficients (PA values) for use in EER equations

	Sedentary (PAL 1.0-1.39)	Low Active (PAL 1.4-1.59)	Active (PAL 1.6-1.89)	Very Active (PAL 1.9-2.5)
	Typical daily living activities (e.g., household tasks, walking to the bus)	Typical daily living activities PLUS 30 - 60 minutes of daily moderate activity (ex. walking at 5-7 km/h)	Typical daily living activities PLUS At least 60 minutes of daily moderate activity	Typical daily living activities PLUS At least 60 minutes of daily moderate activity PLUS An additional 60 minutes of vigorous activity or 120 minutes of moderate activity
Boys 3 - 18 y	1.00	1.13	1.26	1.42
Girls 3 - 18 y	1.00	1.16	1.31	1.56
Men 19 y +	1.00	1.11	1.25	1.48
Women 19 y +	1.00	1.12	1.27	1.45

To prevent weight gain and accrue additional health benefits of physical activity, 60 minutes of daily moderate intensity activity is recommended in addition to the activities required by a sedentary lifestyle. This amount of physical activity leads to an "active" lifestyle.

51-70 y	100	130	ND	0.66	0.80	46	ND	ND	ND	11*	ND	1.1*	ND	21*	ND	2.7*	ND
>70 y	100	130	ND	0.66	0.80	46	ND	ND	ND	11*	ND	1.1*	ND	21*	ND	2.7*	ND
Pregnancy																	
<18 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
19-30 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
31-50 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
Lactation																	
<18 y	160	210	ND	1.05	1.1	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND
19-30 y	160	210	ND	1.05	1.1	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND
31-50 y	160	210	ND	1.05	1.1	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*).

Tolerable Upper Intake Levels (ULs) are in shaded columns.

²⁸ Although a UL was not set for any of the macronutrients, the absence of definitive data does not signify that people can tolerate chronic intakes of these substances at high levels.

²⁹ Available evidence does not support recommending a separate protein requirement for vegetarians who consume complementary mixtures of plant proteins, as these can provide the same quality of protein as that from animal proteins.

³⁰ Recommendations for total protein are determined as the amount needed per kg body weight multiplied by the reference weight.

³¹ Total fibre is defined as the sum of dietary fibre and functional fibre. See definitions for further details.

³² The AI for total fibre is based on 14 g/1000 kcal multiplied by the median usual daily energy intake from the Continuing Survey of Food Intakes by Individuals (CSFII 1994-1996, 1998).

³³ Total water includes drinking water, water in beverages, and water that is part of food.

³⁴ The EAR and RDA for pregnancy are only for the second half of pregnancy. For the first half of pregnancy, protein requirements are the same as those of the nonpregnant woman.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Males & Females ³⁴	Total Carbohydrate	Total Protein	Total Fat	n-6 polyunsaturated fatty acids (linoleic acid)	n-3 polyunsaturated fatty acids (α -linolenic acid)
	Percent of Energy	Percent of Energy	Percent of Energy	Percent of Energy	Percent of Energy ³⁵
1-3 years	45 – 65 %	5 – 20 %	30 – 40 %	5 – 10 %	0.6 – 1.2 %
4-18 years	45 – 65 %	10 – 30 %	25 – 35 %	5 – 10 %	0.6 – 1.2 %
19 years and over	45 – 65 %	10 – 35 %	20 – 35 %	5 – 10 %	0.6 – 1.2 %
³⁴ Includes pregnant and lactating women. ³⁵ Up to 10% of the AMDR can be consumed as eicosapentaenoic acid (EPA) and/or docosahexaenoic acid (DHA).					

Dietary Reference Intakes

Reference Values for Elements

	Arsenic ¹⁶		Boron		Calcium		Chromium		Copper		Fluoride		Iodine			
Unit	N/A		mg/day		mg/day		µg/day		µg/day		mg/day		µg/day			
	AI	UL ¹²	AI	UL	AI	UL	AI	UL ¹²	EAR	RDA/AI	UL	AI	UL	EAR	RDA/AI	UL
Infants																
0-6 mo	ND	ND	ND	ND	210*	ND	0.2*	ND	ND	200*	ND	0.01*	0.7	ND	110*	ND
7-12 mo	ND	ND	ND	ND	270*	ND	5.5*	ND	ND	220*	ND	0.5*	0.9	ND	130*	ND
Children																
1-3 y	ND	ND	ND	3	500*	2500	11*	ND	260	340	1000	0.7*	1.3	65	90	200
4-8 y	ND	ND	ND	6	800*	2500	15*	ND	340	440	3000	1*	2.2	65	90	300
Males																
9-13 y	ND	ND	ND	11	1300*	2500	25*	ND	540	700	5000	2*	10	73	120	600
14-18 y	ND	ND	ND	17	1300*	2500	35*	ND	685	890	8000	3*	10	95	150	900
19-30 y	ND	ND	ND	20	1000*	2500	35*	ND	700	900	10000	4*	10	95	150	1100
31-50 y	ND	ND	ND	20	1000*	2500	35*	ND	700	900	10000	4*	10	95	150	1100
51-70 y	ND	ND	ND	20	1200*	2500	30*	ND	700	900	10000	4*	10	95	150	1100
>70 y	ND	ND	ND	20	1200*	2500	30*	ND	700	900	10000	4*	10	95	150	1100
Females																
9-13 y	ND	ND	ND	11	1300*	2500	21*	ND	540	700	5000	2*	10	73	120	600
14-18 y	ND	ND	ND	17	1300*	2500	24*	ND	685	890	8000	3*	10	95	150	900
19-30 y	ND	ND	ND	20	1000*	2500	25*	ND	700	900	10000	3*	10	95	150	1100
31-50 y	ND	ND	ND	20	1000*	2500	25*	ND	700	900	10000	3*	10	95	150	1100
51-70 y	ND	ND	ND	20	1200*	2500	20*	ND	700	900	10000	3*	10	95	150	1100
>70 y	ND	ND	ND	20	1200*	2500	20*	ND	700	900	10000	3*	10	95	150	1100

Pregnancy												
< 18 y	ND	ND	ND	17	1300*	2500	29*	ND	785	1000	8000	3*
19-30 y	ND	ND	ND	20	1000*	2500	30*	ND	800	1000	10000	3*
31-50 y	ND	ND	ND	20	1000*	2500	30*	ND	800	1000	10000	3*
Lactation												
< 18 y	ND	ND	ND	17	1300*	2500	44*	ND	985	1300	8000	3*
19-30 y	ND	ND	ND	20	1000*	2500	45*	ND	1000	1300	10000	3*
31-50 y	ND	ND	ND	20	1000*	2500	45*	ND	1000	1300	10000	3*

This table presents *Estimated Average Requirements (EARs)* in italics, **Recommended Dietary Allowances (RDAs)** in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹⁶Although a UL was not determined for arsenic, there is no justification for adding arsenic to food or supplements.

¹⁷Due to lack of suitable data, ULs could not be established for arsenic and chromium. This does not mean that there is no potential for adverse effects resulting from high intakes.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Unit	Iron ¹⁸			Magnesium			Manganese			Molybdenum			Nickel			Phosphorus		
	mg/day	EAR	RDA/AI	UL	EAR	RDA/AI	UL ¹⁹	mg/day	AI	UL	EAR	RDA/AI	UL	AI	UL	EAR	RDA/AI	UL
Infants																		
0-6 mo	ND	0.27*		40	ND	30*	ND	0.003*	ND	ND	ND	2*	ND	ND	ND	ND	100*	ND
7-12 mo	6.9	11		40	ND	75*	ND	0.6*	ND	ND	ND	3*	ND	ND	ND	ND	275*	ND
Children																		
1-3 y	3.0	7		40	65	80	65	1.2*	2	13	17	17	300	ND	0.2	380	460	3000
4-8 y	4.1	10		40	110	130	110	1.5*	3	17	22	22	600	ND	0.3	405	500	3000
Males																		
9-13 y	5.9	8		40	200	240	350	1.9*	6	26	34	34	1100	ND	0.6	1055	1250	4000
14-18 y	7.7	11		45	340	410	350	2.2*	9	33	43	43	1700	ND	1.0	1055	1250	4000
19-30 y	6	8		45	330	400	350	2.3*	11	34	45	45	2000	ND	1.0	580	700	4000
31-50 y	6	8		45	350	420	350	2.3*	11	34	45	45	2000	ND	1.0	580	700	4000
51-70 y	6	8		45	350	420	350	2.3*	11	34	45	45	2000	ND	1.0	580	700	4000
>70 y	6	8		45	350	420	350	2.3*	11	34	45	45	2000	ND	1.0	580	700	3000
Females																		
9-13 y	5.7 ^e	8 ^e		40	200	240	350	1.6*	6	26	34	34	1100	ND	0.6	1055	1250	4000
14-18 y	7.9 ^e	15 ^e		45	300	360	350	1.6*	9	33	43	43	1700	ND	1.0	1055	1250	4000
19-30 y	8.1 ^e	18 ^e		45	255	310	350	1.8*	11	34	45	45	2000	ND	1.0	580	700	4000
31-50 y	8.1 ^e	18 ^e		45	265	320	350	1.8*	11	34	45	45	2000	ND	1.0	580	700	4000
51-70 y	5 ^e	8 ^e		45	265	320	350	1.8*	11	34	45	45	2000	ND	1.0	580	700	4000
>70 y	5 ^e	8 ^e		45	265	320	350	1.8*	11	34	45	45	2000	ND	1.0	580	700	3000

Pregnancy		27	45	335	400	350	2.0*	9	40	50	1700	ND	1.0	1055	1250	3500
<18 y	23	27	45	335	400	350	2.0*	9	40	50	1700	ND	1.0	1055	1250	3500
19-30 y	22	27	45	290	350	350	2.0*	11	40	50	2000	ND	1.0	580	700	3500
31-50 y	22	27	45	300	360	350	2.0*	11	40	50	2000	ND	1.0	580	700	3500
Lactation		10	45	300	360	350	2.6*	9	35	50	1700	ND	1.0	1055	1250	4000
<18 y	7	10	45	300	360	350	2.6*	9	35	50	1700	ND	1.0	1055	1250	4000
19-30 y	6.5	9	45	255	310	350	2.6*	11	36	50	2000	ND	1.0	580	700	4000
31-50 y	6.5	9	45	265	320	350	2.6*	11	36	50	2000	ND	1.0	580	700	4000

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹⁸The requirement for iron is 1.8 times higher for vegetarians due to the lower bioavailability of iron from a vegetarian diet.

¹⁹The UL for magnesium represents intake from a pharmacological agent only and does not include intake from food and water.

*For the EAR and RDA, it is assumed that girls younger than 14 years do not menstruate and that girls 14 years and older do menstruate. It is assumed that women 51 years and older are post-menopausal.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

	Selenium		Silicon ²⁰		Vanadium ²²		Zinc ²³		Potassium ²⁴		Sodium ²⁵		Chloride ²⁶		Sulfate ²⁷	
Unit	µg/day		N/A		mg/day		mg/day		mg/day		mg/day		mg/day		N/A	
	EAR	RDA/AI	UL	AI	UL	AI	UL	EAR	RDA/AI	UL	AI	UL	AI	UL	AI	UL
Infants																
0-6 mo	ND	15*	45	ND	ND	ND	ND	ND	2*	4	400*	ND	120*	ND	180*	ND
7-12 mo	ND	20*	60	ND	ND	ND	ND	2.5	3	5	700*	ND	370*	ND	570*	ND
Children																
1-3 y	17	20	90	ND	ND	ND	ND	2.5	3	7	3000*	ND	1000*	1500	1500*	2300
4-8 y	23	30	150	ND	ND	ND	ND	4.0	5	12	3800*	ND	1200*	1900	1900*	2900
Males																
9-13 y	35	40	280	ND	ND	ND	ND	7.0	8	23	4500*	ND	1500*	2200	2300*	3400
14-18 y	45	55	400	ND	ND	ND	ND	8.5	11	34	4700*	ND	1500*	2300	2300*	3600
19-30 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1500*	2300	2300*	3600
31-50 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1500*	2300	2300*	3600
51-70 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1300*	2300	2000*	3600
>70 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1200*	2300	1800*	3600
Females																
9-13 y	35	40	280	ND	ND	ND	ND	7.0	8	23	4500*	ND	1500*	2200	2300*	3400
14-18 y	45	55	400	ND	ND	ND	ND	7.3	9	34	4700*	ND	1500*	2300	2300*	3600
19-30 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1500*	2300	2300*	3600
31-50 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1500*	2300	2300*	3600
51-70 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1300*	2300	2000*	3600
>70 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1200*	2300	1800*	3600
Pregnancy																
< 18 y	49	60	400	ND	ND	ND	ND	10.5	12	34	4700*	ND	1500*	2300	2300*	3600
19-30 y	49	60	400	ND	ND	ND	ND	9.5	11	40	4700*	ND	1500*	2300	2300*	3600
31-50 y	49	60	400	ND	ND	ND	ND	9.5	11	40	4700*	ND	1500*	2300	2300*	3600

Lactation		59	70	400	ND	ND	ND	10.9	13	34	5100*	ND	1500*	2300	2300*	3600	ND	ND
< 18 y		59	70	400	ND	ND	ND	10.9	13	34	5100*	ND	1500*	2300	2300*	3600	ND	ND
19-30 y		59	70	400	ND	ND	ND	10.4	12	40	5100*	ND	1500*	2300	2300*	3600	ND	ND
31-50 y		59	70	400	ND	ND	ND	10.4	12	40	5100*	ND	1500*	2300	2300*	3600	ND	ND

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

²⁰ Although silicon has not been shown to cause adverse effects in humans, there is no justification for adding silicon to supplements.

²¹ Due to lack of suitable data, ULs could not be established for silicon, potassium, and sulfate. This does not mean that there is no potential for adverse effects resulting from high intakes.

²² Although vanadium in food has not been shown to cause adverse effects in humans, there is no justification for adding vanadium to food and vanadium supplements should be used with caution. The UL is based on adverse effects in laboratory animals and this data could be used to set a UL for adults but not children and adolescents.

²³ The requirement for zinc may be as much as 50 percent greater for vegetarians, particularly for strict vegetarians whose major food staples are grains and legumes, due to the lower bioavailability of zinc from a vegetarian diet.

²⁴ The beneficial effects of potassium appear to be mainly from the forms of potassium found naturally in foods such as fruits and vegetables. Supplemental potassium should only be provided under medical supervision

²⁵ Grams of sodium x 2.53 = grams of salt.

²⁶ Sodium and chloride are normally found in foods together as sodium chloride (table salt). For this reason, the AI and UL for chloride are set at a level equivalent on a molar basis to those for sodium, since almost all dietary chloride comes with sodium added during processing or consumption of foods.

²⁷An AI for sulfate was not established because sulfate requirements are met when dietary intakes contain recommended levels of sulfur amino acids (protein).

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Last Updated: 2005-08-04

[Important Notices](#)

Dietary Reference Intakes

Reference Values for Vitamins

Unit	Vitamin A ^{1, 2}			Vitamin D			Vitamin E ³			Vitamin K		
	µg/day (RAE)			IU/day (RAE)			mg/day			µg/day		
	EAR	RDA/AI	UL ³	EAR	RDA/AI	UL ³	AI ⁴	UL	AI ⁴	UL ⁶	AI	UL ⁷
Infants												
0-6 mo	ND	400*	600	ND	1333*	2000	5*	25	200*	1000	ND	2.0*
7-12 mo	ND	500*	600	ND	1667*	2000	5*	25	200*	1000	ND	2.5*
Children												
1-3 y	210	300	600	700	1000	2000	5*	50	200*	2000	5	200
4-8 y	275	400	900	917	1333	3000	5*	50	200*	2000	6	300
Males												
9-13 y	445	600	1700	1483	2000	5667	5*	50	200*	2000	9	600
14-18 y	630	900	2800	2100	3000	9333	5*	50	200*	2000	12	800
19-30 y	625	900	3000	2083	3000	10000	5*	50	200*	2000	12	1000
31-50 y	625	900	3000	2083	3000	10000	5*	50	200*	2000	12	1000
51-70 y	625	900	3000	2083	3000	10000	10*	50	400*	2000	12	1000
>70 y	625	900	3000	2083	3000	10000	15*	50	600*	2000	12	1000
Females												
9-13 y	420	600	1700	1400	2000	5667	5*	50	200*	2000	9	600
14-18 y	485	700	2800	1617	2333	9333	5*	50	200*	2000	12	800
19-30 y	500	700	3000	1667	2333	10000	5*	50	200*	2000	12	1000
31-50 y	500	700	3000	1667	2333	10000	5*	50	200*	2000	12	1000
51-70 y	500	700	3000	1667	2333	10000	10*	50	400*	2000	12	1000
>70 y	500	700	3000	1667	2333	10000	15*	50	600*	2000	12	1000

Pregnancy															
< 18 y	530	750	2800	1767	2500	9333	5*	50	200*	2000	12	15	800	75*	ND
19-30 y	550	770	3000	1833	2567	10000	5*	50	200*	2000	12	15	1000	90*	ND
31-50 y	550	770	3000	1833	2567	10000	5*	50	200*	2000	12	15	1000	90*	ND
Lactation															
< 18 y	880	1200	1800	2933	4000	6000	5*	50	200*	2000	16	19	800	75*	ND
19-30 y	900	1300	2000	3000	4333	6667	5*	50	200*	2000	16	19	1000	90*	ND
31-50 y	900	1300	2000	3000	4333	6667	5*	50	200*	2000	16	19	1000	90*	ND

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹ As Retinol Activity Equivalents (RAE). See conversion factors for more details.

² No DRIs are established for beta-carotene or other carotenoids. However, existing recommendations for consumption of carotenoid-rich fruits and vegetables are supported.

³ UL as preformed vitamin A only. Beta-carotene supplements are advised only to serve as a provitamin A source for individuals at risk of vitamin A deficiency.

⁴ AI values are based on the absence of adequate exposure to sunlight.

⁵ EAR and RDA/AI as alpha-tocopherol (2*R*-stereoisomeric forms) only. See conversion factors for more details.

⁶ The UL for vitamin E applies only to synthetic vitamin E (all isomeric forms) obtained from supplements, fortified foods, or a combination of the two.

⁷ Due to lack of suitable data, a UL could not be established for vitamin K. This does not mean that there is no potential for

adverse effects resulting from high intakes.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Unit	Vitamin C ^g		Thiamin		Riboflavin		Niacin ¹⁰		Vitamin B6	
	mg/day	EAR RDA/AI UL	mg/day	EAR RDA/AI UL ²	mg/day	EAR RDA/AI UL ²	mg/day (NE)	EAR RDA/AI UL ¹¹	mg/day	EAR RDA/AI UL
Infants										
0-6 mo	ND	40*	ND	0.2*	ND	ND	0.3*	ND	ND	0.1*
7-12 mo	ND	50*	ND	0.3*	ND	ND	0.4*	ND	ND	0.3*
Children										
1-3 y	13	15	400	0.4	0.5	ND	0.4	0.5	10	0.4
4-8 y	22	25	650	0.5	0.6	ND	0.5	0.6	15	0.5
Males										
9-13 y	39	45	1200	0.7	0.9	ND	0.8	0.9	20	0.8
14-18 y	63	75	1800	1.0	1.2	ND	1.1	1.3	30	1.1
19-30 y	75	90	2000	1.0	1.2	ND	1.1	1.3	35	1.1
31-50 y	75	90	2000	1.0	1.2	ND	1.1	1.3	35	1.1
51-70 y	75	90	2000	1.0	1.2	ND	1.1	1.3	35	1.4
>70 y	75	90	2000	1.0	1.2	ND	1.1	1.3	35	1.4
Females										
9-13 y	39	45	1200	0.7	0.9	ND	0.8	0.9	20	0.8
14-18 y	56	65	1800	0.9	1.0	ND	0.9	1.0	30	1.0
19-30 y	60	75	2000	0.9	1.1	ND	0.9	1.1	35	1.1
31-50 y	60	75	2000	0.9	1.1	ND	0.9	1.1	35	1.1
51-70 y	60	75	2000	0.9	1.1	ND	0.9	1.1	35	1.3
>70 y	60	75	2000	0.9	1.1	ND	0.9	1.1	35	1.3

Pregnancy															
<18 y	66	80	1800	1.2	1.4	ND	1.2	1.4	ND	14	18	30	1.6	1.9	80
19-30 y	70	85	2000	1.2	1.4	ND	1.2	1.4	ND	14	18	35	1.6	1.9	100
31-50 y	70	85	2000	1.2	1.4	ND	1.2	1.4	ND	14	18	35	1.6	1.9	100
Lactation															
<18 y	96	115	1800	1.2	1.4	ND	1.3	1.6	ND	13	17	30	1.7	2.0	80
19-30 y	100	120	2000	1.2	1.4	ND	1.3	1.6	ND	13	17	35	1.7	2.0	100
31-50 y	100	120	2000	1.2	1.4	ND	1.3	1.6	ND	13	17	35	1.7	2.0	100

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

⁸ Because smoking increases oxidative stress and metabolic turnover of vitamin C, the requirement for smokers is increased by 35 mg/day.

⁹ Due to lack of suitable data, ULs could not be established for thiamin and riboflavin. This does not mean that there is no potential for adverse effects resulting from high intakes.

¹⁰ As Niacin Equivalents (NE). See conversion factors for more details.

¹¹ The UL for niacin applies only to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

^a As preformed niacin, not NE, for this age group.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

	Folate ¹²		Vitamin B12		Pantothenic Acid		Choline ¹⁵	
Unit	µg/day (DFE)		µg/day		mg/day		mg/day	
	EAR	RDA/AI	UL ¹³	AI	UL ¹⁴	AI	UL ¹⁴	UL
Infants								
0-6 mo	ND	65*	ND	ND	1.7*	ND	5*	ND
7-12 mo	ND	80*	ND	ND	1.8*	ND	6*	ND
Children								
1-3 y	120	150	300	0.7	2*	ND	8*	ND
4-8 y	160	200	400	1.0	3*	ND	12*	ND
Males								
9-13 y	250	300	600	1.5	4*	ND	20*	ND
14-18 y	330	400	800	2.0	5*	ND	25*	ND
19-30 y	320	400	1000	2.0	5*	ND	30*	ND
31-50 y	320	400	1000	2.0	5*	ND	30*	ND
51-70 y	320	400	1000	2.0	5*	ND	30*	ND
>70 y	320	400	1000	2.0	5*	ND	30*	ND
Females								
9-13 y	250	300	600	1.5	4*	ND	20*	ND
14-18 y	330	400 ^b	800	2.0	5*	ND	25*	ND
19-30 y	320	400 ^b	1000	2.0	5*	ND	30*	ND
31-50 y	320	400 ^b	1000	2.0	5*	ND	30*	ND
51-70 y	320	400	1000	2.0	5*	ND	30*	ND
>70 y	320	400	1000	2.0	5*	ND	30*	ND
Pregnancy								
<18 y	520	600 ^c	800	2.2	6*	ND	30*	ND
19-30 y	520	600 ^c	1000	2.2	6*	ND	30*	ND
31-50 y	520	600 ^c	1000	2.2	6*	ND	30*	ND

This table presents *Estimated Average Requirements (EARs)* in italics, **Recommended Dietary Allowances (RDAs)** in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹² As Dietary Folate Equivalents (DFE). See conversion factors for more details.

¹³ The UL for folate applies only to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

¹⁴ Due to lack of suitable data, ULs could not be established for vitamin B12, pantothenic acid or biotin. This does not mean that there is no potential for adverse effects resulting from high intakes.

¹⁵ Although AIs have been set for choline, there are few data to assess whether a dietary supply of choline is needed at all stages of the life cycle, and it may be that the choline requirement can be met by endogenous synthesis at some of these stages.

¹⁶ In view of evidence linking the use of supplements containing folic acid before conception and during early pregnancy with reduced risk of neural tube defects in the fetus, it is recommended that all women capable of becoming pregnant take a supplement containing 400µg of folic acid every day, in addition to the amount of folate found in a healthy diet.

¹⁷ It is assumed that women will continue consuming 400 µg folic acid from supplements until their pregnancy is confirmed and they enter prenatal care. The critical time for formation of the neural tube is shortly after conception.

¹⁸ Because 10 to 30 percent of older people may malabsorb food-bound vitamin B12, it is advisable for those older than 50 years to meet the RDA mainly by consuming foods fortified with vitamin B12 or a supplement containing vitamin B12.

Note: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Supplement Search

	#1	#2	#3	#4	#5
Name of Supplement					
Active Ingredient					
Purpose					
Identified Side Effects					
Recommended Dosage					
DRI/RNI requirement met? (%)					
Cost per day					
Food Sources of Active Ingredients					

“Choosing foods according to *Canada’s Food Guide to Healthy Eating* can provide all of the vitamins and minerals needed for good health for most people. In certain cases, specific vitamin or mineral supplements are recommended. For example, the evidence is clear that the use of supplements containing folic acid substantially reduces the risk of occurrence of birth defects known as neural tube defects (NTDs). All women who could become pregnant should take a multivitamin containing 0.4 mg of folic acid every day, in addition to the amount of folate found in a healthy diet.

If you are considering a multivitamin or multivitamin-mineral supplement, talk to your health care provider to find the best supplement for you. In large doses some substances in multivitamins could actually do more harm than good.” (Health Canada, Office of Nutrition Policy and Promotion)

“Do not take more than one daily dose of vitamin supplement as indicated on the product label. Increasing your dose of Folic Acid beyond 1 mg per day without the advice of a doctor is not recommended. In large doses some substances in multivitamins could actually do more harm than good. This is especially true of Vitamin A in the retinol form. Try to select a supplement with Vitamin A as beta-carotene rather than as retinol. This difference is indicated on the label.” (Public Health Agency of Canada)

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SafetyDiseases &
ConditionsDrugs & Health
ProductsEmergencies &
DisastersEnvironmental &
Workplace HealthFirst Nations & Inuit
Health

Food & Nutrition

Advisories, Warnings &
Recalls

Canada's Food Guide

Food & Nutrition
Surveillance

Food Labelling

Food Safety

Genetically Modified
(GM) Foods & Other
Novel Foods

International Activities

Nutrition & Healthy Eating

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Nutrition for Healthy Term Infants - Statement of the Joint Working Group: Canadian Paediatric Society, Dietitians of Canada and Health Canada

Our mission is to help the people of Canada maintain and improve their health.

Health Canada

Published by authority of the Minister of Health

Également disponible en français sous le titre *La nutrition du nourrisson né à
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Table of Contents

Executive Summary

Summary of Principles and Recommendations (Recommendations 1, 10, 22, 23, 30, 43 and 44 updated 2005)

Introduction

Breastfeeding (Recommendations 1 and 10 updated 2005)

Benefits of breastfeeding to infants in Canada

- (i) Reduced incidence of infection
- (ii) Prevention of SIDS
- (iii) Prevention of allergies
- (iv) Enhanced cognitive development

Maintenance of acceptable growth

Factors influencing initiation and duration of breastfeeding

- i. Maternal lifestyle
- ii. Shortened postpartum length of stay
- iii. "Top-up" feeds
- iv. Smoking

Potential contraindications to breastfeeding

- i. Drugs
- ii. Alcohol (Updated 2007)
- iii. Environmental contaminants
- iv. Maternal infections

Vitamin/Mineral supplementation of breastfed infants

- i. Vitamin D (Updated 2005)

Alternate Milks

Infant formulas

- i. Cow's milk protein-based formulas
- ii. Soy protein-based formulas

Specialized infant formulas

- i. Lactose-free, cow's milk protein-based formulas
- ii. Protein hydrolysate formulas

"Follow-up" formulasHomemade evaporated milk formulasOther alternate milks

- i. Pasteurized cow's milk
- ii. Goat's milk
- iii. Soy, rice and other vegetarian beverages

Unresolved issues in the composition of infant formulas

- i. Fatty acids
- ii. Nucleotides
- iii. Level of iron fortification
- iv. Phyto-oestrogens

Other Fluids in Infant Feeding

- i. Water
 - a. Tap water
 - b. Well water
 - c. Commercially bottled non-carbonated water
 - d. Home water treatment equipment
- ii. Fruit juices
- iii. Other beverages
- iv. Herbal teas

Transition to Solid Foods (Recommendations 22 and 23 updated 2005)

- i. Age of introduction (Updated 2005)
- ii. First foods (Updated 2005)
- iii. Table foods
- iv. Home-prepared foods
- v. Commercial baby foods

Safety Issues Around Feeding

- i. Infant botulism
- ii. Salmonellosis
- iii. Choking and aspiration
 - a. Supervision
 - b. Unsafe foods

Nutrition in the Second Year

- i. Small, frequent feedings
- ii. Variety

Other Issues in Infant Nutrition (Recommendations 30, 43, 44 updated 2005)

- i. Food allergies
- ii. Colic
- iii. Constipation
- iv. Dietary fat
- v. Dental caries

- vi. [Gastroenteritis](#)
- vii. [Diabetes](#)
- viii. [Iron deficiency anemia \(Updated 2005\)](#)
- ix. [Vegetarian diets](#)

References

[Next](#)

Last Updated: 2007-05-02



[Important Notices](#)

Guidelines for Designing and Managing Learning Centres

The teacher decides on the learning outcome(s) and designs a centre, as with other learning activities, that moves students towards the demonstration of the outcome(s).

The teacher's primary role in the implementation of learning centres is that of coordinator and resource person.

The success of learning centres hinges on

- preparing students to work in and manage the centres
- the up-front management of space and resources
- clear, concise, step-by-step directions accompanying each centre. For example, numbering and titling materials in each centre and placing replacement materials in a central, accessible place.

The time and effort devoted to up-front planning and attention to detail eliminates confusion, time loss, duplication of effort, frustration and stress.

Some key points to keep in mind

- develop learning centres of 30-40 minutes duration for ease of administration
- write step-by-step directions for each task in the learning centre
- provide ample supplies of consumable materials for each centre
- number and title envelopes or folders for the completed work of each group of students
- have students work in pairs or groups of three
- assign duties to each person in the group including record work; replenish learning centre materials; keep track of time
- arrange centres in the classroom so that movement is limited and materials are easily accessed

Appendix B

NAME(S): 1. _____

2. _____

Comparative Study # 1

FRUITS AND VEGETABLES

COMPARE THE COST OF VARIOUS FRUITS AND VEGETABLES, PER
POUND OR KILOGRAM

Fruit:	Price, Per Pound
GRANNY SMITH APPLES	
GOLDEN DELICIOUS APPLES	
PINK GRAPEFRUIT	
BANANAS	
GLOBE GRAPES	
GREEN SEEDLESS GRAPES	
FRESH PINEAPPLE	
PEARS	
TANGERINES	

Vegetable:	Price, Per Pound
FRESH LOOSE MUSHROOMS	
GREEN PEPPERS	
RED PEPPERS	
SNOW PEAS	
BROCCOLI	
LETTUCE	
POTATOES	

NAME(S): 1. _____

2. _____

Comparative Study # 2

Compare prices of the different forms of food listed below. Be sure that you compare food packages that are of the same weight/volume. Which food form seems to be lower in price?

FOOD FORMS

FOOD	SIZE	FRESH	FROZEN	CANNED
carrots				
orange juice				
chicken				
peaches				
peas				

Comparative Study # 3

Compare prices for the meats on the chart. Be sure the meats compared have the same weight. Record the prices on the chart.

