



Deer Barriers

...fencing, repellents, dog restraint systems, scare devices

Daniel D. Buskirk*, Glenn R. Dudderar** and Harlan D. Ritchie*

*Department of Animal Science

**Department of Fisheries and Wildlife

White-tailed deer prefer to eat many agricultural crops, and when natural foods are scarce, deer depend on agricultural crops. As a result, deer cause millions of dollars of loss to agriculture each year. They trample and feed on grain, fruit and vegetable crops, graze hay and pasture fields, and consume stored forages and grains. In addition, deer may also transmit diseases, such as tuberculosis, to livestock.

Deer can be deterred from agricultural areas by fences, chemical repellents and scare devices. Repellents and scare devices are behavioral deterrents that will seldom result in complete control unless they are combined with other control methods or deer have abundant, high quality alternative foods. Therefore, this publication highlights fencing methods that can provide more complete exclusion.

Fencing Barriers

The only sure deer barriers are woven wire fences or walls that are at least 10 feet tall. All other deer barriers involve some risk of not preventing entry into exclusion areas. They also require some knowledge of deer behavior and diligence in fence maintenance. This publication serves only as an introduction to deer fencing. Additional designs and specific applications can be obtained from a fence distributor and/or contractor. General guidelines can also be found in *High-Tensile Wire Fencing*, published by the Northeast Agricultural Engineering Service (607/255-7654).

Electric Fencing

Most cost-effective deer barriers involve electrification of fence. Electric fence is more than a physical barrier — it acts to modify an animal's behavior. Therefore, an animal must be "introduced" to the fence before control can be achieved. Where a deer herd feeds or travels is habit, learned over time, and it is reinforced each time they feed or travel safely. Pain barriers (electric fences) work best when an animal is tentative; they are less successful when an animal is moving down a known path or trail. For this reason, it is important to identify deer trails entering an exclusion area and interrupt them with something new. Brush laid across the trail may be adequate in breaking deer from their routine and cause them to investigate a newly installed electric fence. To draw a deer's nose to the fence, peanut butter may be wrapped in aluminum foil and hung at 5- to 10-foot intervals. Smear a 1:1 mix of peanut butter and peanut oil onto a 6- by 12-inch piece of aluminum foil, fold the foil over sticky tape, and secure with tape. Once a feeding or traveling habit is broken, control is easier to maintain. However, do not expect success in persuading a starving deer herd away from an excluded area if it contains the only food source.

Polytape electric fence

This is a temporary fence that normally consists of two strands of polytape, one at 18 and the other at 30 inches above ground level (Figure 1). This type of fence is inexpensive to construct and can provide excellent control for 3 to 4 months. Success with this type of

fencing is much more likely if it is installed before the deer are habituated to feeding inside the exclusion area. After 3 to 6 weeks, deer learn to go over or under the fence. When this occurs, place peanut butter-aluminum foil sandwiches on the tape every 5 to 10 feet. Effectiveness is restored for 8 to 12 weeks. Polytape is very visible to deer because it is easy to distinguish from their natural surroundings. Polytape fence needs to be removed and stored immediately after harvest to prevent deer from becoming accustomed to it and to protect it from snow and ice damage.

Offset or double electric fence

This is a permanent, high-tensile electric fence that has a three-dimensional configuration (Figure 2). The three-dimensional nature of this fence requires greater maintenance of foliage growth to prevent short-circuiting of the fence, and is one of the least effective designs for deer control.

Seven- or eight-wire vertical electric fence

This is a permanent, high-tensile electric fence that can provide year-round protection from deer (Figure 3). This fence has a low maintenance cost but high initial cost. Wires are connected in an alternating positive/negative format. Deer will often attempt to step through these fences because of the spacing. In doing so, they will receive an effective shock. Charge with **at least** 4,000 volts over the entire length of the fence. Inspect for full charge every 3 to 4 days.

Seven-wire slanted electric fence

This is a permanent, high-tensile fence that can provide year-round protection against high deer pressure (Figure 4). This fence poses both a physical and a psychological barrier because of its electric shock and three-dimensional nature. The design of this fence requires greater labor and more material to build than other electric fencing options. This design may also require herbicide use to control vegetation growth beneath the hot wires, and in rolling or steep terrain, this may result in unacceptable erosion.

