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EC91-1773 Deer Damage Control in Nebraska

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Nebraska Cooperative Extension EC 91-1773

Deer Damage Control in Nebraska

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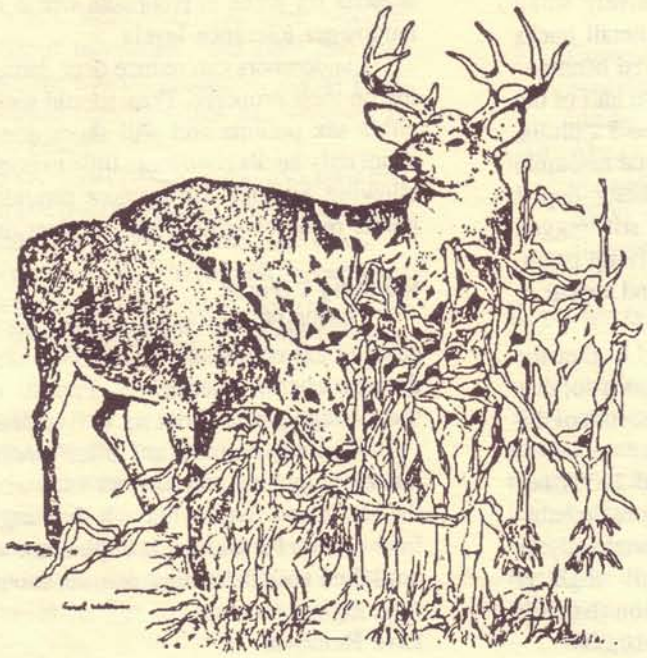

Figure 1. White-tailed deer

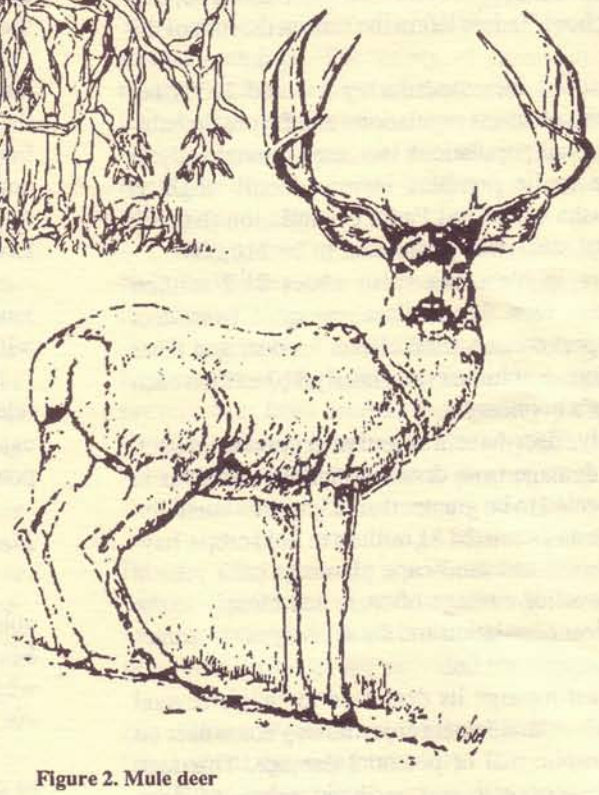

Figure 2. Mule deer

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Nebraskans are fortunate to have two species of deer in the state — the white-tailed deer *(Odocoileus virginianus)* and the mule deer *(Odocoileus hemionus) (Figures 1, 2* on cover*)*. They are beautiful and fascinating animals that provide many aesthetic and recreational benefits. They can, however, cause problems when they damage agricultural crops, trees and backyard plantings.

White-tailed deer are found throughout Nebraska and usually are associated with wooded areas, especially around rivers and streams. "Whitetails" obviously get their name from their broad tails that are entirely white underneath. They often carry their tails high, like flags, as they gracefully bound away.

White-tailed deer have ears that are relatively small compared to mule deer, and the antlers of whitetail bucks typically have tines that arise from single, curved beams.