FOOD FORMS

FOOD	SIZE	FRESH	FROZEN	CANNED
pork loin roast				
beef prime roast				
lean ground beef				
chicken legs				
loin pork chops				
whole chicken				

Price Comparison of Brand Name Products

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____

2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
tinned milk				
1 litre apple juice				
pancake syrup				
canned ravioli				
mustard pickles				
canned crabmeat				
frozen kernel corn				
dish liquid				
salad dressing				
canned peas				
cheese				

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____
2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
frozen orange juice				
frozen dinner (Michelina?)				
canned spaghetti sauce				
1 liter apple juice				
peanut butter				
flavored rice mix				
cheese slices				
flour				
2 liter ice cream				
canned peas				
yoghurt				

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____

2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
frozen juice				
kidney beans				
canned milk				
Hamburger buns				
cheese slices				
chocolate chip cookies				
canned spaghetti				
chicken noodle soup				
bottled water				
“Kraft” – type dinner				
4 or 8 roll toilet paper				

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____

2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
canned tuna fish				
margarine				
peanut butter				
frozen peas				
white bread				
macaroni				
canned peaches				
ground coffee				
strawberry jam				
vegetable oil				
canned tomato soup				

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____

2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
canned corned beef				
Yoghurt				
Cheese whiz				
frozen fries				
whole wheat bread				
spaghetti noodles (bag)				
canned pears				
hot chocolate				
raspberry jam				
ketchup				
canned vegetable soup				

Find 3 different brands for each food listed. Be sure that you pick the same size, weight or volume package. Write down the brand name and the price for each of the 3 brands.

Students Names: 1. _____

2. _____

Food	WT./VOL.	Brand Name/ Price #1	Brand Name/ Price #2	Brand Name/ Price #3
canned shrimp				
canned baked beans				
cereal				
mustard				
cheese				
crackers				
canned pineapple				
onion soup mix				
frozen fish sticks ice cream				
nacho chips				
canned tomatoes				
NUTRITION 2102 CURRICULUM GUIDE				

What's On The Label? Checklist

Name: _____

	Product Name and Brand				
Does the product have.....					
Product identification (what it contains)					
Picture					
Name and address of Manufacturer					
Volume or mass					
Nutritional Info.					
Ingredients					
"Best Before" Date					
How to store it					
Number of Servings					
Nutritional Claims					
Inspection symbol					
Country of Origin					
Food Grade					
Recipes					
Preparation Instructions					
Nutritional Claims					
Bar Code					
Guarantee					
Customer Comment (toll-free number)					

What's On The Label? Checklist

Name: _____

	Product Name and Brand				
Does the product have.....					
Product identification (what it contains)					
Picture					
Name and address of Manufacturer					
Volume or mass					
Nutritional Info.					
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Nutritional Claims					
Inspection symbol					
Country of Origin					
Food Grade					
Recipes					
Preparation Instructions					
Nutritional Claims					
Bar Code					
Guarantee					
Customer Comment (toll-free number)					

Nutrient Content Claims

Table providing a list of some of the more common nutrient content claims and what they mean

Keyword	What they mean
Free	an amount so small, health experts consider it nutritionally insignificant
Sodium free	- less than 5 mg sodium*
Cholesterol free	- less than 2 mg cholesterol, and low in saturated fat (includes a restriction on <i>trans</i> fat)* - not necessarily low in total fat
Low	always associated with a very small amount
Low fat	- 3 g or less fat*
Low in saturated fat	- 2 g or less of saturated and <i>trans</i> fat combined*
Reduced	at least 25% less of a nutrient compared with a similar product
Reduced in Calories	- at least 25% less energy than the food to which it is compared
Source	always associated with a "significant" amount
Source of fibre	- 2 grams or more fibre*
Good source of calcium	- 165 mg or more of calcium*
Light	when referring to a nutritional characteristic of a product, it is allowed only on foods that are either "reduced in fat" or "reduced in energy" (Calories) - explanation on the label of what makes the food "light"; this is also true if "light" refers to sensory characteristics, such as "light in colour"***

*per reference amount and per serving of stated size (specific amount of food listed in Nutrition Facts)

** three exceptions that do not require an explanation are "light maple syrup", "light rum" and "light salted"

with respect to fish. Note that a separate provision is made for the claim "lightly salted" which may be used

when a food contains at least 50% less added sodium compared with a similar product

Table providing information about foods and making a health claim

	the food ...
To make a health claim about ... potassium, sodium and reduced risk of high blood pressure	<ul style="list-style-type: none"> - must be low in (or free of) sodium - may also be high in potassium - must be low in saturated fatty acids - must be limited in alcohol - must have more than 40 Calories if the food is not a vegetable or a fruit - must have a minimum amount of at least one vitamin or mineral
To make a health claim about ... calcium, vitamin D and regular physical activity, and reduced risk of osteoporosis	<ul style="list-style-type: none"> - must be high (or very high) in calcium - may also be very high in vitamin D - cannot have more phosphorus than calcium - must be limited in alcohol - must have more than 40 Calories if the food is not a vegetable or a fruit
To make a health claim about ... saturated and <i>trans</i> fats and reduced risk of heart disease	<ul style="list-style-type: none"> - must be low in (or free of) saturated fat and <i>trans</i> fat - must be limited in cholesterol, sodium and alcohol - must have more than 40 Calories if the food is not a vegetable or a fruit - must have a minimum amount of at least one vitamin or mineral - must, if it is a fat or an oil, be a source of omega-3 or omega-6 polyunsaturated fatty acids
To make a health claim about ... vegetables and fruit and reduced risk of some types of cancers	<ul style="list-style-type: none"> - must be a fresh, frozen, dried or canned fruit or vegetable; fruit juice; vegetable juice - must be limited in alcohol

http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/education/nurtri-kit-trousse/te_background-le_point_e.html (address for the Nutrition Labelling Toolkit for Educators as of aug16/ 05)



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

FOOD SAFETY FACTS ON BOTULISM (*CLOSTRIDIUM BOTULINUM*)

[Printer-Friendly PDF Version](#)

What is foodborne illness?

Foodborne illness can occur when a person consumes food contaminated with pathogenic bacteria, viruses, toxins, or parasites. This condition is often referred to as “food poisoning”. Many cases of foodborne illness go unreported because their symptoms often resemble those of the flu. The most common symptoms of foodborne illness may include stomach cramps, nausea, vomiting, diarrhea and fever.

What are *Clostridium botulinum* and botulism?

- *Clostridium botulinum* (*C. botulinum*) is a bacteria that exists commonly in nature
- Botulism is a rare but serious illness caused by botulinum toxin, a nerve poison that can be produced by *Clostridium botulinum* bacteria
- In children, this is called infantile botulism
- *C. botulinum* cannot grow in the air
- The toxin produced by *C. botulinum* is a nerve poison that can cause paralysis

What are the symptoms of botulism?

- Symptoms can range from nausea, vomiting, fatigue, dizziness, headache, double vision, dryness in the throat and nose to respiratory failure, paralysis and in some cases, death.
- The onset of symptoms is generally from 12-36 hours after ingesting the toxin.
- The duration of illness may be 2 hours to 14 days, although some symptoms may linger much longer.
- With proper treatment the fatality rate of *C. botulinum* cases in Canada is as low as five to ten per cent.

Where might *C. botulinum* pose a risk?

- Improperly prepared home-canned, low-acid foods (e.g. corn, green beans, mushrooms, spaghetti sauce, salmon) are most likely to represent a risk for botulism. Outbreaks of botulism have also occurred in Canada's Inuit populations when people have eaten improperly prepared raw or parboiled meats from marine mammals.
- Improperly stored low acid fruit juices (e.g., carrot juice).
- Improperly stored baked potatoes
- Honey may also be contaminated with *C. botulinum* and has been linked to cases of infantile botulism

How can I protect myself and my family?

- Never eat food from cans that are dented, leaking or have bulging ends. The food may not look or

smell spoiled but it may still contain the toxin.

- When canning foods at home, be sure to process all low-acid products (e.g. vegetables, mushrooms, seafood) in a pressure canner following the manufacturer's instructions closely.
- Take precautions with home-prepared foods stored in oil (e.g., vegetables, herbs and spices). If these products are prepared using fresh ingredients, they must be kept refrigerated and for no more than 10 days.
- Consumers who purchase products such as those outlined above from fairs, farmer's markets or roadside stands or receive them as a gift should check when they were prepared and discard them if more than a week old.
- Do not feed honey (even pasteurised honey) to children under one year old. The bacterium cannot grow or make toxins in the honey, but it may grow and make toxins in the baby's body.
- Date and label preserves and canned goods and follow proper canning requirements strictly.
- Keep all work surfaces, food, utensils, equipment, and hands clean during all stages of the canning process.
- Refrigerate all foods labeled "keep refrigerated".
- If you experience symptoms of botulism, seek medical attention immediately.

What does industry do to protect consumers?

- Manufacturers of commercially canned low acid foods use strict thermal processes which are designed to destroy spores of *C. botulinum*.
- Processors may also add salt and nitrites to many vacuum-packaged foods to enhance flavour and colour. These nitrites also reduce the growth of *C. botulinum*.
- Individual companies and industry associations are working to develop systems that will further enhance the safety of their product.

How does the Canadian Food Inspection Agency protect consumers?

- The CFIA administers and enforces 13 Acts governing food safety and food inspection within Canada and at its borders.
- CFIA inspectors monitor food processing in federally registered slaughtering and processing establishments.
- CFIA inspectors check packaging dates and labels in retail stores.
- CFIA laboratories continue to develop quick, cost-effective tests to better detect new and existing pathogens in foods and their manufacturing processes.
- In cooperation with industry, the CFIA is moving towards a modernised, science-based inspection system.

For [more information on foodborne illness and safe food handling practices](http://www.inspection.gc.ca), visit the Canadian Food Inspection Agency website at www.inspection.gc.ca.

P0027E-02

Date Modified: 2006-10-31

Canada



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

E. coli O157:H7 Food Safety Facts Preventing foodborne illness

[PDF \(219kb\)](#)

What is foodborne illness?

Food contaminated by bacteria, viruses and parasites can make you sick. Many people have had foodborne illness and not even known it. It's sometimes called food poisoning, and it can feel like the flu. Symptoms may include the following:

- stomach cramps
- nausea
- vomiting
- diarrhea
- fever

Symptoms can start soon after eating contaminated food, but they can hit up to a month or more later. For some people, especially young children, the elderly, pregnant women and people with weakened immune systems, foodborne illness can be very dangerous.

Public health experts estimate that there are 11 to 13 million cases of foodborne illness in Canada every year. Most cases of foodborne illness can be prevented by using safe food handling practices and using a food thermometer to check that your food is cooked to a safe internal temperature!



[MP3 \(14.9mb\)](#)

What is *Escherichia coli* O157:H7?

Escherichia coli O157:H7 (called *E. coli* in this pamphlet) bacteria are found naturally in the intestines of cattle, poultry and other animals. If people become infected with these bacteria, the infection can result in serious illness. Several other types of *E. coli* can also infect people and cause illness.

What are the symptoms of *E. coli* infection?

Symptoms can develop within hours and up to 10 days after ingesting the bacteria, characterized by severe abdominal cramping. Some people may also have bloody diarrhea (hemorrhagic colitis). Others infected with the bacteria may not get sick or show symptoms, but they can carry the bacteria, and spread the infection to others.

How serious is the infection?

Most people recover within seven to 10 days, but up to 15 percent develop Hemolytic Uremic Syndrome (HUS), an unusual type of kidney failure and blood disorder, which can be fatal.

Symptoms of HUS vary, depending on the person's health and the extent of the infection. Some people may have seizures or strokes and some may need blood transfusions and kidney dialysis. Others may live with side effects like permanent kidney damage. Although everyone is susceptible to *E. coli* infection, pregnant women, people with compromised immune systems, young children and the elderly are most at risk for developing serious complications.

How does the bacteria spread?

E. coli bacteria can sometimes contaminate the surface of meat when animals are slaughtered, despite precautions. In highly processed or ground meat, the mechanical process can spread the bacteria through the meat. Raw fruits and vegetables can become contaminated with pathogens while in the field, by improperly composted manure, contaminated water, wildlife and poor hygienic practices of the farm workers.

E. coli bacteria are most often spread from person-to-person. Both animals and people infected with the bacteria can be carriers. Therefore, proper hygiene, safe food handling and preparation practices are key to preventing foodborne illness. If you think you are infected with *E. coli* bacteria or any other gastrointestinal illness, do not prepare food for other people unless you wear disposable gloves and follow safe food handling procedures. It's also a good idea to keep pets away from food storage and preparation areas.

Foodsafe tip: Gloves can pick up bacteria too. Change gloves frequently and wash gloved hands as often as bare hands.

Where has *E. coli* O157:H7 been found?

Food can become contaminated with *E. coli* during the slaughter and processing of an animal, when food is handled by a person infected with *E. coli* or from cross-contamination because of unsanitary food handling practices. The following listed below have been responsible for foodborne illnesses:

- ground beef
- raw fruits and vegetables, including sprouts
- untreated water
- unpasteurized (raw) milk and (raw) milk products, including raw milk cheese
- unpasteurized apple juice/cider
- petting zoos

Should I eat unpasteurized products?

Pasteurization destroys *E. coli* O157:H7 and other harmful bacteria. If you choose to eat or drink **unpasteurized** dairy products or drink unpasteurized juice/cider, be aware! Food safety experts don't recommend **unpasteurized** products, particularly for young children, the elderly, pregnant women and people with weakened immune systems. It's safest to drink only pasteurized dairy products. Drink juice/cider that is shelf-stable or labelled as pasteurized, or boil **unpasteurized** juice/cider before you drink it.

Will cooking destroy the bacteria?

Like many other harmful bacteria that could be in our food, *E. coli* O157:H7 are destroyed when food is

cooked to a safe internal temperature. Use a digital food thermometer to measure the internal temperature of your food. [See the chart below.](#)

Defeating *E. coli* O157:H7: A 4-point plan

1. Get off to a CLEAN start!

- Handwashing is one of the best ways to prevent the spread of foodborne illness. Do you washed your hands for at least 20 seconds with soap and warm water before and after handling food? Wash again when you switch from one food to another.
- Are your countertops and utensils clean and sanitized? Sanitizing reduces bacteria and can prevent foodborne illness.

BLEACH SANITIZER

- Combine 5 mL (1 tsp) of bleach with 750 mL (3 cups) of water in a labelled spray bottle.
- After cleaning, spray sanitizer on the surface/utensil and let stand briefly.
- Rinse with lots of clean water, and air dry (or use clean towels).

Foodsafe tip: Because raw fruits and vegetables can be contaminated with bacteria, viruses and parasites, wash them thoroughly with clean, safe running water before you prepare and eat them. Use a brush to scrub produce with firm or rough surfaces, such as oranges, cantaloupes, potatoes and carrots.

2. CHILL your food and stop bacteria cold!

- Bacteria can grow in the danger zone between 4°C and 60°C (40°F to 140°F). Keep cold food cold at or below 4°C (40°F).
- Refrigeration at or below 4°C (40°F) slows down most bacterial growth. Freezing at or below -18°C (0°F) can stop it completely. (But remember: refrigeration and freezing won't kill bacteria. Only proper cooking will do that!)

Foodsafe tip: Thaw food in the fridge or in the microwave just before you want to cook it. Always marinate meat, poultry and seafood in the refrigerator!

3. SEPARATE! Don't cross-contaminate!

- Bacteria can be carried in raw meat juices. Place raw meat, poultry and seafood in containers on the bottom shelf of the refrigerator. Use containers that are large enough to prevent raw juices from dripping onto other food or touching other food. Platters, utensils and cutting boards used for raw meat can carry bacteria, too, so use clean ones for cooked and other ready-to-eat food!
- Keep raw food away from ready-to-eat food while shopping, storing and preparing foods.

Foodsafe tip: Before marinating meat, set some marinade aside in the fridge so you can use it later to baste meat or as a dipping sauce. Do not use leftover marinade from the raw food on the cooked food.

4. COOK safely!

- Cooking meat to a safe internal temperature destroys *E. coli* bacteria. Use a digital food thermometer to check the internal temperature of your food. [See table.](#)
- Bacteria can grow quickly in the danger zone between 4°C to 60°C (40°C to 140°F) so keep hot foods at or above 60°C (140°F).

Foodsafe tip: Did you know that hamburgers can turn brown inside before they have been safely cooked? Don't use colour, look or feel of your meat to guess doneness. Use a food thermometer instead. Remember: Your burger's done at 71°C (160°F).

When is my food ready to eat?

Food	Temperature
fully cooked and ready-to-eat meats (e.g. ham, roast)	You can eat it cold or you can heat it.
beef and veal steaks and roasts	63°C (145°F) medium-rare 71°C (160°F) medium 77°C (170°F) well done
pork chops, ribs, roasts; ground beef, ground pork and ground veal (including sausages)	71°C (160°F)
stuffing and casseroles, hot dogs, leftovers, egg dishes; ground chicken and ground turkey (including sausages)	74°C (165°F)
chicken and turkey breasts, legs, thighs and wings	74°C (165°F)
chicken and turkey, whole bird	85°C (185°F)

Safeguarding Canada's Food Supply

The Canadian Food Inspection Agency (CFIA) is the Government of Canada's science-based regulator for animal health, plant protection and, in partnership with Health Canada, food safety.

For [more information on food safety or to order free copies of this brochure](#), visit the CFIA website at www.inspection.gc.ca or call 1 800 442-2342/TTY 1 800 465-7735 (8:00 a.m. to 8:00 p.m. Eastern Standard Time, Monday to Friday). You can also find food safety information on the [Health Canada](#) and [Canadian Partnership for Consumer Food Safety Education](#) websites respectively at www.hc-sc.gc.ca and www.canfightbac.org.

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Canada 



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Kitchen Food Safety Tips *Preventing foodborne illness*

[PDF \(192kb\)](#)

How safe is your kitchen?

Did you know that most foodborne illness results from poor food handling at home? Your kitchen could be a high risk environment. Bacteria can thrive in food that is improperly stored or handled. Reduce the risks by following these tips from Canada's food safety experts. Play it "food safe" in your kitchen!

Get off to a **CLEAN** start!

- Handwashing is one of the best ways to prevent the spread of foodborne illness. Do you wash your hands for at least 20 seconds with soap and warm water before and after handling food? Wash again when you switch from one food to another.
- Are your countertops and utensils clean and sanitized? Sanitizing reduces bacteria and can prevent foodborne illness.

It's important to thoroughly clean everything that comes in contact with your hands or your food! Don't forget about kitchen cloths . . . faucet handles . . . sink drains . . . garbage disposals . . . can opener blades . . . refrigerator handles . . . small appliances . . . utensils, and so on.



[MP3 \(8.99mb\)](#)

BLEACH SANITIZER

- Combine 5 mL (1 tsp) of bleach with 750 mL (3 cups) of water in a labelled spray bottle.
- After cleaning, spray sanitizer on the surface/utensil and let stand briefly.
- Rinse with lots of clean water, and air dry (or use clean towels).

Eight quick tips for the kitchen (at home, work, school, etc.)

1. Keep separate **cutting boards** for raw meat, poultry and seafood and a different one for ready-to-eat and cooked foods. Clean and sanitize cutting boards after each use. Plastic cutting boards can be easily cleaned in the dishwasher.
2. Wash the lids of **canned foods** just before opening them to prevent dirt from getting into the food. Clean the can opener's blade after every use.
3. Take **small appliances** apart (food processors, meat grinders and blenders) right after you use them, and clean and sanitize them thoroughly.
4. Air dry **dishes and utensils** if you can, or dry them with clean kitchen towels. Wash and sanitize towels, sponges and cloths often to prevent bacteria from growing.
5. Clean the **pantry** regularly, keeping food off the floor. Store food in sealed containers.

6. Thoroughly wash and sanitize **containers and utensils** that were in contact with **raw food** before you reuse them.
7. If you have an infection or cut on your hand, cover it with a bandage and then wear **disposable gloves** when preparing food. But remember: gloves pick up bacteria, too. Change gloves frequently and wash gloved hands as often as bare hands.
8. Use a food thermometer to measure the internal temperature of your food. [See table.](#)

Cold Facts

Fridge and Freezer Checklist

Refrigeration slows down most bacterial growth while freezing can stop the growth of most bacteria. (But remember: refrigeration and freezing won't kill bacteria. Only proper cooking will do that!)

- Don't let bacteria get a foothold! After you shop, immediately put away food that needs to be refrigerated or frozen.
- Check the temperature of your fridge and freezer. **Are they cold enough?**
 - Set refrigerators at or below 4°C (40°F). Use a refrigerator thermometer to check the temperature.
 - Keep freezers at or below -18°C (0°F). Use a freezer thermometer to check the temperature.
- Don't overload your fridge and freezer. Cool air must circulate freely to keep food properly chilled.
- Clean the refrigerator and freezer regularly.
- Bacteria can be carried in raw meat juices. Place raw meat, poultry and seafood in containers on the bottom shelf of the refrigerator. Use containers that are large enough to prevent raw juices from dripping onto or touching other food.

Foodsafe tip: Freezing will **NOT** kill all bacteria that might have been in the food before it was frozen. Only cooking your food to a safe internal temperature will kill harmful bacteria.

When is my food ready to eat?	
Food	Temperature
fully cooked and ready-to-eat meats (e.g. ham, roast)	You can eat it cold or you can heat it.
beef and veal steaks and roasts	63°C (145°F) medium-rare 71°C (160°F) medium 77°C (170°F) well done
pork chops, ribs, roasts; ground beef, ground pork and ground veal, including sausages made with ground beef/pork/veal	71°C (160°F)
stuffing and casseroles, hot dogs, leftovers, egg dishes; ground chicken and ground turkey, including sausages made with ground chicken/turkey	74°C (165°F)

chicken and turkey breasts, legs, thighs and wings	74°C (165°F)
chicken and turkey, whole bird	85°C (185°F)

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Canada

Canadian Food
Inspection AgencyAgence canadienne
d'inspection des aliments

SAFE FOOD STORAGE

Fresh? Frozen? Or shelf-stable? Food items in the supermarket are stored a certain way to maintain product quality and to keep foods safe. Once a food product has been chosen from the shelf or cooler, the consumer is responsible for making sure it is properly transported and stored at home. Failure to safely store food may cause bacteria in food to multiply and could result in a foodborne illness if the food is consumed.

At the supermarket

- Choose canned and dry goods first. Buy refrigerated/frozen and hot deli items last.
- Don't choose cans that bulge, leak or are dented at the seam or rim.
- Double bag (in plastic) meat and poultry to prevent cross-contamination from any dripping juices.
- Check eggs to make sure that they are not cracked or dirty.

On your way home

- Foods containing bacteria that can cause foodborne illness can't be in the "Danger Zone" (less than 60° C or 140° F or above 4° C or 40° F) longer than two hours. Bacteria multiply rapidly and can reach dangerous levels at this stage.
- Once you have purchased your food, go directly home. If this is not possible, place perishable foods in a cooler until you get home.

Storing shelf stable foods

- Store unopened dry foods, canned goods and high acid items (like ketchup, mustard and vinegar) in a clean, dry place where the temperature is neither too hot (above 100° F) or too cold. After opening, refrigerate any foods that need to be kept cool.
- Do not use food from cans or jars that are damaged.

Storing refrigerated food

Though food is refrigerated to prolong freshness and inhibit bacterial growth, there is a limit to how long food can be kept in the refrigerator. Once food begins to look or smell bad, it should be discarded. Follow these tips to help keep refrigerated food safe:

- Maintain a temperature of 4° C or 40° F or less to inhibit bacterial growth.
- Store eggs in their carton on a shelf, not in the door.
- Keep meat and poultry products in the original packaging. Less handling reduces the incidence of cross-contamination.
- Keep your refrigerator clean to avoid cross-contamination from spilled or spoiled foods.
- Don't let meat or juices of raw meat and poultry contaminate other foods in the refrigerator.

Storing frozen foods

- Keeping food at -18°C (0° F) stops bacterial growth, but it will not kill bacteria already present.

- Food can safely be defrosted in the refrigerator, under cold running water or in the microwave. If you defrost food in the microwave, cook it immediately.
- Foods frozen near the beginning of their durable life will taste better than foods frozen near the end of their durable life.
- Food that is freezer burnt (dry in spots) is safe to eat (but may not taste very good).

Durable life information on food products

- Durable life is the amount of time that an unopened product will retain all of its wholesomeness, taste, nutritional value, and any other qualities claimed by the manufacturer, when stored under appropriate conditions.
- Manufacturers and retailers are responsible for determining the durable life of foods they manufacture and sell.
- Durable life information is not a guarantee of product safety.

For more information on foodborne illness and safe food handling practices, visit the Canadian Food Inspection Agency website at www.inspection.gc.ca

[Printer-friendly PDF version](#)

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Food Safety



for Older Adults



Why older adults must *FightBAC!*TM

Age brings experience and wisdom. Age also increases the risk of foodborne illness.

Everyone's health is different, including our ability to fight off disease, but as we age:

- immune systems weaken and our ability to fight illness is not as strong or efficient
- stomach acid decreases (stomach acid plays an important role in reducing the number of bacteria in our intestinal tracts)
- sensory losses (sight, smell and taste) may diminish our ability to detect food spoilage
- the risk of chronic illness increases—diabetes, some cancer treatments, and kidney disease may increase a person's risk of acquiring foodborne illness



The Canadian Partnership for Consumer Food Safety Education is a unique coalition of industry, consumer, government, health and environmental organizations working together to improve consumer understanding of foodborne illness and the measures that can be taken to decrease the risk of illness.

How's your food safety savvy?

Canada's food supply is one of the safest in the world and Canadians should be proud. However, food safety doesn't just happen, many people play a vital role in keeping our food safe—farmers, fishermen, processors, grocers and you, the consumer.

According to Health Canada, an estimated two million Canadians are affected each year by foodborne illness—commonly known as food poisoning. Many cases go unreported because the symptoms resemble other digestive illnesses. Unsafe food handling practices in the home are a leading cause of foodborne illness.

Research and technological advances over the past 25 years have led to many changes in farming, food processing and eating habits. Unfortunately, in many cases, the way consumers prepare and handle food has changed very little. Food handling practices, which have been in the family for years, may be leaving you exposed to foodborne illness.

It's time to *FightBAC!*TM—eliminate the bacteria responsible for foodborne illness. *FightBAC!*TM is a national awareness campaign designed to educate everyone about food safety. Assess your current food safety habits and compare them to the *FightBAC!*TM messages—**Clean, Separate, Cook and Chill**. Then tell your friends, children and grandchildren and encourage them to join you in the national effort to *FightBAC!*TM.

Foodborne illness can be deadly!

In general, foodborne illness is not long lasting, but in some cases it can be severe, even deadly.

- **Older adults**, young children, pregnant women and people with weakened immune systems are more susceptible to severe bouts of foodborne illness
- Foodborne illness occurs when a person eats food contaminated with microscopic, disease-causing organisms, such as bacteria, viruses and parasites.
- The most common symptoms may include stomach cramps, nausea, vomiting, diarrhea, headache and fever, or any combination of these.
- These symptoms can occur several hours or several days after eating contaminated food.
- Symptoms will vary according to the type and amount of bacteria, viruses and parasites present in the food.
- The good news—foodborne illness can be prevented. Make sure you're up-to-date on how to *FightBAC!*TM.

Clean

Wash hands and surfaces often

Wash fresh produce

Whether they come from your garden, the market, or the store—fruits and vegetables should be washed just before serving. They should never be consumed without being washed.

- Wash produce under clean, potable, running water.
- Use a vegetable scrub brush on produce with a firm skin such as carrots, potatoes, melons and squash.
- Always wash produce, such as squash, melons and oranges, even if you don't eat the outer rind. Bacteria on the outer surface can be transferred to the inner flesh when the item is cut or peeled.
- Discard outer leaves of leafy vegetables and wash produce thoroughly under clean, potable, running water—making sure all dirt has been removed.

Do not use detergent or bleach on fruit and vegetables. Porous produce can absorb these products and neither detergent nor bleach is intended for use on foods.

Clean, potable, running water and a vegetable scrub brush are sufficient for cleaning produce.

Bacteria can be present throughout the kitchen—on cutting boards, utensils, sponges and counter tops. Meat, poultry, seafood, eggs, fruits and vegetables may carry bacteria responsible for foodborne illness and as you handle them you can cross-contaminate other foods and working surfaces.

Here's how to FightBAC!™

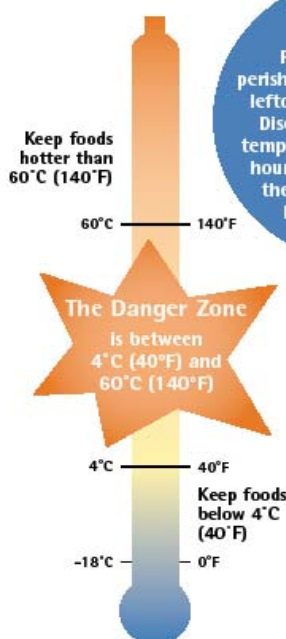
- Wash your hands for 20 seconds with soap and warm water before and after handling food, using the bathroom and handling pets.
- Wash your cutting boards, dishes, utensils and counter tops with soap and warm water after preparing each food item and before you go on to the next food.
- Once cutting boards (including plastic, non-porous, acrylic and wooden boards) become excessively worn or develop hard-to-clean grooves—replace them.
- Wash cloth tea towels and dish cloths *often* in the hot cycle of a washing machine. Consider using paper towels to clean up kitchen surfaces.
- For added protection, use a commercial kitchen sanitizer as directed or make your own bleach solution. Mix 5 mL (1 tsp) of household bleach to 750 mL (3 cups) of water.

Proper hand washing may eliminate nearly half of all cases of foodborne illness and significantly reduces the spread of the common cold and flu.

- Occasionally sanitize cutting boards by flooding the board with the bleach solution. Let it stand a few minutes and then rinse thoroughly with clean, potable, running water.

Chill

Chill it promptly!



The Two-Hour Rule

Refrigerate or freeze perishables, prepared food and leftovers, within two hours. Discard food left at room temperature longer than two hours. This includes food in the car, picnics and food left on the counter.

At room temperature, bacteria in food can double every 20 minutes. Freezing foods or storing them at cold temperatures won't kill the bacteria, but it will prevent most types from multiplying.

It is essential to refrigerate or freeze perishable foods, prepared foods and leftovers within 2 hours of purchase or consumption. The fewer bacteria—the less likely you will become ill.

Here's how to FightBAC!™

- Set your refrigerator at 4°C (40°F) or colder and your freezer at -18°C (0°F). Check the temperature occasionally with an appliance thermometer.
- Don't pack the refrigerator with food—cold air must circulate to keep food safe.
- Marinate foods in the refrigerator.
- Store eggs in their original carton. Although your refrigerator may have an egg tray on the door, these areas are not cold enough.
- Refrigerate leftovers within 2 hours. Today's refrigerators are designed to chill warm food items without causing damage to the appliance. To aid the cooling process, separate large quantities into shallow containers and cover once cooled.

When shopping

- Read and follow label instructions such as "Keep refrigerated", "Best before", "Refrigerate after opening" and "Keep frozen".
- Pick up all refrigerated and frozen foods last. Refrigerate or freeze food within two hours of purchase. Use a cooler in your car on hot days or when the trip home will take more than an hour.



