UNIVERSITY OF NEW HAMPSHIRE
COOPERATIVE EXTENSION

Controlling Deer Damage In New England Orchards

Introduction

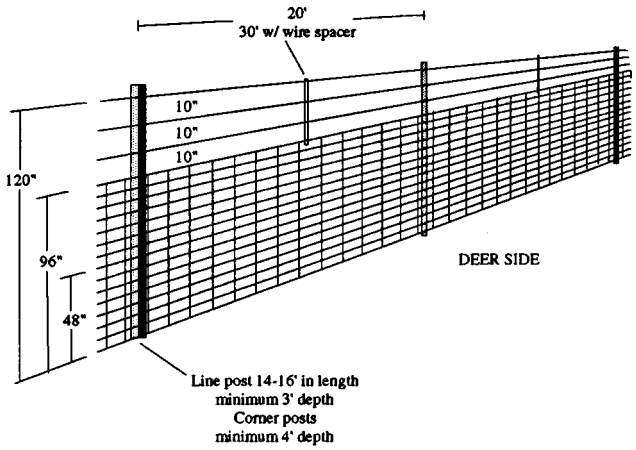
Deer damage to both young non-bearing and mature bearing apple trees is a problem on the increase in New England. The use of spur-type trees and dwarf rootstocks makes available a greater proportion of each tree for browsing by deer. In addition a reduction in use and maintenance of exclusionary fences around orchards allows deer greater access to trees. This reduction has been caused by increasing costs of fencing, loss of cost-share assistance from the state, and, for individuals entering the profession, a lack of prior experience dealing with deer.

Controlling deer damage in orchards should embrace an integrated approach that includes regulated hunting (with landowner permission), depredation permits, scare devices (eg. propane cannons, pyrotechnics), chemical repellents, and conventional and electric fencing. Fencing is an effective way to control damage by deer in orchards and several designs are available that provide differing levels of cost and effectiveness.

Woven Wire Fence

Woven wire fencing is an excellent option where deer densities are high and the likelihood for damage is great. An 8-foot-high, vertical fence is usually constructed from two 4-foot sections of 6 x 12 inch wire mesh, joined with hog rings. Two or more strands of barbed wire, spaced 10 inches apart, are added to the top of this structure extending the overall height to 10 feet or more.

This fence provides an effective barrier to deer, especially when routinely maintained and kept free of vegetation. It is expensive; including labor, can cost as much as $4.00 per linear foot.



Woven Wire Fence

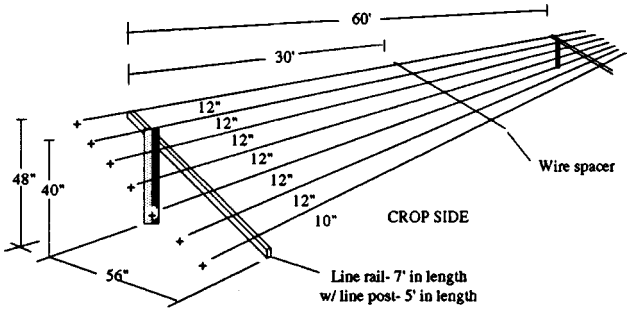
High-Tensile Electric Fence

High-tensile electric fencing has emerged as the preferred method to exclude deer from orchards in New England over the past several years. These fences are easy to erect, repair and maintain. In addition, the high voltage, low impedance chargers used can charge long fence lines (up to 5000 feet or more) and are relatively resistant to grounding by vegetation.

For all high-tensile electric fence applications, we recommend using bi-polar fence chargers which provide shocking power even under poor grounding conditions. These chargers are designed to work as both earth and ground wire return systems, thus eliminating the problem of poor earth conductivity in drought, frozen ground, or snow conditions.

There are several configurations of high-tensile electric fencing currently in use in New England orchards. These fence systems do not provide absolute deer control; however, if properly erected and maintained, they will reduce the amount of damage below the economic threshold. They work best when erected in the open, around the perimeter of an orchard block. Problems of deer penetration have been encountered where high-tensile fencing has been placed in wooded areas adjacent to orchards to reduce overall fence length.

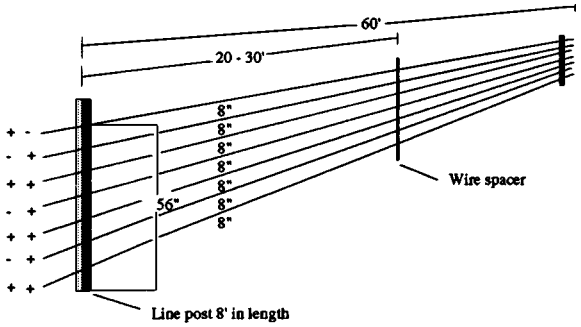
7 - Wire Slant Electric Fence: This fence configuration has been effective in situations where deer densities are moderate to high over large acreages. Although the fence is only 4 feet in height, it spreads approximately 6 feet horizontally. Individual wires are spaced 12 inches apart and the fence slants up and away from the crop being protected.