Mule deer are found primarily in the western half of the state in the ridge and canyon country and in the Sandhills. "Mulies" get their name from their large ears that resemble those of a mule. They have relatively small, black-tipped tails, carried low as they bounce along in their stiff-legged gate. They also have a rather noticeable white rump patch. The antler tines of mule deer bucks are forked and appear to form the letter "Y."

Deer were an important source of meat and leather for early explorers and settlers of Nebraska — so much so, that there were only about 50 deer left in the state at the turn of the century.

Deer populations increased during the mid-1900s because of appropriate harvest regulations and favorable habitat changes. Whitetail populations increased dramatically in the 1980s while mulie numbers increased only slightly. Today the Nebraska Game and Parks Commission (NGPC) estimates the total state deer population to be 210,000.

Deer hunters in Nebraska spent about $1.2 million annually in license fees. The dollars generated from deer license sales support conservation efforts for deer and other species. In addition, deer hunters add nearly $10 million each year to Nebraska's economy.

Unfortunately, deer have a negative economic impact, too. The cost of damage from deer-automobile collisions in Nebraska is suspected to be greater than $5 million annually. Deer also damage an estimated $1 million in field crops, haystacks, trees, gardens and landscape plantings each year in Nebraska. The level of damage often is tied closely to the size of the local deer population and the severity of the winter weather.

Nebraska must manage its deer herd to satisfy several interest groups. Most landowners enjoy having some deer on their property, despite real or potential damage. This fact, coupled with the economic and aesthetic values of deer, suggests that a combination of herd control through hunting and a reasonable effort at damage control will serve everyone's needs. It is important to remember that ***success in deer damage control is measured by the reduction of damage to tolerable levels, not the total elimination of damage.***

Methods for Reducing Deer Damage

Herd Management

Legal harvest

One of the most effective ways to control deer populations is to harvest deer during established hunting seasons. The regular firearm season in Nebraska lasts nine days during mid-November. The archery season lasts from mid-September to the end of December. Occasionally, there are late firearm seasons for areas where deer populations exceed unit goals. There is also a provision for special depredation seasons for areas in Nebraska where deer damage exceeds landowner tolerance levels.

Landowners can reduce deer damage by allowing hunting on their property. They should solicit hunters who have either-sex permits and will shoot does, since hunters who shoot only bucks contribute little to population reduction. By allowing hunting, landowners provide public access to a public resource while reducing deer damage.

Shooting Permits

The NGPC may issue shooting permits to landowners in cases of extreme losses where there are no other reasonable damage control alternatives. Permits allow landowners or their designates to shoot up to five deer per permit.

Shooting permits are often controversial, especially among neighbors and hunters who would prefer to harvest the deer themselves. Although shooting permits satisfy some landowners, for many it is unpleasant work. About 200 deer are killed under shooting permits annually in Nebraska.

Live Removal

Capturing and relocating deer is seldom a practical or long-term solution to deer damage. Deer can be captured with rocket nets, drop-door box traps or tranquilizer guns. Following capture, they can be immobilized, transported and released back into the wild. These methods, however, are expensive and time-consuming. They also require NGPC permits and the expertise of professional wildlife biologists.

Deer Fencing

Where deer are abundant or crops are particularly valuable, fencing is an effective way to minimize deer damage. Several fencing designs are available to meet specific needs, whether it be field crops, gardens, tree plantings or haystacks.

Permanent woven-wire fences have been used for years to control deer damage. They are expensive to build, but require little maintenance. Electric fences provide a less expensive, yet effective alternative. The unique designs and shocking power of electric deer fences present both a physical and psychological barrier to deer.