Non-electrified Fencing Options

Five-wire slanted high-tensile fence with wire mesh

This is a modified non-electric version of the seven-wire slanted electric fence (Figure 5). Wire mesh is attached to the three lower high-tensile wires for support. Installation labor, material cost and maintenance are high. Effectiveness has not been extensively evaluated.

High-tensile woven wire or smooth woven wire

This is a permanent fence that can provide year-round protection from even high pressure from deer (Figure 6). Although these fences are expensive and difficult to construct, they may be appropriate for enclosing feed storage areas such as hay bale yards, bunker silos or cull potato piles in areas frequented by deer. These fences are constructed from 8 to 10 feet high. They may be made of traditional woven wire or high-tensile woven wire.

Polypropylene mesh fence

This type of fence has been used by homeowners, gardeners and nurseries to exclude deer (Figure 7). It may be similar to woven wire in effectiveness against high deer pressure. Black mesh fences were designed to be nearly invisible and aesthetically pleasing to humans. For this reason, this type of fencing should have white flags attached at frequent intervals for a minimum of two months until deer have rerouted trails.

Odor and Taste Repellents

Table 1 lists homemade and commercial deer repellents. Using these materials requires labor that may be impractical on large acreage. These repellents generally require repeat applications and are most effective when properly applied and when deer have desirable alternative foods to eat. Although these techniques may be useful for small areas or individual plants, they generally are not practical for use in protecting pasture or field crops where reapplication is required for extended control.

Table 1. Homemade and commercial odor and taste deer repellents.

Contents	Brand name	Uses	Estimated effectiveness	Durability	Effectiveness of renewed application
Feather meal	—	In 2+ cloth bags on woody plants	90-95%	30-90 days	Same
Meat meal	—	In 2+ cloth bags on woody plants	90-95%	30-90 days	Same
Meat meal/pepper	Greenscreen	In 2+ cloth bags on woody plants	95-100%	30-90 days	Same
Blood meal	—	Apply to area to be protected	90-100%	3-10 days (washes off with rain)	Same
Soap bars	—	2+ bars on woody plants	80-90%	30-90 days	Same
Liquefied eggs in water	—	Spray on any plant	80-90%	3-7 days	Same
Putrescent whole egg solids	Deer-Away	Spray or dust on ornamental and non-bearing fruit trees	95-100%	21-42 days	Same
Ammonium hydroxide	Hinder	Spray on any plants	80-95%	7-14 days (washes off with rain)	Same
Capsaicin	Hot sauce	Spray on ornamental and non-bearing fruit trees	0-50%	15-30 days	Same or less
Thiram	Bonide, Lescoc, Spotrete	Spray on ornamental and non-bearing fruit trees	50-75%	15-30 days (90 days with sticker)	Same
Benzyl diethyl ammonium saccharide thymol	Ro-Pel	Spray on ornamental and non-bearing fruit trees	0-50%	7-14 days	Same or less
Denathonum benziaata (Bittrex)	Tree Guard	Spray on ornamental and non-bearing fruit trees	50-75%	30-60 days	Same
Garlic	—	Spray on ornamental and non-bearing fruit	90-100%	30-60 days	Same
Mixtures of above	*Deerbuster, Deerstopper	Spray on ornamental and non-bearing fruit	95-100%	30-60 days	Same
Cat urine & feces (lion urine, feces)	—	Apply to area to be protected	50-75%	7-14 days	None
Moth balls	—	Apply to area to be protected	0-50%	3-14 days	None
Human hair	—	In 2+ cloth bags on woody plants or spread on ground around plants	0-50%	3-7 days	Variable

* Not currently available in Michigan.

Dog Restraint Systems

Electronic pet barriers are useful for excluding deer in areas where damage occurs. Dogs fitted with electronic shock collars enclosed in an area by a wire that activates the collars have reduced deer damage dramatically. When using an electronic pet barrier, the following points are vital!