Keep Hot Foods Hot & Cold Foods Cold!

- Use a cooler with ice to transport food in the car.
- Use ice packs or frozen drinking boxes to keep lunches cool.
- Use insulated bags or hot packs in coolers to transport hot food. It may be necessary to reheat items to a safe internal temperature when you reach your destination.

2 Produced by the Canadian Partnership for Consumer Food Safety Education.

Cross-contamination is the process of spreading bacteria from one product to another. Bacteria can be spread to food by coming into direct contact with contaminated food, kitchen utensils or counter surfaces.

This is especially important when handling raw meat, poultry and seafood. Keep these foods and their juices separate from other foods.

Here's how to *FightBAC!*TM

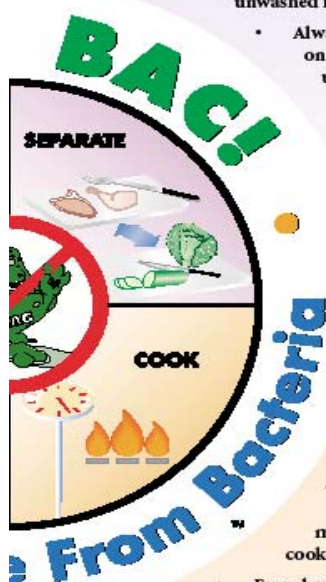
- Separate raw meat, poultry and seafood from other foods in your grocery cart and in your refrigerator.
- Use two cutting boards, one for raw meat, poultry and seafood, and a second one for washed, fresh produce and other ready-to-eat foods. The use of separate cutting boards is common practice in commercial kitchens and should be in the home as well.
- Always wash hands, cutting boards, dishes, knives and utensils with soap and warm water after they come in contact with raw meat, poultry, seafood, eggs and unwashed fresh produce.

- Always place cooked food on a clean plate. Do not use an unwashed plate as bacteria from the raw food will contaminate your cooked food.

Board Games plastic vs wood

There is no evidence to support one type of cutting board—hard wood or plastic—over the other, but the following advice will help keep them free of bacteria:

- use two cutting boards—one for raw meat, poultry and seafood and one for washed fresh produce and ready-to-eat foods
- wash with soap and warm water after each use
- use a bleach solution to kill microbes; then rinse well and air dry or dry with a clean cloth
- replace boards or sand wooden boards when they become grooved and worn



Food safety experts agree foods are properly cooked when they are heated for a *long enough time* and at a *high enough temperature* to kill harmful bacteria responsible for foodborne illness.

Here's how to *FightBAC!*TM

- Use a clean food thermometer, which measures the internal temperature of cooked foods, to make sure meat, poultry, casseroles and other foods are properly cooked all the way through.
- Eggs should be cooked thoroughly to proper temperature.
- Fish should be opaque and flake easily with a fork.
- When cooking in a microwave oven, make sure there are no cold spots in food where bacteria can survive. To do this, cover food, stir and rotate the dish by hand once or twice during cooking—unless you have a turntable in the microwave. Allow for standing time. All of these steps are necessary for thorough cooking or reheating of food. Use a food thermometer to make sure foods have reached a safe internal temperature.

Reheating leftovers

- Reheat solid foods quickly to an internal temperature of at least 74°C (165°F).
- Reheat and stir soups, stews, sauces and gravies to a rolling boil.
- Follow the microwave manufacturer's instructions when reheating leftovers, since microwaves vary.
- Discard unused portions of reheated leftovers.
- NEVER use your nose, eyes or taste buds to judge the safety of food. You cannot tell if a food may cause foodborne illness by its smell, look or taste. "If in doubt, throw it out!"

Separate

Don't cross-contaminate

At the grocery store

- In the grocery cart, be careful juice from raw meat, seafood or poultry does not drip onto other foods. Place them in a plastic bag before placing in your cart.
- Don't allow raw meat, seafood or poultry to be bagged with other groceries.
- If you find juice dripping from raw meat, poultry or seafood on display in the grocery store, tell a manager. Food safety is everyone's responsibility.

In your refrigerator

- Place raw meat, seafood and poultry in a container on the bottom shelf of your refrigerator so it cannot drip onto other foods.

Cook

Cook to proper temperatures

"I never use a thermometer."

Does this sound familiar?

While there are many ways to test when meat, poultry and seafood are done (juices run clear, meat falls off bone, meat patties are brown), or when casseroles are properly reheated (casserole is hot and bubbling) these methods can be misleading. To ensure food has been cooked to a safe temperature, use a food thermometer. A variety of food thermometers are available, but the easiest to handle is a digital model. They are easy to read, provide quick readings and can be used at various stages of cooking. Always wash thermometers between readings! Keep your food thermometer handy and use it ... *It's worth the effort!*



Produced by the Canadian Partnership for Consumer Food Safety Education. 3

Cooking Temperatures



Safe thawing

Food should not be thawed at room temperature.

Three acceptable ways to safely thaw foods are: in a refrigerator, in a microwave or immersed in cold water.

- Generally, it will take five hours to thaw half of a kilogram or one pound of meat or poultry in a refrigerator.
- When thawing by microwave, cook the food immediately following the thawing process.
- If you thaw food using cold water, keep the food in its original wrapping and change the water every half hour to ensure the water remains cold. If raw meat comes in contact with sinks and kitchen surfaces, remember to wash them immediately.



An industry standard chart

Recommended internal cooking temperature

Ground Meat

Beef, pork, veal	71°C (160°F)
Chicken, turkey	80°C (176°F)

Fresh Beef

Rare	60°C (140°F)
Medium	71°C (160°F)
Well done	77°C (170°F)

Rolled beef roasts or steaks	71°C (160°F)
Beef minute steak	71°C (160°F)

Fresh Pork

Pork chops	71°C (160°F)
Roasts	71°C (160°F)
Fresh cured ham	71°C (160°F)
Cooked ham (to reheat)	60°C (140°F)

Poultry

Chicken, turkey—whole, stuffed	82°C (180°F)
Chicken—whole, unstuffed	82°C (180°F)
Turkey—whole, unstuffed	77°C (170°F)
Chicken, turkey—pieces	77°C (170°F)

Stuffing

Cooked alone	74°C (165°F)
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Eggs & Egg Dishes

Egg casseroles, sauces, custards	71°C (160°F)
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Leftovers—reheated	74°C (165°F)
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Thanks to the following industry groups for their input to the cooking chart:

Beef Information Centre
Canadian Egg Marketing Agency
Canadian Pork Council
Canadian Turkey Marketing Agency
Chicken Farmers of Canada

Storage Chart

Keep
it safe!
Follow the
"Best before"
date!



For refrigerators and freezers

	Refrigerator 4°C (40°F)	Freezer -18°C (0°F)
Fresh Meat		
Beef—steaks, roasts	2-4 days	10-12 months
Pork—chops, roasts	2-4 days	8-12 months
Lamb—chops, roasts	2-4 days	8-12 months
Veal roasts	3-4 days	8-12 months
Ground meat	1-2 days	2-3 months
Fresh Poultry		
Chicken, turkey—whole	2-3 days	1 year
Chicken, turkey—pieces	2-3 days	6 months
Fresh Fish		
Lean fish (i.e., cod, flounder)	3-4 days	6 months
Fatty fish (i.e., salmon)	3-4 days	2 months
Shellfish (clams, crab, lobster)	12-24 hours	2-4 months
Scallops, shrimp, cooked shellfish	1-2 days	2-4 months
Ham		
Canned ham	6-9 months	Don't Freeze
Ham, fully cooked (half & slices)	3-4 days	2-3 months
Bacon & Sausage		
Bacon	1 week	1 month
Sausage, raw (pork, beef, turkey)	1-2 days	1-2 months
Pre-cooked, smoked links or patties	1 week	1-2 months
Leftovers		
Cooked meat, stews, egg or vegetable dishes	3-4 days	2-3 months
Gravy & meat broth	1-2 days	2-3 months
Cooked poultry and fish	3-4 days	4-6 months
Soups	2-3 days	4 months
Hot Dogs & Lunch Meats		
Hotdogs	2 weeks	1-2 months
opened	1 week	
Lunch meats	2 weeks	1-2 months
opened	3-5 days	1-2 months
Deli Foods		
Deli meats	3-4 days	2-3 months
Store-prepared or homemade salads	3-5 days	Don't freeze
TV Dinners / Frozen Casseroles		
Keep frozen until ready to serve		3-4 months

Refrigerator
4°C (40°F)

Freezer
-18°C (0°F)

Eggs

Fresh—in shell	3-4 weeks	Don't Freeze
out of shell	2-4 days	4 months
Hardcooked	1 week	Doesn't freeze well
Egg substitutes, opened	10 days	Don't freeze
	3 days	1 year

Dairy Products

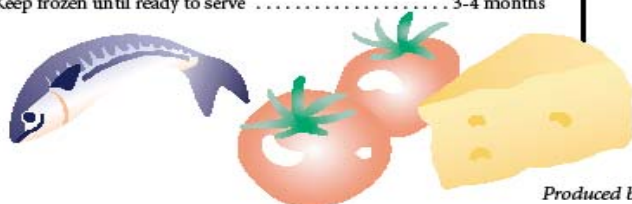
Milk	Check best before date	6 weeks
opened	3 days	
Cottage cheese	Check best before date	Doesn't freeze well
opened	3 days	
Yogurt	Check best before date	1-2 months
opened	3 days	
Cheese		
soft	1 week	Doesn't freeze well
semi-soft	2-3 weeks	8 weeks
firm	5 weeks	3 months
hard	10 months	Up to a year
processed	Several months	3 months
opened	3-4 weeks	Don't freeze
Butter	8 weeks	salted—1 year
		unsalted—3 months
opened	3 weeks	Don't freeze

Commercial mayonnaise

(refrigerate after opening)	2 months	Don't freeze
-----------------------------	----------	--------------

Vegetables

Beans, green or waxed	5 days	8 months
Carrots	2 weeks	10-12 months
Celery	2 weeks	10-12 months
Lettuce, leaf	3-7 days	Don't freeze
Lettuce, iceberg	1-2 weeks	Don't freeze
Spinach	2-4 days	10-12 months
Squash, summer	1 week	10-12 months
Squash, winter	2 weeks	10-12 months
Tomatoes	Not recommended	2 months



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Food Storage



Eggs and food safety

Salmonella in Canadian eggs is not very common.

When preparing recipes that use eggs, follow these food safety tips:

- Always use fresh, Canada Grade A eggs that have been refrigerated. The "Best before" date on the carton will help determine freshness.
- Ensure the eggs are clean and the shells are not cracked.
- Wash your hands, cooking surfaces and all utensils immediately before and after handling raw eggs.
- Prepare only enough food to be consumed in one sitting.
- Serve all egg-rich products immediately after preparing or store in the refrigerator.

Source: Canadian Egg Marketing Agency



For canned food and leftovers

Storing canned food

- Store in cool, clean, dry place.
- Date canned goods at purchase and consume them within 1-2 years or before their "Use by" date if applicable.
- Never use or purchase foods from jars with loose or bulging lids or from bulging, leaking or badly dented cans.

"First in" ...
"First out" ...
A good rule for
using and storing
canned food.

Storing leftovers

- Refrigerate leftovers within 2 hours. Discard if left out for more than 2 hours.
- Never remove a large pot of very hot food (such as soup, stew, or pasta sauce) from the stove and place directly in the refrigerator. Large masses of food can take hours or days to chill properly. A slow cooling process provides an ideal environment for the growth of harmful bacteria.
- Very hot items can be cooled at room temperature for approximately 30 minutes prior to being refrigerated. Frequent stirring or a cold water bath accelerates the cooling at this stage.
- Refrigerate or freeze leftovers in shallow containers and cover once cooled. Food will cool faster in shallow containers.
- Remove bones from large pieces of meat or poultry and divide them into smaller portions before storing.
- Date leftovers to ensure freshness—eat leftovers as soon as possible. Once thawed, leftovers should be eaten within four days.
- Always put leftovers in clean containers and never mix them with fresh food.

Flavoured oils

Homemade flavoured oils are popular and tasty gifts, but they have a limited shelf life of one week and must be kept refrigerated at all times. Oils made with fresh foods such as garlic and herbs pose the greatest risk. These products, often purchased from fairs and farmers' markets, are frequently sold unrefrigerated. Before purchasing, ensure these oils have been refrigerated and check the preparation date. Do not purchase them if they are more than a week old.

Commercially prepared products stored in oil and containing an acid (such as vinegar) or salt in their list of ingredients are generally considered to be safe. They should be refrigerated after opening and between each use.



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High Risk Foods

For older adults, young children and people with weakened immune systems

The following foods have been linked to outbreaks of foodborne illness. These foods must be **fully cooked** to eliminate bacteria and therefore should be **avoided** in a raw, or semi-cooked state.

- Raw fin fish and shellfish—including oysters, clams, mussels and scallops.
- Raw or unpasteurized cow or goat milk or foods made from unpasteurized milk. If you do use cheeses made from unpasteurized milk, consume only those that have been aged 60 days or longer.
- Soft cheeses such as feta, brie, camembert, and queso blanco fresco.
- Raw or lightly cooked egg or egg products including salad dressings, cookie or cake batter, sauces, and beverages such as homemade eggnog. Foods made from commercially pasteurized eggs have a reduced risk. If you choose to make eggnog with whole eggs, heat the milk mixture to 71°C (160°F).
- Raw meat or under cooked poultry.
- Raw sprouts such as alfalfa, clover, radish and mung beans.
- Unpasteurized fruit juice and cider.



Food safety ambassadors



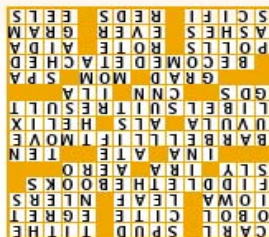
In most communities across Canada, kitchens can be found in churches, community centres, private clubs and condominium complexes. These kitchens are used by a number of people for potluck suppers, senior luncheons or other community functions. Poor food handling practices can lead to foodborne illness.

Whether food is prepared at home and brought to the event, catered or prepared on site, when cooking for a group—food safety is everyone's responsibility. Clean, Separate, Cook, Chill—following these four steps

will help make your event safe.

The Canadian Partnership for Consumer Food Safety Education encourages you to become a Food Safety Ambassador by taking the *FightBAC!*™ messages to your community events. Remind everyone to make food safety a priority.

Answers to
crossword page 8



Listeriosis

Listeria monocytogenes is a bacterium that can be found in a variety of products made from raw milk, vegetables, fish and meat products. Although foods such as some soft cheeses, pâté and smoked fish are processed according to strict guidelines, they have been linked to listeriosis. Therefore, those at high risk of acquiring foodborne illness should avoid these types of foods. Refrigerated smoked fish products can be eaten safely when fully cooked (e.g. in a casserole). Hot dogs have also been implicated in outbreaks of *Listeria monocytogenes* and should, therefore, be cooked until steaming hot before eating. Although the risk of listeriosis associated with foods from deli counters, such as sliced meat and poultry products, is relatively low, high-risk individuals may choose to avoid these foods.

Pasteurized vs. unpasteurized fruit juice and cider

Pasteurized juice and cider have been treated to kill harmful bacteria and prolong shelf life. They do not pose a risk to health. Pasteurized juice is generally packaged in bottles, cans and juice boxes and can be found unrefrigerated on grocery store shelves.

Most unpasteurized fruit juice and cider (freshly pressed) is sold from local orchards, roadside stands, and juice bars and in refrigerated cases or on ice in the produce section of grocery stores. These types of juice and cider have not been treated and this means the product may contain bacteria harmful to your health.

In Canada, two outbreaks of foodborne illness—one in 1980 and one as recently as 1998—were linked to unpasteurized apple cider. People who fall into the high-risk category should avoid consuming unpasteurized products.

For more information visit Health Canada website: www.hc-sc.gc.ca/food-aliment/english/organization/microbial_hazards/pamphlet_ufr_eng.html

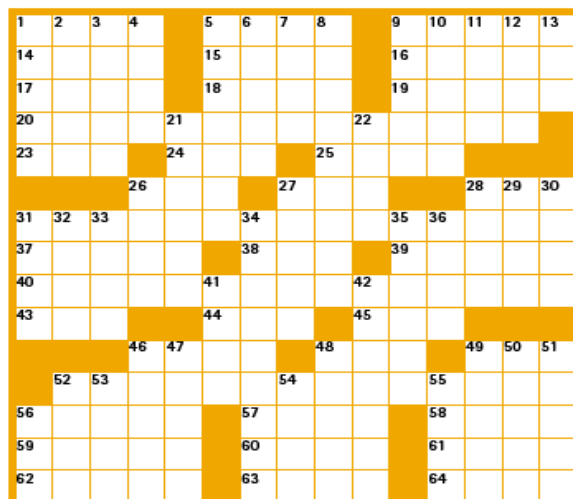


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Cook, Clean, Chill, Separate



This fun crossword puzzle has four themed clues which are the largest entries on the grid. The four clues are a 'spin' on the FightBac™ messages—Cook, Clean, Separate and Chill. We challenge all readers and crossword-lovers to give the puzzle a try! See page 7 for the solution.



by Fraser Simpson

ACROSS

- 1 Sigmund's sometime collaborator
- 5 Veggie choice
- 9 Give your part
- 14 Shawn descendant
- 15 Exemplify
- 16 Swamp dweller
- 17 "The Bridges of Madison County" setting
- 18 It might appear in a table
- 19 Expos, e.g.
- 20 COOK
- 23 Arch
- 24 Sinn Fein org.
- 25 Bubble-filled bar
- 26 _____ flash
- 27 Reckless Olympian
- 28 Lacrosse team
- 31 CLEAN
- 37 Soft palate dangler
- 38 Hirt and others
- 39 Outer ear part
- 40 CHILL
- 43 Part of GST
- 44 Wolf Blitzer's network
- 45 Union on the waterfront
- 46 Alternative to DEG or RAD, on a calculator
- 48 Harriet, to Ricky
- 49 Aix-en-Provence, e.g.
- 52 SEPARATE
- 56 Asks
- 57 Surf's murmur
- 58 "Ritorna vin citor" singer
- 59 Aussie/Brit cricket trophy, with "The"
- 60 Even once
- 61 Metric unit
- 62 Novel genre
- 63 Movie about John Reed
- 64 Anguilliform creatures

DOWN

- 1 Do, do, do?
- 2 Seething
- 3 Bullyboy
- 4 Galena yield
- 5 Dealing with the outer eyeball
- 6 Michelangelo sculpture
- 7 2002 Games locale
- 8 Kind of attitude
- 9 Drift
- 10 White House?
- 11 Star _____
- 12 Towel word
- 13 UFO crew
- 21 Descendant
- 22 Carp
- 26 Contempt follower
- 27 Wiped
- 28 Resin used in perfumes
- 29 Base
- 30 Barbershop call
- 31 Eur. country
- 32 Dyed-in-the-wool
- 33 Tries the lamp?
- 34 Clothes washer
- 35 Role for Geena
- 36 Phoenix suburb
- 41 Pigeon's undoing
- 42 Unruly folk
- 46 One on staff?
- 47 Martini go-with
- 48 Dealt
- 49 Hobbits' home, with "The"
- 50 Cycle
- 51 "Watership Down" author
- 52 Pear choice
- 53 K-8
- 54 Pacifist
- 55 Avant-garde composer John
- 56 Ballet move

Acknowledgements

The Canadian Partnership for Consumer Food Safety Education wishes to acknowledge the FDA/Center for Food Safety and Applied Nutrition USDA/Food Safety and Inspection Service for its publication, To Your Health! Food Safety for Seniors which was used as a prototype for this Canadian resource. A special thanks to the members of the Partnership's Education Committee and the many people who gave their time and skills to the development of this piece, including: Patti Goodman, Writer/Researcher/Coordinator; Tracy Carefoot, Graphic designer; Aline Barnoti, Translation; Dolco Printers.

Who We Are

The Partnership is a group of over 50 public and private sector organizations dedicated to helping consumers handle, store and prepare food safely. With support from our members across the country, the Partnership is focused on teaching Canadians about food safety with a goal of reducing the incidence of foodborne illness. Thanks to all of our members for their support.

Level I Partners

Agriculture & Agri-Food Canada*
Canadian Council Grocery Distributors*
Canadian Egg Marketing Agency*
Canadian Food Inspection Agency*
Canadian Meat Council*
Canadian Poultry & Egg Processors Council*
Canadian Produce Marketing Association*
Chicken Farmers of Canada*
Health Canada*
Ontario Ministry of Agriculture & Food

Level II Partners

Beef Information Centre*
Canadian Cattlemen's Association
Canadian Turkey Marketing Agency*

Level III Partners

Canada Pork*
Canadian Federation of Agriculture*
Canadian Federation of Independent Grocers*
Canadian Meat Science Association
Capital Health
Food and Consumer Products Manufacturers of Canada
Further Poultry Processors Assoc. Of Canada*
Manitoba Agriculture & Food
Manitoba Health
Manitoba Conservation
Province of Manitoba Food Safety Partners
New Brunswick Department of Health and Wellness
Soap & Detergent Association of Canada
Vancouver Coastal Health Authority

Level IV Partners

Algoma Health Unit
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Ceridian Canada
Chicken Farmers of Nova Scotia
City of Ottawa Public Health
Consumers' Association of Canada*
Eastern Ontario Health Unit
Environmental Health
Environmental Health Foundation of Canada*
Farm Folk/City Folk
Federated Women's Institutes of Ontario
Food Safety Info Line
Fraser Health Authority
Guelph Food Technology Centre
Kidney Foundation of Canada

Muskoka Parry Sound Health Unit
National Institute of Nutrition
Nova Scotia Dept of Agriculture and Fisheries
Nutrition Resource Centre, Ont Public Health Assoc.
Ontario Family Studies Leadership Council
Ontario Farm Women's Network
Ontario Independent Meat Processors
Ontario Public Health Association
Oxford County Board of Health
Parents Providing Care
Region of Peel Health Dept.
Regional Municipality of Halton
Waterloo Region Community Health Dept.
Yukon Health & Social Services

*Founding Member

International Affiliate

United States Partnership for Food Safety Education

Associate Members

Maple Leaf Foods
University of Waterloo

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Aussi disponible en français

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Appendix C

Guest Speaker Report Form

Name: _____ Date: _____

Speaker's Name/Title: _____

Speaker's Topic: _____ Date: _____

1. What were the speaker's main points?

☐ _____

☐ _____

☐ _____

2. Record TWO facts presented by the speaker that surprised you or caught your attention.

1. _____

2. _____

3. How can you relate or apply what was presented to this course?

4. Was the speaker a good source of information? Explain.

5. Was the information presented interesting and easy to understand? Explain.

6. Summarize the information presented to you in point form.

☐ _____

☐ _____

☐ _____

☐ _____

ARTICLE/WEBSITE REPORT FORM

Name: _____

Date: _____

Name of article/website: _____

Source of article/URL of website: _____ Date: _____

In your own words, summarize the main points of the article/website:

What is your opinion of article/website? *(Was it a valuable source of information? How did the information relate to material covered in class? Was there any evidence of bias?)*

Would you recommend this article/website to a person looking for information on the topic? Explain why or why not.

Appendix D

Nutrition Pretest

1. Plant-source foods are a source of this type of protein.
 - a) complete
 - b) incomplete
 - c) essential
2. Proteins are made up of smaller units called _____.
 - a) minerals
 - b) amino acids
 - c) complete protein
3. The percentage of total calories which should come from protein for 17 year olds is between _____.
 - a) 45 - 65%
 - b) 25 - 35%
 - c) 10 - 30%
4. The nutrient needed mainly for growth and repair of body tissues is _____.
 - a) minerals
 - b) fat
 - c) protein
5. This nutrient is more often associated with allergies than any of the other nutrients. (People are often allergic to milk, peanuts, or eggs, which are high in this nutrient.)
 - a) protein
 - b) complete protein
 - c) plant protein
6. This type of protein provides all of the essential amino acids needed by the body.
 - a) incomplete protein
 - b) complete protein
 - c) plant protein
7. The composition of skin, hair and muscle tissue is mainly _____.
 - a) fat
 - b) minerals
 - c) protein
8. Athletes and people who are very physically active should take extra protein in the form of supplements like protein powder.
 - a) true
 - b) false

9. Which food group provides the most protein?
- a) grain products
 - b) fruit and vegetables
 - c) milk products
 - d) meat and alternatives
10. Incomplete protein is found in _____.
- a) meat, fruits and vegetables
 - b) all plant source foods
 - c) fish, peanut butter and cereal
11. Vitamin C is stored in an adipose tissue.
- a) true
 - b) false
12. Vitamin D is not toxic, no matter how much you take.
- a) true
 - b) false
13. This vitamin is often referred to as the “Miracle Vitamin”.
- a) Vitamin A
 - b) the “B” Vitamins
 - c) Vitamin C
14. For a person with a family history of spinabifida, the amount of folic acid needed daily is _____.
- a) 4 mg
 - b) .4 mg
 - c) 1 mg
15. Vegan vegetarians may need a pill providing a supplement of this vitamin.
- a) B12
 - b) folic acid
 - c) vitamin C
16. Which are the fat-soluble vitamins?
- a) A, B, C, D
 - b) E, K, C
 - c) A, D, E, K
17. A good food source of Vitamin D is _____.
- a) grain products
 - b) milk/margarine
 - c) oranges

18. Which group of food is the best supplier of Vitamins A and C?
- a) fruits/vegetables
 - b) dairy foods
 - c) meats
19. The B vitamin which should be taken during pregnancy because it is present in very small amounts in food is_____.
- a) thiamine
 - b) niacin
 - c) folic acid
20. The group of vitamins associated with the release of energy from protein, fats and carbohydrates is_____.
- a) vitamin A
 - b) vitamin C
 - c) the “B” vitamins
21. The mineral closely connected to hemoglobin in the blood is
- a) ascorbic acid
 - b) calcium
 - c) iron
22. The mineral that works with calcium for strong bones is
- a) zinc
 - b) potassium
 - c) phosphorus
23. Too much of this mineral in one’s diet is frequently connected to an increase in
- a) bone density
 - b) blood pressure
 - c) red blood cells
24. The main dietary source of this mineral is table salt.
- a) iron
 - b) iodine
 - c) potassium
25. The best source of dietary iron is from
- a) eggs
 - b) liver
 - c) whole wheat bread

26. A good source of fluoride in one's diet is
- a) tea
 - b) apple juice
 - c) jello
27. The best food source of calcium is
- a) milk
 - b) orange juice
 - c) spinach
28. Bioavailability refers to the
- a) amount of a nutrient in a food
 - b) amount of different nutrients in a food
 - c) amount of a nutrient that is absorbed from a food
29. Zinc is a _____.
- a) vitamin
 - b) amino acid
 - c) mineral
30. The mineral that works with sodium to maintain fluid balances is
- a) fluoride
 - b) potassium
 - c) selenium
31. For the moderately active person _____ is the best choice for hydration.
- a) juice
 - b) water
 - c) coffee
32. The number of calories in water is
- a) 0
 - b) 4
 - c) 9
33. Municipal water systems add _____ to water.
- a) calcium
 - b) proteins
 - c) fluoride
34. A reasonable daily intake of water or other fluids is
- a) 2 cups
 - b) 8 cups
 - c) 32 cups

-
35. One should be careful to drink extra water when
- a) one is exercising on a hot day
 - b) one is sweating a great deal during exercise
 - c) all of the above
36. Approximately _____ of the average person's body is water.
- a) 15%
 - b) 65%
 - c) 95%
37. It is safe to give water to a baby under 4 months.
- a) Yes
 - b) No
38. Dehydration refers to
- a) adequate fluid balance
 - b) inadequate fluid balance
 - c) drinking water with meals
39. When one is dehydrated drinking _____ can make the problem worse.
- a) coffee
 - b) beer
 - c) milk
 - d) a & b
40. The kind of fat that is hard at room temperature is
- a) polyunsaturated
 - b) saturated
 - c) unsaturated
41. Your body's main source of energy
- a) fat
 - b) protein
 - c) carbohydrate
42. This nutrient supplies the body with energy and acts as a cushion to protect some vital organs
- a) carbohydrate
 - b) vitamin C
 - c) fat
43. A minimum of 55% of your daily calories should come from
- a) fat
 - b) protein
 - c) carbohydrate

44. For every gram of fat consumed, your body is provided with
- a) 9 calories
 - b) 4 calories
 - c) 5 calories
45. Sources of fat are either visible or invisible. A source of invisible fat is
- a) margarine
 - b) grizzle on meat
 - c) baked products using high fat ingredients
46. Plant material that is not digested and helps the body's digestive tract work properly is
- a) starch
 - b) carbohydrate
 - c) dietary fiber
47. Being at risk for heart disease means you should try to control the level of _____ in the blood
- a) iron
 - b) cholesterol
 - c) hemoglobin
48. The # of grams of fiber recommended per day is
- a) 20 grams
 - b) 25 grams
 - c) 40 grams
49. To increase the amount of fiber in your diet you should
- a) avoid eating junk
 - b) use supplements
 - c) eat more whole grain foods
50. Over indulgence in sugary foods is associated with a higher risk of
- a) obesity
 - b) dental cavities
 - c) a & b
51. _____ is a sugar found naturally in fruit
- a) lactose
 - b) sucrose
 - c) fructose
52. When you need energy over a long period of time it is best to eat these types of foods
- a) sugar
 - b) fiber
 - c) starch

53. A maximum of _____% of calories should come from fat
- a) 50%
 - b) 20%
 - c) 30%
54. Vitamins A, D, E and K are carried and stored by and in
- a) fat
 - b) protein
 - c) iron
55. Choosing lean cuts of meat, removing the skin of chicken, turkey, and not adding too much dressing, oil or margarine are all attempts to control your intake of
- a) sugar and starch
 - b) protein
 - c) fat and cholesterol
56. The number of calories you consume and the energy you output is called
- a) controlling your weight
 - b) energy balance
 - c) dieting
57. Eating an excess of carbohydrate food results in the extra calories being stored as
- a) carbohydrate
 - b) starch
 - c) fat
58. Eating food high in fat will contribute to feelings of being
- a) energetic
 - b) tired
 - c) neither of the above
59. Reduced risk of cancer and constipation are some of the health benefits associated with eating
- a) fiber
 - b) starch
 - c) sugar
60. The vitamin which prevents premature cell destruction by interfering with oxidation is
- a) vitamin E
 - b) vitamin K
 - c) vitamin B

Student Handout #1

Marketing to Teens - Scenario Page**Give one marketing scenario to each student group:****Scenario One:**

(product name here) *Marketing Hype* people need to get excited about (product name here)!!!!!! The company that makes (product name here) knows that many teenagers have a lot of disposable income (money they can spend on things they want or enjoy, not things like rent or groceries). They are going to spend \$2 million on an ad campaign to promote (product name here) to this market. You work for an advertising agency, and your job is to make (product name here) a trendy product for teenagers. Your print ad will appear in (magazine names here).

Scenario Two:

You are a marketing team whose job is to make (product name here) the hottest thing ever for teenagers. You will be designing a print ad to appear in (magazine names here) to get teenagers to buy (product name here). You have \$5 million to work with, so you can do anything you want.