This section is only an introduction to deer fencing. Several other designs of deer fences are available for different crops and deer pressures. Contact a fencing contractor or

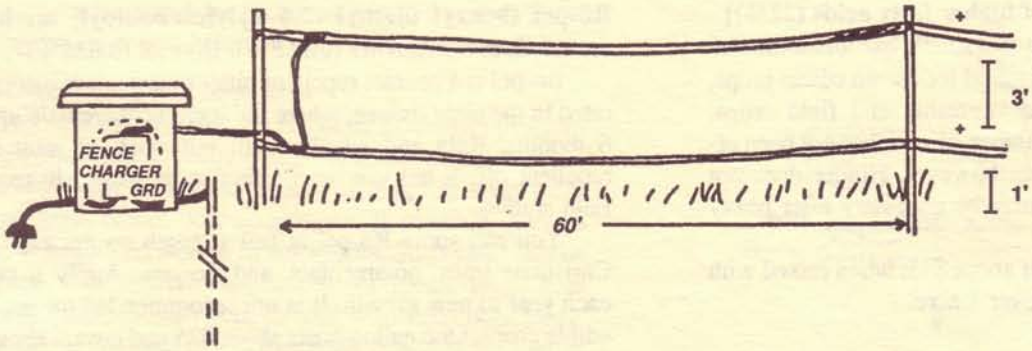

Figure 3. Polytape-peanut butter electric deer fence

distributor for details. The NGPC has a limited supply of fencing materials available to landowners experiencing problems with deer damage.

Polytape-peanut butter electric deer fence

This is a temporary fence that includes two main components: polytape livestock fencing material and peanut butter *(Figure 3)*. It is effective for gardens and moderately-sized nurseries, orchards and field crops (up to about 40 acres) subject to moderate deer pressure during non-snow periods.

Polytape is strong, portable and easy to work with. Deer are attracted to the fence by its bright color and peanut butter odor. They are lured into making nose-to-fence contact and learn to avoid fenced areas after receiving a substantial shock.

Install fences at the first sign of damage to prevent deer from establishing feeding patterns in your fields. Frequent inspection and maintenance are necessary.

Polytape fences have a life expectancy of about 20 years, but they should be removed from the field at the end of each growing season and stored during the winter. Material and installation costs range from $0.10 to $0.15 per foot.

Follow these steps to build a polytape-peanut butter fence:

(1) Drive fiberglass "T" posts 2 feet into the ground at the corners.

(2) String 1 or 2 strands of polytape around the corners and apply light tension.

(3) Use square knots or half-hitches to make splices or to secure the polytape to the corner posts.

(4) Set 4-foot fiberglass rods along the polytape at 60-foot intervals.

(5) Attach the strands of polytape to clips on the rods (2 feet above ground for single-strand fences, 1 and 3 feet above ground for double-strand fences) and hand tighten to remove all slack.

(6) Connect the polytape to the positive (+) post of a well-grounded, low-impedance fence charger.

(7) Apply a 1-foot patch of peanut butter directly to the polytape at 6 to 12-foot intervals. Apply more peanut butter in areas where the fence crosses well-traveled deer trails. You can make a simple applicator by mounting a free-spinning, 4-inch pulley on a shaft inside a plastic ice cream pail. Fill the pail with a peanut butter-vegetable oil mixture that has the consistency of thick paint. To apply the peanut butter, pull the pulley along the polytape, making sure the peanut butter is drawn up out of the pail.

(8) Check the fence voltage once each week and inspect the fence for damage by deer and grounding by vegetation. Apply peanut butter once a month.

(9) See **General Fencing Tips** for more information.

6-wire vertical electric deer fence

This is a permanent, high-tensile electric fence that can provide year-round protection from deer *(Figure 4)*. It is

