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Deer Barriers: Fencing, repellents, dog restraint systems, scare devices
Michigan State University Extension Service
Daniel D. Buskirk and Harlan D. Ritchie, Department of Animal Science; Glenn R. Dudderar, Department of Fisheries and Wildlife
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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 3). 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.

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

* 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 ISO-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.
Sources of Information for this Publication


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