Scenario Three:

You work on an advertising team. Your client (the company that makes product name here) has \$3 million to spend to promote (product name here) to teenagers. You are being paid the big bucks to make them catch on as the hottest new trend. Your ad will appear in some of the most popular magazines among this age group, like (magazine names here).

Scenario Four:

A huge company that manufactures (product name here) knows it could double its sales if teenagers bought their product, because many teenagers have a lot of disposable income (money they can spend on things they want or enjoy, not things like rent or groceries). They have hired your marketing team because you specialise in marketing to teens. You have several million dollars to work with and your ads will appear in (magazine names here).

From the Expecting Respect Peer Education Program program or Seeing Beyond the Glam. Used with Permission

Student Handout # 2

Marketing to Teens - Advertising Strategies

Advertisers have many methods to try and get you to buy their products. Lots of times, what they are selling is a lifestyle, or an image, rather than the product. Here are some tricks of the trade.

Ideal Kids (or families) - always seem perfect. The kids are really hip looking, with the hottest fashions, haircuts and toys. Ideal families are all attractive and pleasant looking — and everyone seems to get along! Ideal kids and families represent the types of people that kids watching the ad would like themselves or their families to be.

Family Fun - a product is shown as something that brings families together, or helps them have fun together; all it takes is for Mum or Dad to bring home the "right" food, and a ho-hum dinner turns into a family party.

Excitement - who could ever have imagined that food could be so much fun? One bite of a snack food and you're surfing in California, or soaring on your skateboard!

Star Power - your favorite sports star or celebrity is telling you that their product is the best! Kids listen, not realizing that the star is being paid to promote the product.

Bandwagon - join the crowd! Don't be left out! Everyone is buying the latest snack food: aren't you?

Scale - is when advertisers make a product look bigger or smaller than it actually is.

Put Downs - when you put down your competition's product to make your own product seem better.

Heart Strings - ads that draw you into a story and make you feel good, like the McDonalds commercial where the dad and his son are shoveling their driveway and the son treats his poor old dad to lunch at McDonalds when they are done.

Sounds Good - music and other sound effects add to the excitement of commercials, especially commercials aimed at kids. Those little jingles, that you just can't get out of your head, are another type of music used to make you think of a product. Have you ever noticed that the volume of commercials is higher than the sound for the program that follows?

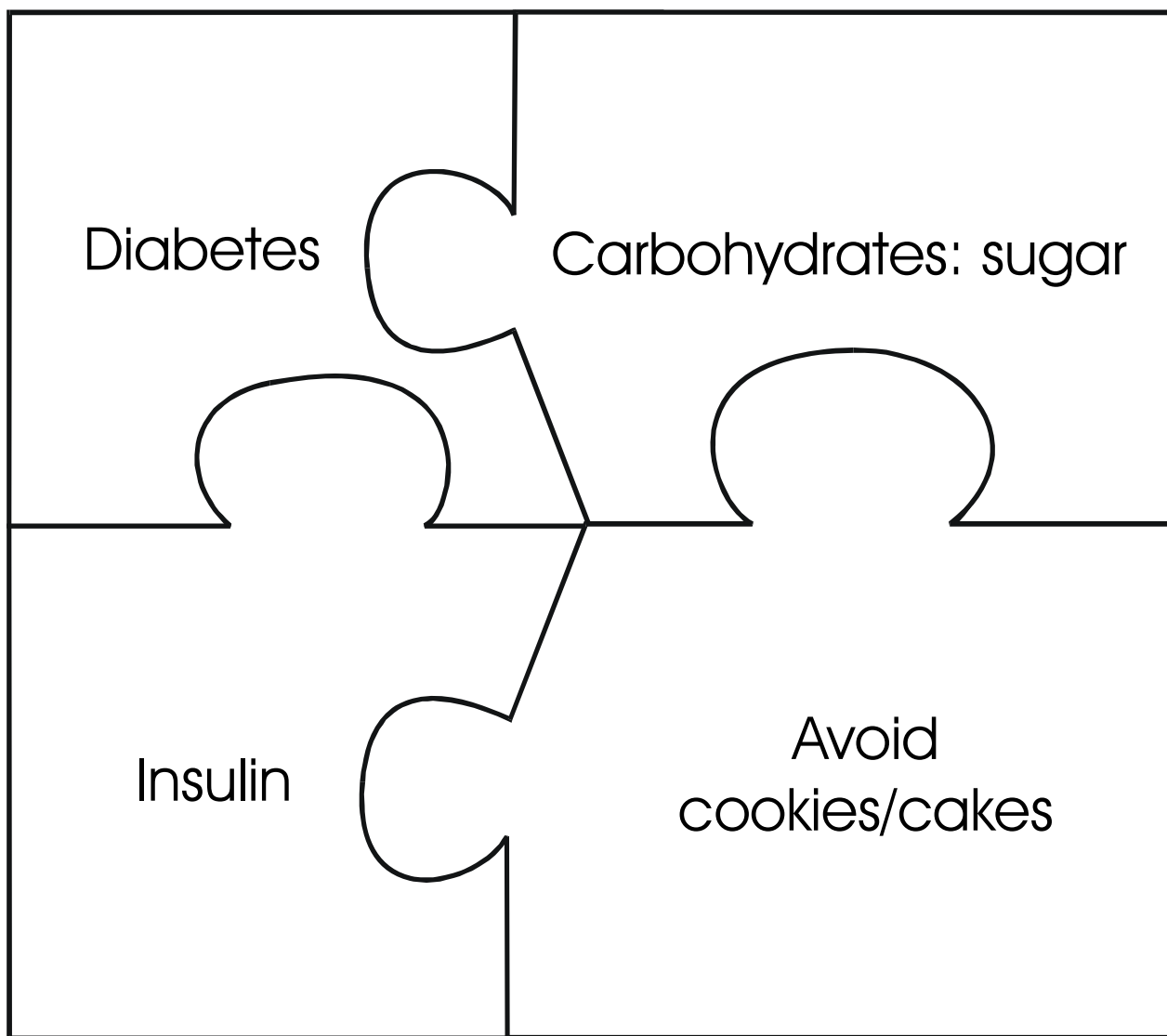
Cartoon Characters - Tony the Tiger sells cereal and the Nestlé's Quick Bunny sells chocolate milk. Cartoons like these make kids identify with products.

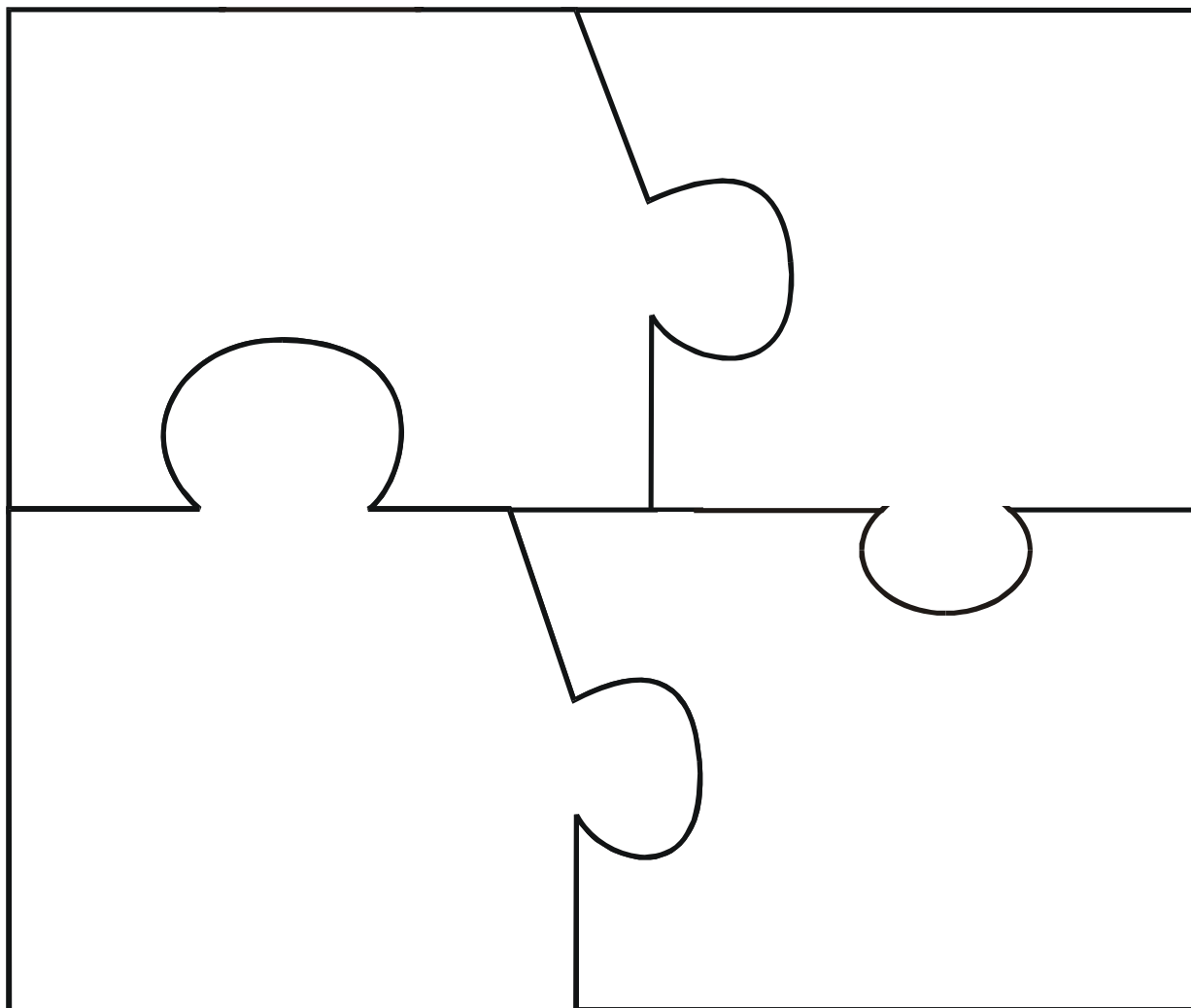
Weasel Words - by law, advertisers have to tell the truth, but sometimes, they use words that can mislead viewers. Look for words in commercials like: "Part of..." "The taste of real...." "Natural...." "New, better tasting...." "Because we care..." There are hundreds of these deceptive phrases -- how many more can you think of?

Omission - where advertisers don't give you the full story about their product. For example, when a Pop Tart claims to be "part" of a healthy breakfast, it doesn't mention that the breakfast might still be healthy whether this product is there or not.

Are You Cool Enough? - this is when advertisers try to convince you that if

<p>Facts and Figures - when you use facts and statistics to enhance your product's credibility.</p> <p>Repetition - advertisers hope that if you see a product, or hear its name over and over again, you will be more likely to buy it. Sometimes the same commercial will be repeated over and over again.</p>	<p>you don't use their products, you are a nerd. Usually advertisers do this by showing people who look uncool trying a product and then suddenly become hip looking and do cool things.</p>
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What's New -- CSPI Press Releases

Caffeine Content of Foods and Drugs

Product	Serving Size ¹	Caffeine (mg) ²
OTC Drugs		
NoDoz, maximum strength; Vivarin	1 tablet	200
Excedrin	2 tablets	130
NoDoz, regular strength	1 tablet	100
Anacin	2 tablets	64
Coffees		
Coffee, brewed	8 ounces	135
General Foods International Coffee, Orange Cappuccino	8 ounces	102
Coffee, instant	8 ounces	95
General Foods International Coffee, Cafe Vienna	8 ounces	90
Maxwell House Cappuccino, Mocha	8 ounces	60-65
General Foods International Coffee, Swiss Mocha	8 ounces	55
Maxwell House Cappuccino, French Vanilla or Irish Cream	8 ounces	45-50
Maxwell House Cappuccino, Amaretto	8 ounces	25-30
General Foods International Coffee, Viennese Chocolate Cafe	8 ounces	26
Maxwell House Cappuccino, decaffeinated	8 ounces	3-6
Coffee, decaffeinated	8 ounces	5
Teas		
Celestial Seasonings Iced Lemon Ginseng Tea	16-ounce bottle	100
Bigelow Raspberry Royale Tea	8 ounces	83
Tea, leaf or bag	8 ounces	50
Snapple Iced Tea, all varieties	16-ounce bottle	42
Lipton Natural Brew Iced Tea Mix, unsweetened	8 ounces	25-45
Lipton Tea	8 ounces	35-40

Lipton Iced Tea, assorted varieties	16-ounce bottle	18-40
Lipton Natural Brew Iced Tea Mix, sweetened	8 ounces	15-35
Nestea Pure Sweetened Iced Tea	16-ounce bottle	34
Tea, green	8 ounces	30
Arizona Iced Tea, assorted varieties	16-ounce bottle	15-30
Lipton Soothing Moments Blackberry	Tea 8 ounces	25
Nestea Pure Lemon Sweetened Iced Tea	16-ounce bottle	22
Tea, instant	8 ounces	15
Lipton Natural Brew Iced Tea Mix, diet	8 ounces	10-15
Lipton Natural Brew Iced Tea Mix, decaffeinated	8 ounces	< 5
Celestial Seasonings Herbal Tea, all varieties	8 ounces	0
Celestial Seasonings Herbal Iced Tea, bottled	16-ounce bottle	0
Lipton Soothing Moments Peppermint Tea	8 ounces	0
Soft Drinks		
Josta	12 ounces	58
Mountain Dew	12 ounces	55.5
Surge	12 ounces	52.5
Diet Coke	12 ounces	46.5
Coca-Cola classic	12 ounces	34.5
Dr. Pepper, regular or diet	12 ounces	42
Sunkist Orange Soda	12 ounces	42
Pepsi-Cola	12 ounces	37.5
Barqs Root Beer	12 ounces	22.5
7-UP or Diet 7-UP	12 ounces	0
Barqs Diet Root Beer	12 ounces	0
Caffeine-free Coca-Cola or Diet Coke	12 ounces	0
Caffeine-free Pepsi or Diet Pepsi	12 ounces	0
Minute Maid Orange Soda	12 ounces	0
Mug Root Beer	12 ounces	0
Sprite or Diet Sprite	12 ounces	0
Caffeinated Waters		
Java Water	1/2 liter (16.9 ounces)	125
Krank 20	1/2 liter (16.9 ounces)	100
Aqua Blast	1/2 liter (16.9 ounces)	90
Water Joe	1/2 liter (16.9 ounces)	60-70

Aqua Java	1/2 liter (16.9 ounces)	50-60
Juices		
Juiced	10 ounces	60
Frozen Desserts		
Ben & Jerry's No Fat Coffee Fudge Frozen Yogurt	1 cup	85
Starbucks Coffee Ice Cream, assorted flavors	1 cup	40-60
Häagen-Dazs Coffee Ice Cream	1 cup	58
Häagen-Dazs Coffee Frozen Yogurt, fat-free	1 cup	40
Häagen-Dazs Coffee Fudge Ice Cream, low-fat	1 cup	30
Starbucks Frappuccino Bar	1 bar (2.5 ounces)	15
Healthy Choice Cappuccino Chocolate Chunk or Cappuccino Mocha Fudge Ice Cream	1 cup	8
Yogurts, one container		
Yoplait Cafe Au Lait Yogurt	6 ounces	5
Dannon Light Cappuccino Yogurt	8 ounces	< 1
Stonyfield Farm Cappuccino Yogurt	8 ounces	0
Chocolates or Candies		
Hershey's Special Dark Chocolate Bar	1 bar (1.5 ounces)	31
Perugina Milk Chocolate Bar with Cappuccino Filling	1/3 bar (1.2 ounces)	24
Hershey Bar (milk chocolate)	1 bar (1.5 ounces)	10
Coffee Nips (hard candy)	2 pieces	6
Cocoa or Hot Chocolate	8 ounces	5

1 -- Serving sizes are based on commonly eaten portions, pharmaceutical instructions, or the amount of the leading-selling container size. For example, beverages sold in 16-ounce or half-liter bottles were counted as one serving.

2 -- Sources: National Coffee Association, National Soft Drink Association, Tea Council of the USA, and information provided by food, beverage, and pharmaceutical companies and J.J. Barone, H.R. Roberts (1996) "Caffeine Consumption." *Food Chemistry and Toxicology*, vol. 34, pp. 119-129.

A New Food Guide

For North American Vegetarians

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Abstract

This companion paper to the *Position of the American Dietetic Association and Dietitians of Canada: Vegetarian Diets*, presents a new food guide for vegetarians. Two graphic formats are presented, a rainbow and a pyramid. The guide will assist vegetarians in choosing diets that meet recent recommendations established by the Institute of Medicine for nutrients including protein, iron, zinc, calcium, vitamin D, riboflavin, vitamin B-12, vitamin A, omega-3 fatty acids, and iodine. The guide can be adapted for different types of vegetarian diets and includes a wide variety of foods commonly used by vegetarians. The guide is based on the following food groups: Grains; Vegetables; Fruits; Legumes; nuts, and other protein-rich foods; Fats; and Calcium-rich foods. The Calcium-rich foods food group is planned to offer expanded choices for calcium sources and includes foods from each of the other food groups. Specific guidelines are given for meeting requirements for vitamins B-12 and D. Modifications are provided to meet needs of different stages of the life cycle. This vegetarian food guide has a number of advantages including the promotion of variety and moderation within the context of vegetarian diets, a focus on foods commonly consumed by vegetarians, and a foundation in current nutritional science.

(Can J Diet Prac Res 2003; 64:82-86)

Résumé

Cet article, qui porte sur un nouveau guide alimentaire pour les végétariens, accompagne l'exposé de position de l'American Dietetic Association et des Diététistes du Canada. Le guide se présente sous deux formes graphiques: un arc-en-ciel et une pyramide. Il aidera les végétariens à choisir une alimentation qui satisfait aux recommandations récentes établies par l'Institut de Médecine pour les nutriments, notamment les protéines, le fer, le zinc, le calcium, la vitamine D, la riboflavine, la vitamine B₁₂, la vitamine A, les acides gras oméga-3 et l'iode. Le guide peut être adapté à divers types de régimes végétariens et comprend une grande variété d'aliments couramment utilisés par les végétariens. Il est basé sur les groupes d'aliments suivants : céréales; légumes; fruits; légumineuses, noix et autres aliments riches en protéines; matières grasses; aliments riches en calcium. Ce dernier groupe offre des choix multiples de sources de calcium et comprend des aliments de chacun des autres groupes. Des directives particulières permettent de satisfaire les besoins en vitamines B₁₂ et D et les besoins à différentes étapes du cycle de vie. Le guide alimentaire végétarien offre de multiples avantages, entre autres ceux de promouvoir la variété et la modération dans le contexte d'une alimentation végétarienne, d'insister sur les aliments couramment consommés par les végétariens et de présenter les bases scientifiques actuelles de la nutrition.

(Rev can prat rech diétét 2003; 64:82-86)

The first North American food guide was published by the U.S. Department of Agriculture in 1916. It was not until the 1940s however, when wartime shortages, indications of malnutrition among citizens, and the release of the first recommended dietary allowances focused greater attention on nutrient requirements, that food guides became a familiar meal-planning tool in the United States (1). The Canadian government released its first food guide at this time, in 1942 (2). Up until 1992, when the USDA's food guide pyramid (3) and Canada's Food Guide to Healthy Eating (CFGHE) (2) with its rainbow design were introduced, the emphasis of food guides was largely placed on meeting nutrient needs.

The 1992 guides were the first to consider the harmful effects of overnutrition. They were also the first guides to visually emphasize the importance of plant foods in the diet. However, they did not include sufficient guidelines for planning vegetarian diets. USDA publications noted that vegetarians needed special guidance in planning healthful diets, implying that USDA's food guide was not appropriate for vegetarians (4).

Over the past several decades, a number of meal-planning

tools have been developed specifically for vegetarians (5,6). The majority of these have used the pyramid format or the rainbow design and many have been revised versions of the USDA's food guide pyramid and CFGHE. However, because vegetarian diets differ in many ways from non-vegetarian diets, the USDA food guide pyramid and CFGHE are not necessarily the most useful starting point when considering guidelines for vegetarians. It is particularly difficult to manipulate these tools when attempting to provide adequate and practical guidelines for vegans (vegans are vegetarians who exclude all animal products).

In designing a new food guide for vegetarians, we aimed to achieve the following goals:

- To establish a guide that would meet the needs of people following different types of vegetarian diets.
- To help vegetarians choose diets that would meet the most recent recommendations established by the Institute of Medicine.
- To include guidelines that focus on specific nutrients of particular interest in vegetarian diets, as discussed in the

Table 1
Tips for meal planning

1. Choose a variety of foods.
2. The number of servings in each group is for minimum daily intakes. Choose more foods from any of the groups to meet energy needs.
3. A serving from the calcium-rich food group provides approximately 10% of adult daily requirements. Choose 8 or more servings per day. These also count towards servings from the other food groups in the guide. For example, 1/2 cup (125 mL) of fortified fruit juice counts as a calcium-rich food and also counts towards servings from the fruit group.
4. Include 2 servings every day of foods that supply n-3 fats. Foods rich in n-3 fat are found in the legumes/nuts group and in the fats group. A serving is 1 teaspoon (5 mL) of flaxseed oil, 3 teaspoons (15 mL) of canola or soybean oil, 1 tablespoon (15 mL) of ground flaxseed, or 1/4 cup (60 mL) walnuts. For the best balance of fats in your diet, olive and canola oils are the best choices for cooking.
5. Servings of nuts and seeds may be used in place of servings from the fats group.
6. Be sure to get adequate vitamin D from daily sun exposure or through fortified foods or supplements. Cow's milk and some brands of soymilk and breakfast cereals are fortified with vitamin D.
7. Include at least 3 good food sources of vitamin B-12 in your diet every day. These include 1 Tbsp (15 mL) of *Red Star* Vegetarian Support Formula nutritional yeast, 1 cup (250 mL) fortified soymilk, 1/2 cup (125 mL) cow's milk, 3/4 cup (185 mL) yogurt, 1 large egg, 1 ounce (28 g) of fortified breakfast cereal, 1-1/2 oz (42 g) of fortified meat analog. If you don't eat these foods regularly (at least 3 servings per day), take a daily vitamin B-12 supplement of 5 to 10 µg or a weekly B-12 supplement of 2,000 µg.
8. If you include sweets or alcohol in your diet, consume these foods in moderation. Get most of your daily calories from the foods in the Vegetarian Food Guide.

ADA and Dietitians of Canada's joint position on vegetarian diets in this issue of the *Journal* (7,8).

- To include a wide variety of foods that are consumed by vegetarians.
- To increase awareness about the availability of calcium from nondairy foods.

In addition, we strived to meet the challenge spelled out in the 1981 issue of the *Journal of Nutrition Education* by then FDA nutritionist Jean Pennington for an "instrument which converts the professional's scientific knowledge of food composition and nutrient requirements for health into a practical plan for food selection by those without training in nutrition" (9).

Challenges in designing such a guide exist regardless of dietary pattern. Individual food preferences, habits, and choices within food groups will all impact diet quality. While no food guide is completely reliable, a food guide can maximize the chances that consumers will choose healthful diets. The inclusion of 8 Tips for Meal Planning (see Table 1) provides additional help to vegetarians in planning healthful diets.

FOOD GROUPS

The food guide principle that has been in use in North America since 1916 is based on an approach that classifies foods into groups based on similar nutrient content. We have adhered to this principle, with some modification. In the vegetarian food guide, calcium needs are met through choices from several food groups.

In keeping with familiar and widely used approaches to food guide presentation in North America, we have designed our guide in the forms of both a pyramid and a rainbow; the latter is the graphic used in Canada. Both guides utilize the same food groupings, specify the same number of servings, and can be used interchangeably (Figures 1 and 2).

Foods are grouped as follows:

Grains: At the base of the pyramid and in the widest arc of the rainbow, these foods form the foundation of the diet. Grains provide energy, complex carbohydrate, fibre, iron, and B-vitamins. Whole grains are an important source of zinc and other minerals. Vegetarians should choose whole grains often, but enriched refined grains can play a role in vegetarian diets and may be especially valuable for children.

Vegetables and fruits: Vegetables have been grouped separately from fruits to encourage vegetarians to choose a variety of both types of food rather than to focus on one or the other for most choices. A higher number of servings of vegetables is specified due to the greater nutrient density and phytochemical content of vegetables compared to fruits.

Legumes, nuts, and other protein-rich foods: This group includes foods that are good sources of protein, B vitamins, and many trace minerals. It includes all legumes, including soy products such as soymilk and tofu, as well as nuts, seeds, nut and seed butters, eggs, and meat analogs. In a departure from most existing food guides, we have placed dairy foods in this group as well. This groups dairy products with other foods that offer similar amounts of protein per serving. It makes dairy an available but optional choice for vegetarians, while ensuring that protein needs will be met whether or not dairy foods are included in the diet. Categorizing dairy foods with other protein sources also meets the goal of emphasizing the availability of calcium from all of the food groups. Most of the foods in this group provide iron, which is well absorbed when a source of vitamin C is consumed with the meal (10). Dairy foods are the exception here, and those vegetarians who consume frequent servings of dairy foods should be advised to ensure that they are including adequate sources of iron in their meals.

Fats: Vegetarians and others who do not eat fish, require small amounts of plant sources of n-3 fats. In addition, research suggests that moderate intake of certain healthful plant fats may reduce risk for cardiovascular disease (11), improve nutrient

PUBLIC POLICY STATEMENTS ÉNONCÉS DE POLITIQUE

intake (12), and may even aid in weight control (12). Ideally, most of the fat in vegetarian diets should come from fat-rich whole plant foods such as nuts, seeds, and avocado. To ensure an optimal fat intake and to support a practical approach to meal planning, we have specified a minimum of two servings of fats per day. Table 1 indicates that nuts or seeds can be used in place of these fats and also directs vegetarians towards choosing the most healthful fats in their diet.

Calcium-rich foods: Adults should choose a minimum of eight servings of calcium-rich foods daily. Each serving also counts towards choices from one of the other food groups in the guide. For example, one cup of certain cooked leafy green vegetables counts as a serving from the calcium-rich foods group and as two servings from the vegetable group. Placement of the calcium food group adjacent to each of the other food groups allows this concept to be presented in a clear visual way. It also emphasizes the fact that calcium needs are met by choosing a variety of foods from across the food groups.

Diets based on the minimum specified servings from each of the food groups provide approximately 1,400 to 1,500 calories per day, which may be an inadequate energy intake for many vegetarians. Because the numbers of servings in the food guide are minimum recommendations, consumers can meet higher energy needs by choosing more servings from any of the food groups. Regardless of energy needs, most food choices should come from these groups, with only moderate servings of sweets and alcohol at most.

EXPANDED CHOICES FOR MEETING CALCIUM NEEDS

Survey data suggest that vegans account for as much as 40% of the actual vegetarian population (13). Actual vegetarians are those who never eat meat, in contrast to self-described vegetarians, many of whom actually eat some type of animal flesh regularly. Therefore, any guide aimed at vegetarians must consider the needs of vegans. Studies also indicate that a substantial percentage of vegan women as well as some lacto-ovo-vegetarian women (lacto-ovo-vegetarians are those vegetarians that use dairy products and eggs), have calcium intakes that are too low which suggests that calcium deserves special attention in vegetarian food guides (14). With few exceptions, vegetarian food guides have not provided appropriate guidelines for vegans. A number of guides have included an optional dairy group which presents the risk that consumers will choose diets that are deficient in both calcium and protein. Other guides have included a dairy group that also includes fortified soymilk. However, not all vegans choose to consume soymilk daily. Those who do may not wish to consume the two to three recommended servings. For many families, the expense of soymilk compared to cow's milk makes it an unrealistic choice as the primary source of calcium in the diet.

This food guide illustrates acceptable choices in addition to dairy foods and fortified soymilk for meeting calcium needs. It incorporates the principles of variety and moderation and encourages consumers to consider more plant foods as sources of

Figure 1
Vegetarian food guide pyramid

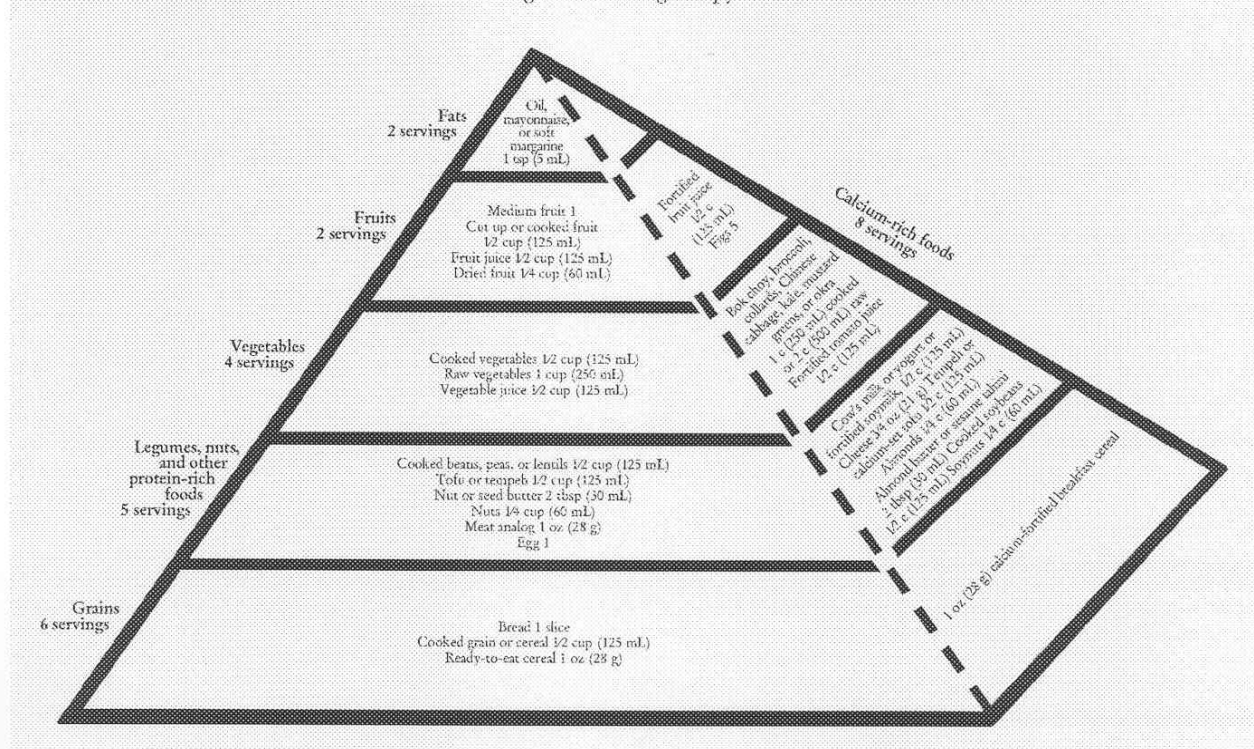
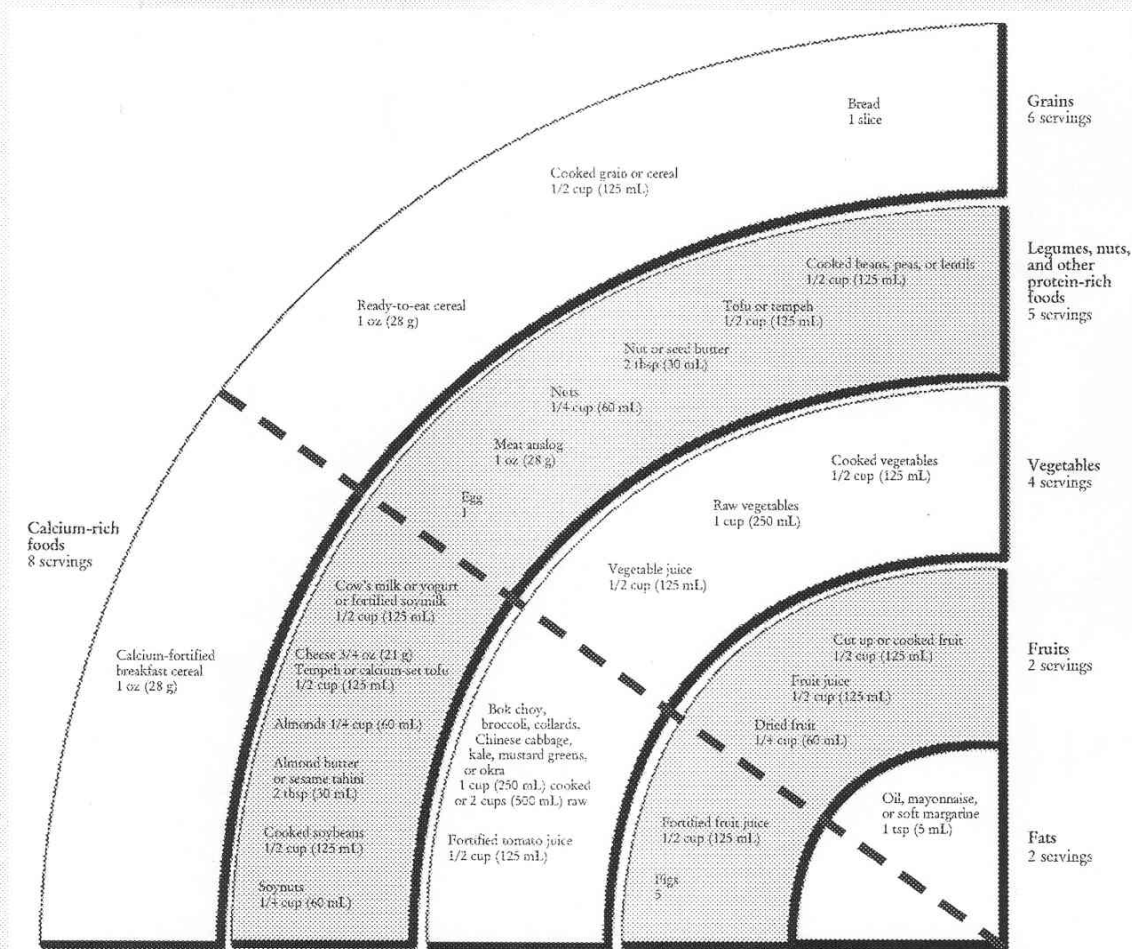


Figure 2
Vegetarian food guide rainbow



nutrients. This is in keeping with government recommendations. Although this food guide does not emphasize the value of one calcium source over another, there may be an advantage to including more plant sources of calcium in diets, since research suggests that other compounds in plant foods, such as isoflavones in soyfoods (15) and potassium (16) and vitamin K (17) in fruits and vegetables, may favourably impact bone health.