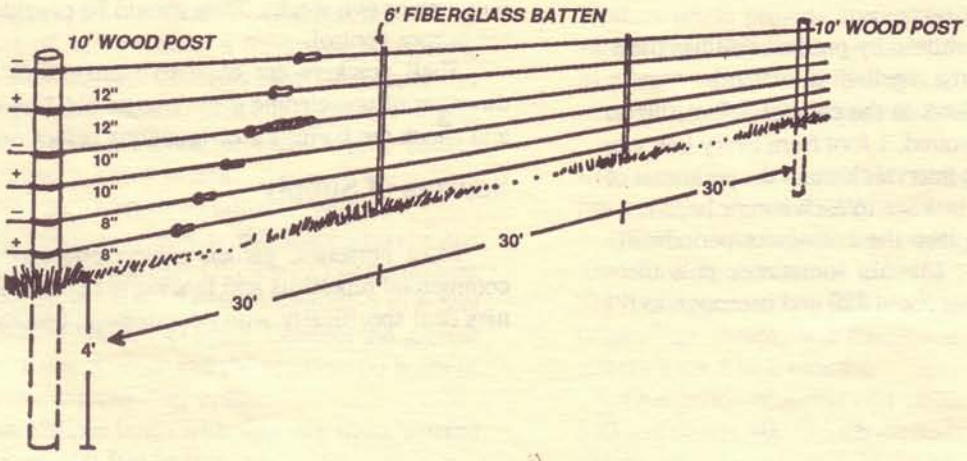

Figure 4. 6-wire vertical deer fence.

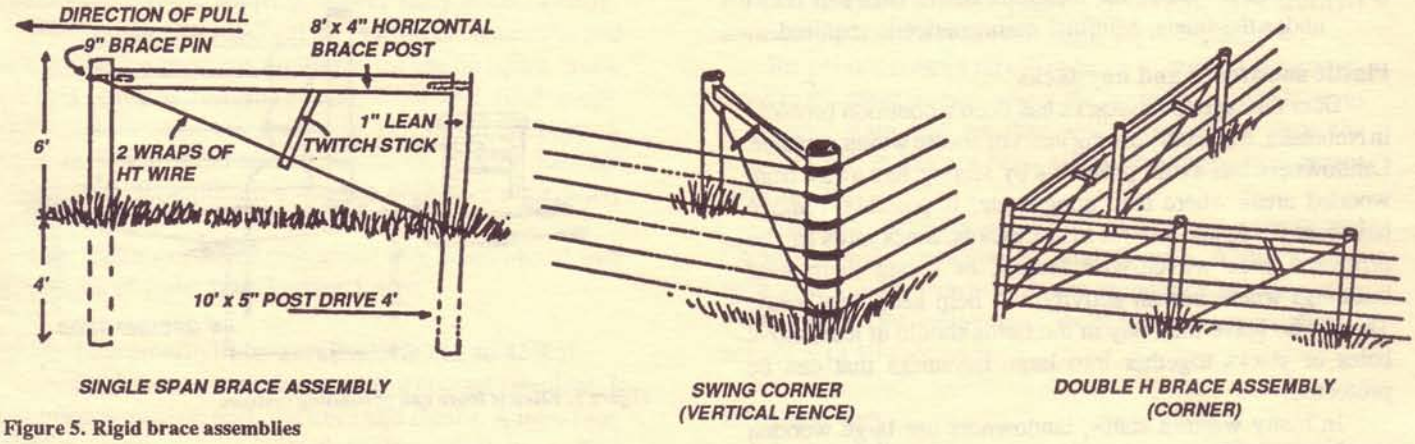

Figure 5. Rigid brace assemblies

effective at protecting field crops, orchards and other plantings from moderate to high deer pressures. Because of the costs involved, it is best suited to high-valued specialty crops or orchards. Deer usually will try to step through these fences because of the prescribed wire spacing; in doing so, they receive an effective shock.

High-tensile fences require strict adherence to construction guidelines concerning rigid corner assemblies and fence configurations. Frequent inspection and maintenance are necessary. High-tensile fences have a 20 to 30-year life expectancy. Material and installation costs range from $0.50 to $1.50 per foot.

