

Prevent Damage to Beehives with an Energized Fence



A beekeeper's guide to developing a cost-effective, energized fence to protect beehives from black bears.

Each year, the Minnesota Department of Natural Resources (DNR) receives complaints from beekeepers whose beehives have been damaged by black bears. Killing bears that cause damage, or trapping and transplanting bears are options that are usually done after damage has occurred; these methods do not protect the beekeeper from financial loss nor do they prevent subsequent losses. By contrast, energized fence designs have been tested and proven effective in *preventing* bear damage to beehives in many eastern states and Canadian provinces. Energized fences should be considered for protection of beehives in areas that the potential for bear damage.

Fence Design

A basic fence design is shown in the illustration on page 3. The four critical components to an effective energized fence are: 1. a high voltage, low impedance energizer capable of delivering a minimum of 4000 volts under all conditions, 2. an adequate electrical grounding system, 3. proper wire and post spacing, and 4. monitoring of fence status with a voltmeter.

1. Energizer

- A high voltage, low impedance energizer delivers a short (0.003 second), painful, but safe shock to bears. The short pulse will not set fire to grass contacting the wires, nor will it injure humans or animals.
- Energizers may be powered by a 6 or 12-volt battery, D-cell alkaline batteries, or 110-volt AC current.



- Deep cycle marine or gell cell batteries are recommended for 12-volt energizers.
- Energizers may be attached to the outside of a hive or hidden in a false hive. Some D-cell chargers may be hung directly from the fence wire.

- Batteries must be insulated from the ground.
- The fence must always be energized. The energizer and grounding system should be installed and operational prior to installing posts and wire. All fence wires should be energized.
- Coated underground cable may be buried as a lead out wire from the energizer to the fence and from the energizer to the ground rods.
- Remember, the shocking power of the fence deters the bear. The posts and wires are the delivery system; it is not a physical barrier, and will not be effective unless it is constantly energized.

2. Grounding

- Use a minimum of three 6 foot ground rods. Additional or longer ground rods may be necessary on sandy soils or during dry conditions. Ground rods should be driven into the ground so that approximately 3 inches remain above the surface to attach the cable from the energizer.