By including foods that provide approximately 10-15% (100-150 mg) per serving of the adult AI for calcium, we have allowed consumers to meet calcium needs using a variety of foods in realistic serving sizes. While the serving size of one-half cup for milk differs from many other food guides, it is consistent with common servings on many food labels such as puddings or for use with breakfast cereal.

It should be noted that this approach of emphasizing the variety of calcium-rich foods in different food groups is not specific to the needs of vegetarians but could be adopted for

those who consume non-vegetarian diets as well. The advantages of this approach are relevant for all consumers regardless of diet choices.

SPECIAL CONSIDERATIONS FOR VEGETARIANS

Unsupplemented vegan diets do not provide vitamin B-12. Dairy products and eggs supply vitamin B-12; however depending on food choices, some lacto-ovo-vegetarians may have inadequate intakes as well. The Institute of Medicine has recommended that all people over the age of 50, regardless of type of diet, take vitamin B-12 in the form found in supplements and fortified foods for optimal absorption (18). Vitamin B-12 is well-absorbed from fortified nondairy milks, and from breakfast cereals, as well as from supplements. Because vitamin B-12 absorption is inversely related to dosage, we have recommended a daily supplement of at least 5 µg or a weekly supplement of 2,000 µg.

In addition to regular supplementation with vitamin B-12,

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Table 2

Modifications to the Vegetarian Food Guide (Figures 1 and 2) for children, adolescents, and pregnant and lactating women

Life cycle	Food Group ^a		
	B-12-rich foods (svgs)	Beans/nuts/seeds/egg (svgs)	Calcium-rich foods (svgs)
Child ^b	2	5	6
Adolescent ^c	2	6	10
Adolescent ^d	3	6	10
Pregnancy	4	7	8
Lactation	4	8	8

^aThe number of servings in each group is the minimum amount needed. The minimum number of servings from other groups is not different from the Vegetarian Food Guide (Table 1, Figure 1). Additional foods can be chosen from any of the groups in the Vegetarian Food Guide to meet energy needs.

^b4-8 yrs

^c9-13 yrs

^d14-18 yrs

vegans require a dietary source of vitamin D when sun exposure is insufficient. This occurs at northern latitudes and in certain other situations. Many fortified nondairy milks and breakfast cereals provide vitamin D, although the form used to fortify cereals is often not vegan. Vegetarians may also choose vitamin D supplements.

Table 1 provides specific guidelines for meeting needs for vitamins B-12 and D. The vegetarian food guide is based on nutrient needs of adults. It can be modified to meet needs of different stages of the life cycle. Table 2 shows modifications in food group servings for different age groups.

SUMMARY

In summary, this vegetarian food guide has a number of advantages over previous guides designed for this population:

- It is based on current nutritional science. This guide aims to provide sufficient nutrient intake based on the most recent DRIs and addresses concerns like balance of fats in diets.
- It provides information about how to meet calcium needs that are appropriate to a wide range of individuals, including those who follow lacto-ovo-vegetarian diets and vegan diets.
- It promotes the concepts of variety and moderation. Many other guides for both vegetarians and non-vegetarians direct consumers only to dairy foods to meet calcium needs, while this guide emphasizes the wide variety of foods that can meet calcium requirements.
- It focuses on foods that are commonly consumed by vegetarians.

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A Good Reducing Diet:

- includes food you normally eat and enjoy
- recommends increasing physical activity
- includes foods from all four food groups in Canada's Food Guide
- provides enough food for your body's needs
- relies on food for necessary nutrients instead of vitamin pills
- allows for a slow, steady weight loss of 1-2 pounds per week
- allows for nutritious snacking
- recommends a variety of foods instead of promoting one food
- emphasizes that serving sizes are important when reducing
- allows for easy adaptation to family meals
- avoids gimmicks - you should not have to buy a product
- you can stick to it long-term
- it does not leave you hungry all the time
- it should have least 1200 calories for women and 1500 for men

Appendix E



Canadian Agriculture at a Glance Teacher's Kit

Lesson plans

2001 Census of Agriculture data

Previous teacher's kit

Other teacher's kits

96-328-MWE



Statistika Canada / Statistique Canada



Français	Contact Us	Help	Search	Canada Site
The Daily Census	Canadian Statistics	Community Profiles	Our Products and Services	Home Other Links

[Canadian Agriculture at a Glance Teacher's Kit](#) > [Lesson plans](#)

Lesson: What's in your grocery cart?

View the article ([PDF](#))

[Introduction](#)

[Curriculum connections](#)

[Notes to teacher](#)

[Teaching and learning strategies](#)

[Assessment/evaluation strategies](#)

[Accommodation and enrichment strategies](#)

[Links to other activities](#)

[Suggestions for further research](#)

Introduction

This activity considers some of the new produce we are seeing in Canadian grocery stores. It looks at the origins of these vegetables, and how they came to be in Canadian stores.

Curriculum connections

Geography

- demonstrates an understanding of the diversity of agricultural endeavours in Canada
- identifies the human factors that affect food production.

Family Studies/Home Economics

- identifies food supply and production industries in Canada
- identifies factors that affect food supply in Canada
- investigates food-related issues
- promotes an understanding of the links between agriculture and the consumer
- describes the effect of economics on food production and supply and, ultimately, costs to consumers
- describes the impact of consumer demand on food production.

Science

- evaluates how the energy and nutritional needs of a population influence the development and use of plant science and technology.

Notes to teacher

In the farm profile unit, the activities can be a co-operative group activity. Students can be divided into groups of "experts" to learn about one of the farms profiled; they can then teach the rest of the class about their topic. ([PDF](#))

Ideally, this unit would be best taught using examples of the vegetables discussed in the article.

Teaching and learning strategies

1. If possible, have a selection of vegetables from the article to show the class. If not, have pictures of some of them.
2. Ask students to identify the vegetables and where they originated.
3. Using a map of the world, connect these vegetables to the countries where they are predominately eaten.
4. Have students read the article "What's in your grocery cart?" on pages 55 to 62 in *Canadian Agriculture at a Glance* ([PDF](#)).
5. Have students answer the following questions after reading the article:
 - a. How have consumers influenced the types of vegetables grown in Canada?
 - b. What were the traditional vegetables grown in Canada? What vegetables are replacing them?
 - c. How is greenhouse production changing over time?
 - d. What four factors are driving the shift in vegetables consumers are demanding?
6. After completing the questions, each student chooses a vegetable to study, looking at its country of origin, where it is grown in Canada, how to cook it, and providing a recipe that uses it.
7. Students add terminology to their [glossaries](#).

Assessment/evaluation strategies

1. Assess answers to questions for completion and accuracy.
2. Assess [glossaries](#) for accuracy and completion.

Accommodation and enrichment strategies

1. Some students may require assistance in order to complete written work.
2. Students with special needs may work with a partner to complete a task.
3. Templates for note-taking should be provided to students with special needs.
4. Main ideas and/or new information should be mapped out and organized to meet the needs of all students.
5. Wherever possible, vocabulary lists should be provided with a discussion of context clues and related vocabulary.
6. For enrichment, students can find out how the four factors that are changing vegetable production are also changing another type of agricultural production.

Links to other activities

This activity is linked to:

- [Bud the Spud moves west](#)
- [What's growing under glass?](#)
- [Fresh produce north of 60](#)
- [From Concord to Chardonnay: Canada's grape transformation](#)
- [Little bees big potential](#)
- [Tapping the Manitoba maple - a Prairie cottage industry](#)
- [The little devils are everywhere](#)

- [Stop the car! Are those llamas in that field?](#)
- [From wild beast to docile partner](#)

Suggestions for further research

- Students can investigate how a different cultural mosaic in another country affects the vegetables grown there, e.g., influx of Hispanic peoples in the southern United States.
- Students can use 2001 Census of Agriculture data in [E-STAT](#) for data analysis, graphing and mapping activities for specific geographic areas of local interest.

Please send comments or examples of how you used this lesson in your class to [Learning Resources](#).

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Date modified: 2007-03-20



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What's in your grocery cart?

by Elizabeth Abraham, Statistics Canada

Take a peek inside your cart as you walk down the fresh produce aisle in your grocery store. Do you notice any changes in the type of produce you have been purchasing recently? Do you see bean sprouts, bok choy, parsley, mint, basil, other herbs, new varieties of onions, different sizes of squash and other vegetables that didn't make their way into your cart a few years ago? There's more to fresh produce these days than potatoes, tomatoes, sweet corn, beans and peas.

Not everything we see in the produce section is grown in Canada, but what is grown here has changed in the last decade. Farmers' decisions about what to produce often reflect consumer choices or demands. Are Canadian farmers responding to the changes in the attitudes and demands of the public? Let's look at the changing production patterns in the vegetable industry in Canada and the reasons for these changes.

Canadian farmers planted 133,900 ha of farmland (excluding greenhouses) with vegetables in 2001. That was up 9.1% from 122,600 ha in 1991. A closer look at the individual commodities within the vegetable group tells an interesting story — a shift away from traditional vegetables to other types, reflecting underlying changes in the vegetable industry.

Que contient votre panier d'épicerie?

par Elizabeth Abraham, Statistique Canada

Jetez un coup d'œil dans votre panier pendant que vous marchez dans l'allée des produits frais à l'épicerie. Avez-vous remarqué récemment si vous achetez des produits différents? Vous y voyez des germes de soya, du pak-choï, du persil, de la menthe, du basilic, d'autres herbes, de nouvelles variétés d'oignons, des courges de diverses grosseurs et d'autres légumes que vous ne déposiez pas dans votre panier auparavant? De nos jours, les produits frais ne se résument pas seulement au maïs sucré, aux pommes de terre, aux tomates, aux haricots et aux pois.

Les denrées que vous remarquez dans la section des produits frais ne sont pas toutes cultivées au Canada, mais celles qui le sont ont changé depuis la dernière décennie. Les agriculteurs déterminent souvent ce qu'ils doivent cultiver selon les choix ou demandes des consommateurs. Les agriculteurs canadiens répondent-ils aux changements d'attitudes et aux demandes des consommateurs? Pour en savoir davantage à ce sujet, examinons les tendances de la production légumière au Canada et les raisons expliquant ces changements.

En 2001, les agriculteurs canadiens ont ensemencé des légumes sur 133,900 ha de terres agricoles (à l'exception des serres). Il s'agit là d'une augmentation de 9,1% par rapport à 1991, où ce chiffre atteignait 122,600 ha. Si nous observons de plus près les différentes denrées du groupe de légumes, nous remarquons un fait intéressant — les consommateurs achètent moins les légumes traditionnels et en choisissent d'autres, démontrant ainsi un mouvement de changements fondamental dans la production légumière.



To help you understand this article

Antioxidants: Substances that inhibit damaging oxidation in the body. Antioxidants such as lycopene, polyphenols, flavonoids, tannins, anthocyanins and certain vitamins are found in many foods.

Brassica: A large genus of herbs in the family *Cruciferae* of the order *Capparales*, including cabbage, watercress and sweet alyssum. Kale belongs to the *Brassica oleracea* family.

Salsify: A plant grown for its edible root.

Vegetables can be broadly classified on the basis of use, botany or a combination of both: bulb crops (such as onions), cole crops (cabbages), root crops (carrots), cucurbits (cucumbers), solanaceous fruits (tomatoes), greens (lettuce), gramineae (sweet corn), legumineuse (green peas), oriental vegetables, herbs and other vegetables. A complete listing is in Table 1.

ha = hectare

kg = kilogram

Heavyweights under pressure from new contenders

The traditional Canadian heavyweights have been solanaceous fruits (such as tomatoes and peppers), gramineae vegetables (sweet corn) and legumineuse vegetables (green or wax beans and peas). These three groups made up 65% of the total vegetable area in 1991. By 2001 the share of these vegetables dropped seven percentage points to 58% of total area (Table 1).

The new contenders have been in three groups: oriental vegetables, cucurbits, and herbs and other vegetables, reflecting the diversification in the vegetable industry. From 1991 to 2001, the share of oriental vegetables grew from 0.7% to 1.1%, cucurbits from 4.9% to 8.6%, and herbs and other vegetables from 1.1% to 1.7%. These changes in share may look like small potatoes, but they indicate a very real shift from traditional to non-traditional crops.

It's a battle for turf

The area of oriental vegetables, cucurbits, and herbs and other vegetables all rose more than 75% from 1991 (Figure 1). Solanaceous fruits and gramineae vegetables lost 12.0% and 1.5%, respectively, while legumineuse vegetables gained just 2.2%. Despite the decline in solanaceous fruit area, more tomatoes are being grown in greenhouses — the area of greenhouse vegetables is not counted in the data shown in Figure 1. In the last half of the nineties, greenhouse tomato production rose sharply, from 51.8 million kg in 1996 to 210.7 million kg in 2001.

Les nouveaux concurrents exercent des pressions sur les catégories les plus importantes

Les catégories traditionnelles les plus importantes au Canada comprenaient les solanacées (comme les tomates et les poivrons), les graminées (comme le maïs sucré) et les légumineuses (comme les haricots verts ou jaunes et les pois). Ces trois catégories représentaient 65% de la superficie totale réservée à la culture des légumes en 1991. La part de ces légumes a chuté de 7 points de pourcentage en 2001, pour s'établir à 58% de la superficie totale (tableau 1).

Les nouveaux concurrents sont classés en trois catégories: les légumes orientaux, les cucurbitacées ainsi que les herbes et autres légumes, reflétant ainsi la diversification de la production légumière. De 1991 à 2001, la part de culture des légumes orientaux est passée de 0.7% à 1.1%, celle des cucurbitacées, de 4.9% à 8.6% et celle des herbes et autres légumes, de 1.1% à 1.7%. Ces changements dans la répartition du marché peuvent sembler de la grenaille, mais ils indiquent un passage très réel des cultures traditionnelles aux cultures non traditionnelles.

À la conquête du territoire

Depuis 1991, les superficies réservées à la culture des légumes orientaux, des cucurbitacées et des herbes et autres légumes ont toutes augmenté de plus de 75% (figure 1). On enregistre une baisse de 12.0% pour les solanacées et de 1.5% pour les graminées, tandis que la culture des légumineuses a augmenté d'à peine 2.2%. Malgré la diminution de la superficie réservée aux solanacées, de plus en plus de tomates sont cultivées en serre — la superficie réservée aux légumes de serre n'est pas calculée dans les données présentées à la figure 1. Au cours de la deuxième moitié de la décennie 1990, la production de tomates de serre a nettement augmenté, passant de 51.8 millions de kg en 1996 à 210.7 millions de kg en 2001.

Table 1
Here come the contenders

Tableau 1

Voici les concurrents

Pour vous aider à
comprendre cet article

Class	Members	Area in 2001 (ha)	Percentage change from 1991 Changement en % par rapport à 1991	Category	Légume
Bulb crops	Leeks, garlic, chives, onions, shallots and green onions, other bulb crops	7,236	40.0	Bulbs	Poireaux, ail, ciboulette, oignons, échalotes et oignons verts, autres bulbes
Cole crops	Broccoli, Brussels sprouts, cabbage, cauliflower, collard greens, kohlrabi, kale and other edible brassicas	12,492	6.8	Choux	Brocoli, choux de Bruxelles, chou, chou-fleur, feuilles de « chou vert », chou-rave, chou morsette et autres brassicas comestibles
Root crops	Carrots, rutabagas, beets, radishes, turnips, parsnips, salsify, other root vegetables	14,268	18.1	Roots	Carottes, rutabagas, betteraves, radis, rabort, panais, salsifis, autres légumes-racines
Cucurbits	Cucumbers, artichokes, watermelon, other melons, squash, pumpkins and zucchini	11,485	90.5	Cucurbit- taceae	Concombres, artichauts, pastèques, autres melons, courges, citrouilles et courgettes
Solanaceous fruits	Tomatoes, peppers, eggplant	12,457	-12.0	Solanaceae	Tomates, poivrons, aubergines
Greens	Endives, chard, lettuce, spinach, celery, asparagus, fiddleheads, celeriac, other greens	6,962	6.3	Légumes- feuilles	Endives, bettes à carde, laitue, épinards, céleri, asperges, croûtes de fougère, celeri-rave, autres légumes à feuilles alimentaires
Gramineae	Sweet corn	35,499	-1.5	Gramineae	Maïs sucré
Legumineuse	Green or wax beans, green peas, okra, other beans	29,598	2.2	Legumineuses	Haricots verts ou jaunes, pois verts, okra, autres haricots
Oriental vegetables	Chinese cabbage, bean sprouts, bok choy, other oriental vegetables	1,530	86.7	Légumes orientaux	Pai-bai, germes de soja, pak-choi, autres légumes orientaux
Herbs and other vegetables	Mint, anise, parsley, basil, rhubarb, other herbs and vegetables	2,269	75.5	Herbes et autres légumes	Minthe, anis, persil, basilic, rhubarbe, autres herbes et légumes

Source: 1991 and 2001 Census of Agriculture

Source: Recensement de l'agriculture de 1991 et de 2001



Photo: Rick D. Murphy

Antioxydantes Substances inhibitrices de l'oxydation qui cause une détérioration du corps. Bon nombre d'aliments contiennent des antioxydants, par exemple le lycopers, les polyphénols, les flavonoïdes, les tanins, les anthocyanines et certaines vitamines.

Brassicacées Type d'herbes de haute taille de la famille des crucifères de l'ordre des caprulaires, comprenant le chou, le cresson et la corbeille d'argent. Le chou vert frisé appartient à la famille *Brassicaceae*.

Les légumes peuvent être généralement classés selon l'usage, la botanique ou une combinaison des deux dans les catégories suivantes: les bulbes (comme les oignons), les choux (choux pommés), les légumes-racines (carottes), les cucurbitacées (concombres), les solanacées (tomates), les légumes verts (laitue), les graminées (maïs sucré), les légumineuses (pois verts), les légumes orientaux, les herbes et autres légumes. On trouvera la liste complète dans le tableau 1.

Salsifis Plante cultivée pour ses racines comestibles.

ha = hectare

kg = kilogramme



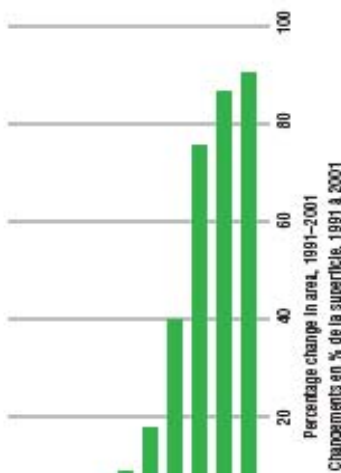
Figure 1

New crops on the rise

Solanaceous fruits – Solanacées
Gramineae – Graminées
Legumineuse – Légumineuses
Greens – Légumes verts
Cote crops – Choux
Root crops – Légumes-racines
Bulb crops – Bulbes
Herbs and other vegetables – Herbes et autres légumes
Oriental vegetables – Légumes orientaux
Cucurbitis – Cucurbitacées

Figure 1

Les nouvelles cultures à la hausse



Source: 1991 and 2001 Census of Agriculture

Source: Recensements de l'agriculture de 1991 et de 2001

Another group of vegetables that has seen sharp growth is bulb crops, such as onions, garlic and leeks. The area devoted to bulb crops rose 40%, from 5,166 ha in 1991 to 7,235 ha in 2001.

Les bulbes — une autre catégorie de légumes — affichent une forte croissance: il s'agit des oignons, de l'ail et des poireaux. La superficie réservée à la culture des bulbes a augmenté de 40%, passant de 5,166 ha à 7,235 ha de 1991 à 2001.

Why the shift in production?

A host of reasons explain the changes in the production patterns: an ethnically diverse population, an aging population, rising incomes and awareness of the health benefits of some vegetables.

Pourquoi un tel changement dans la production?

Plusieurs raisons expliquent les nouvelles tendances dans la production: la diversité ethnique de la population, la population vieillissante, les revenus à la hausse et la sensibilisation aux bienfaits de la consommation de certains légumes sur la santé.

An international mosaic

Until late in the 20th century, most immigrants to Canada came from Europe; in recent years most have come from Asia and the Middle East.

Une mosaïque internationale

Jusqu'à la fin du XX^e siècle, la plupart des immigrants au Canada venaient d'Europe. Toutefois, depuis quelques années, la majorité de ces immigrants arrivent d'Asie et

This ethnically diverse group looks for fruits and vegetables — and other foods — that are common to their cultures. These changing consumption patterns have affected production; for example, farmers are allocating more area to oriental vegetables and herbs and other vegetables. The greater availability has helped spawn interest in new spices and flavours among the wider population. The emergence of ethnic restaurants and popularity of foreign travel have also sparked consumer interest and influenced domestic cuisines.

Not only are our consumers ethnically diverse, our farming population is also reflecting this diversity. Although farm operators with European origins still make up the bulk of our farming population, the presence of Asian farmers is steadily rising. Census data on ethnic origin of farmers show that the number of Asian farmers growing vegetables rose from 220 in 1991 to 350 in 2001. It's not always consumers' preferences that affect what farmers grow: These farmers are producing more commodities that are common to their cultures.

An aging population

Canada's population is aging: One indication is that the median age of the population has risen from 33.5 in 1991 to 37.6 in 2001. The fastest-growing age group from 1991 to 2001 was people aged 80 years and over: Their numbers soared 41.2% to 932,000.

These demographic changes can influence the demand for food products. As people age, they tend to need and eat fewer calories because their metabolism slows down. An expanding population of the middle-aged and elderly tends

du Moyen-Orient. Les consommateurs de ces divers groupes ethniques cherchent à se procurer des fruits et des légumes — et d'autres aliments — propres à leur culture. Ces changements de tendances dans la consommation ont eu des répercussions sur la production: par exemple les agriculteurs réservent une plus grande superficie pour les légumes orientaux ainsi qu'aux herbes et autres légumes. Cette plus grande disponibilité a contribué à éveiller l'intérêt pour de nouvelles épices et saveurs dans la population en général. L'ouverture de restaurants exotiques et la popularité des voyages à l'étranger ont aussi éveillé l'intérêt des consommateurs et influé sur les cuisines au pays.

La diversité ethnique se révèle non seulement chez les consommateurs, mais aussi dans la population agricole. Les exploitants agricoles d'origine européenne forment toujours la majeure partie de la population agricole, mais le nombre d'agriculteurs asiatiques augmente de façon constante. Les données du recensement sur l'origine ethnique des agriculteurs montrent que, de 1991 à 2001, le nombre d'agriculteurs asiatiques cultivant des légumes est passé de 220 à 350. Fait à noter, les préférences des consommateurs n'ont pas toujours une incidence sur ce que les agriculteurs cultivent, ceux-ci produisant davantage de denrées communes à leur culture.

Une population vieillissante

La population du Canada vieillit. L'âge moyen en est une indication, passant de 33,5 ans en 1991 à 37,6 ans en 2001. Le groupe d'âge qui a enregistré la croissance la plus rapide entre 1991 et 2001 est celui des personnes de 80 ans et plus. En effet, leur nombre a augmenté de 41,2% pour atteindre 932,000 personnes.

Ces changements démographiques peuvent avoir des répercussions sur la demande de produits alimentaires. L'apport calorique des personnes qui vieillissent est moindre et leur consommation baisse d'autant en raison du ralentissement de leur métabolisme. L'augmentation

Why not potatoes?

Technically, yes, they're a vegetable. We've excluded potatoes from our discussion of vegetables mainly because they're eaten as a starch in the Canadian diet. However, they're an important field crop; nearly 170,000 ha were planted with spuds in 2001, according to the Census of Agriculture. (For more on potatoes, see "Bud the Spud moves west" on page 45.)

Pourquoi pas les pommes de terre?

En théorie, la pomme de terre est bel et bien un légume. Nous l'avons exclu de notre étude des légumes surtout parce qu'elle est consommée comme féculent dans le régime alimentaire canadien. Néanmoins, la culture des pommes de terre est importante, car, selon le Recensement de l'agriculture, près de 170,000 ha ont été cultivés en 2001. (Pour en savoir plus sur les pommes de terre, voir « Mine de rien, notre « patate » fait du chemin » à la page 45.)

Vegetable or fruit?

Fruits and vegetables have much in common in their compositions and the way they're harvested, processed and stored. In fact, many vegetables may be considered fruit in the true botanical sense. Botanically, fruits are plants that have seeds in them. By this reasoning, tomatoes, cucumbers, eggplant and peppers might be classified as fruits instead of vegetables. However, the common distinction between the two is based on usage alone and not botanical properties. Plants eaten with a main course of a meal are classified as vegetables and those consumed as desserts are considered fruits.

Suggested reading

Claudio E. Pérez. "Fruit and Vegetable Consumption," in *Health Reports, Statistics Canada Catalogue no. 82-003-XIE, Vol. 13, no. 3, March 2002*.

to change dietary patterns, consuming more vegetables and less meat. Vegetables, though low in calories, provide many needed nutrients.

A health-conscious generation

An increasing portion of the population is now obtaining a high school and college or university education. Higher education tends to be associated with greater knowledge of nutrition. According to a Statistics Canada study, people with postsecondary graduation reported higher consumption frequency of fruits and vegetables than did people with less than high school graduation. (See "Suggested reading" for details on the study.) The same research found a significant association between incomes and levels of education on the one hand and fruit and vegetable consumption on the other. That is, people with higher incomes and more education are more likely to eat fruits and vegetables regularly, according to the *Health Reports* study.

Canada's Food Guide, published by Health Canada, promotes the importance of a variety of foods, including vegetables and fruits in our daily diet. Health information from various sources tells us that eating vegetables and fruits may mitigate health problems such as cardiovascular diseases and certain cancers.

Health benefits not only stem from directly consuming these foods; scientists are also using these foods to make new medicines. For example, scientists are looking at the antioxidant properties of the pigments responsible for the red, pink and blue colours of our foods. These reports influence

de la population d'âge moyen et la hausse du nombre de personnes âgées semblent changer les tendances du régime alimentaire, car ces personnes consomment plus de légumes et moins de viande. Les légumes, qui ont une faible teneur en calories, offrent de nombreuses substances nutritives essentielles.

Une génération consciente de sa santé

De plus en plus de citoyens font maintenant des études secondaires, collégiales ou universitaires et, une instruction supérieure est généralement liée à de meilleures connaissances sur l'alimentation. Selon une étude de Statistique Canada, les personnes ayant obtenu un diplôme postsecondaire ont déclaré consommer plus souvent des fruits et des légumes que celles qui ne possèdent pas de diplôme d'études secondaires. (Voir « Lecture suggérée » pour connaître les détails de cette étude.) Cette même étude a permis de découvrir un lien important entre le revenu et le niveau d'études d'une part, et la consommation de fruits et de légumes d'autre part. Selon les *Rapports sur la santé*, les personnes ayant des revenus plus élevés et une instruction supérieure sont plus susceptibles de consommer régulièrement des fruits et des légumes.

Santé Canada publie le *Guide alimentaire canadien*, dans lequel on fait valoir l'importance de consommer une variété d'aliments, dont les fruits et les légumes, dans le régime alimentaire quotidien. L'information sur la santé provenant de diverses sources indique que la consommation de fruits et légumes peut contribuer à atténuer les problèmes de santé, notamment les maladies cardiovasculaires et certains cancers.

Les bienfaits sur la santé ne résultent pas directement de la consommation de ces aliments; les scientifiques les utilisent également pour préparer de nouveaux médicaments. Par exemple, ils étudient les propriétés des pigments qui donnent les couleurs rouge, rose et bleu aux aliments antioxydants. Ces rapports influent sur les

our dietary patterns and daily intake of foods. Producers respond to consumer attitudes by increasing the supply of vegetables and fruits of different varieties.

More dual-income households

Food consumption depends on not only our willingness to purchase but also on whether we can afford what's available. As more and more women have entered the workforce, families' disposable incomes have increased. According to Statistics Canada family income data, after-tax family income rose each year from 1997 to 2001. Families with rising incomes tend to have more money available to purchase higher-priced specialty and non-traditional vegetables and prepared foods or to eat out in restaurants, boosting demand for such foods.