Follow these steps to build a 6-wire vertical deer fence:

(1) Install rigid brace assemblies at the corners, ends and gates *(Figure 5)*. They must be entirely rigid, constructed of sturdy materials, and must strictly conform to design specifications.
(2) String one strand of high-tensile wire around the corner assemblies and apply light tension. Use 12 1/2 gauge wire (minimum tensile strength-160,000 psi, minimum breaking strength-1,300 pounds).
(3) Set 8-foot wooden or fiberglass line posts along the wire at 60 to 100-foot intervals.
(4) Attach the wire to insulators 8 inches above ground level. Use compression sleeves for splicing wires and in-line tensioners to apply 150 to 250 pounds of tension to the wire.
(5) Attach 5 additional strands of wire to insulators at 16, 26, 36, 48, and 60 inches above ground level and apply 150 to 250 pounds of tension.
(6) Place 8-foot fiberglass battens at 30-foot intervals, to maintain the spacing of fence wires.
(7) Use compression sleeves to connect the second and fourth wires from the top, and the bottom wire to the positive (+) post of a well-grounded, low-impedance fence charger.
(8) Connect the top, third and fifth wires directly to the grounding system.
(9) Check the fence voltage once each week and inspect the fence for damage by deer and grounding by vegetation.
(10) See **General Fencing Tips** for additional information.

Permanent woven-wire deer fence

Woven-wire fences are used for year-round protection of high-value crops and haystacks subject to high deer pressures *(Figure 6)*. These fences are expensive and difficult to construct, but easy to maintain.

Before the advent of high-tensile electric fencing, woven-wire fences were used most often to protect orchards and nurseries. In these situations the high crop value, perennial nature of damage and 20-year life span of the fences justified the high initial costs.

They are still used around small orchards, specialty crops and permanent stackyards. Material and installation costs range from $3 to $5 per foot.

Follow these steps to build a 10-foot, woven-wire fence:

(1) Set rigid corner assemblies where necessary.
(2) String a light wire between two corners and apply light tension.
(3) Set 16-foot posts along the wire at 40-foot intervals, to a depth of 4 to 6 feet.
(4) Attach a roll of 8 to 10-foot woven-wire to each of the two corners and roll them out to the center of the run.
(5) Attach fence strainers to the free ends of the two rolls, apply 50 pounds of tension, and splice the roll-ends together.
(6) Repeat steps (2) through (5) as necessary to complete the fence.
(7) Attach two strands of high-tensile smooth wire to the top of the fence to raise the height of the entire fence to 10 feet.

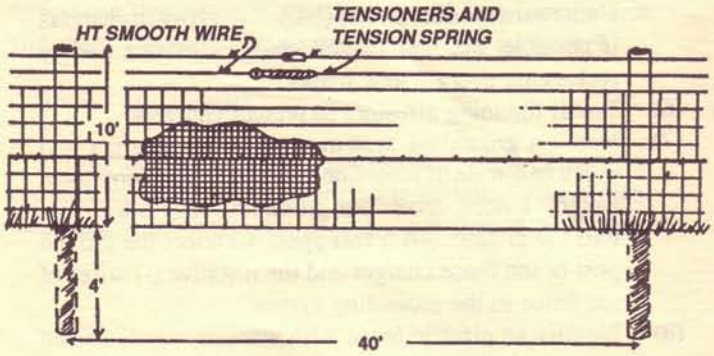

Figure 6. Permanent woven-wire deer fence

(8) Inspect the fence for locations where deer can crawl under the fence. Minimal maintenance is required.

Plastic snowfence and haystacks

Deer damage to haystacks has been a common problem in Nebraska, especially during years of severe winter weather. Landowners can avoid problems by storing hay away from wooded areas where deer congregate. If possible, remove hay from fields and store it in stackyards. Stackyards can be protected with woven-wire fences, or locate them near buildings where human activity will help keep deer away. Those who leave their hay in the fields should at least move bales or stacks together into large haystacks that can be protected.

In many western states, landowners use large wooden panels to protect scattered haystacks from deer and elk. These panels are expensive and cumbersome. Today there are new plastic snowfence materials that can be used to protect hay quickly and easily.

They are available in lightweight, 8 X 100-foot rolls that can be wrapped around and over haystacks. They also can be attached to posts to make easily-constructed stackyards.

Plastic snowfence costs about $200 per roll and will last 20 to 30 years if stored properly when not in use. The NGPC has a small supply of plastic snowfence available for landowner use.

General Fencing Tips

(1) Do not use cheap materials to reduce costs. This only will reduce the effectiveness and life-span of the fence you choose to build.

