



Electric Fencing to Prevent Crop Damage by Moose

Introduction

Preventing moose from eating crops is a challenge for most Newfoundland and Labrador vegetable farmers. A properly constructed fence designed to deal with the specific challenges moose present is one of the most effective ways to prevent crop damage.

Fences fall into two basic classifications: electric and non-electric (traditional). Non-electric fences, usually constructed using wood and/or wire, put a physical barrier between the moose and the crop. Electric fences act as a psychological barrier that train moose to avoid a fence by giving them an unexpected shock and resulting in a learned respect for the barrier.

Electric fences are often the preferred choice for the following reasons:

- Lower cost per linear foot;
- Very effective once moose are trained to avoid it;
- Easier to set up and take down than a traditional fence; and
- Layout is easily modified to avoid obstacles.

Electric Fence Components

Electric fences consist of the following components:

- **Energizer or Charger:** A proper power source is essential in building an effective fence, and can be either AC (plugin), DC (battery), or solar powered. AC-powered chargers are very effective but must be close to a power source, while battery-powered DC chargers require replacing or regular recharging. Solar-powered chargers use the sun to recharge attached batteries. Solar and DC-powered fences are ideal for remote locations. Moose fence energizers should provide a minimum of 5,000 volts, with 7,000 volts preferred.
- **Grounding System:** A grounding system is essential to allow an electric pulse to travel from the hot wire (+), into the animal, and back through the ground to the charger. Proper grounding is required to provide an adequate shock that will deter a moose from touching a fence again.
- **Wire:** A wire attached to the posts transports electric pulses. Many types of wire are available, each with advantages and disadvantages. Metal wire (galvanized steel or aluminum) is preferred for permanent fences, whereas Polywire or Polytape electro-net are preferred for temporary fencing. Electro-net is not usually used for moose fencing.

- Posts and Insulators: Posts supporting the wire and insulators isolating the wire from the posts ensure the electric charge stays in the wire. The most common types of posts are metal, wood, fiberglass and plastic. Metal and wood require insulators to work properly, but fiberglass and plastic do not. Many different types of insulators are available, with each designed for a specific purpose and attached to specific types of posts.
- Fence Tester: A tester will test a fence at various locations to ensure it is operating properly. Testing should occur on a regular basis.

Electric Fence Designs

Electric fences can have either all hot (+ charge) wires or hot (+) and ground (- charge) wires.

In a fence with all hot (+) wires, the electric pulse travels from the fence, through the animal, into the ground, and back to the charger, giving the animal the shock. Good grounding between the animal and the soil is required for this type of fence to be effective.

A fence with both hot (+) and ground (-) wires is constructed so that wires alternate vertically on the fence. The circuit can be completed by either touching a hot (+) and ground (-) at the same time, or by touching a hot (+) wire alone. This allows electricity to travel directly to the ground. Either method will give the animal a shock. Wires in this type of fence need to be close enough (12 inches apart) so the moose will ideally touch both a hot (+) and a ground (-) wire simultaneously. This type of fence is preferred in areas where the soil has poor grounding.

Single Line Fence

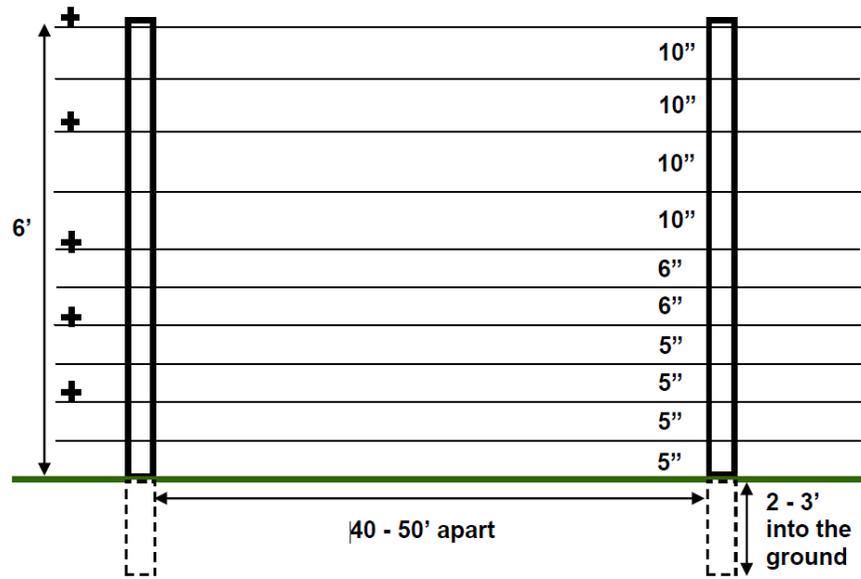
When installed properly and with adequate voltage, this type of fence can be very effective. The fence consists of a single line of posts installed at a regular spacing with a number of wires attached to the fence. The fence is at least six feet high and preferably eight feet long. It can have all hot (+) wires or alternating hot (+) and ground (-) wires. Wire spacing and number of posts can vary depending on individual situations, but wire spacing should not exceed 12 inches to prevent moose from getting their heads through the wires. Closer wire spacing at the bottom of the fence is believed to make the fence look impenetrable, thereby discouraging moose from challenging it. This type of fence can be permanent or temporary.