Higher demand not just about the nutritional benefits

The 2001 Census of Agriculture found a big increase in the area devoted to cucurbits, or the gourd family. Pumpkins are the driving force behind this increase. This vegetable is not only used as pie filling, but has become a symbol of harvest during Thanksgiving and a favourite decorative object for Halloween. This non-food use of pumpkins has encouraged farmers to produce more. (For more on pumpkins, see "The pumpkin patch — a venture in agri-tourism" on page 241).

tendances de notre régime alimentaire et sur notre consommation quotidienne d'aliments. Les producteurs réagissent à l'attitude des consommateurs en offrant une plus grande variété de fruits et de légumes.

Davantage de ménages à deux revenus

Notre volonté à acheter et notre capacité de payer ce qui est disponible déterminent quels aliments seront consommés. La population active compte de plus en plus de femmes et les revenus disponibles des familles ont augmenté. Selon les données sur le revenu familial de Statistique Canada, le revenu après impôt a augmenté chaque année entre 1997 et 2001. Les familles dont les revenus sont à la hausse ont tendance à avoir plus d'argent pour acheter des légumes non traditionnels et spéciaux, à prix plus élevés, ainsi que des aliments appêtés, ou bien les gens mangent dans les restaurants, ce qui contribue à faire augmenter la demande pour ce genre d'aliments.

Les avantages nutritionnels n'expliquent pas nécessairement la hausse de la demande

Le Recensement de l'agriculture de 2001 a permis de constater une nette augmentation dans le secteur réservé à la culture des cucurbitacées. Les citrouilles constituent le principal produit expliquant cette augmentation. Ce légume ne sert pas seulement de garniture pour les tartes; il est aussi devenu un symbole de la récolte pendant l'Action de grâce et un objet décoratif à l'Halloween. Cette utilisation non alimentaire des citrouilles a incité les agriculteurs à augmenter leur production de citrouilles. (Pour en savoir davantage sur les citrouilles, voir « La plantation de citrouilles — une entreprise agritouristique » à la page 241.)

Fruit ou légume?

La composition des fruits et des légumes est très semblable sur plusieurs points, par exemple leur récolte, leur traitement et leur conservation. En fait, de nombreux légumes peuvent être considérés comme des fruits d'un point de vue botanique. Selon la botanique, les fruits sont des plantes à graines. Suivant cette affirmation, on pourrait classer les tomates, les concombres, les aubergines et les poivrons comme des fruits au lieu de légumes. La distinction commune entre les deux est toutefois fondée sur l'usage seulement, et non sur les propriétés botaniques. Les plantes consommées avec le mets principal au repas sont classées en tant que légumes et celles consommées au dessert, comme des fruits.

Lecture suggérée

Claudio E. Pérez, « Consommation de fruits et de légumes », Rapports sur la santé, produit n° 82-003-XIF au catalogue de Statistique Canada, vol. 13, n° 3, mars 2002.



Economic factors come into play, too

As Canada and other countries have become more open through trade liberalization, Canadian producers have been forced to compete on an international level. But this has opened up new export opportunities. For example, greenhouse tomato growers in Ontario, Quebec and British Columbia have found markets for their fresh products in adjacent American states; this is one reason greenhouse tomato production jumped in the last half of the 1990s.

Canada's vegetable sector is slowly moving away from traditional commodities to new varieties as farmers respond to demographic, social and economic change. This is something you might ponder as you stand at the grocery checkout counter.

Des facteurs économiques sont aussi en jeu

Le Canada et d'autres pays sont maintenant plus ouverts à la libéralisation des échanges commerciaux et les producteurs canadiens ont dû faire concurrence sur la scène internationale. Cette situation a créé de nouvelles occasions d'exportation. Les cultivateurs de tomates de serre en Ontario, au Québec et en Colombie-Britannique, par exemple, ont découvert des marchés pour leurs produits frais dans les États américains voisins, ce qui explique la hausse de la production des tomates de serre durant la deuxième moitié de la décennie 1990.

L'industrie des légumes au Canada s'éloigne lentement des denrées traditionnelles pour adopter de nouvelles variétés. Les agriculteurs doivent par conséquent tenir compte des changements démographiques, économiques et sociaux. Ce phénomène, vous pourrez l'observer lorsque vous attendrez en ligne à la caisse de l'épicerie.



Photo: Rick Dunphy

Commodity Groups

Egg Producers of NL
NL Chicken Marketing Board
Dairy Farmers of NL
NL Young Farmers
Landscape NL
Blueberry Growers Association NL
Lake Melville Agriculture Association
Sheep Producers Association NL
Provincial Farm, Women Association
Pork Producers Association NL
NL Horticulture Producers Council Inc.
Fur Breeders Association of NL
Strawberry Producers



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Lesson: There's more to organic farming than being pesticide-free

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[Introduction](#)

[Curriculum connections](#)

[Notes to teacher](#)

[Teaching and learning strategies](#)

[Assessment/evaluation strategies](#)

[Accommodation and enrichment strategies](#)

[Links to other activities](#)

[Suggestions for further research](#)

[Worksheet](#)

Introduction

This activity looks at all aspects of organic farming, helping students to understand what the term really means.

Curriculum connections

Geography

- demonstrates understanding of the diversity of agricultural endeavours in Canada
- identifies the human factors that affect food production
- demonstrates understanding of soil fertility and the factors that affect it
- demonstrates understanding of how humans are part of the ecological system and how human activity has long- and short-term effects on the natural environment.

Family Studies/Home Economics

- identifies the food supply and production industries in Canada
- identifies factors that affect food supply in Canada
- investigates food-related issues
- promotes the understanding of the links between agriculture and the consumer
- describes the effect of economics on food production and supply and, ultimately, costs to consumers
- describes the effect of consumer demand on food production
- demonstrates an understanding of the effect of different environmental factors on food production and supply.

Science

- demonstrates understanding of the factors that influence the sustainability of the natural environment and evaluates their

- importance
- demonstrates understanding of the impact of humans on the environment, and assesses alternative courses of action to protect the environment.

Notes to teacher

This activity can be taught with the others in this unit, which corresponds to the chapter "Agriculture and the Environment" in the book, as part of a group work project on agriculture and the environment. Students can be divided into groups of "experts" to learn about one of the topics; they can then teach the rest of the class about their topic ([PDF](#)).

Teaching and learning strategies

1. Teacher puts the word "organic" on the board or overhead and asks students to provide a definition. Teacher encourages students to be specific in their definition.
2. Students read the article "There's more to organic farming than being pesticide-free" on pages 179 to 187 in *Canadian Agriculture at a Glance* ([PDF](#)). While reading the article, they complete the template in the [worksheet](#).
3. Students create a pamphlet to be distributed to consumers educating them about organic products.
4. Students add terminology to their [glossaries](#).

Assessment/evaluation strategies

1. Assess [worksheet](#) for completion and accuracy.
2. Evaluate pamphlet.
3. Assess [glossaries](#) for accuracy and completion.

Accommodation and enrichment strategies

- Some students may require assistance in order to complete written work.
- Students with special needs may work with a partner to complete a task.
- Templates for note-taking should be provided to students with special needs.
- Main ideas and/or new information should be mapped out and organized to meet the needs of all students.
- Wherever possible, vocabulary lists should be provided with a discussion of context clues and related vocabulary.
- Students with special needs may wish to complete an oral, taped or video presentation rather than a written assignment.
- For enrichment, students can visit the website of an organic farm organization to find out more about organic farming.
- For enrichment, students may visit an organic farm.

Links to other activities

This activity is linked to:

- [What is "sustainable" agriculture?](#)
- [Living with the farm next door](#)
- [It's waste and a valuable resource too](#)
- [Watering our Prairie farms](#)

- [Protecting crops from pests](#)
- [Growing herbs for the medicine chest](#)

Suggestions for further research

- Students may investigate proposed legislation about organic farming. As well, they may investigate legislation in other countries.
- Students can use 2001 Census of Agriculture data in [E-STAT](#) for data analysis, graphing and mapping activities for specific geographic areas of local interest.

Please send comments or examples of how you used this lesson in your class to [Learning Resources](#).


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[Lesson: There's more to organic farming than being pesticide-free](#)

Worksheet: Organic farming

Practices used in both organic and traditional farming	
Practices for organic farming only	
Practices for non-organic farming only	
Why choose organic foods?	
Number of farms producing organic foods	

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There's more to organic farming than being pesticide-free

by Patti Wunsch, Statistics Canada

People are asking lots of questions about organically grown food these days. How can you be sure the organic foods you buy are truly organic? Are there regulations about what can be called organic? Why would someone choose organic food when conventionally produced food costs less?

Many people think organic foods are simply those grown without the benefit of man-made chemicals. Considering synthetic chemicals have been in use for less than a century and the fundamentals of agriculture were discovered 10,000 years ago, this definition implies that most of the food man has produced has been organic. However, organic farming involves more than simply avoiding synthetic pesticides and chemical fertilizers. Some organic practices have been around for a long time, such as crop rotation, which was introduced in the 16th century, and the use of green manure crops as fertilizer, introduced in the 19th century. Other organic practices are more recent developments: using no genetically modified organisms on the farm and not irradiating organic foods during processing, for example.

What's different about how organic foods are grown?

The idea of using organic production methods, however old or new, is to ensure that the organic

La bioculture: plus qu'une question de pesticides

par Patti Wunsch, Statistique Canada

De nos jours, les gens se posent une foule de questions sur les aliments biologiques. Comment peut-on être sûr que les aliments portant la mention « biologique » le sont vraiment? Existe-t-il une réglementation définissant ce qu'est un aliment biologique? Pourquoi choisir des produits biologiques, alors que les produits ordinaires coûtent moins cher?

Bien des gens pensent que les aliments biologiques sont tout simplement ceux que l'on cultive sans recourir aux substances chimiques anthropiques (qui résultent de l'activité humaine). Si l'on considère que les produits chimiques de synthèse sont en usage depuis moins d'un siècle et que les rudiments de l'agriculture ont été découverts il y a 10,000 ans, cette définition implique que la plupart des aliments que les humains ont fait pousser étaient biologiques. Toutefois, la culture biologique est plus que le simple refus des engrais chimiques et des pesticides de synthèse. Certaines techniques biologiques existent depuis longtemps. La rotation des cultures, par exemple, a été adoptée au XVI^e siècle et les cultures d'engrais vert ont fait leur apparition au XIX^e siècle. Il y a cependant des techniques biologiques plus récentes: on peut, par exemple, ne pas utiliser d'organismes génétiquement modifiés dans une exploitation, ni irradier les produits biologiques en cours de transformation.

En quoi la bioculture diffère-t-elle de la culture ordinaire?

Avec les méthodes de production biologique, l'idée, ancienne ou nouvelle, est de veiller à ce que l'agriculture



To help you understand this article

Buffer zones: Also called "buffer strips," these are clearly defined boundary areas surrounding an organic field to separate it from adjacent non-organic areas and help shield the organic crop from substances not recommended for organic crops.

Census farms: An agricultural operation producing at least one product for sale. For a detailed definition, see "What you need to know before you Glance," on page 3.

Certified organic farm — census definition: Farms that were certified by a recognized certification body were counted as certified organic during the 2001 Census of Agriculture. Many organic farms produce both organically grown and conventionally grown products.

Crop rotation: The practice of growing different crops in succession on the same land from year to year or periodically to control weeds, insects and disease, or to replenish soil nutrients or reduce erosion.

farm is sustainable and operates in a manner harmonious with the environment. These two basic principles provide the founding elements of the Canadian General Standards Board's voluntary national guidelines for organic agriculture. The guidelines recommend that organic farmers:

- protect the environment, minimize soil degradation and erosion, decrease pollution, optimize biological productivity and promote a sound state of human, animal and environmental health
- replenish and maintain the long-term soil fertility by optimizing conditions for biological activity within the soil
- maintain diversity on and around the farm, while protecting and enhancing the biological diversity of plants and wildlife native to the area
- recycle materials and resources when possible
- provide appropriate care to livestock by promoting their health and meeting their behavioural needs, and
- maintain the integrity of organic foods and processed products from initial handling to the point of sale.

More specifically, farmers that raise animals organically are required to manage the living conditions, feed, health, breeding and handling of their animals in a way that promotes their health and behavioural needs as well as protecting the environment. Organic farmers must manage disease, pests, weeds, environmental

biologique ait un caractère durable et respecte l'environnement. Ce sont les deux principes à la base des normes nationales d'application volontaire qu'impose l'Office des normes générales du Canada à l'agriculture biologique. Il est ainsi recommandé que les agriculteurs:

- protègent l'environnement, atténuent la dégradation et l'érosion des sols, combattent la pollution, optimisent la productivité biologique et favorisent la santé humaine et animale et la salubrité de l'environnement;
- renouvellent et entretiennent la fertilité des sols à long terme en y créant des conditions optimales d'activité biologique;
- conservent la diversité à l'intérieur et autour des exploitations, tout en protégeant et en renforçant la diversité biologique de la flore et de la faune indigènes;
- recyclent les matières et les ressources dans la mesure du possible;
- prennent soin du bétail en s'occupant de sa santé et de ses besoins comportementaux;
- sauvegardent l'intégrité des aliments et produits transformés d'origine biologique entre les premiers stades de leur traitement et leur mise en vente.

Plus particulièrement, les agriculteurs qui font de l'élevage biologique sont tenus de gérer les conditions de vie, d'alimentation, de santé, de reproduction et de traitement de leurs animaux en fonction des besoins sanitaires et comportementaux de ces derniers et à des fins de protection de l'environnement. Les producteurs biologiques doivent donc s'occuper des maladies, des

factors (such as water quality and soil erosion), rotation of crops and the type of crops in rotation, soil health and buffer zones. Conventional farmers grapple with similar issues every day, and many of them use "organic" measures when possible, within the cost and other constraints of conventional farming.

Organic farmers must also minimize use of plastics, and recycle them whenever feasible.

It's a cow's life!

Following organic principles means extra work for a dairy farmer, but not a bad life for dairy cows. They are fed only organically grown grains and hay, and are let out to graze on organically managed pasture. If a cow becomes sick, organic farmers will try biological or physical treatments first; if these fail, antibiotics will be used, as is done on conventional dairy farms. (On both organic and conventional farms, the milk from cows being treated with antibiotics is never sold for human consumption. Once the course of antibiotics is finished, both organic and conventional farmers must ensure that the cow's milk is free of the drug before her milk can be sold again.)

Organic dairy farmers do not use hormones, as conventional farmers occasionally do, to make cows more receptive to breeding. Emphasis is placed on the cow's long-term health, even if it means lower milk production.

ennemis des cultures et des mauvaises herbes; tenir compte de facteurs environnementaux comme la qualité de l'eau et l'érosion des sols; faire la rotation des cultures et prendre en considération la nature des cultures mises en alternance et s'occuper de l'assainissement des sols et des zones tampons. Les producteurs ordinaires font face à des problèmes semblables tous les jours, nombre d'entre eux adoptent des mesures « biologiques » quand ils le peuvent, compte tenu des coûts et des autres contraintes de la production non biologique.

Les producteurs biologiques doivent aussi renoncer le plus possible aux matières plastiques et les recycler chaque fois qu'ils peuvent le faire.

Certaines vaches font la belle vie!

S'en tenir aux principes de la production biologique veut dire un surcroît de travail pour les producteurs laitiers, mais la vie des vaches laitières s'en trouve améliorée. Celles-ci ne se nourrissent que de céréales et de foin de culture biologique et paissent aussi dans des champs qu'on gère de façon biologique. Si une vache tombe malade, le producteur biologique recourra d'abord aux traitements biologiques ou physiques et, en cas d'échec, aux antibiotiques comme le font les producteurs traditionnels. (Dans les exploitations biologiques ou non, le lait de vaches traitées aux antibiotiques n'est jamais vendu pour la consommation humaine; après de tels traitements, les producteurs tant biologiques que traditionnels doivent s'assurer que le lait de leurs vaches ne contient aucun antibiotique avant de le vendre à nouveau.)

Les producteurs biologiques n'utilisent pas d'hormones comme peuvent le faire à l'occasion les producteurs traditionnels pour rendre leurs vaches plus réceptives à la reproduction. L'accent est mis sur la santé de la vache dans une perspective à long terme, même si la production laitière devait en souffrir.

Pour vous aider à comprendre cet article

Aliment génétiquement modifié: Aliment qui provient d'organismes modifiés par inclusion ou exclusion directe de gènes; c'est ce qu'on appelle aussi les techniques de l'ADN recombiné. La reproduction sélective traditionnelle des végétaux et des animaux n'est pas considérée comme une modification génétique.

Aliment irradié: Se dit d'un aliment qui a été exposé à des rayonnements ionisants préétablis. Ceux-ci peuvent pénétrer dans les aliments sans les cuire et tuer les bactéries, les parasites, les moisissures et les levures nuisibles. L'irradiation peut aussi ralentir le mûrissement ou la germination de produits frais, prolongeant ainsi leur durée de conservation.

Cultures d'engrais vert: Culture de jeunes plantes vertes qui seront incorporées au sol comme engrais. Le trèfle rouge et le sarrasin sont des exemples de cultures d'engrais vert.

Ferme biologique certifiée selon la définition du recensement: Exploitations qui ont été dénombrées dans le cadre du Recensement de l'agriculture de 2001 comme ayant été certifiées par un organisme de certification reconnu. Nombre de ces exploitations produisent des produits à la fois biologiques et ordinaires.

To help you understand this article

Farm cash receipts: Revenues from the sale of agricultural commodities and forest products, custom work and program payments.

Genetically modified food: Food made from organisms that have been modified by directly transferring genes into or out of those organisms. These transfer methods are also called recombinant DNA techniques. Traditional selective breeding of plants and animals is not considered genetic modification.

Green manure crops: Young, green plants that are grown to be tilled into the soil as fertilizer. Common green manure crops are red clover and buckwheat.

Irradiated food: Food that has been exposed to a controlled amount of ionizing radiation. The radiation can penetrate food, without cooking it, and kill harmful bacteria, parasites, molds and yeasts. Irradiation can also slow ripening or sprouting in fresh produce, allowing it a longer shelf life.

The label says “organic,” but how do I know for sure?

Once food has been harvested, there is no accepted way to analyse and prove it was produced organically. Testing for the presence of synthetic chemical residues does not indicate whether the food was produced organically. Modern testing technology can detect the smallest traces of such chemicals, and organic foods are not always 100% chemical-free. The widespread use and prevalence of synthetic chemicals in our environment make it possible for organically grown foods to come into contact with these chemicals accidentally through both air and water.

One way to ensure a food has been produced organically is to buy it from a farm that is “certified organic” by a recognized organic certification body. Farms that are designated as “certified organic” are inspected by a third-party inspector and produce their organic food products according to a set of guidelines set out by the certification body. These guidelines meet or exceed the voluntary national guideline for organic agriculture in Canada. Once a farm is certified organic, it labels its organic foods with the certification body’s name or certification number. This makes it easy to pick out organic foods produced on certified organic farms in the grocery store or roadside stand.

Some farms produce and sell organic products grown according to the voluntary national guidelines for organic agriculture, but are not certified by a recognized certification body. Although these farms may be producing organic products, certification represents a seal of

L'étiquette dit « produit biologique », mais comment vérifier?

Après la récolte, il n'y a pas de façon convenue d'analyser les produits alimentaires et de prouver qu'ils sont d'origine biologique. Si l'on constate la présence de résidus chimiques de synthèse dans certains aliments, ça ne veut pas nécessairement dire que les aliments sont issus d'une production non biologique: les techniques modernes d'analyse permettent de détecter les moindres traces de tels agents chimiques, et les produits biologiques n'en sont pas toujours entièrement exempts. Comme les produits chimiques de synthèse sont largement utilisés et abondent dans notre environnement, il est possible que des produits biologiques entrent accidentellement en contact avec des agents chimiques se trouvant dans l'air comme dans l'eau.

Une façon de s'assurer qu'un produit est biologique est de l'acheter d'une ferme qui a été « certifiée biologique » par un organisme de certification reconnu. Les exploitations ayant reçu la certification biologique sont inspectées par des tiers et suivent les lignes directrices fixées par l'organisme de certification pour leurs produits. Ces règles sont égales ou supérieures aux normes nationales d'application volontaire qui régissent l'agriculture biologique au Canada. Une fois certifiées biologiques, les produits d'une ferme portent le nom ou le numéro de certification de l'organisme en question. Il est alors plus facile de repérer les produits biologiques d'exploitations certifiées dans les épiceries ou les étalages au bord des routes.

Il y a des fermes qui respectent la Norme nationale sur l'agriculture biologique et commercialisent leurs produits comme tels, sans avoir été agréées par un organisme de certification reconnu. Bien qu'elles puissent offrir des produits biologiques, seul le socle d'approbation des

approval from qualified inspectors attesting that the product was grown organically.

Why do some people choose organically produced food over conventionally produced food?

Organic farmers do not give their animals feed additives. Vaccines and veterinary drugs are only permitted in certain circumstances. On their cropland, organic farmers avoid synthetic pesticides and fertilizers. As a result, they tend to incur higher costs and reap lower yields. This causes most organic foods to be more expensive than their conventionally grown counterparts.

But some consumers are willing to pay premium prices — in fact, the demand for organic foods is growing. According to industry sources, retail organic food sales totalled \$700 million in 1997. This is expected to hit \$3.1 billion by 2005, for an average annual growth rate of 20%. About 22 million Canadians, or 71% of the population, bought organic foods at least once in 2000 (Table 1).

So why would consumers be willing to pay more for certified organic foods? For many, the motivation is assurance that:

- organic foods are not irradiated or genetically modified
- organic foods are grown without synthetic pesticides or chemical fertilizers
- organic production occurs in an environmentally friendly way
- extra emphasis is placed on animal welfare

inspecteurs compétents atteste qu'il s'agit véritablement de produits biologiques.

Pourquoi des gens préfèrent-ils les produits biologiques aux produits ordinaires?

Les producteurs biologiques ne donnent pas d'additifs alimentaires à leurs animaux. Les vaccins et les médicaments vétérinaires sont permis dans certaines circonstances seulement. Sur leurs terres en culture, les producteurs biologiques se tiennent loin des engrais et des pesticides de synthèse, ce qui augmente les coûts et diminue les rendements. Les produits biologiques coûtent donc plus cher que les produits ordinaires.

Certains consommateurs sont cependant prêts à payer davantage pour des produits biologiques et la demande pour de tels produits s'accroît. D'après des données de l'industrie, les ventes au détail d'aliments biologiques se sont élevées à 700 millions de dollars en 1997. Selon les prévisions, elles devraient atteindre les 3,1 milliards de dollars en 2005, ce qui porterait le taux annuel moyen de progression à 20%. En l'an 2000, quelque 22 millions de Canadiens, soit 71% de la population du pays, ont acheté des produits biologiques au moins une fois (tableau 1).

Pourquoi les consommateurs sont-ils prêts à payer plus pour des produits certifiés biologiques? Nombre d'entre eux veulent ainsi s'assurer:

- que les produits ne sont ni irradiés ni génétiquement modifiés;
- qu'ils sont cultivés sans engrais chimiques ni pesticides de synthèse;
- qu'on respecte l'environnement lors de la production;
- qu'on se soucie davantage de la santé animale;

Pour vous aider à comprendre cet article

Ferme de recensement: Exploitation agricole dont au moins un des produits est destiné à la vente. Pour une définition plus précise, voir « Ce que vous devez savoir avant de jeter un Coup d'œil » à la page 3.

Recettes monétaires agricoles: Recettes provenant de la vente de denrées agricoles et de produits forestiers, et recettes tirées du travail sur commande et des paiements de programmes.

Rotation des cultures: Pratique consistant à faire alterner les cultures d'année en année ou à intervalles réguliers dans un même sol pour contrôler les mauvaises herbes, les insectes et les maladies, renouveler les éléments nutritifs ou combattre l'érosion.

Zones tampons: Les zones ou les bandes tampons sont des zones limitées nettement marquées qui entourent un champ de culture biologique, le séparant des zones adjacentes de culture ordinaire et aident à le protéger contre des substances non recommandées pour la culture biologique.

Organic is an old idea that's suddenly new again

While the fundamental concepts of organic agriculture have been around for a long time, the term "organic farming" was not common until 1940, when it was used in the book, *Look to the Land*, by Lord Northbourne. The organic movement did not come to Canada until 1953, when filmmaker Christopher Chapman founded the Canadian Organic Soil Association, which was later renamed the Land Fellowship. Chapman produced two documentaries relevant to organic agriculture, "Understanding the Living Soil" and "A Sense of Humus."

The organic movement continued into the 1960s, spurred on by cross-Canada lecture tours given by Spencer Cheshire on behalf of the Land Fellowship. By the 1970s, Canada had organic farming organizations in six provinces. During the 1980s, the first comprehensive surveys of Canadian organic farmers were conducted, and several certification programs were established. At the time of the 2001 Census of Agriculture, there were 29 recognized certification bodies across Canada.

- drugs are never used to boost production on organic farms.

Although not definitively proven by scientific data, consumer studies indicate many people also feel that organic foods are safer, healthier, taste better and provide more nutrition than conventionally produced foods.

Another reason for organic foods' growing popularity may be their availability. Once found only in health food stores, food co-ops, farmers' markets or local roadside stands, organic foods have gone mainstream. They are now found in large chain grocery stores — often in sections dedicated solely to organic products — as well as numerous independent fruit, vegetable and specialty meat stores across the country. Just how popular organic foods are was underscored in 2001, when one of Canada's largest grocery store chains launched 80 branded organic products, with plans to increase that number to nearly 200 by the end of 2003.

- que les drogues ne servent jamais à augmenter la production dans les fermes biologiques.

Il n'y a pas de données scientifiques qui le prouvent hors de tout doute, mais les études de consommation indiquent que bien des gens pensent aussi que les produits biologiques sont plus sûrs, plus sains, plus savoureux et plus nourrissants que les produits ordinaires.

La disponibilité est peut-être un autre facteur ayant contribué à l'engouement pour les produits biologiques. Ce qui se vendait seulement dans les boutiques santé, les coopératives agroalimentaires, les marchés frais ou les étalages en bordure des routes se retrouve maintenant un peu partout. On peut maintenant acheter ces produits dans les grandes chaînes d'épicerie — souvent dans des sections leur étant spécifiquement destinées —, ainsi que dans un grand nombre de magasins spécialisés dans la vente de fruits, de légumes et de viandes partout au pays. Cette vogue est devenue plus évidente en 2001, lorsqu'une des plus grandes chaînes d'épicerie a lancé 80 produits biologiques de marque en prévoyant porter ce nombre à près de 200 à la fin de 2003.

Table 1

How often Canadian consumers bought organic in 2000

Regularly	18%
Several times	22%
Once or twice	31%
Never	26%
Didn't know/didn't answer	3%

Source: *Economics International Ltd., published in The Organic Consumer Profile, Alberta Agriculture, Food and Rural Development, April 2001*

Tableau 1

Fréquence des achats de produits biologiques par les consommateurs canadiens en 2000

Régulièrement	18 %
Plusieurs fois	22 %
Une ou deux fois	31 %
Jamais	26 %
Ne sait pas/n'a pas répondu	3 %

Source: *Economics International Ltd., données diffusées dans The Organic Consumer Profile, Alberta Agriculture, Food and Rural Development, avril 2001*



Photo: RBSI

How many farms produce organic products?

Farm cash receipts from the organic industry reached about \$600 million in 2000, according to industry sources, representing about 1.5% of agriculture's total farm cash receipts. According to the 2001 Census of Agriculture, 2,230 census farms, or just under 1% of Canada's total, produced some type of certified organic product. (Farms that were not certified organic by a recognized certification body were not counted.)

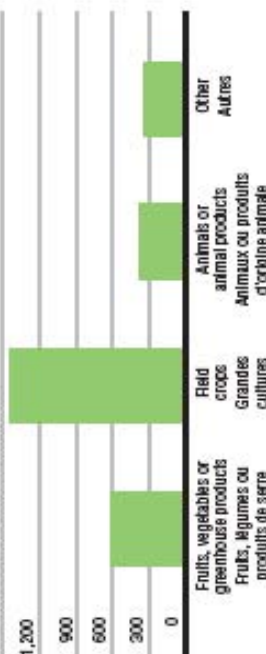
Les produits biologiques proviennent de combien d'exploitations?

D'après les données de l'industrie, les recettes monétaires de l'agriculture biologique ont été d'environ 600 millions de dollars en l'an 2000. C'est environ 1.5% de l'ensemble des recettes monétaires agricoles. Selon les données du Recensement de l'agriculture de 2001, 2,230 fermes de recensement — un peu moins de 1% du total national — produisaient des produits « certifiés biologiques » quelconques. (Sont exclues de ce dénombrement les exploitations qui n'avaient pas reçu de certification d'un organisme reconnu.)



Figure 1
Field crops are tops on farms with certified organic production

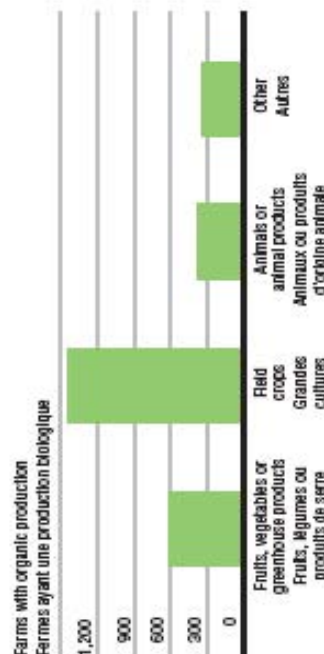
Farms with organic production
Fermes ayant une production biologique



Notes: Some farms produce products from more than one category. The "other" category includes products such as herbs and maple syrup. Products such as honey and milk are counted in the animal and animal products category.

Source: 2001 Census of Agriculture

Figure 1
Dans les exploitations « certifiées biologiques », les grandes cultures dominent



Notes: Il y a des exploitations dont les produits appartiennent à plusieurs catégories. La catégorie « autres » comprend des produits comme les herbes et le sirop d'érable. Des produits comme le miel et le lait sont comptés dans la catégorie des animaux et des produits d'origine animale.

Source: Recensement de l'agriculture de 2001

L'agriculture biologique est une ancienne idée qui refait surface

Les principes fondamentaux de l'agriculture biologique sont anciens, mais l'expression « agriculture biologique » était peu courante avant 1940, c'est-à-dire avant la parution du livre *Look to the Land* de Lord Northbourne. Le mouvement biologique n'a pas gagné le Canada avant 1953, moment où le cinéaste Christopher Chapman a fondé la Canadian Organic Soil Association, ensuite rebaptisée « Land Fellowship ». Chapman a réalisé deux documentaires sur l'agriculture biologique, à savoir *Understanding the Living Soil* et *A Sense of Humus*.

Le mouvement biologique a continué dans les années 1960, nourri par les conférences que donnait Spencer Cheshire d'un bout à l'autre du Canada au nom de la Land Fellowship. Dans les années 1970, le Canada comptait des organismes d'agriculture biologique dans six provinces. Dans la décennie 1980, on a procédé aux premiers dénombrements complets des producteurs biologiques du pays, et un certain nombre de programmes de certification ont vu le jour. À l'époque du Recensement de l'agriculture de 2001, il y avait, dans tout le pays, 29 organismes de certification reconnus.