(2) Prepare fencelines before construction. It is easier and less expensive to install and maintain fences on clear, level runs. Minimize corners to increase strength and reduce costs.

(3) Fence flexibility is necessary to endure frequent temperature changes, deer hits, and obstructions. Allow wires to slide freely through insulators on fence posts.

(4) Gate designs vary depending on the type of fence constructed. Gates should be electrified, well-insulated and practical for the type of farming or ranching operation. Gates range from single strands of electrified wire with gate handles, to electrified panel or tubular gates.

(5) Use high-quality, low-impedance chargers that deliver a minimum of 3,000 volts at a maximum pulse duration of 1/1,000 second. Chargers must be approved by Underwriters Laboratories (UL). Use 110-volt chargers if possible. Six and 12-volt chargers require battery recharging every 2 to 4 weeks.

(6) Install lightning arrestors to protect chargers.

(7) Install a grounding system at the fence charger and every half-mile of fenceline *(Figure 7)*. For permanent electric fences, drive four grounding rods 5 to 6 feet into the ground and 6 feet apart. Connect the ground post of the fence charger and the negative (-) wires of the fence to the grounding system.

(8) Identify an electric fence with warning signs, affixed at intervals of 300 feet or less.

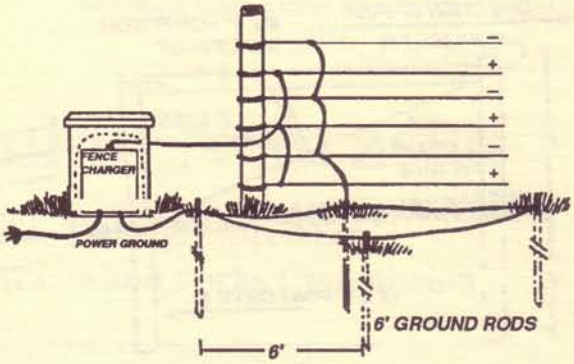

Figure 7. Electric fence and grounding systems

(9) Control vegetation near electric fences by mowing or applying herbicides to avoid excessive fence grounding by weeds.

(10) Always keep the fence charger on. Check the fence voltage weekly with a voltmeter. Maintain at least 3,000 volts at the furthest distance from the fence charger.

Repellents

Repellents can be helpful in reducing deer damage. They are best suited for use in orchards, gardens and ornamental plantings. The utility of repellents on row crops, forages, and other large acreage crops is limited because of high costs, limitations on use, and variable results. The effectiveness of repellents depends on several factors. Some repellents do not weather well, so you may need to reapply them periodically.

The availability of alternative deer foods often dictates the effectiveness of repellents. Deer may completely ignore repellents if they are food stressed.

It is important to anticipate deer damage problems. For best results, apply repellents at the first signs of damage to prevent deer from establishing feeding patterns.

Contact repellents repel deer by taste; apply them directly to the plants you want to protect. Area repellents repel deer by odor; apply them near the plants you want to protect.

There are a wide range of deer repellents available. Product labels provide specific information on the use of various repellents and must be followed to the letter, not only as a legal requirement, but also to achieve maximum success. Cost estimates are provided for comparative purposes.

Big Game Repellent (MGK-BGR) and Deer-Away [putrescent egg solids (37%)]

These contact repellents smell and taste like rotten eggs. They have been reported to be 85 to 100 percent effective. They are registered for use on fruit trees prior to flowering, ornamental shrubs, and Christmas trees. Applications are effective for 2 to 6 months.

One gallon of liquid or 1 pound of powder costs about $20 and covers 400, 3-inch saplings or 75, 4-foot evergreen shrubs.

Hinder [ammonium soaps of higher fatty acids (22%)]

Hinder is an area repellent that smells like ammonia and is one of the few products registered for use on edible crops. You can apply it directly to vegetable and field crops, forages, ornamentals, and fruit trees. Hinder has not been effective in several field studies, however. Hinder does not weather well. Reapplication may be necessary after heavy rains.

Four gallons of liquid cost about $45; when mixed with 100 gallons of water it will cover 1 acre.

