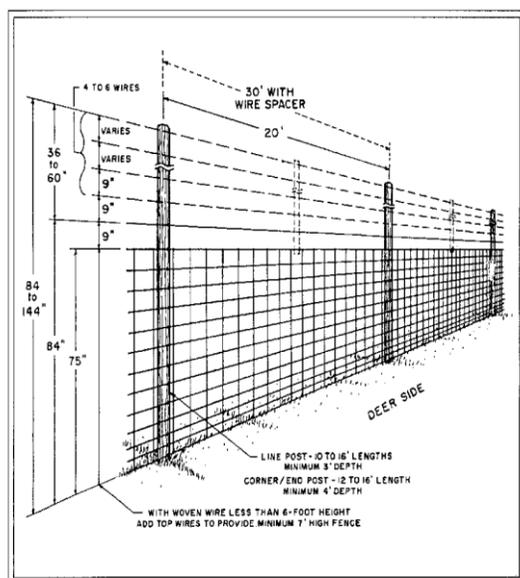


Reducing Deer Damage to Ornamental and Garden Plants

Choosing the appropriate deer damage management option depends upon many variables. The primary factors include deer foraging pressure, damage levels observed, and the economic losses sustained. Deer feeding pressure is influenced by weather conditions (especially winter snow depths), and the amount and types of different plants that are available. Damage to ornamentals or gardens depends upon the frequency of deer feeding attempts, the proportion of the plant within the reach of deer, and the potential for the plant to recover from a given level of feeding.



Fencing

Fencing can be an effective means of reducing deer damage. While a variety of fence types may successfully deter deer, consideration should be given to the following:

The preferred approach is the construction of at least an 8-foot-high woven-wire fence that completely encloses plants requiring protection. If deer must be kept out entirely, this is the only reliable method. Fences reaching 5, 6 or even 7 feet are useful deterrents, but do not always provide complete exclusion. The eight foot fence is expected to last 20-30 years.

An alternative barrier consists of a smaller welded-wire fence, which includes a top so the plants to be protected are completely enclosed. This procedure may be more economical for protecting bedding plants vegetables or perennial flowers. This smaller, complete enclosure can be

cost-effective for very small garden plots or isolated plantings. The alternative barrier for small planting beds may be a much lower fence depending upon the crop needing protection. Plants started in seedbeds may be protected with a one- or two-foot high covered fence.

Non-electric fences may be sufficient to keep deer out of an area if their density is not particularly high (<10/ sq. mi.) and a variety of natural foods are available. Several sizes of welded or mesh wire can be combined with additional single wires. For vegetable or flower gardeners who do not wish to lose plants to deer or other wildlife pests, we recommend a 1/2-inch welded-wire fence three feet high, with the bottom edge buried 6 inches beneath the soil. This will deter rodents, rabbits, and woodchucks from entering the area. With an additional 3 wires spaced 1 1/2 feet apart above the welded wire, this design is a suitable enclosure but not an absolute barrier for deer.

Electric fences. Several types of electric fencing provide a less expensive, yet effective alternative to the complete barrier described earlier. The polytape livestock electrical fencing coated with peanut butter can be effective for home gardens. This simple, temporary fence works best under light deer pressure during summer and fall. The poly-tape fence apparently attracts deer with its bright color and peanut butter odor. Deer make nose-to-fence contact when they approach, receiving a substantial shock and quickly learn to avoid such fenced areas. A variation of this fence substitutes a suitable repellent such as Hinder® or other deer repellent for peanut butter, and in recent studies is shown to be even more effective at

repelling deer. Certainly the combination of electronic shock with either attractants or malodorous repellents is more effective than electric fences alone.

The vertical, high-tensile electric fence is a proven deterrent to deer and is effective in 6-or 7-wire combination. Because deer choose to crawl under or step through a fence rather than jump over it, the spacing of the wire is critical. The bottom wire should be 10 inches above the ground with additional wires at 10-to 12-inch spacing to be effective.