Many organic farms also produce some non-organic commodities. Of the 2,230 farms with certified organic production in Canada, the majority produced field crops such as grains, oilseeds or pulses (Figure 1).

The number of farms producing certified organic products varied from a low of 3 in Newfoundland and Labrador to a high of 773 in Saskatchewan. But the number of farms alone doesn't show the whole picture. Another way to evaluate the prevalence of farms with certified organic production in each province is to show the number of organic farms as a percentage of all farms in that province. British Columbia posts the highest share of farms with certified organic production, 1.6% (Figure 2). Saskatchewan is a close second with 1.5%, while Prince Edward Island and Quebec are third, with 1.2%.

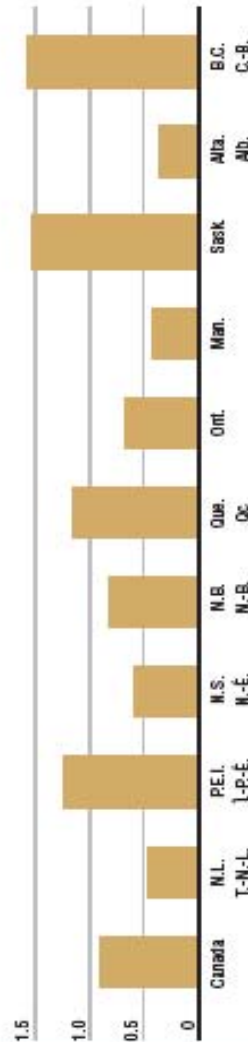
Parmi ces fermes, plusieurs produisaient également des produits non biologiques. La majorité des 2,230 exploitations biologiques canadiennes comptaient de grandes cultures de céréales, d'oléagineux ou de légumineuses (figure 1).

Le nombre d'exploitations certifiées biologiques a varié entre un minimum de 3 à Terre-Neuve-et-Labrador et un maximum de 773 en Saskatchewan. Le nombre d'exploitations ne dit cependant pas tout. Une autre façon de juger de l'abondance des exploitations biologiques dans chaque province est d'exprimer le nombre de ces fermes en proportion de l'ensemble des exploitations du territoire provincial. C'est en Colombie-Britannique que les exploitations certifiées biologiques sont proportionnellement les plus nombreuses, à 1.6% (figure 2). La Saskatchewan suit de près, à 1.5%, et l'Île-du-Prince-Édouard et le Québec arrivent *ex aequo*, au troisième rang, à 1.2%.

Figure 2

Still small potatoes: Farms with certified organic production make up a tiny share of all farms

Percentage of total farms
Pourcentage de toutes les exploitations



Source: 2001 Census of Agriculture

Figure 2

Encore un phénomène modeste: les exploitations certifiées biologiques ne représentent qu'un faible pourcentage de l'ensemble des exploitations

Source: Recensement de l'agriculture de 2001

A confusing world of regulations

While Canada does have standards for producing organic products, compliance is voluntary, and these standards are not recognized by all countries. As a result, these standards are being revised. In the meantime, some certification bodies and provinces are revising their rules and regulations to make them equivalent to other countries' requirements for organic products.

Abroad

- To facilitate trade with Canada's major trading partners, the national standards are being revised to meet these nations' standards.
- The Canadian Food Inspection Agency's mandate does not cover organic products destined for export.

At home

- The voluntary National Standard for Organic Agriculture was approved in June 1999 by the Standards Council of Canada. These standards describe how Canadian organic products are to be produced, processed, labelled and marketed.
- Quebec is the only province with a mandatory provincial standard in place concerning the use of the term "organic." Since February 2000, producers and processors in Quebec must be certified by the *Conseil d'accréditation du Québec* before they can label products as organic.
- British Columbia has a provincial standard concerning the use of the term "certified organic."
- The Canadian Food Inspection Agency has the authority to take enforcement action when an organic product claim in Canada is felt to be misleading under the Food and Drug Act or the Consumers Packaging and Labeling Act.

Un enchevêtrement de règlements

Même si le Canada dispose de normes régissant la production de produits biologiques, celles-ci sont d'application volontaire et ne sont pas reconnues par l'ensemble des pays. C'est pourquoi elles font l'objet d'une révision. Parallèlement, un certain nombre d'organismes de certification et de provinces revioient leurs règles et leurs règlements afin qu'ils correspondent aux normes des autres pays en matière de produits biologiques.

À l'étranger

- Pour faciliter les échanges avec ses grands partenaires commerciaux, le Canada révisé ses normes nationales en fonction des normes de ces pays.
- Le mandat de l'Agence canadienne d'inspection des aliments n'englobe pas les produits biologiques destinés à l'exportation.

Au pays

- Le Conseil canadien des normes a adopté en juin 1999 une norme nationale d'application volontaire pour l'agriculture biologique. La Norme nationale sur l'agriculture biologique indique comment on devrait produire, transformer, étiqueter et commercialiser les produits biologiques canadiens.
- Le Québec est la seule province où l'utilisation du terme « biologique » est régie par une norme provinciale d'application obligatoire. Depuis février 2000, les producteurs et les transformateurs de cette province doivent être agréés par le Conseil d'accréditation du Québec avant de pouvoir étiqueter leurs produits comme biologiques.
- La Colombie-Britannique a une norme provinciale qui s'applique à l'emploi de l'expression « certifié biologique ».
- L'Agence canadienne d'inspection des aliments est habilitée à prendre des mesures d'application de la loi lorsqu'on présente au Canada un produit comme biologique et qu'il s'agit d'une représentation commerciale trompeuse au sens de la *Loi sur les aliments et drogues* ou de la *Loi sur l'emballage et l'étiquetage* des produits de consommation.





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Lesson: Technology on the farm

View the article ([PDF](#))

[Introduction](#)

[Curriculum connections](#)

[Notes to teacher](#)

[Teaching and learning strategies](#)

[Assessment/evaluation strategies](#)

[Accommodation and enrichment strategies](#)

[Links to other activities](#)

[Suggestions for further research](#)

Introduction

This activity looks at the different ways in which technology is used on the farm.

Curriculum connections

Geography

- demonstrates an understanding of the diversity of agricultural endeavours in Canada
- identifies the human factors that affect food production.

Family Studies/Home Economics

- describes new technology and products related to food.

Science

- describes scientific and technological developments and teaches an appreciation of their impact on individuals, societies and the environment, both locally and globally
- demonstrates an understanding of how technological endeavours are influenced by human needs and the societal context of the time.

Notes to teacher

This unit, which corresponds to the chapter "The Leading Edge" in the book, can be taught as co-operative group work, focusing on change and its impact on agriculture and our lives as consumers ([PDF](#)).

Teaching and learning strategies

- In small groups, students brainstorm about the number of ways in which technology improves their daily lives.
- Students discuss the ways technology influences their food supply.

3. Students read article "Technology on the farm" on pages 303 to 310 in *Canadian Agriculture at a Glance* ([PDF](#)).
4. They make a list of ways in which technology influences agriculture.
5. Students create a Venn diagram (a diagram using circles to show mathematical sets that intersect where they have elements in common) to show the overlap between the three ways described in the article in which technology influences food supply.
6. Students make posters to show how technology is used on the farm.
7. Students add terminology to their [glossaries](#).

Assessment/evaluation strategies

1. Evaluate Venn diagrams.
2. Evaluate posters.
3. Assess [glossaries](#) for accuracy and completion.

Accommodation and enrichment strategies

1. Some students may require assistance in order to complete written work.
2. Students with special needs may work with a partner to complete a task.
3. Templates for note-taking should be provided to students with special needs.
4. Main ideas and/or new information should be mapped out and organized to meet the needs of all students.
5. Wherever possible, vocabulary lists should be provided with a discussion of context clues and related vocabulary.
6. Students with special needs may wish to complete an oral, taped or video presentation rather than a written assignment.
7. Groups may be predetermined in order to provide for success of all students.

Links to other activities

This activity is linked to:

- [A science-fiction harvest](#)
- [There's omegas in those hemp seeds](#)
- [Growing herbs for the medicine chest](#)
- [Farming with a mouse](#)
- [Dairy farming goes high tech](#)

Suggestions for further research

- Students can research technology in other industries and compare it to the technology on the farm. How is it similar; how is it different?
- Students can use 2001 Census of Agriculture data in [E-STAT](#) for data analysis, graphing and mapping activities for specific geographic areas of local interest.

Please send comments or examples of how you used this lesson in your class to [Learning Resources](#).

Technology on the farm

by Heather Smith, Statistics Canada

What images come to your mind when you think of a farm in Canada? Animals, crops, barns, and tractors? How about a robotic milking system? A satellite system to go with the office computer? These and other pieces of equipment are used every day on some Canadian farms. You have to step into the barn to find out how technologically sophisticated agriculture has become.

The use of computers as a farm management tool has more or less doubled every five years since 1986, the first time the Census of Agriculture asked farm operators about the use of computers in their farm businesses. (For more data on computer use, see "Farming with a mouse" on page 311.)

In 2001, the census question was expanded to ask operators what they used their computers for — accounting, livestock/crop record keeping, word processing, Internet browsing, or e-mail. In the "other" write-in box on the questionnaire, farmers reported using their computers for banking, global positioning system (GPS) applications or Data Transmission Network (DTN) services.

The most common application was bookkeeping, reported by about 78% of farms that use a computer. Internet use and word processing ranked as the second and third most popular applications used.

La technologie à la ferme

par Heather Smith, Statistique Canada

Quelles sont les images qui vous viennent à l'esprit quand vous pensez à une ferme au Canada? Des animaux, des cultures, des étables et des tracteurs? Et pourquoi pas un système de traite robotisé? Un système satellitaire qui fonctionne avec l'ordinateur de bureau? Ces systèmes comptent parmi le matériel utilisé tous les jours à certaines fermes canadiennes. Il faut se rendre à l'étable pour voir comment les perfectionnements technologiques se sont introduits dans le secteur de l'agriculture.

L'utilisation d'ordinateurs comme outils de gestion à la ferme a presque doublé tous les cinq ans depuis 1986, première année où l'on a posé des questions aux agriculteurs à ce sujet dans le cadre du Recensement de l'agriculture. (Pour de plus amples renseignements sur l'utilisation d'ordinateurs, voir l'article « Exploiter une ferme avec une souris » à la page 311.)

En 2001, on a développé la question du recensement pour demander aux exploitants à quelles fins ils utilisaient leur ordinateur — la comptabilité, les registres sur le bétail ou les cultures, le traitement de texte, la navigation sur Internet ou le courrier électronique. Dans la case « autre » du questionnaire où ils devaient écrire la réponse, les agriculteurs ont indiqué qu'ils utilisaient leur ordinateur pour les opérations bancaires, des applications du système mondial de positionnement (GPS) ou des services du Réseau de transmission des données (RTD).

L'application la plus courante était la tenue de livres, comme l'ont indiqué environ 78% des agriculteurs qui utilisent un ordinateur. La navigation sur Internet et le traitement de texte figuraient respectivement aux deuxième et troisième rangs.



Photo: OPA

To help you understand this article

DTN: Data Transmission Network. An information system offering farmers weather reports, crop prices and detailed market analysis information. The data are sent either over the Web or by satellite. The satellite-based system uses a special receiver-viewer and satellite dish.

Free-stall barn: A barn in which a cow has a stall, but is not tied to it by a halter, chain or stanchion.

Lactation: The period of milk production, which begins with giving birth and ends when offspring are weaned or when the animal is "dried off"—her milk production diminishes and stops, and her feed rations are cut back accordingly.

Of the three "other" applications that operators wrote in — banking, GPS and DTN — banking was by far the most commonly used in all provinces except Manitoba. More farmers there reported using DTN than banking.

Robots in the dairy barn?

Dairy farms make up 7.6% of farms in Canada, and they account for 10.6% of farms reporting a computer. More than one-half of all dairy farms reported using a computer for farm management. Perhaps, then, it should be no surprise that this sector has been at the forefront of technological advances for some time. Many dairy operations in Canada use milking parlours and have means of electronically tracking the volume of milk each cow produces.

The next advancement in dairy is the robotic milker, or automated milking system. While these systems have been available in Europe since 1992, adoption in Canada was initially slow. However, farmers have started to adopt the technology over the last few years. Approximately 65 farms in Canada use robotic systems, compared with only 10 farms in the United States. Robotic milkers are usually best suited for farms with fewer than 150 head. One reason that farms in the United States have been slower in adopting this technology is that they tend to have larger herds, which are less well suited to robotic systems.

An automated milking system has a stall into which a cow goes whenever she wants to be milked. The cow is motivated to visit the milker by the promise of feed during or after milking. The cow must go through an identification area

Parmi les trois « autres » applications citées par les exploitants — opérations bancaires, GPS et RTD — les opérations bancaires étaient au premier rang, avec une large avance, dans toutes les provinces, à l'exception du Manitoba où un plus grand nombre d'agriculteurs ont déclaré qu'ils utilisaient davantage leur ordinateur pour le RTD que pour les opérations bancaires.

Une étable laitière robotisée?

Les fermes laitières constituent 7,6% des fermes au Canada et 10,6% des fermes qui déclarent l'utilisation d'un ordinateur. Plus de la moitié des fermes laitières ont déclaré qu'elles utilisaient un ordinateur pour la gestion. Par conséquent, on ne devrait pas s'étonner que depuis un certain temps ce secteur figure au premier plan pour les progrès technologiques. Bon nombre de fermes laitières au Canada utilisent des salles de traite et déterminent par un procédé électronique le volume de lait produit par chacune des vaches.

Le progrès suivant dans l'industrie laitière est le trayeur robotisé, ou système de traite automatisé. Ces systèmes existent en Europe depuis 1992, mais leur adoption au Canada a été lente au départ. Toutefois, les agriculteurs ont commencé à adopter la technologie ces dernières années. Au Canada, environ 65 fermes utilisent des systèmes robotisés, comparativement à 10 seulement aux États-Unis. Habituellement, les trayeurs robotisés sont idéals pour les fermes qui comptent moins de 150 têtes de bétail. L'une des raisons de la plus lente adoption de cette technologie aux États-Unis tient au fait qu'en général les fermes ont de plus grands troupeaux, et les systèmes robotisés conviennent moins à ce type de fermes.

Le système de traite automatisé compte une stalle où la vache se rend quand elle veut se faire traire. Afin d'attirer la vache vers le trayeur, on lui offre de la nourriture pendant ou après la traite. La vache doit passer par une zone d'identification où une puce informatique, placée

where a computer chip, located either in the cow's ear or a collar, is scanned to identify the animal. When the cow has been identified, she passes through a gate to the milker.

Once the cow is in the milking area, the milker cleans and prepares the udder and attaches itself. Initially the robot needs to be shown the location of the teats so it can attach properly — each cow's udder is a little different, and the robot needs to “learn” how that cow's teats are arranged. As well, the location of a cow's teats changes throughout lactation, and the system must automatically adjust the position of the washer and milking cups accordingly. Once milking begins, the system monitors the flow of milk and detaches the milking cup when the flow diminishes to a pre-determined cut-off point. Milking usually takes four to five minutes. If a cow returns to the milker too soon after being milked, the robot will not let her be milked again.

Cows must be shown how to use this system, but how well they catch on depends on the herd. Most cows need a few days to become accustomed, but some older cows take longer. Some cows may have trouble learning to go to the milker, especially if they're used to a tie-stall environment — robotic milkers work only in a free-stall system. Other cows may have teats that are located in unusual places on the udder, making it difficult for the milker to attach. All these considerations can make the transition to robotic milkers difficult.

However, both farm operators and cows may benefit from the use of an automated milking system. These systems are less labour intensive, so it may be possible to avoid hiring workers to help with the milking. These systems also allow

dans son oreille ou son collier, est lue par un scanner. Une fois l'identification terminée, la vache se rend au trayeur en passant par un portillon.

Dès que la vache se trouve dans la zone de traite, le trayeur nettoie et prépare le pis auquel il s'attache. Au début, il faut diriger le robot vers l'endroit où sont les trayons pour qu'il puisse bien s'y attacher — il y a de légères différences entre les pis de chaque vache, et le robot doit « apprendre » pour savoir comment les trayons de la vache sont disposés. De plus, l'endroit où se situent les trayons de la vache change durant la période de lactation, et le système doit déterminer automatiquement où doivent être placés le dispositif de lavage et les gobelets. Dès que la traite commence, le système surveille le débit de lait puis détache le gobelet au moment où le débit atteint un seuil prédéterminé. La traite dure habituellement de quatre à cinq minutes. Si une vache retourne au trayeur trop tôt après avoir été traitée, le robot empêche qu'elle soit traitée de nouveau.

Il faut montrer aux vaches comment utiliser ce système. Cependant, leur degré de compréhension dépend du troupeau. La plupart des vaches ont besoin de quelques jours pour s'y habituer, mais certaines vaches âgées prennent davantage de temps. Certaines vaches peuvent avoir de la difficulté à apprendre à se rendre au trayeur, surtout si elles sont habituées à un milieu à stalles entravées — les trayeurs robotisés ne fonctionnent que dans un système à stalles libres. D'autres vaches peuvent avoir des trayons situés à des endroits inusités sur leur pis, ce qui rend l'attachement du trayeur difficile. Tous ces facteurs peuvent compliquer la transition vers les trayeurs robotisés.

Toutefois, les exploitants agricoles et les vaches peuvent profiter d'un système de traitement automatisé. Ces systèmes demandent moins de main-d'œuvre — l'exploitant peut donc ne pas être obligé d'embaucher des travailleurs pour la traite. De plus, ils donnent davantage

Pour vous aider à comprendre cet article

Étable à stalles entravées: Étable dans laquelle une vache est attachée dans une stalles par un harnais ou une chaîne.

Étable à stalles libres: Étable dans laquelle une vache a une stalles, sans y être attachée par un harnais, une chaîne ou un cornadis.

Lactation: Période de production du lait, qui commence par la mise bas et qui se termine lorsque la progéniture est servée ou lorsque l'animal est « tari » — sa production de lait diminue puis cesse, et ses rations alimentaires sont réduites en conséquence.

Mammites: Inflammation de la glande mammaire du pis. Elle peut être causée par une infection bactérienne ou par des facteurs chimiques, thermiques ou mécaniques. Les machines à traite déficientes, le manque d'hygiène ainsi que les mauvaises techniques de traitement peuvent entraîner l'infection de la glande mammaire par le conduit du trayon. Toute blessure au bout du trayon ou toute procédure qui contamine le bout du trayon peut accroître le risque d'infection bactérienne du pis.

To help you understand this article

Mastitis: An inflammation of the mammary gland in the udder. It can be caused by bacterial, chemical, thermal, or mechanical injury. Faulty milk machines, poor sanitation and faulty treatment techniques may enable infection to spread through the test duct to the mammary gland. Any injury to the teat end or any procedure that contaminates the teat end can increase the risk of bacterial infection of the udder.

Milking parlour: A special room in the barn where cows are milked.

Tie-stall barn: A barn in which a cow is fastened in a stall by a halter or a chain.

operators more flexibility, as they are not on a fixed schedule — the cows decide when it's time to be milked. Higher production is also possible because cows can be milked more often without the need for a third shift every day of the week to milk at midnight. And using an automated system may reduce physical strain for farmers.

Benefits to the cows include lower incidence of clinical mastitis and reduced stress on udders. Because cows have more control over their daily routine, they are able to lie down or eat when they choose.

There are also some challenges to using a robotic milker. The cost of such a system may be out of reach for some farmers. One robot capable of milking 60 cows can cost about \$250,000. The robot does not necessarily reduce time in the barn, either. While the milking is done by the robot, the operator may need to spend more time on herd management issues. Such issues include making sure all cows have visited the milker, showing reluctant cows the milker more often and ensuring that the robot and software are working properly.

Precision farming

Precision farming uses various sensors, monitors and controllers of agricultural equipment to provide farm operators detailed information about their farm. This technology enables operators to more accurately control equipment actions, chemical applications and consider climatic or other types of information that may influence a crop decision.

One component of precision farming is GPS. This is a technology that uses satellite signals

de souplesse aux exploitants puisqu'ils ne fonctionnent pas selon un horaire fixe — les vaches décident du moment où on devra les traire. En outre, il est possible d'accroître la production puisqu'on peut traire les vaches plus souvent sans avoir besoin d'un troisième quart de travail chaque jour, pour la traite de minuit. Qui plus est, l'utilisation d'un système automatisé peut diminuer l'effort physique pour les agriculteurs.

Les avantages de ce système pour les vaches comprennent une moindre incidence de mammites cliniques et une réduction du stress sur le pis. Comme les vaches maîtrisent davantage leurs habitudes quotidiennes, elles peuvent s'étendre ou se nourrir lorsqu'elles le désirent.

Cependant, l'utilisation d'un traqueur robotisé comporte certains obstacles. Le coût d'un tel système n'est pas nécessairement à la portée de tous. Un robot d'une capacité de 60 vaches peut coûter environ \$250,000. De plus, le robot n'entraîne pas nécessairement une diminution du temps passé à l'étable. Il assure la traite des vaches, mais l'exploitant peut devoir consacrer davantage de temps aux questions de gestion du troupeau comme, par exemple, veiller à ce que toutes les vaches aillent vers le traqueur, montrer aux vaches réticentes le traqueur à maintes reprises et s'assurer que le robot et le logiciel fonctionnent bien.

L'agriculture de précision

L'agriculture de précision est l'utilisation de divers capteurs, moniteurs et mécanismes de contrôle du matériel agricole qui fournissent aux exploitants des renseignements détaillés au sujet de leur ferme. Cette technologie permet aux exploitants de mieux maîtriser le fonctionnement du matériel et l'épandage de produits chimiques et de tenir compte de renseignements sur le climat ou sur d'autres facteurs qui peuvent influencer sur les décisions relatives aux cultures.

L'une des composantes de l'agriculture de précision est le GPS, une technologie qui fait appel aux signaux satellites

that are picked up by receivers on the ground. (Used by sailors, soldiers and anyone working in remote locations, GPS is the high-tech replacement for a map and compass.) First, a farmer creates boundary and topography maps using GPS technology. Boundary maps show the boundaries of farm fields, as well as the location of roads, tree stands and wetlands. GPS-based topography maps combine soil type, surface drainage and other factors that are useful when interpreting yield and weed maps. GPS data can also be gathered by yield monitors, which are attached to combines and measure yields in each field as the harvest is done. Maps of weed concentrations can be input manually by a farmer using a keypad hooked to a GPS receiver and data logger. Even soil salinity can be measured by a meter that can gather GPS-based data as it is dragged across fields on a sled by an all-terrain vehicle or truck.

Later, all those GPS data are entered into a geographic information system (GIS). In the GIS, the data on soil type, surface drainage, yields, weeds, salinity and other variables can be combined and analysed. For example, the yield monitoring and mapping data show a farmer which fields, and which parts of fields, were most productive and least productive. The weaker areas can be targeted for fertilizer. If weeds, insects or diseases are the source of the poor yields, pesticides can be applied. As well, these data can be used to regulate the application of fertilizer or pesticide — not just where to put it, but also the amount and the blend to use.

captés par des récepteurs au sol. (Le GPS, qui est utilisé par les marins, les soldats et tous ceux qui travaillent en milieu éloigné, est le substitut de pointe d'une carte géographique et d'une boussole.) D'abord, l'agriculteur crée des cartes des limites et des cartes topographiques à l'aide de la technologie GPS. Les cartes des limites montrent les limites des champs de la ferme, ainsi que l'emplacement des routes, des boisés et des terres humides. Les cartes topographiques GPS fournissent des renseignements sur le type de sol, le drainage en surface et d'autres facteurs utiles pour l'interprétation des cartes sur le rendement et les mauvaises herbes. De plus, les données GPS peuvent être recueillies par des capteurs de rendement installés sur les moissonneuses-batteuses, qui mesurent le rendement de chacun des champs pendant la récolte. Les cartes montrant la concentration de mauvaises herbes peuvent être entrées manuellement par l'agriculteur à l'aide d'un bloc numérique relié à un récepteur GPS et à un enregistreur de données. On peut même mesurer la salinité des sols à l'aide d'un appareil de mesure qui peut recueillir les données GPS lorsqu'il est traîné sur les champs sur un chariot relié à un véhicule tout-terrain ou à un camion.

Plus tard, toutes ces données GPS sont entrées dans un système d'information géographique (SIG). Dans le SIG, on peut combiner et analyser les données sur le type de sol, le drainage en surface, le rendement, les mauvaises herbes, la salinité et d'autres variables. Par exemple, les données de suivi et de localisation du rendement montrent à l'agriculteur les champs, et les parties des champs, qui ont produit le plus et le moins. Il est ainsi possible de cibler les endroits les moins productifs aux fins de l'épandage d'engrais. Si les mauvaises herbes, les insectes ou les maladies sont la cause d'un piètre rendement, on peut appliquer des pesticides. En outre, ces données peuvent servir à réguler l'épandage d'engrais ou de pesticides — indiquer non seulement le lieu d'épandage, mais aussi la quantité et le mélange à épandre.

Pour vous aider à comprendre cet article

RTD: Réseau de transmission des données. Système d'information qui fournit aux agriculteurs des renseignements sur les conditions météorologiques, les prix des produits cultivés et les analyses détaillées du marché. Les données sont transmises par Internet ou par satellite. Pour le système satellitaire, on utilise un récepteur-visuiseur spécial et une antenne parabolique.

Salle de traite: Dans l'étable, salle spéciale aménagée pour la traite des vaches.



Photo O.F.A.

Getting the bigger picture

All the GIS data gathered in the field can be used to make long-term strategic decisions, not just where to apply more fertilizer next spring. Various software applications are available that generate charts and maps and help farmers analyse the mountains of numbers.

Large databases of information may be generated because there are so many different variables for which a GPS can collect data. For example, it may be useful to collect data on how much herbicide was actually sprayed versus what the ideal amount should have been. Collecting various detailed types of information about a farm allows the operator to analyse crop choices, determine the effect of seeding dates and the depths at which seeds are planted, and measure changes in salinity or other soil conditions.

Once several years' worth of data have been collected, a farmer can determine the crop rotations and tillage practices that produce the best yields. This may help operators lower the risk associated with producing certain crops in certain conditions or in specific areas of their fields.

Autopilot on the combine

Farm equipment manufacturers are working on guidance systems for tractors. These high-precision systems can, in some cases, accurately position a moving vehicle within centimetres. These tools aren't cheap, but they may replace conventional equipment markers for spraying or seeding.

Pour obtenir une vue d'ensemble

Toutes les données du SIG recueillies sur le terrain peuvent servir non seulement à déterminer l'endroit où épandre davantage d'engrais le printemps suivant, mais aussi à prendre des décisions stratégiques à long terme. Diverses applications logicielles qui sont offertes permettent de produire des graphiques et des cartes, et aident les agriculteurs à analyser la multitude de chiffres.

Il est possible de produire de grandes bases de données parce que le GPS peut recueillir des données sur un grand nombre de variables différentes. Il peut, par exemple, servir à recueillir des données sur la quantité d'herbicides réellement épandue par rapport à celle qu'il aurait fallu épandre idéalement. L'exploitant qui recueille divers types de renseignements détaillés au sujet de sa ferme peut analyser les choix de cultures, déterminer l'efficacité des dates d'ensemencement et la profondeur à laquelle il faut ensemençer, et mesurer les changements concernant la salinité ou les autres facteurs qui influent sur l'état du sol.

Lorsque des données portant sur plusieurs années ont été recueillies, l'agriculteur peut déterminer les rotations de cultures et les méthodes de labourage qui donnent les meilleurs rendements. Cet avantage peut aider les exploitants à diminuer les risques liés à la production pour certaines cultures dans certaines conditions ou à des endroits particuliers dans leurs champs.

La coopération du pilote automatique

Les fabricants de matériel agricole travaillent à l'élaboration de systèmes de guidage pour les tracteurs. Dans certains cas, ces systèmes de haute précision peuvent positionner avec exactitude un véhicule en mouvement au centimètre près. Ces outils coûtent cher, mais ils peuvent remplacer les marqueurs conventionnels pour l'épandage ou l'ensemencement.

These are some examples of the technology being used on Canadian farms today. More and more farm operators are realizing that technology can help keep their businesses efficient and competitive. With computer use nearly doubling every five years, farm operators are no doubt adopting other forms of technological advancements as well. Who knows what the next five years will bring to Canadian agriculture?

Ces exemples montrent comment on peut utiliser la technologie de nos jours dans les fermes canadiennes. De plus en plus d'exploitants agricoles se rendent compte que la technologie peut les aider à faire en sorte que leur activité demeure efficace et concurrentielle. Comme le degré d'utilisation d'un ordinateur est presque doublé tous les cinq ans, les exploitants agricoles sont certainement en train d'adopter d'autres formes de progrès technologiques. Qui sait ce que les cinq prochaines années réserveront à l'agriculture canadienne?



Photo: OFAC

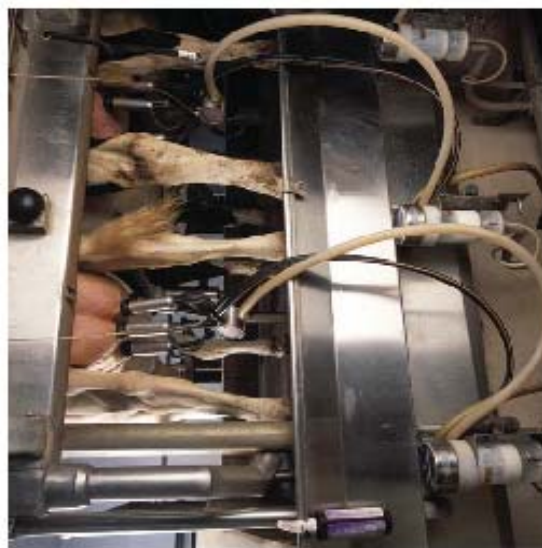




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[Curriculum connections](#)

[Notes to teacher](#)

[Teaching and learning strategies](#)

[Assessment/evaluation strategies](#)

[Accommodation and enrichment strategies](#)

[Links to other activities](#)

[Suggestions for further research](#)

Introduction

This activity looks at changes in technology and how they affect the dairy industry.

Curriculum connections

Geography

- identifies the human factors that affect food production.

Family Studies/Home Economics

- identifies food supply and production industries in Canada
- identifies factors that affect food supply in Canada
- describes new technology and products related to food.

Science

- demonstrates an understanding of how technological endeavours have been and continue to be influenced by human needs
- teaches an appreciation of the role and contribution of science
- illustrates how individuals, society and the environment influence and are influenced by scientific and technological endeavours.

Notes to teacher

This unit, which corresponds to the chapter "The Leading Edge" in the book, can be taught as co-operative group work, focusing on change and its impact on agriculture and our lives as consumers ([PDF](#)).

Teaching and learning strategies

- Students read the article "Dairy farming goes high tech" on pages 313 to 318 in *Canadian Agriculture at a Glance* ([PDF](#)).
- Students answer the following questions based on the article:

- a. What is the milking cycle of a cow? Describe.
 - b. How important is the cow's diet? What factors need to be considered when feeding cows?
 - c. How is technology involved in providing the best food for cows?
 - d. How do farmers ensure they have the best producing herd?
3. Students add terminology to their [glossaries](#).