- The wire that activates the shock collars does not have to be buried, except where convenient or necessary (e.g., roads).
- Herding and retrieving breeds of dogs (e.g., border collies, shepherds, retrievers) have been more reliable than confirmed deer-chasing dogs.
- The dogs must be trained to the wire initially. Visual indicators of the position of the wire help train the dogs.
- Male dogs (two or more) are better than female dogs.
- The dogs must be housed and fed within the wire.
- The number of dogs needed per unit of area is unknown. Two dogs have protected 150-acre test plots in orchards. Long-term effectiveness is unknown in crops such as corn, hay, etc.

Frightening Devices (Scare Devices)

When applied properly and in combination, frightening devices may reduce deer damage if used in conjunction with other control methods. Use at least two of the following techniques and apply them so as to frighten the deer as they enter the field rather than after they enter the field.

Automatic bird scaring propane exploder cannons

Use at least one per 5 acres. Place on a platform higher than crop height. Move every three days. Vary the interval between explosions. Consider using multi-bang versions of the exploder and attachments that rotate the exploder with each explosion. Do not use during daytime where not needed. Use at night may disturb neighbors.

Light/noise systems (e.g., siren/strobe)

Use two devices per 5 to 10 acres. Alternate the broadcasting of the light/noise with the broadcast sounds of static, steam locomotives, urban traffic, ocean surf, hard rock music, etc. Do not use during daylight hours when not needed. Use at night may disturb neighbors.

Motion detector accessories

Cannons and alarm and distress broadcast systems are available with motion detectors that trigger the devices when deer enter the field. Because the frightening devices are not operating continuously, the deer are more likely to be frightened away and the devices should be more effective for longer periods of time.

Exploding 12-gauge shotgun shells

Fire shells to produce aerial explosion over the field whenever deer are in the field. If possible, fire from concealment so that deer do not associate explosions with a vehicle, person, etc. Use at night may disturb neighbors.