A modification of the vertical fence is the slanted 7-wire electric fence which has proven effective for larger acreages. This fence is constructed in much the same way as the vertical fence but slants outward to present the deer with a more effective two-dimensional barrier. With all electric fences vegetation must be carefully controlled beneath the fence to avoid loss of power. The slanted fence requires more extensive vegetation control, and can be maintained with herbicide sprays or gas-powered weed trimmers.

Another design consists of a 3-wire combination of electrical fencing, deer repellent, and visual cue. This fence is economical, easy to build, and quite effective if maintained in good working order. Standard 7-or 8-foot wooden or steel posts, with electrical wires placed 18, 36 or 54 inches above ground, can be supplemented with 5-or 6-inch strips of cotton cloth stapled to the wires at 10-foot intervals. The cloth strips are then saturated with odor-based repellents (i.e., Hinder® or Deer Off®) and the wires are energized with at least 5,000 volts. Solar-powered charging units are available that will hold a charge for 24 hours even on cloudy days. The addition of another electrical wire 4 inches above ground will exclude most woodchucks and raccoons, but not rabbits and mice.

With electrical fencing of any design it is important to remember that:

- A quality energizer that delivers a minimum of 5,000 volts is a must.
- High-tensile fences require strict adherence to construction guidelines (i.e., corner assembly, wire configurations and maintenance).

Repellents

Several deer repellents are available to the home gardener, and function either as taste or odor repellents. Most commercially available repellents can be applied as a spray to ornamental shrubs and non-bearing fruit trees. Generally, repellents are only partially effective. There is nothing on the market that provides absolute protection. Repellents are most effective when applied on a regular 4-week schedule, before serious damage has begun. They work best on plants that are low on the deer's preference list, and especially when alternate natural foods are available. Recent studies indicate satisfactory protection of perennial flower beds and some vegetable gardens by alternating the use of more than one repellent.

Repels-All (putrescent whole egg solids, clove oil, and garlic oil)

Repels-All deters by touch, taste, and smell. Protects plants and property for up to 2 months per application.

Deer-Off Repellent Spray (putrescent whole egg solids, capsaicin, and garlic)

Deer-Off is a combination odor and taste-based product registered for use on flowers, grass, bulbs, ornamental shrubs, edible crops, plants, seedlings and trees. Deer-off is available as a spray and should be applied to all leaves, stems and branches at the beginning of each season.

Hinder® (ammonium soaps of higher fatty acids)

This odor-based product is one of the few repellents registered for use on edible crops. Hinder can be applied directly to home gardens, ornamentals, annual and perennial flowers, and fruit trees until 1 week before harvest. Its effectiveness is usually limited to 2 to 4 weeks but varies because of weather and application technique.

Miller's Hot Sauce® Animal Repellent (capsaicin)

This taste-based repellent is registered for use on ornamentals, fruit and nut trees, bushes, vines and hay bales stored in the field. Apply it with a backpack or trigger sprayer to all susceptible plant parts, such as leaders and young leaves. Do not apply to fruit-bearing plants after fruit set. Vegetable crops also can be protected if sprayed prior to the development of edible parts. Weatherability can be improved by adding an antitranspirant

Other Measures

The use of dogs as a frightening device is another alternative that merits attention. A dog of sufficient size and temperament may be kept on a leash near the garden and allowed to stay outdoors overnight. A number of deer damage problems have been alleviated with a system such as this. An alternative that has shown great promise in recent experiments is the use of a dog contained by a buried electrical ("invisible") fence. Such an invisible fence has great utility in keeping the dog at home, while simultaneously repelling deer from the property.

Noise-making devices (i.e., exploders, sirens, whistles, etc.) are not recommended for the home garden because of the disturbance to neighbors and lack of effectiveness. Deer readily acclimate to the noise and are little disturbed after a few days of exposure.



