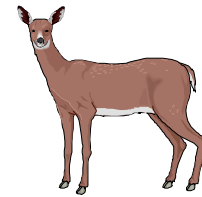
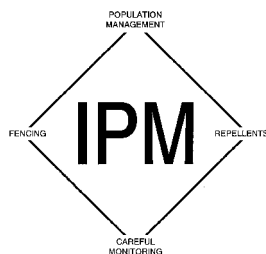


# AN INTEGRATED APPROACH TO DEER DAMAGE CONTROL



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The white-tailed deer is West Virginia's most popular game animal with 343 thousand hunters harvesting over 175 thousand deer annually. As deer numbers have increased, damage problems to farms and gardens have also increased. Deer have high nutritional requirements and can be very destructive; however, deer damage is a natural hazard of the farming profession and should be considered analogous to insect and disease problems. Therefore, an integrated management strategy (Figure 1) is often necessary for solving the problem.



**Figure 1. The IPM Approach to Deer Control--Population Management Integrated with Repellents or Fencing Plus Careful Monitoring.**

Concerns about deer damage have been voiced by many crop producers throughout West Virginia. Losses have been reported in corn, forages, small grains, tree fruits, Christmas trees, nursery stock, forest regeneration, landscape plantings, and vegetable gardens. Additional concerns are deer vehicle collisions, loss of plant diversity, and ecological changes which effect other wildlife species.

It has been estimated that in the United States deer damaged a total of \$100 million of agricultural crops, \$750 million of forest regeneration, and \$1 billion in deer vehicle accidents. Economic and recreational benefits from deer were judged to be \$14 billion. The

white-tailed deer is both a valuable and highly esteemed animal in the eyes of the public and at the same time a serious cause of agricultural and other damage problems. These conflicting values among residents of the State emphasize the need for options to control damage due to the white-tailed deer.

## CONTROL OPTIONS

The landowners' goals and values influence their choice of deer damage control options. If the landowner values his deer hunting recreation over commercial crop goals, then he is likely to choose a control option emphasizing protection from damage rather than decreasing the deer herd. Likewise, other landowners may choose to decrease the deer herd on their land during the regular hunting season by emphasizing the removal of does. Once the level of tolerance to deer damage and the desired size of the deer herd is determined then a comprehensive management program can be implemented.

**Regulated Hunting** is the best way to reduce the size of the deer herd and the amount of damage being received. Most counties experiencing deer damage have liberal antlerless deer seasons allowing the removal of does to accomplish this goal. Herd reduction requires the removal of does and cannot be achieved only through the harvest of bucks. Given their choice, hunters will frequently take a buck and not return for a doe. Landowners must regulate the harvest of does by choosing hunters who will carry out their management objectives. Access is of primary importance. No game regulation will reduce deer herds on private land unless sufficient hunter access is available to remove the required number of does.

Large acreages that are not hunted due to posting or other restrictions offer refuges to deer and may aggravate the problem on adjacent lands. When possible landowners should practice herd reductions on

multiple parcels of land to accomplish their objectives. However, frequently landowner values regarding the deer herd differ and an agreeable compromise may not be possible. Deer herd management may be accomplished on as little as 250 acres. Deer range is determined by family groups of related matriarchal units and herd reductions on even small acreages can be beneficial to landowners experiencing deer damage.

Landowners may choose to lease their lands to hunting clubs to derive additional income and remove surplus deer. If this choice is made the landowner should assure the removal of an adequate number of does in the lease agreement.

In general, deer herd reduction will occur when the number of antlerless deer removed on the property exceeds the number of bucks removed. Farmers and other landowners who wish to enjoy hunting benefits yet reduce deer damage on their property should contact the Division of Natural Resources (DNR) for assistance on how many does to remove from their property.

**Wildlife damage permits** are another option available to the landowner. If the herd cannot be reduced during the regular hunting season through sport hunting, provisions are available for obtaining permits from the DNR to remove deer which cause damage. Specific information is available from your local DNR conservation officer. Although crop damage is an attractive alternative and can be effective at removing specific offending animals, it can require significant amounts of time.

**Fencing** is an efficient method of controlling deer damage particularly in high value crops such as gardens, Christmas tree plantations, fruit trees and truck crops. There are many good electric fence designs including the simple one strand electric fence, poly-wire and poly-tape fencing, and high tensile electric fencing. The choice depends on the degree of protection needed. Fencing should always be applied before the damage problem is anticipated. Deer move through fencing as a learned behavior and are easier to turn before a feeding habit is established.

