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Consider Using Electric Powered Fences for Controlling Animal Damage¹

Robert E. Steger²

The use of electronics in animal damage control is not new. The use of amplified frequencies or sound has been widely used for controlling insects, rats, and other kinds of animals. Recent innovations for uses of electric powered fences are being recognized. Animals heretofore managed by expensive predacides or physical barriers are being managed with electric powered barriers. For example, caterpillars are being economically managed in New Zealand with the use of one electrical wire slightly above ground level. This application is being made possible because electric powered fences are 1) economical; 2) effective; 3) provide flexibility; and 4) are relatively easy to install.

An economic comparison of electrical powered fence to conventional fencing reveals that the electrical fence is only one-third to one-half the cost of the conventional kind. Both labor and material requirements are reduced.

In regards to efficiency, the electrical powered fence is more efficient than conventional fencing for some animals. Animals such as coyotes, buffalo, elk, moose and others may be only partially controlled by conventional fencing and may even find a challenge in tearing it up. Whereas, these same animals become very afraid of electrical fences.

Specially designed structures such as two parallel fences of a few wires on each (one or two) can restrain deer from damaging high-value crops. A slight deviation of this, the fence constructed on an angle (leaning) with the ground has been effective in controlling some animals, especially those capable of jumping.

The modification of a conventional fence with electrical powered attachments can often increase the effectiveness of an existing conventional structure. The control of coyote predation has been shown to be most effective in both Texas and Arizona studies by adding electrical wires, one slightly above ground level

offsetting the conventional net wire fence and one near the top of the fence.

Flexibility is an added feature of electrical fencing. The fencing components can usually be salvaged with some ease if one decides to change the fencing arrangement or design, especially if this is included in the plan at the onset.

The ease of construction is another feature of electrical powered fencing. Most people can construct these fences following some instructions. While bracing is a critical part of the fencing design, it requires almost as much of a structure as conventional fencing. A new bracing assembly is available that is engineered to give a strong, professional-appearing brace or corner. Complete, step-by-step instructions are included to explain how to build these braces.

Ease of construction may be a relative term, however. There are some places that are remote and sufficiently rugged that this may be the only feasible way to construct a fence.

Many new ideas are being implemented into features for electrical fencing as more technology is applied. Some specific features include:

1) The application of voltage and amperage capabilities of energizers to the corresponding requirements of the animal. The early day American-made energizers were low amperage (usually less than 1 amp) and produced approximately 2,000 volts or less. Also, the energy was dissipated when an animal touched the fence. Hence, the animals tended to lunge into the fence and tear up the structure. The New Zealand type of energizers produce a pulsating current (approximately 1 per second). The voltage and amperage on the larger units that are commonly used for wildlife are relatively high (up to 100+ amps) with an operating voltage of 4,000 to 6,000 volts. The length of pulse is short enough to give a health safety factor when delivering a tremendous charge.

Cattle, horses, and swine have relatively low tolerances for electrical shock and can be controlled with approximately 2,000 volts. Sheep and goats require 3,000 or more volts. Deer and elk have hollow hair to provide some insulating effect and usually require 4,000 volts or more for dependable control. Coyotes are quite sensitive to electricity, but often require the higher voltage range of 4,000 volts or more to discourage their

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desires for a lamb dinner. Not only are these higher voltages required, but it must be delivered with adequate amperage to assure this maximum delivery under all conditions and at all times.

2) Assurance that the energizer is working at top performance at all times has been a problem in the past. Proper and adequate grounding (earthing) was a difficult thing to determine. Also, shorting of the energized wire to an unintentional ground was also a problem. The new PEL Series 5 energizers have done much to reduce these problems. They are equipped with lights that indicate inadequate grounding or shorts on the fence. This self-monitoring allows one to check the energizer to determine if the fence is working properly.

The application of round fiberglass rod posts with holes drilled through the post offer the most trouble-free fence possible. These durable posts do not shatter when being driven and a rock is encountered. Nor do they become brittle over time, heat or extreme cold, but they are self-insulating. Thus the wires will not be knocked out of insulators

and cannot be shorted due to touching a post that may ground it.

3) Animal behavioral characteristics are being studied to help in reducing the amount of barrier needed to control animals. One wire, at a 10" height is adequate to control white-tailed deer movements into seeded or otherwise treated areas, for example. No doubt other animals have critical zones that can be capitalized upon.

If the resource manager can determine the cause of why animals cross a fence and may help in the application of the fencing need. Animals usually cross fences to 1) obtain something to eat or drink, or 2) to join other animals.

One must remember that the electrical powered fence is a mental barrier rather than a physical barrier. Some physical barrier must be applied for jumping animals. Thus, the fence must be in constant operating order to be effective. Many animals such as cattle and deer can tell if the fence is working, even without actually touching the fence.