Assessment/evaluation strategies

1. Assess answers for accuracy and completion.
2. Assess [glossaries](#) for accuracy and completion.

Accommodation and enrichment strategies

1. Some students may require assistance in order to complete written work.
2. Students with special needs may work with a partner to complete a task.
3. Templates for note-taking should be provided to students with special needs.
4. Main ideas and/or new information should be mapped out and organized to meet the needs of all students.
5. Wherever possible, vocabulary lists should be provided with a discussion of context clues and related vocabulary.
6. Students with special needs may wish to complete an oral, taped or video presentation rather than a written assignment.
7. For enrichment, students can investigate the nutritional needs of a non-ruminant animal, and compare the two.

Links to other activities

This activity is linked to:

- [A science-fiction harvest](#)
- [There's omegas in those hemp seeds](#)
- [Growing herbs for the medicine chest](#)
- [Technology on the farm](#)
- [Farming with a mouse](#)
- [What's for dinner, Daisy?](#)
- [Dairy and beef - contrasting industries](#)
- [There's more to organic farming than being pesticide-free](#)

Suggestions for further research

- Students can go onto a university website (such as the University of Alberta, www.afns.ualberta.ca/Hosted/DRTC/Articles/Article_All.asp) and find out what research is going on in animal nutrition.
- Students can use 2001 Census of Agriculture data in [E-STAT](#) for data analysis, graphing and mapping activities for specific geographic areas of local interest.

Please send comments or examples of how you used this lesson in your class to [Learning Resources](#).

Dairy farming goes high tech

by Nicole Dufresne-Baker, Ritchie Feed and Seed Inc.

Milking time is no longer as simple as approaching a cow with a bucket and a three-legged stool — it hasn't been so for a long time. Dairy farming has become a complex process requiring skills in business, herd management and dairy nutrition to name a few. All of this is often accomplished with only one or two people managing the farm. Technology is what helps one or two people manage dozens or hundreds of highly productive dairy cattle. It is used in all aspects of milk production, from computer-generated algorithms for designing feeding programs to laboratory testing for determining the digestibility of feed ingredients, to computer chips and databases that track milk production.

But it all still begins with a cow

A cow is not born giving milk; she must be bred, typically at about 15 months of age, for milk production to begin. Once she gives birth nine months later, at about two years of age, the milking cycle begins, and runs for about 305 days. A good cow will produce about 29.4 L of milk per day, but towards the end of the milking cycle her production wanes. When it falls below a minimum threshold, the cow is then "dried off" and she gets a couple of months' rest.

By the time the rest period begins, she has been carrying another calf for about seven months;

Une production laitière de haute technologie

par Nicole Dufresne-Baker, Ritchie Feed and Seed Inc.

L'heure de traite n'est plus aussi simple qu'elle l'était auparavant. Il y a belle lurette qu'on ne trait plus les vaches avec un seau et un tabouret à trois pattes. La production laitière est devenue un processus complexe qui nécessite des compétences en affaires, en conduite de troupeaux et en nutrition laitière, pour ne nommer que celles-là. Toute cette besogne est souvent accomplie par une ou deux personnes qui gèrent la ferme. Or c'est grâce à la technologie que ces personnes peuvent gérer des douzaines ou des centaines de bovins laitiers très productifs. Elle est utilisée dans tous les aspects de la production laitière. Cela va des algorithmes générés par ordinateur pour élaborer des plans alimentaires aux essais en laboratoire pour déterminer le coefficient de digestibilité des aliments, en passant par des puces d'ordinateur et par des bases de données servant au suivi de la production du lait.

Ça prendra toujours des vaches

Les vaches ne naissent pas avec la capacité acquise de donner du lait. Pour que ce soit possible, une jeune génisse doit être accouplée vers l'âge de 15 mois. Lorsqu'elle met bas, neuf mois plus tard, elle a environ deux ans et le cycle de production du lait commence et peut se prolonger jusqu'à environ 305 jours. Une bonne vache produit environ 29,4 L de lait par jour, mais vers la fin du cycle de production du lait, elle en donne moins. Lorsqu'elle diminue en deçà d'un seuil minimal, la vache est alors « tarie » et elle a droit à un repos de quelques mois.

Au moment où la période de repos commence, elle porte déjà un autre veau — son deuxième — depuis environ



Photo: OFAC

To help you understand this article

Algorithm: A step-by-step problem-solving procedure, usually with a finite number of steps, usually associated with computer programming or mathematics.

Conformation: A measure of a dairy cow's physique — how closely she "conforms" to the physical ideal of a dairy cow.

Corn silage: Corn harvested and used for animal feed. The whole plant is used rather than just the grain or kernels and is generally stored in airtight containers such as upright silos or plastic bags.

Drying off cows: The end of a cow's lactation period is referred to as "drying off." A cow's milk production gradually diminishes, and her feed rations are cut back accordingly.

Forage: Fresh, dried or stored plant material fed to cattle, sheep and other ruminants as well as horses. Forage crops include alfalfa, barley, clover, corn and sorghum.

Haylage: Silage made from hay crops such as alfalfa; also called "hay crop silage."

Heifer: A female bovine, over one year old, that has never given birth.

Herbivores: Animals that eat only plant material.

during the rest period, she carries her second calf the last two months to term. Once she calves, the milking cycle resumes.

The farmer continually assesses her production, conformation and temperament. If the farmer decides she doesn't produce enough milk or isn't fitting in with the herd, the cow is sold.

Farmers keep the best-producing cows and breed them annually. Over time, this practice improves the herd's overall quality, making it stronger, with high production potential. Ultimately, this process leads to more production with fewer animals. In 2001, Canada had just over 1 million dairy cows, 13.6% fewer than in 1996, but they produced roughly the same amount of milk as five years earlier.

These well-bred cows also need high-octane fuel to produce the quantities of milk anticipated.

Typically in Canada, a cow is fed in one of two ways: with a "complete" feed that provides all the nutritional content it requires; or with a

combination of forages, grains and a "supplement." The second method is considered by most expert nutritionists as the ideal diet, as it provides the necessary levels of fibre to maintain good "rumen activity" — or what those of us with one stomach would call digestion.

All that fuel is not cheap: A cow will eat about 11.9 kg of hay and silage, plus 8.5 kg of grain ration, per day. (See "What's for dinner, Daisy?" on page 201.) That's a lot of feed. In 2000, dairy farmers with herds of between 80 and 120 cows paid an average \$66,700 for feed, according to the Census of Agriculture. For that kind of

sept mois. Elle va mettre bas deux mois plus tard. À la suite du vêlage, le cycle de production du lait reprend.

L'agriculteur évalue continuellement la production, la conformation et le tempérament de la vache. Si l'agriculteur décide qu'elle ne produit plus assez de lait ou qu'elle ne s'adapte pas au troupeau, il vend la vache.

Les agriculteurs gardent les vaches qui ont la meilleure production et ils les font s'accoupler chaque année. Avec le temps, cette pratique améliore la qualité de l'ensemble du troupeau, le rendant plus fort et lui conférant un plus grand potentiel de production. En bout de ligne, ce processus mène à une plus grande production avec un nombre réduit d'animaux. En 2001, le Canada possédait un peu plus d'un million de vaches laitières, soit 13.6% de moins qu'en 1996. Les vaches laitières ont cependant produit plus ou moins la même quantité de lait que cinq ans auparavant.

Ces vaches bien accouplées ont également besoin de « bon carburant » pour produire la quantité de lait attendue. En général, il y a deux façons possibles de nourrir une vache au Canada. On lui donne soit des aliments « complets » qui fournissent tous les éléments nutritifs dont elle a besoin, soit une combinaison de fourrages, de céréales et de « suppléments ». La deuxième méthode est considérée par la plupart des nutritionnistes spécialisés comme le régime idéal, qui fournit les quantités de fibre nécessaires pour maintenir une bonne « activité du rumen », ce que nous, qui avons un estomac, appelons la digestion.

Tout ce « carburant » n'est pas bon marché. En effet, une vache mangera environ 11.9 kg de foin et d'ensilage, et 8.5 kg de céréales par jour. (Voir « Qu'est-ce qu'on mange, Marguerite? » à la page 201.) Cela représente beaucoup de nourriture. En 2000, les producteurs laitiers qui avaient des troupeaux de 80 à 120 vaches ont déboursé en moyenne \$66,700 pour des rations de

money, the cow's feed must bring the desired results. Feed management — deciding what should be in the feed, and how much of it cows need to produce at high levels — becomes crucial. Today, technology is being used to achieve this.

Let's ruminate on this awhile

Cows, like other herbivores such as sheep, goats, buffalo, deer, elk, camels and giraffes, have stomachs with four compartments. These animals are known as ruminants because the main compartment is called the rumen. The rumen is filled with a huge population of microbes that digest the feed and convert it to forms of energy that the cow can use for maintenance, growth and, of course, milk production. It is with the help of these microbes that the cow breaks down the complex fibres in forages — otherwise the nutrients would pass through the cow's system and end up in the manure.

Cows need sufficient protein and fibre to produce milk. However they also need to eat the proper combination of feed components to activate the organic machinery that is their digestive system. In order to determine the best combination of feed, the nutritionist needs to know the protein level of the forages — the corn silage and haylage — the farmer is feeding the herd. Farmers can choose to have their forages tested in the laboratory using "wet chemistry," a process that uses chemicals to isolate the protein and other nutrients so they can be measured.

céréales, selon le Recensement de l'agriculture. Pour une telle somme d'argent, la nourriture que l'agriculteur donne à la vache doit produire les résultats escomptés. La gestion des aliments — c'est-à-dire l'activité qui consiste à décider ce que devrait comprendre les aliments et quelle quantité les vaches ont besoin pour produire de grandes quantités de lait — devient essentielle. À cet effet, la technologie d'aujourd'hui est très utile.

Ruminons là-dessus pour un temps

Les vaches, comme d'autres herbivores tels le mouton, la chèvre, le bison, le cerf, le wapiti, le chameau et la girafe, ont un estomac à quatre compartiments. C'est un fait connu, ces animaux sont des ruminants, la principale partie de l'estomac est même appelée le rumen ou la panse. Le rumen contient une énorme quantité de microbes qui digèrent les aliments et les convertissent en énergie que la vache métabolise pour se maintenir, pour sa croissance et bien sûr pour la production de son lait. C'est grâce à ces microbes que la vache décompose les fibres complexes des fourrages. S'il en était autrement, les nutriments passeraient tout droit dans le système digestif de la vache pour se retrouver dans le fumier.

Pour produire du lait, les vaches ont besoin de suffisamment de protéines et de fibres. Mais il est également nécessaire de respecter les bonnes combinaisons d'aliments, celles qui permettent d'activer leur matière organique, c'est-à-dire leur système digestif. Pour déterminer quelle est la meilleure combinaison d'aliments, le nutritionniste doit connaître le contenu en protéines des fourrages — le maïs à ensilage et l'ensilage préfané — que l'agriculteur donne au troupeau. Les agriculteurs peuvent décider de faire analyser leurs fourrages en laboratoire et avoir recours à la « chimie par voie humide », un processus où des produits chimiques entrent en jeu pour isoler les protéines et les autres nutriments afin qu'on puisse les mesurer.

Pour vous aider à comprendre cet article

Algorithme: Procédure par étapes pour résoudre les problèmes. Cette procédure est habituellement caractérisée par un nombre fini d'étapes et est associée à la programmation d'ordinateur ou aux mathématiques.

Conformation: Mesure d'une vache laitière pour savoir si son physique est « conforme » au physique idéal d'une vache laitière.

Ensilage préfané: Produit d'ensilage fait à partir des cultures de foin — notamment la luzerne — également appelé « ensilage mi-finé ».

Fourrage: Matériel végétal frais, séché ou entreposé que l'on donne à manger aux bovins, aux moutons et à d'autres ruminants, de même qu'aux chevaux. Les cultures fourragères incluent la luzerne, l'orge, le trèfle, le maïs et le sorgho.

Génisse: Une jeune vache, de plus d'un an, qui n'a jamais vêlé.

Herbivores: Animaux qui se nourrissent seulement de végétaux.

In situ: À l'endroit d'origine — dans ce cas, l'estomac de la vache.

In vitro: Dans un environnement artificiel, souvent une éprouvette ou une boîte de Pétri, à l'extérieur de l'organisme vivant.

To help you understand this article

In situ: In the original location—in this case, in the cow's stomach.

In vitro: In an artificial environment, often a test tube or petri dish, outside the living organism.

Ration: Livestock are placed on feed programs to optimize their health and productivity. These feed programs, or rations, are the amount given to an animal during a 24-hour period, whether given at one time or at different times. Feed rations can be made up of different proportions of various grains (primarily barley and corn, secondarily wheat and oats) or roughages (e.g., corn silage, hay and straw).

Ruminant: Animals that have stomachs with four compartments, including sheep, goats and cattle. They are efficient feeders because bacterial action in one of the compartments, the rumen, allows the animal to digest low-grade feed such as hay, corn silage and straw.

kg - kilogram

L - litre

Each season brings different growing conditions for the forage plants, which will affect the strength of the plants and therefore their starch content. Once they are harvested and stored in silos, the forages will ferment, which, again, will change the character of the plant. These factors influence how well the fibres in the plant can be broken down by the cow, and, by extension, to what extent these nutrients will be used by the cow to produce milk. This is called the “digestibility” of the forages.

Farmers can also choose a more exacting, leading-edge method: testing the digestibility of the forages in the laboratory. This is done by two means: *in vitro* or *in situ*. *In vitro* testing consists of taking the rumen fluid found in a cow's stomach, along with a sample of the forage, and putting it in a machine (we call ours Dausy) that mimics the digestion of the cow. The sample is weighed and the rate at which it disappears at different time points tells the nutritionist how well the forages can be digested. *In vitro* is used to measure the disappearance of fibre and protein.

How do we get the rumen fluid, you ask? The cow, which is kept on a farm in a regular milking herd, is “fistulated”—a hole is cut into the side of her stomach. A cannula, a rubber plug with a removable stopper, is fitted into the hole, called the fistula. This allows the laboratory technician to access the rumen fluid when needed. This type of setup is much like the open passage created for people with kidney disease so that they can have dialysis treatment, or the new technology that replaces insulin shots for diabetics.

Chaque saison apporte des conditions de croissance différentes pour les plantes fourragères, ce qui a une incidence sur la résistance des plantes et, bien sûr, sur leur contenu en amidon. Lorsqu'ils sont récoltés et stockés dans les silos, les fourrages fermentent, ce qui, encore une fois, a une incidence sur la constitution de la plante. Ces facteurs influent sur la façon dont les parties fibreuses de la plante sont décomposées par la vache et, par le fait même, sur la mesure dans laquelle elle utilisera ces nutriments pour produire le lait. C'est ce qu'on appelle la « digestibilité » des fourrages.

Les agriculteurs peuvent également avoir recours à une méthode plus rigoureuse et d'avant-garde. En effet, ils feront évaluer la digestibilité des fourrages en laboratoire. Cela peut être fait de deux façons: *in vitro* ou *in situ*. Dans le test *in vitro*, il s'agit de prélever le liquide du rumen, donc de l'estomac de la vache, de même qu'un échantillon du fourrage et de les mettre dans un appareil (nous appelons le nôtre Marguerite) qui simule la digestion d'une vache. L'échantillon est pesé et le rythme auquel il disparaît à différents moments précis indique au nutritionniste dans quelle mesure les fourrages sont bien digérés. On a recours au test *in vitro* pour mesurer la disparition des fibres et des protéines.

Vous vous demandez sûrement de quelle façon on doit s'y prendre pour prélever le liquide du rumen? La vache, qui est gardée dans une ferme au sein d'un troupeau de vaches laitières, est « fistulée », ce qui signifie qu'on a fait un trou sur le côté de son estomac et qu'une canule ainsi qu'un bouchon en caoutchouc muni d'un obturateur détachable ont été installés dans le trou que l'on appelle fistule. Le technicien de laboratoire peut alors tirer du liquide du rumen, au besoin. Ce dispositif très semblable à celui qu'on installe aux personnes atteintes d'une maladie du rein pour leur permettre de recevoir leur traitement de dialyse, ou encore à la nouvelle technologie qui remplace les injections d'insuline pour les diabétiques.

In situ testing consists of leaving the sample in the cow's stomach, retrieving it through the fistula at specified times and weighing it to measure disappearance. Starch testing has to be done using *in situ* for more accurate results.

Once the nutritionist knows the level of protein and the digestibility of the components grown by the farmer, they can design a supplement to complement the first two elements — the corn silage and haylage. The supplement is developed using a sophisticated algorithm embedded in a specialized computer program. This algorithm takes into account the level of protein in each ingredient and its cost, and then calculates the most efficient combination of ingredients. The feed is then manufactured as prescribed.

The nutritionist can then develop a feeding plan or ration that describes how many tonnes of each component — haylage, corn silage, supplement and other grain — is needed.

The farmer can then follow the nutritionist's "recipe," combining these ingredients in a huge mixer, and serving it up to the cows.

Get with the program, Bessie!

This proposed nutritional plan is intended to provide the best combination of nutrients, fibre and digestibility to the cow for maximum milk production. The quality of feed and suitability of the ration influence not only the milk production but also the butterfat content of the milk.

A farmer with a large herd will refine the feeding program to take into account the cow's stage of life. A cow in production will need more protein than one that is dry and has recently been bred to stimulate the next round of milk production. As

Dans le test *in situ*, on laisse l'échantillon dans l'estomac de la vache, on le prélève par la fistule à des moments précis et on le pèse afin de mesurer la façon dont il se désagrége. Le test de l'amidon doit être fait *in situ* pour que les résultats soient exacts.

Lorsque le nutritionniste connaît le niveau de protéines et la digestibilité des composantes cultivées par l'agriculteur, il peut mettre au point un supplément pour compléter les deux premiers éléments, soit le maïs à ensilage et l'ensilage préfané. Le supplément est mis au point à l'aide d'un algorithme perfectionné intégré à un programme informatique spécialisé. Cet algorithme prend en considération le niveau de protéines dans chaque ingrédient ainsi que son coût, et calcule ensuite la combinaison d'ingrédients la plus efficiente. Les aliments sont ensuite fabriqués tels qu'ils sont prescrits.

Le nutritionniste peut alors préparer un régime alimentaire ou une ration qui précise le nombre de tonnes de chaque composante nécessaire — ensilage préfané, maïs à ensilage, suppléments et autres céréales.

L'agriculteur peut ensuite suivre la « recette » du nutritionniste, combiner ces ingrédients dans un énorme mélangeur et les servir aux vaches.

Suivons le programme, Marguerite!

Ce régime nutritionnel proposé vise à fournir la meilleure combinaison de nutriments et de fibres, et à assurer la meilleure digestibilité pour la vache, ce qui favorisera une production maximale de lait. La qualité des aliments et l'adéquation de la ration ont une influence non seulement sur la production du lait, mais également sur le contenu de matière grasse dans le lait.

Un agriculteur qui possède un grand troupeau perfectionnera le programme d'alimentation en fonction de l'âge de la vache. Une vache à l'étape de la production nécessitera plus de protéines qu'une vache tarie et qui a récemment été accouplée dans le but de favoriser le prochain cycle de

Pour vous aider à comprendre cet article

Maïs à ensilage: Maïs récolté et utilisé comme aliment pour les animaux. La plante entière est utilisée plutôt que le grain seulement et, en général, est stockée dans des contenants hermétiquement fermés, entre autres dans des silos verticaux ou des sacs de plastique.

Ration: Le bétail est soumis à des programmes d'alimentation visant à optimiser sa santé et sa productivité. Ces programmes d'alimentation, ou rations, représentent la quantité donnée à un animal en une fois ou à différents moments au cours d'une période de 24 heures. Les rations d'aliments peuvent être composées de différentes proportions de céréales diverses (principalement l'orge et le maïs, ensuite le blé et l'avoine) ou de fourrages grossiers (p. ex. le maïs à ensilage, le foin et la paille).

Ruminant: Animaux qui ont quatre estomacs, dont le mouton, la chèvre et le bovin. Les ruminants sont d'excellents animaux d'engraissement puisque l'action bactérienne dans un de leurs estomacs, le rumen, permet à l'animal de digérer des aliments de qualité inférieure, le maïs à ensilage et la paille.

Vache tarie: On dit d'une vache qu'elle est tarie lorsque sa période de lactation est interrompue. La production de lait d'une vache diminue de façon graduelle, et ses rations alimentaires sont réduites en conséquence.

kg = kilogramme

L = litre



well, heifers require special nutrition to build strength and avoid diseases. All these things have to be considered when designing a ration.

Since the milk production is the bread and butter of, in this case, butterfat of the farmer, it behooves the farmer to track production. In some herds, cows have a computer chip embedded in their identification tag. With this unique identifier, the farmer can track which cows are passing through the milking machine and how much milk each cow has produced. These data are stored on the farmer's computer for future reference.

Farmers can later use the data to decide which cows to breed and, most importantly, to identify significant fluctuations in milk production so that the nutrition program can be adjusted if need be.

All this data adds up to more milk

A good cow can produce an average of 9,242 L in a year. Given that a family of four consumes around 6.5 L per week, this is more than enough to feed 27 families for a year. That's a lot of milk!

production du lait. De plus, les génisses ont besoin d'une nutrition particulière pour prendre des forces et ainsi éviter les maladies. Tous ces éléments doivent être pris en considération au moment de préparer une ration.

Puisque la production du lait représente le « pain quotidien » ou plutôt le « lait quotidien » de l'agriculteur, il incombe à ce dernier d'assurer le suivi de la production. À cet effet, dans certains troupeaux, les vaches ont une puce d'ordinateur intégrée à leur étiquette d'identification. Grâce à cet identificateur unique, l'agriculteur peut savoir quelles sont les vaches qui passent par la trayeuse et combien de lait chacune des vaches a produit. Ces données sont stockées dans l'ordinateur de l'agriculteur pour consultation future.

Les agriculteurs peuvent avoir recours ultérieurement à ces données pour décider quelles vaches seront accouplées et, de façon plus importante, pour détecter les fluctuations importantes de la production du lait, de sorte que le programme de nutrition puisse être ajusté au besoin.

Plus de données, ça signifie plus de lait

Une bonne vache peut produire en moyenne 9,242 L dans une année. Disons qu'une famille de quatre personnes en consomme environ 6.5 L par semaine, c'est plus qu'assez pour nourrir 27 familles pour un an. C'est beaucoup de lait!

Appendix F

Factors Affecting Food Supply and Sustainability

Factor	Global Issues	Local Issues
Agricultural Methods and Practices		
Land Ownership		
Natural Environment		
Natural Disasters		
Conflicts		
Food Distribution		
Government Regulations		
Economy of the Country		
Population Density		

Deriving and Using the HFB Tool

The Public Health Agency of Canada discusses the use of the Healthy Food Basket tool:

“The HFB tool is constructed and implemented in many different ways. A general outline of the process is described below.

Constructing the basket

Foods are selected on the basis of several criteria:

- Quantities in the basket must reflect nutritional needs (e.g., foods with little nutritional value are not included in the basket).
- Selected foods must reflect current food-purchase and food-consumption patterns.
- Items in the basket must be widely available across stores in the area to be surveyed and be available during all seasons of the year.

Conducting the survey

Survey is conducted in a sample of stores. Depending on the aims of the survey, stores may be stratified according to various characteristics, including store size or location. Generally, the lowest price for each food item is selected. Efforts are made to ensure comparability across brand names and package size.

Calculating the cost of the HFB

The total cost of the HFB is used for multiple purposes:

- Total HFB cost may be compared with social assistance allowances.
- HFB costs may be compared across neighborhoods.
- HFB costs may be compared over time in select settings.”

Source: The Public Health Agency of Canada

Job Cards

Occupation/Job: Store Clerk (no post-secondary) Wage per hour: \$ * 40 hours per week: \$ per month: \$	Occupation/Job: Office Clerk (1yr program college) Wage per hour: \$ * 40 hours per week: \$
Occupation/Job: Food Service Worker (no post secondary) Wage per hour: \$ * 40 hours per week: \$	Occupation/Job: Electrician (certified) Wage per hour: \$ * 40 hours per week: \$
Occupation/Job: Mechanic (certified) Wage per hour: \$ * 40 hours per week: \$	Occupation/Job: Nurse (university graduate) Wage per hour: \$ * 40 hours per week: \$
Occupation/Job: Chemical Engineer (university graduate) Wage per hour: \$ * 40 hours per week: \$	Occupation/Job: Social Worker (university graduate) Wage per hour: \$ * 40 hours per week: \$

<div>Snack Item:</div> <div>Price:</div> <div>Nutrient Content:</div>	<div>Paste package here</div>
<div>Alternative Snack:</div> <div>Cost:</div> <div>Nutrient Content:</div> <div>Cost Savings:</div>	

Appendix G

SNL1998 CHAPTER C-12.1

CHILD, YOUTH AND FAMILY SERVICES ACT
[Part VIII to be Proclaimed]

Amended:

1999 c22 s7; 2000 c7; 2001 c42 s5

CHAPTER C-12.1**AN ACT RESPECTING CHILD, YOUTH AND
FAMILY SERVICES***(Assented to December 15, 1998)***Excerpt:****Duty to Report**

15. (1) Where a person has information that a child is or may be in need of protective intervention, the person shall immediately report the matter to a director, social worker or a peace officer.

(2) Where a person makes a report under subsection (1), the person shall report all the information in his or her possession.

(3) Where a report is made to a peace officer under subsection (1), the peace officer shall, as soon as possible after receiving the report, inform a director or social worker.

(4) This section applies, notwithstanding the provisions of another Act, to a person referred to in subsection (5) who, in the course of his or her professional duties, has reasonable grounds to suspect that a child is or may be in need of protective intervention.

(5) Subsection (4) applies to every person who performs professional or official duties with respect to a child, including,

- (a) a health care professional;
- (b) a teacher, school principal, social worker, family counsellor, member of the clergy or religious leader, operator or employee of a child care service and a youth and recreation worker;
- (c) a peace officer; and
- (d) a solicitor.

(6) This section applies notwithstanding that the information is confidential or privileged, and an action does not lie against the informant unless the making of the report is done maliciously or without reasonable cause.

(7) A person shall not interfere with or harass a person who gives information under this section.

(8) A person who contravenes this section is guilty of an offence and is liable on summary conviction to a fine not exceeding \$10,000 or to imprisonment for a term not exceeding 6 months, or to both a fine and imprisonment.

(9) Notwithstanding section 7 of the *Provincial Offences Act*, an information or complaint under this section may be laid or made within 3 years from the day when the matter of the information or complaint arose.

The Home Economics/Family Studies Education Foundation document identifies critical information for the planning, implementation and resourcing of courses housed in this discipline. Scheduling, class size, student safety and resources such as physical space, finances, personnel and material learning resources are factors that contribute to a successful learning experience for both student and teacher. Further details are on pp29-30, 32-38 of the foundation document.

Preparing your class for laboratory work:

- o Limit the working groups to 5 students per group. Each member of the group should be engaged for the duration of the laboratory experience.
- o The groups should remain constant throughout the course. This helps establish stability and routine in the laboratory experience.
- o Establish an expectation of conduct during laboratories.
- o Address safety issues as they pertain to personal conduct, interaction with other class members and operation/use of potentially dangerous tools and equipment.
- o Identify proper dress for the lab both for safety and sanitation purposes.
- o Provide students with an opportunity to familiarize themselves with the kitchen layout and organization of items stored within the kitchen unit prior to any food laboratories taking place.
- o On a lab by lab basis, introduce or review proper usage of any key pieces of equipment or utensils.
- o Provide students with their own copy of the recipe prior to lab day. This provides opportunity for the student to become familiar with it. The student is responsible for bringing it to the lab.
- o Communicate to the students the lab evaluation criteria and the percentage of the course assigned to the laboratory component. If a student misses a lab, a procedure should be in place in accordance with your school's policy. It would not be financially feasible to repeat a lab for one or two students who have not completed a lab.

Getting the food laboratory ready

- o Decide whether it would be more convenient for each kitchen unit to have staple food items contained within the unit or to have all groups retrieve staple foods from a central location.
- o Share duties such as storing unused food, laundering cloths, maintaining refrigerators and stoves etc. with the class.
- o Decide whether all groups will make the same food item or not.
- o On lab day, the teacher is in a facilitator role as sufficient preparation would have been done in the days leading up to the lab.
- o Use index cards to record the names of students in each group, their presence or absence, the date of the lab and the food item made. Comments can also be recorded on the cards to aid in completing the evaluation at a later date. Index cards are small enough to place in the pocket of a lab coat while the teacher moves about.
- o Plan labs for a period in the schedule when you have sufficient time to prepare the room.

Cost Saving Tips

- o Use meal extenders where possible. For example, hamburger meat used in conjunction with pasta.
- o Buying the least expensive form or grade of a food. For example, using canned mandarin oranges or canned pineapple in a fruit based recipe.
- o Instead of fresh milk, use powdered milk for baking.
- o Buy in bulk where possible.
- o Avoid wastage

Lab Evaluation

Student: _____

Date: _____

Lab Topic: _____

Criteria	Comments	Points Awarded
1. Appropriate Dress <ul style="list-style-type: none"> - hair restraint - apron - non-slip shoes 		
2. Has and is familiar with the recipe. <ul style="list-style-type: none"> - can demonstrate the terminology - understands the directions and can execute them according to the recipe 		
3. Is competent in measuring: <ul style="list-style-type: none"> - liquid ingredients - dry ingredients 		
4. Contributes to the completion of the food product by performing duties within the group.		
5. Exercises proper safety procedures. <ul style="list-style-type: none"> - food safety - safety of self and others 		
6. Exercises proper sanitation practices <ul style="list-style-type: none"> - washes hands when necessary - uses hot soapy water to clean dishes and soil surfaces - uses drying cloths only for drying dishes - stores dishes that are thoroughly dried 		
7. Completion of the food product as per the recipe.		
		Total:

A **minimum** of eight lab experiences must be completed in each of Nutrition 2102 and 3202. Of these eight, five must be food preparation lab experiences. If a teacher chooses to do eight meal preparation labs then the lab requirement of eight labs would have been met along with the minimum of five having to be food preparation labs.

If a teacher decides to do the minimum of five food preparation labs, the remaining three labs to meet the lab requirement for the course, may consist of food demonstrations, food taste testing, food experiments, etc.

It is recommended that no more than 30% of the course mark be awarded for the laboratory component.

FOOD LAB: MARKET ORDER FORM

Names: Lead: _____ Date: _____
 Assistant: _____ Kitchen: _____
 Assistant: _____
 Assistant: _____
 Clean-up: _____

Name of Recipe: _____

INGREDIENTS (Food)	DIRECTIONS (Step-by-Step)

MARKET ORDER (list BELOW ONLY items that you need me to pick up and in the exact amount that you need)

PRODUCE (fruits and vegetables)		DAIRY (milk, eggs, cheese)	
CANNED/BOXED GOODS		BAKERY ITEMS	
MISCELLANEOUS			

FOOD LAB: WORK PLAN FORM

Names: Lead: _____ Date: _____

 Assistant: _____ Kitchen: _____

 Assistant: _____

 Assistant: _____

 Clean-up: _____

Name of Recipe: _____

WORK PLAN	
Jobs to be Done	Person Responsible

SUPPLIES NEEDED (FOOD)		SUPPLIES NEEDED (NON-FOOD AND EQUIPMENT)	
Food Item	Measured/Collected by	Item	Collected by