Single line Fence

Electric Fence Design

Line posts: 4 to 5" by 8' long

Wire: 12.5ga High Tensile Smooth Wire



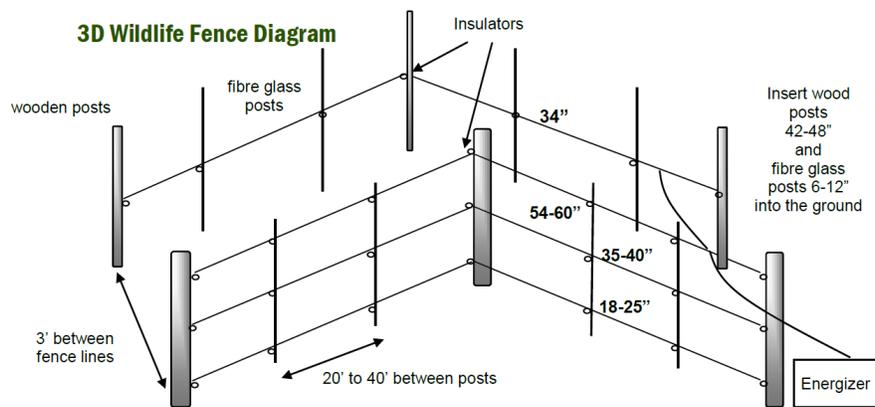
Source: Peace River Forage Association of British Columbia



3D Fences

This type of fence has proven to be very effective against moose and other ungulates in western Canada, with a double-fence setup that encourages moose to stop and investigate before jumping over or pushing through it. This method works because moose have poor depth perception. The three-dimensional nature of the fence creates a visible barrier – the moose will see the fence, approach cautiously and sniff it, resulting in a shock to its nose. The fence is constructed by installing a single wire (often Poly tape or another highly visible wire) at approximately 34 inches high as an outer fence. An inner fence is installed three feet from this with three wires, to a height of approximately five feet. Baiting this fence greatly increase its effectiveness even after moose have started breaking through it. This type of fence can be permanent or temporary.

3D Fence



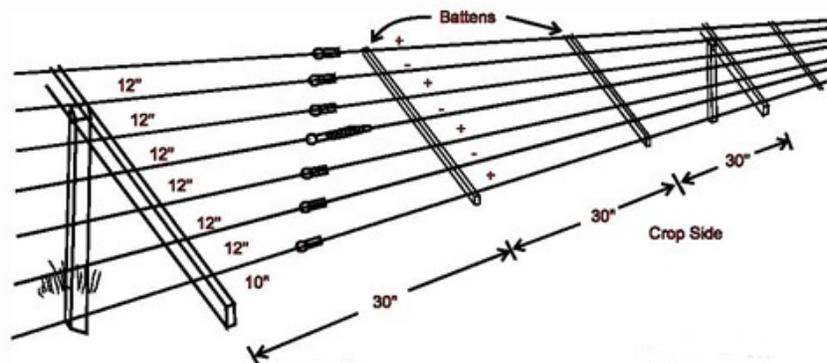
Source: Peace River Forage Association of British Columbia



Slanted Fence

This type of fencing is in use in many locations around the world, and the recent addition of electric wires has greatly increased its effectiveness. This method creates a physical, psychological and visual barrier for moose due to its strength, three-dimensional nature, and ability to shock. The visible aspect causes the moose to approach cautiously and touch the fence with its nose, thereby receiving a shock. The fence is constructed using a slanted post attached to an upright post, with wires placed every 12 inches along the slanted post. This type of fence requires more time, area and materials to construct than a traditional upright fence, but once in place, it is very effective. This is usually a permanent fence.

