



## COEXISTENCE OF APIARIES AND WILDLIFE

*Manitoba's black bears are well-known for their attraction to a beekeeper's hives. If they are able to access this food source, they will consume the honey, as well as the bees and larvae inside the hives. Other animals, such as skunks and raccoons are also attracted to beehives and can cause significant damage.*

*There are things beekeepers can do to reduce the risk of predator damage to their apiary. This fact sheet offers some helpful advice to protect your beehive operation and reduce the risk of damage by black bears and other wildlife.*

### THINGS YOU NEED TO KNOW ABOUT DETERRING BEEHIVE PREDATORS

- Significant electric shock has been shown to deter black bears from venturing into a bee yard.
- Electric shock has also been effective in deterring other predators from venturing into an area where their presence is not desired.
- A variety of electrified exclusion measures are available to beekeepers, some are permanent while others are temporary in nature.

*Black bears, skunks and other wildlife are attracted to beehives.*



### THINGS YOU CAN DO TO REDUCE THE RISK OF CONFLICT

#### Permanent Electric Fencing

A fence that alternates charged and grounded wires is recommended for use in bee yards, particularly in dry or rocky soils where there are poor grounding conditions. The bottommost and topmost wires should always be charged, which means there will always be an odd number of wires required for installation.

In this fence design, all the charged wires are connected to each other and to the positive terminal on the energizer. All the ground wires are connected to each other and to the negative terminal on the energizer. Rather than relying on the ground soil to complete the circuit, the animal must touch both a charged and a ground wire to receive a full shock. A minimum of five wires are required, but seven wires are recommended. The wires must be spaced closely together to ensure an animal will make contact with two wires and receive a shock.

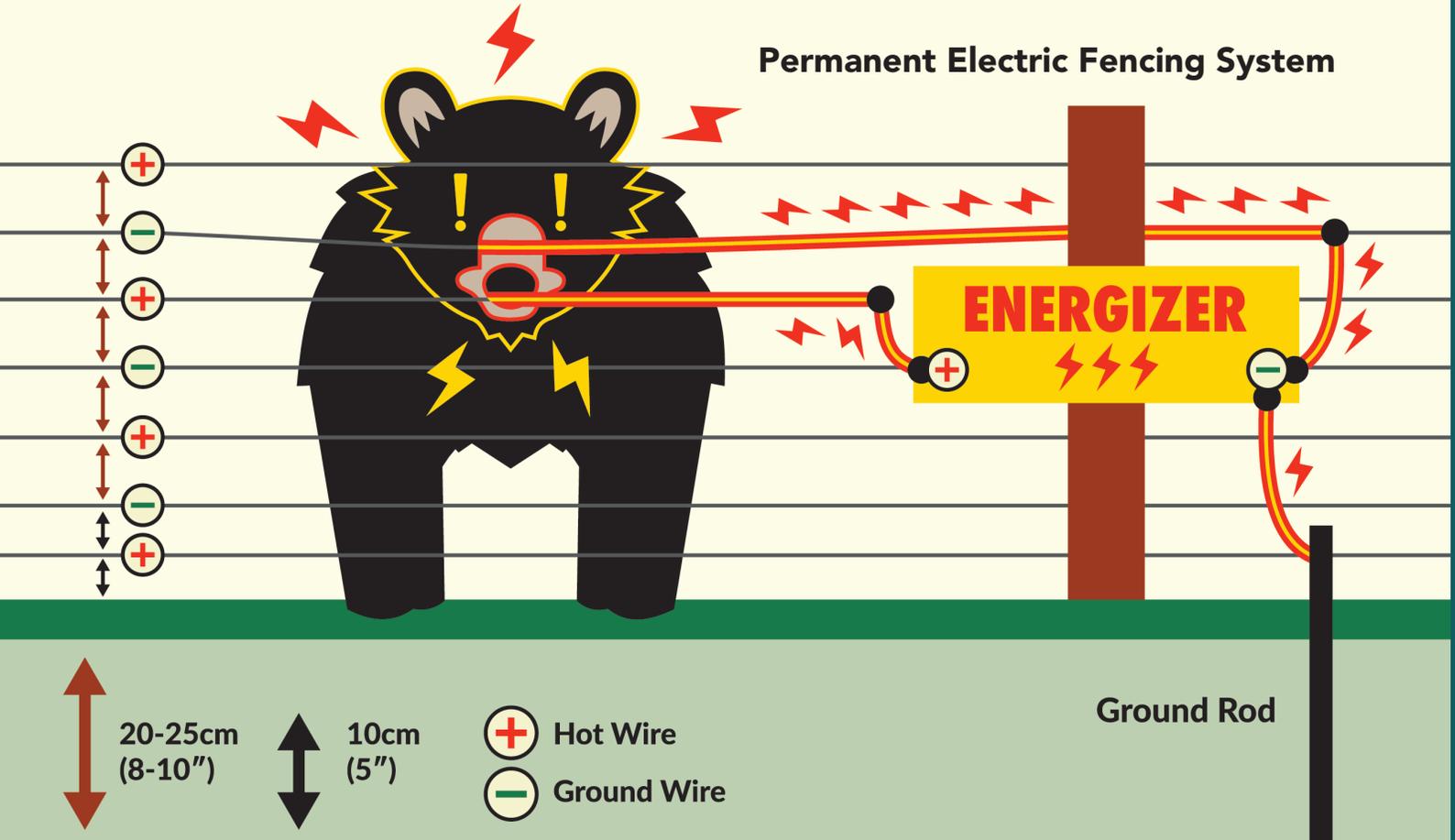
**Recommended minimum specifications for permanent electric fencing are provided below.**

