

Beans (Dry)

VEGETABLE CROPS PRODUCTION GUIDE

FOR THE ATLANTIC PROVINCES

Prepared by the ADVISORY COMMITTEE ON VEGETABLE CROPS

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Introduction

Dry beans are, as snap beans, a member of the Leguminosae (legume family). *Phaseolus vulgaris* is the species and only differs from snap beans in that the seed is used after it is mature and dried.

Commercial cultivars are "bush types" which have a concentrated bloom. They reach maturity in early September (100 to 120 days from seeding). Yields range from 1000 to 3500 kg per hectare depending on the cultivar and the season.

The major types of dry beans are based primarily on physical appearance of the seed:

Navy, pea or white (small seed)

Small black (eg. "Black Turtle")

Red Kidney (dark or light)

Great Northern (large white)

Pinto (medium seed size)

Cranberry (large seed)

White Marrow (large seed)

Yellow-eye (large seed)

Heirloom ("Jacob's Cattle", "Soldier Bean")

Plant vigor, earliness, yields and seed quality vary dramatically with the cultivar.

Soil requirements regarding dry beans are for good drainage to a depth of 1 metre with low levels of diseases such as white mold and root rot. Soil nitrogen levels should be low such that excessive vegetative growth is not encouraged. Heavy soils can produce good bean yields as long as rainfall is not excessive so as to cause drowning out of the crop. Also, harvest may be more difficult than from sandy soils under wet fall conditions.

Beans are harvested from mid September to late October. They are dried and then marketed on a year round basis. Most beans produced in the Atlantic area are of the large seeded type. These find markets at roadside stands and are also delivered to wholesalers. Some beans, such as "Dark Red Kidney" are processed in Atlantic Canada. Many processing and export markets are possible if economics show we can be competitive.

Nutrient Content: Good source of protein, energy, calcium, iron, folic acid and vitamin E, as well as other nutrients to the diet. 250 mL (1 cup) contains approximately 220 kilocalories. Also, 250 mL (1 cup) cooked dried beans constitutes a meat alternate from Canada's Food Guide.

The protein value of beans is enhanced when beans are consumed with other foods such as whole grains. Cooking is essential to the use of beans for food as heat destroys "anti nutrition" factors.

Crop Establishment

Obtain certified seed, although in many cases certified seed is not available, especially for the large seed cultivars. Purity of seed is needed to ensure uniformity of maturity at harvest time. It is important to select well developed, mature, uniform seed of sound vitality. Germination and seedling vigor may be affected by the overall quality and age of the seed. Poor seed quality can be expressed in reduced germination, poor seedling vigor and abnormalities of the seedlings. See the Atlantic Provinces Guide to Pest Management for seed treatments (extremely important for dry beans). Diseased seed will produce diseased plants which may infect the entire crop. Bean seed should be germination tested. For high yields, seed as early as possible (the last week of May or 1st week of June). Do not plant beans where risk of frost is high in the spring and where early frosts are possible, especially in late August. Plant only when soil temperatures have reached a minimum of 15 C. The optimum temperature for germination is 20 C. Temperatures too low (below 10 C) will cause poor pod set.

See Beans (Snap) Section for further information on *seed treatment, seeding/planting*.

Crop Management

See Beans (Snap) section.

Nutrition

See Beans (Snap) section.

Nutrient removal by 1100 kg of dry beans:

N 70 kg, P 50 kg, K 40 kg, Ca 50 kg, Mg 14 kg, Cu .02 kg, Fe .5 kg, Mn .07 kg, Zn .05 kg.

Pests and Pest Control

(For control of weeds, diseases and pests see under Beans (Snap)).

The European Corn Borer can continue to consume beans after harvest if they make it to the storage bin.

Disinfection of all equipment and storages is essential for control of diseases, especially those that infect the seed.

Harvesting and Handling

Harvest when most pods are yellow and dry but before they start shattering. Unevenness of maturity can lead to problems of either shattering or abrasion, discoloration or disease of immature beans. Desiccants can be used to enhance uniform drying and crop maturity. Beans can be direct harvested or pulled and windrowed. Beans are pulled in the morning, when pods are damp and tough thereby lessening shatter. Vines are windrowed for subsequent pickup and threshing with a specialized bean combine; the time between pulling and combining should be minimized to avoid discoloration.

Storage and Conditioning

Beans should be about 18% moisture at harvest. Low seed moisture can result in mechanical injury (split seed coats) so use extreme caution. Special drying techniques using heated and/or unheated air have been developed. If beans are not sold at harvest they can be stored in an elevator or granary. If seed moisture is below 15% the crop is ready for marketing or storage. High moisture seed must be dried slowly so the skin is not wrinkled or damaged. If there is a lot of foreign material in the beans, then natural heating must be prevented by aeration. Store beans at 5 C during the winter.

Bibliography

(See also General References)

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