**Tree shelters and wire cages** have been successfully used in recent years to protect seedlings from browsing. The popular plastic tube type tree shelters in 5 to 6 foot heights provide protection from deer browsing during the first 2 or 3 years allowing the tree to become established. They also provide a greenhouse effect stimulating tree growth while contained in the shelters. Wire cages can also be used to protect high value trees such as fruit trees. These cages can be made of concrete wire or other welded wire and reused after the seedling is no longer

susceptible to browsing.

**Repellents** are often used when damage control is needed on a short term or limited area basis. Many home remedies such as human hair, soap, bloodmeal, and moth balls work on an intermittent basis and offer a degree of control. Commercial repellents offer better control but often must be reapplied every 3 to 4 weeks or after heavy rains. Repellents usually have a displeasing taste or a disagreeable odor.

**Other control devices and changes in farming practices** may be effective in controlling deer damage. Barking dogs, flashing lights, and noise devices can offer short term protection from deer damage. This is occasionally useful in situations such as some garden crops where the crop is susceptible to damage for a short period before it matures and is picked. Christmas tree growers may find species such as Scotch pine and Norway spruce less susceptible to deer damage. Semi-dwarf fruit trees are more susceptible to damage than full size trees. When the landowner suspects regeneration will be damaged after a timber cut, he may wish to specify that tree tops be left intact rather than lobbed to restrict deer movement and browsing in the cut area. Timing the timber harvest after a good mast year will result in more seedlings being available to regenerate the timber stand. Fertilizing crops can increase damage and may actually decrease productivity in some situations. Many landowners have decreased deer damage by providing wildlife plots near the bedding grounds of the deer as alternative food sources. Conversely, fields adjacent to good deer cover may be more susceptible to deer damage than those farther away.

## MAKING A CHOICE

Ideally, a deer damage control program should be planned well in advance of planting a crop. Do not wait until you have experienced high losses to begin doing something about the problem. Consider the characteristics of the land to be protected as well as future planting plans. In addition to the type of crop, important factors to consider are the presence of neighboring deer cover, the size of the acreage to be protected, and the topography of the land.

Your plans should include deer hunting season. How many does need to be removed from the farm? Can your neighbors and family remove the needed number of does or should you consider inviting guests to hunt during the antlerless season? The Hunters Helping the Hungry program channels surplus deer to the needy during the regular hunting season. Contact your nearest DNR office for information. Remember,

buck hunters will not solve your problem of too many deer.

The type of deer damage control program chosen will depend on the level of damage. If damage is light, there are probably only a few offending animals and wildlife damage permits or repellents may be effective in controlling the problem. Wildlife damage permits can be obtained from the DNR to remove the deer. Browsing of certain garden crops can be a learned behavior pattern in deer and many times removal of the offending animal before the behavior is passed on to other individuals can stop the damage. Repellents are usually cost effective where temporary control is needed and repeated applications are not necessary. Deer may be more easily repelled in the summer when other succulent browse is available. Where large areas or repeated applications of repellent are needed, fencing is often more economical and supplies better control.

A simple and economical one strand electric fence 3 foot high has proven effective in controlling deer damage in gardens. Fencing should always be in place before damage begins and if an electric fence is used then it should be charged well in advance. Electric poly-wire and poly-tape fences used in conjunction with peanut butter baits wrapped in tin foil are effective in controlling deer damage. Research at West Virginia University and Pennsylvania University have shown that the cost of 6-wire high tensile electric fence for 5 acres is \$140 per acre but decreased to \$35 per acre for 100 acres. Rills and gullies may decrease the ability to effectively use fencing to control deer damage. Fencing also may not be economical where crops are planted in small and dispersed fields.

Passing through a fence is a learned behavior for deer. When deer are able to negotiate an electric fence the farmer should have a wildlife damage permit ready and quickly kill the animal before this behavior is learned by other deer.

## **MAKING YOUR CONTROL PROGRAM WORK**

The key to an effective deer damage control program is an integrated program of removing antlerless deer in season combined with control techniques to minimize deer damage. It is difficult to change deer feeding habits after they have begun, and

therefore it is important to anticipate when problems will occur. Monitor your crops throughout the year to determine the times when there is the greatest potential for deer damage, and apply controls before damage begins.

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