7 Wire Slanted Electric Fence

The area beneath the fence needs regular weed and brush control to prevent grounding problems. Because deer occasionally will try jumping over or through this barrier, baiting the wires with folded aluminum foil flags coated with peanut butter or adding electrified outriggers may help "educate" problem deer. The 7-wire slant fence can cost up to $2.50 per linear foot.

7 - Wire Vertical Electric Fence: Over the last several years, this configuration has become the most widely used of the deer control fences. Although it is most effective in areas with low to moderate deer densities, it is not deer proof.



7 Wire Vertical Electric Fence

Integration of electrified outriggers, peanut butter coated aluminum flags, trip wires, or perimeter applications of repellents may help to reduce penetration through the fence by deer. Routine maintenance and repair are necessary to assure effective deer deterrent. The costs of this fence may range up to $1.50 per linear foot.

With both configurations, the bottom wire should be positioned no higher than 10 inches above the ground. Additionally, this wire always should be electrified to prevent deer from crawling beneath the fence.

In situations where ground conductivity is poor, an alternating "hot"/"cold" wire configuration is recommended (a bipolar charger is necessary). Conditions that warrant such an arrangement include drought prone areas and frozen or snow covered ground.

Fence line voltage should be monitored periodically using a digital voltmeter. A flash/pulse indicator light attached to the fence permits quick visual inspection of charge status at night. Problems can arise with low voltage in these fences and may be caused by:

- Poor electrical connections at the fence or charger
- Excessive loading by contact with vegetation
- Poor grounding system
- Tree limbs or other debris on the fence
- Deep snow or excessive drought.

Deer Repellents

In areas where deer densities are low, repellents can be used to reduce deer browsing damage. Repellents should be applied before damage occurs rather than after a browsing pattern has been established.

If repellents are the only form of control used, they may not be cost effective in orchards greater than 3 acres in size. Although the initial cost to obtain these materials is relatively low, the need for frequent re-application drives up costs. Also, as deer density increases, effectiveness of repellents often drops.

Repellents operate using the principle of odor, taste, or combination of the two. Commonly used taste repellents include the fungicide Thiram (eg., Gustafson 42-S$_R$, ChewNot$_R$, and Chaperone$_R$, and the compound Capsaicin (eg.,Miller Hot Sauce$_R$). Examples of odor repellents are ammonium soaps of higher fatty acids (eg., Hinder$_R$), bone tar oil, and bars of deodorant soap.

Bars of soap, with their wrappers intact and hung from scaffold branches, have provided adequate protection in small orchards where deer browsing damage is limited. Based on results of recent research at the Connecticut Agricultural Experiment Station, soap bars have an effective range of 3 feet in diameter.

The effects of both odor and taste are combined in repellents containing putrescent egg solid (eg., Big Game Repellent$_R$); however, this effective compound can only be applied during dormant or non-bearing seasons. As is true for all pesticides, label restrictions and product registrations change frequently. Be sure to verify the current registration and label instructions of any deer repellent before using it.

Two, non-commercial repellents that may provide limited protection against deer browsing are human hair and tankage. Hair collected from local barber shops or salons is placed in 1/8 inch mesh net bags (about 2 handfuls) and hung from scaffold branches approximately 30 - 36 inches above the ground. On larger trees, bags should be placed about the perimeter of the tree at 3-foot intervals. Tankage (ie., animal by-products or fecal residue) is placed in cloth bags (about 1 cup per bag) and hung in a manner similar to that used for hair. Periodically replace or renew the supply of material (hair or tankage) in each bag to maitain its effectiveness.

Scare Devices

Scare devices, such as propane cannons and pyrotechnics, have been successful as short term solutions to deer damage problems. The key to effective use of scare devices is to employ them at the first sign of deer damage, before the deer have developed a behavior pattern.

Propane cannons are the most commonly used scare devices. They are effective for only a couple of weeks and should not be relied upon as the only method used to prevent deer browsing problems.

These cannons are most effective when moved every few days and the sequence of explosions is staggered, as deer quickly become accustomed to regular noise patterns. The volume of noise produced by these devices can be increased by placing the cannons above the ground.

Local regulations may restrict or prohibit the use of these types of devices; therefore, it is strongly recommended that individuals consult with local officials to determine what, if any, restrictions apply.

Lethal Control Measures

Maintaining the balance between the number of deer and the amount of food available within the habitat surrounding orchards (ie., through regulated hunting, and habitat enhancement) helps to prevent deer densities from exceeding tolerable levels.

Depredation permits may be issued where conventional non-lethal control methods are impractical or have failed. However, this option can be time consuming and rarely provides a long-term solution to deer browsing problems. Removal of depredating animals may be effective in providing short-term protection until such time as a more permanent solution (ie., fencing) can be implemented.

Reference to or use of any product or trade name does not imply endorsement of such products; these names are used only to simply provide information.

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