<b>FENCE FEATURE</b>	<b>MINIMUM SPECIFICATION</b>
Minimum voltage	6,000 volts
Minimum number of shocks per minute	60
Ground rod material	Galvanized steel (do not use painted metal)
Minimum ground rod length	46 centimetres (18 inches)
Minimum ground rod diameter	1.5 centimetres (1/2 inch)
Number of ground rods	One rod for every joule of energizer output; you can never have too many ground rods
Depth of ground rods	1.8 metres (six feet) Alternatively, drive in at a shallower depth using a steep angle, or place several rods in a series, ten feet apart
Minimum distance between fence and items inside	92 centimetres (36 inches)
Recommended energizer output	0.7 joules (note this is output joules, not stored joules)
Minimum fence height	122 centimetres (48 inches)
Minimum post length	1.8 metres (six feet); buried 60 cm (two feet) deep
Maximum spacing between posts	2.4 metres (eight feet)
Minimum wire gauge	12 or 14 gauge smooth steel or 14 gauge aluminum
Minimum number of wire strands	Five minimum; seven recommended
Maximum height of bottom wire	Ten to 15 centimetres (four to six inches) above the ground, with the second wire ten to 15 cm above the first
Maximum distance between remaining wire strands	25 centimetres (10 inches)
Ground wire return system	Alternating hot and ground wires
Fence tester to indicate the amount of current passing through the wire	Voltage meter

### **Additional Information**

- Treated wooden posts are the most durable and require the least maintenance for fence construction.
- Wire insulators must be used to secure charged wire strands to wooden or metal posts to prevent the wire from grounding out.
- Use a ground rod clamp to attach the wire running from the energizer's ground terminal to the ground rod.
- Use a voltage meter to test the amount of current passing through each charged wire once fence installation is complete.
- If theft of the fencer and battery is likely, you may want to hide them in an empty hive box. Place active hives on top of the empty hive box that houses the equipment. Wires can run through a length of buried hose or plastic pipe.

## Permanent Electric Fencing System



### Temporary/Portable Electric Fencing

#### Polyfencing

Polyfencing uses small wire strands which serve as the conductors, woven together with polyethylene plastic. It is both flexible and strong. Be sure to use a poly wire (not a poly tape) that has at least nine strands of wire embedded within the polyethylene so that a sufficient charge can be transferred to the animal.