Figure 1. Polytape electric fence

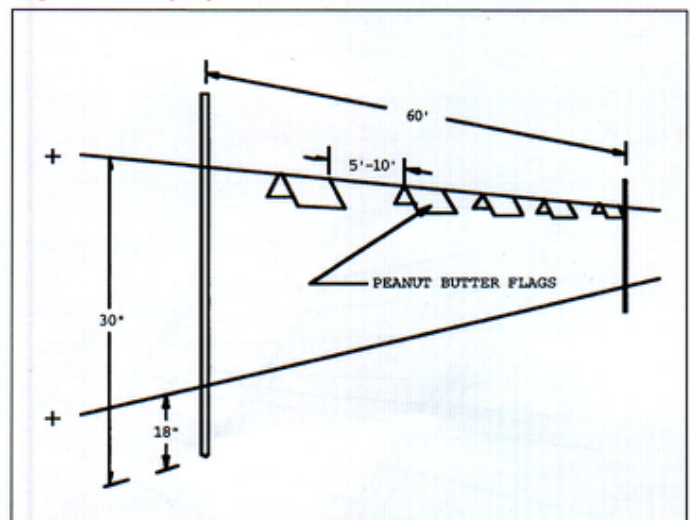


Figure 2. Offset or double electric fence

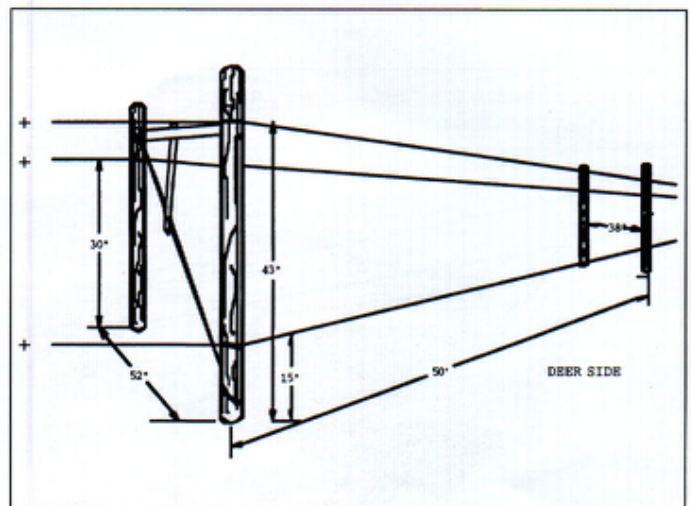


Figure 3. Seven- or eight-wire vertical electric fence

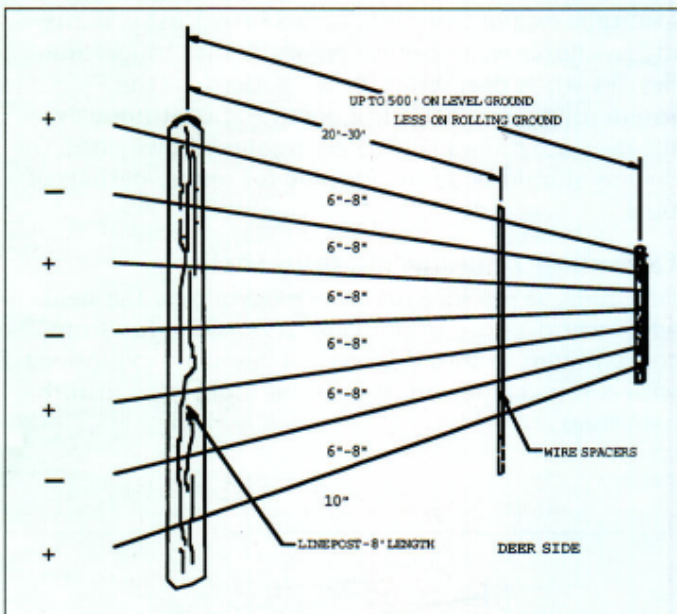


Figure 4. Seven-wire slanted high-tensile electric fence

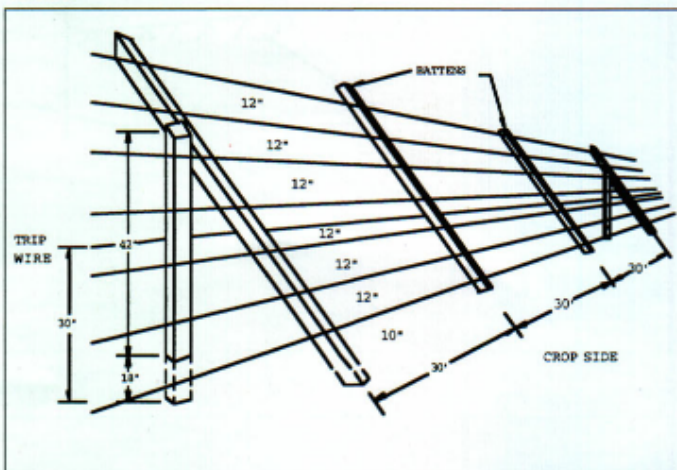


Figure 5. Five-wire slanted high-tensile fence with wire mesh

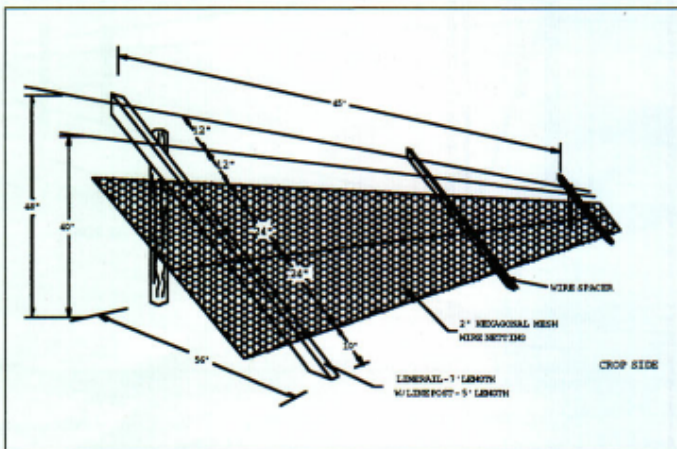


Figure 6. High-tensile woven wire or smooth woven wire fence

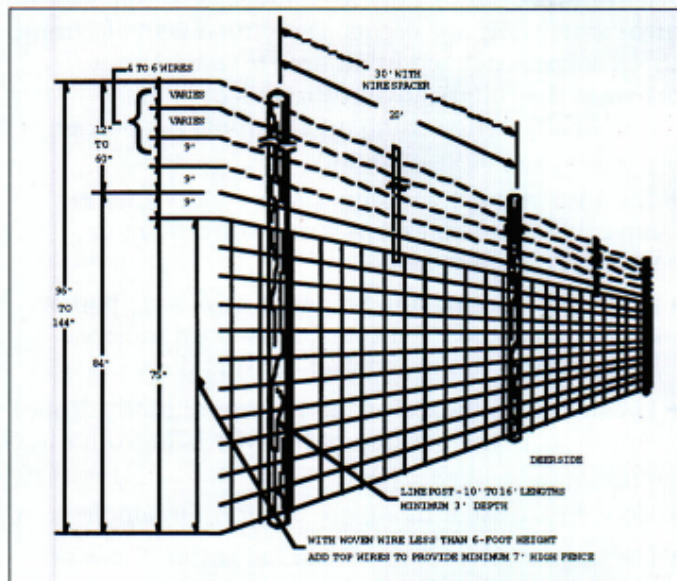
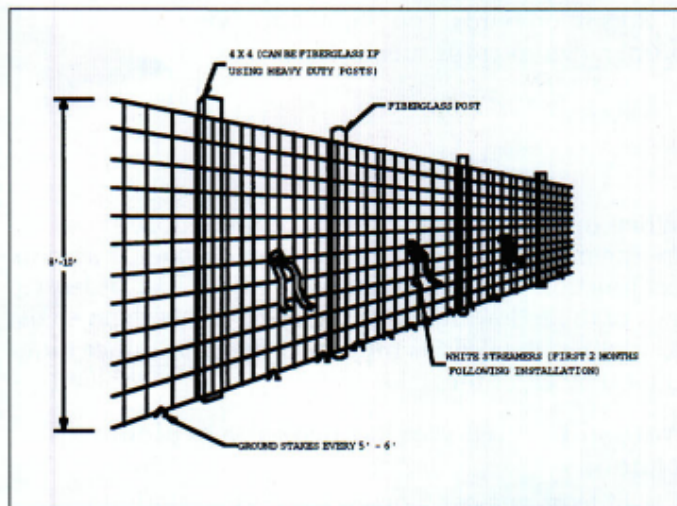


Figure 7. Polypropylene mesh fence



Sources of Information for this Publication

Baughner, T.A., S.M. Carcaterra, W.R. Davidson, W.N. Grafton, T.R. McConnell, A.W. Selders, C.E. Williams and D.J. Workman. 1989. High-tensile fencing for deer control. Ext. Publ. 810. Morgantown, W. Va.: West Virginia Univ.

Craven, S., and S. Hygnstrom. 1996. Controlling deer damage in Wisconsin. Ext. Bull. G3083. Madison, Wis.: Univ. of Wisconsin.

Deer damage a problem? 1998. Benner's Gardens, New Hope, Pa.

Electric deer barrier principles. 1998. Fencing for all seasons. Washington, Iowa: Premier fence systems.

Henderson, F.R., and C. Lee. 1992. Controlling deer damage. Ext. Bull. C-728. Manhattan, Kansas: Kansas State Univ.

Hygnstrom, S., and B. Baxter. Deer damage control in Nebraska. Ext. Bull. EC 91-1773. Lincoln, Neb.: Univ. of Nebraska.

Selders, A.W., and J.B. McAninch. 1987. High-tensile wire fencing. NRAES-11. Ithaca, N.Y.: Northeast Ag. Eng. Serv.



**MICHIGAN STATE
UNIVERSITY
EXTENSION**

MSU is an affirmative-action equal-opportunity institution. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, marital status, or family status. ■ Issued in furtherance of Extension work in agriculture and home economics, acts of May 8 and June 20, 1914, in cooperation with the U.S. Department of Agriculture. Margaret A. Bethel, Extension director, Michigan State University, E. Lansing, MI 48824. ■ This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned. This bulletin becomes public property upon publication and may be printed verbatim with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company. Rep 4:02-2M, KMF/SP, Price .80, for sale only.