Slanted Fence



Source: North Carolina Wildlife Commission



Baiting to an Electric Fence

When a moose receives an unexpected shock, it learns to respect the fence. The best spot to shock an animal is on its nose – this is a very sensitive area, and a shock here causes the animals to jump backwards. The neck and chest are not as sensitive, and a shock there often causes the animal to bolt forward and push through the fence. Baiting an electric fence helps train a moose to respect the barrier by encouraging the animal to sniff it, resulting in a shock to their nose. Fences are baited by attaching metal tabs, tinfoil, or aluminum tart tins to the fence and smearing them with molasses or peanut butter, or by attaching a bottle cap stuffed with cotton wool soaked in apple scent to the wire. Lures should be placed every 40 feet (the distance may be adjusted depending on situation) along the fence and in high moose-traffic areas, and re-baited every seven to 10 days during the “training period” and monthly afterwards.

Fence Lures

Scent Caps



Aluminum Foil



Aluminum Tart Tins



Source: Peace River Forage Association of British Columbia

Combination Fences

Electric wires added to the tops and bottoms of traditional fences can make them more effective in deterring moose by preventing animals from going over or under the fence. Wires can be attached directly to the posts, or attached to offsets. A single electric wire strung three feet from the fence on posts in the style of 3D fences is also effective.

Funding

Funding to assist in the purchase of electric fencing to prevent moose from damaging crops is available to farmers under the Provincial Agrifoods Assistance Program (PAAP) and Canadian Agricultural Partnership Program (CAP). Eligible costs for fence materials and labour are covered up to 75 per cent under CAP and up to 50 per cent under PAAP. More information about these programs is available from your Agriculture Development Officer or online:

PAAP:

gov.nl.ca/ffa/files/programs-pdf-2020-21-provincial-agrifoods-assistance-program-guide.pdf

CAP:

gov.nl.ca/ffa/files/programs-pdf-cap-nl-program-guide.pdf



Tips

To ensure success when constructing your fence, consider the following tips:

- Develop and implement a plan in advance - do not wait until the damage occurs to decide how to deal with it.
- Most fencing suppliers offer free assistance in recommending components required to design a fence to meet your needs.
- A fence is a long -term investment – purchasing the best materials you can afford will ensure a fence is more effective and lasts longer.
- Grounding is reduced in dry and/or rocky soils, and decreases if the fence crosses asphalt, concrete or wood surfaces, or snow. A fence with both hot (+) and ground (-) wires works best in areas with poor grounding.
- When vegetation touches a hot (+) wire, it grounds the fence. Keep vegetation from touching the fence to prevent power from decreasing as it travels along the line.
- Ground rods may need to be installed along lengthy fences occasionally to ensure proper grounding.
- Always keep a fence energized. If a moose touches a fence that is not energized, it will not receive a shock and will be more likely to challenge the fence in the future.
- Energize a fence at the end of the day even if it is not completed. An animal's first encounter with a fence is very important in training it to stay away.
- The top wire should always be a hot (+) wire to deter a moose from putting its head over the fence.
- Keep a six- to 10-foot area free of obstacles and debris around the outside of the fence so it remains visible and moose have adequate room to travel easily around the perimeter.
- A moose will often hit a fence before it realizes it is there. Make the fence more visible by using larger electro-braid wire or poly tape, installing cross bars, or tying flagging tape to the wires.
- Install the fence before the moose starts eating the crop - it is much more difficult to prevent a moose from going into a field when it knows the area contains a food source.
- When baiting a fence, use a squeeze bottle for easier application of scent, molasses or peanut butter.
- Bait lures immediately after installation to begin training moose at their first encounter with the fence.
- Inspect your fence on a regular basis to keep it in good working order.
- A moose can jump six feet - while a six-foot fence can be effective, it is better to construct an eight-foot fence.

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