Thiram [tetramethylthiuram disulfide (11 to 42%)]

Thiram is a fungicide that acts as a contact repellent. It most often is used on dormant trees and shrubs. A liquid formulation is sprayed or painted on individual trees. Two gallons of 42 percent Thiram cost about $50; when mixed with 100 gallons of water it will cover 1 acre.

Magic Circle [bone tar oil (93.8%)]

This area repellent has had mixed effectiveness in orchards, fields and vegetable crops. To apply, mix 2 gallons of Magic Circle with 100 gallons of water and spray a 6 to 10-foot band around the field. Do not apply directly on the crop.

Another method is to saturate cords or rags with Magic Circle and suspend them 30 inches above the ground and around the perimeter of the area to be protected. Magic Circle does not weather well and must be reapplied after heavy rains.

One gallon of liquid costs about $20; when mixed with 50 gallons of water it will cover 1 acre.

Miller's Hot Sauce Animal Repellent [capsaicin (2.5%)]

This contact repellent is spicy-hot and has had mixed effectiveness in repelling deer. It is registered for use on ornamental, Christmas and fruit trees. Spray the repellent on all susceptible new growth, such as leaders and young leaves. Do not apply to fruit-bearing plants after fruit set. Vegetable crops can be protected if sprayed prior to the development of edible parts.

Hot Sauce costs about $180 per gallon. Eight ounces of Hot Sauce with sticker, mixed with 100 gallons of water, will cover 1 acre.

Tankage (putrefied meat scraps)

Tankage is a slaughterhouse by-product that has traditionally been used as an area repellent in orchards.

Attach cans or cloth bags to the ends of 4-foot stakes. Drive the stakes into the ground, 1 foot from every tree you want to protect or at 6-foot intervals around the perimeter of a block. Place one cup of tankage in each can or bag.

You may have to replace the containers periodically because coyotes or other animals sometimes pull them down. A 50-pound bag costs about $20 and is enough to fill 300 bags.

Ro-pel (benzyl diethyl [2,6 xylylcarbamoyl] methyl) ammonium saccharide (0.065%), thymol (0.035%))

Ro-pel is a contact repellent bitter to taste. It is incorporated in the plant tissues, where the ingredients remain up to 6 months. Rain and weather will not wash or wear the repellent off. It has not been effective, however, in recent field studies.

You can spray Ro-pel at full strength on nursery and Christmas trees, ornamentals, and flowers. Apply it once each year to new growth. It is not recommended for use on edible crops. One gallon costs about $25 and covers about 1 acre of 8 to 10-foot trees.

Repellent tips

During fall and winter, apply contact repellents on dry days when temperatures are above freezing. Treat young trees completely. On older trees it is more economical to treat only terminal growth that is within reach of deer (6 feet above maximum snow depth). New growth that appears after treatment is unprotected. Contact repellents may reduce the palatability of forage crops and should not be used on plant parts destined for human consumption.

A wide variety of "home remedy" repellents have been used with mixed success. These include bar soap, human hair, blood meal, feather meal, cat feces, moth balls, creosote, rotten eggs, chained dogs and others. When using repellents, don't overlook new preparations or imaginative ways to use old ones.

Scare Devices

The most common scare devices are propane exploders and shell crackers. Each makes a loud noise that is temporarily effective at scaring deer out of an area. The NGPC has a limited supply available to landowners experiencing problems with deer.

To maximize the effectiveness of exploders, take action at the first sign of a problem. It is difficult to change the behavior of a group of deer once a feeding pattern has been established. Move exploders every few days and stagger the firing sequence to prevent deer from becoming accustomed to a regular pattern. Noise levels can be increased by raising exploders off the ground. Exploders usually are effective for only one or two weeks. They should be considered only for temporary control.

Shell crackers are explosive projectiles fired in the direction of unwelcome deer. Use an old 12-gauge shotgun and check the barrel for obstructions before every shot.

Sources of Supply

Most nurseries, garden centers and farm co-ops sell commercial repellents and fencing materials. Some companies deal specifically with deer damage control products.