Wire placement for fence construction follows the same recommendations as for permanent fencing. Post options include T-posts, fiberglass posts or step-in-the-ground plastic posts. Wooden posts or guy wires are recommended for use at corners to provide support. Remember to use insulators for securing charged wire strands to wooden or metal posts to prevent grounding of the wire. Plastic and fiberglass posts don't require insulators for the charged wires and can be attached directly to the posts. Ground wires can be attached directly to posts.

#### Rigid wire panel fencing

Rigid wire panels are another option for temporary fencing. For this approach, use fiberglass posts to raise panels off the ground to ensure they remain charged.

The panels are attached to each other and to the positive terminal of the energizer. In areas of dry soil or hard ground conditions, additional panels can be laid on the ground beneath any raised panels, and connected to the ground terminal of the energizer. This will ensure proper grounding of the animal for it to receive an appropriate shock.

#### Electric Fencing Maintenance Tips

- Place plastic electric fence warning signs around the perimeter of your fence to improve visibility and alert people to its use.
- If you're using a 12-volt battery operated energizer, check weekly to ensure that your battery is charged. Make sure the battery terminals are free of corrosion and are still connected to the fence and grounding rod.
- Frequently check that hot wires are not grounded out by tall vegetation, fallen branches, broken insulators, etc.
- Check for poor wire connections in locations where the wire has been spliced or where it has become loose.
- Conduct a weekly voltage check using the electric fence voltage meter, particularly in areas furthest from the energizer.

## Alternative Exclusionary Measures

Storing beehives in bear-resistant structures or containers are an alternative to the use of electric fencing. For this approach, there are some recommended specifications to follow:

1. Fabricate the housing and doors of rust-resistant 12, 14, and 16 gauge galvanealed steel and finished with powder coating. The finish is resistant to humidity, salt spray, fog, ultraviolet light, abrasion and chemicals. The receptacle is assembled with ¼" rivets and welds.
2. Use hinges and latches or round locking handles that are made of stainless steel or zinc plated steel.
3. If a latch is used, it should be installed under a latch hood with a deflector plate set near the latch opening so small bears cannot slide their paw in. The actuation lever must be properly recessed out of the reach of adult claw tips.
4. Reinforce surfaces in case bears apply force from pushing or jumping.
5. While entrances to hives should be no smaller than 7/32" to allow access by bees; keep all gaps to a maximum width of ¼" to prevent bears from getting a firm claw grip.
6. Firmly bolt containers to a hard surface, such as concrete.
7. Prevent container surfaces from overlapping. Instead, recess door(s) into the container body. Overlapping surfaces provide bears a place to grab.
8. Ensure water drains away from the container's interior.

## Skunks

Placing beehives on stands that are one metre (3 feet) in height, can reduce the risk of access by skunks, because they don't typically climb. This height will also prevent them from reaching the hive entrance to scratch at it and eat the bees that appear to investigate the disturbance. Adding sheets of aluminum skirting around the base of a hive will further reduce the risk of skunks climbing. The use of electric fencing is still recommended in combination with this approach, to deter other predators, such as bears and raccoons.

## LETHAL REMOVAL

Black bears, and many other wild animal species, can be harvested by a licensed hunter or trapper during a regulated season. All hunting and trapping regulations apply.

Under The Wildlife Act, in certain circumstances, some wildlife species may be killed to defend one's property. For additional information about this provision, please contact Manitoba Government Inquiries at 204-945-3744, 1-866-MANITOBA or [mgj@gov.mb.ca](mailto:mgj@gov.mb.ca).

## DAMAGE COMPENSATION

Manitoba Agricultural Services Corporation pays a portion of the loss or damage to eligible honey products and leafcutter bee products, caused by black bears. There are no premiums or administration fees involved in program participation. For more information, visit the "Wildlife Damage Compensation" program at [masc.mb.ca](http://masc.mb.ca).



*An unsecured apiary has a higher risk of wildlife damage.*

**For more information on reducing the risk of conflicts with black bears and other wildlife, visit [manitoba.ca/human-wildlife](http://manitoba.ca/human-wildlife).**

**To report wildlife showing aggressive behaviour or that appears sick, injured, or orphaned, contact a conservation officer at the local district office or call the TIP line at 1-800-782-0076.**