Choice of Landscape Plantings

Homeowners are often faced with the dual problem of preventing deer from damaging a vegetable garden and/or a few fruit trees, while also protecting ornamental shrubs, flowers, and trees. In the first instance, the choice of garden plants is dictated by the owners desire for specific products, so little compromise is possible. With ornamental plants, however, the homeowner has some additional latitude in choice of species and variety, and may avert future problems and expenses by selecting landscape materials from a list of plants considered less desirable to deer. Publications describing the most-and least-preferred food plants for deer are available. Such lists may vary somewhat across broad geographic regions, but are generally reliable.

This information can be useful both for selecting plants that are unlikely to be damaged by deer, and identifying those ornamentals that almost certainly will require protection from deer, even in areas where populations are low and feeding patterns are selective.

Resistance of Woody and Herbaceous Plants to Deer Damage

This list is included only as a guideline and was developed from a variety of sources which may not all be equally reliable. Note that no plant is completely "deer-proof", particularly when deer densities are high. This is not meant to be a comprehensive list.

Woody Ornamental Plants Rarely Damaged by Deer

American holly
Colorado blue spruce

Barberry
Japanese pieris

Birch

Common boxwood

Herbaceous Plants Rarely Damaged by Deer

Annuals and Biennials

Perennials

Ageratum	Amsonia	Garlic chives	Pennyroyal
Blanket flower	Anemones	Gas plant	Peony
Blue salvia	Angelica	Globe thistle	Perennial blue flax
Cleome	Anise-Hyssop	Goatsbeard	Plumbago
Dahlia	Astilbe	Goldenrod	Primrose
Dusty miller	Avens	Hay-scented fern	Purple coneflower
Edging lobelia	Baby's breath	Heath	Queen-of-the-prairie
Forget-me-not	Balloon flower	Heather	Rhubarb
Four O'clock	Barrenwort	Hellebore	Ribbon grass
Heliotrope	Basket of gold	Hungarian speedwell	Rosemary
Marigold	Bittersweet	Interrupted fern	Royal fern
Morning glory	Beebalm	Jack-in-the-pulpit	Russian sage
Parsley	Bergenia	Jacob's ladder	Sage
Polka-dot plant	Bishop's weed	Japanese pachysandra	Scilla
Poppy	Bleeding heart	Japanese painted fern	Sensitive fern
Snapdragon	Boltonia	Joe-pye weed	Shasta daisy
Sweet alyssum	Bugbane	Knapweed	Snowdrops
Sweet basil	Bugleweed	Kirengeshoma	Soapwort
Thorn apple	Buttercup	Labrador violet	Spike gayfeather
Verbena	Butterfly bush	Lamb's ear	Statice
Wax begonia	Candytuft	Lavender	Sundrops
Zonal geranium	Christmas fern	Lemon balm	Sweet Cicely
	Cinnamon fern	Lenten rose	Sweet William
	Cinquefoil	Lily-of-the-valley	Sweet Woodruff
	Clematis	Lupine	Tiger lily
	Columbine	Lungwort	Thyme
	Coreopsis	Mint	Toadflax
	Crown imperial	Mullein	Turtlehead
	Daffodil	New York fern	Tussock bellflower
	Dead nettle	Oregano	Wisteria
	Evening primrose	Ornamental onion	Wood fern
	False indigo	Ostrich fern	Wormwood
	Feverfew	Oriental poppy	Yarrow
	Forget-me-not	Painted daisy	Yucca
	Foxglove	Partridgeberry	

Woody Ornamental Plants **Seldom** Severely Damaged by Deer

American bittersweet	Corkscrew willow	Japanese flowering cherry	Red pine
Austrian pine	English hawthorn	Japanese wisteria	Redvein enkianthus
Beautybush	European beech	Kousa dogwood	Scots pine
Chinese holly	European white birch	Mountain laurel	White spruce
Chinese junipers	Forsythia	Mugo pine	
Common lilac	Honey locust	Pitch pine	
Common sassafras	Inkberry	Red osier dogwood	

Woody Ornamental Plants **Occasionally** Severely Damaged by Deer

Allegheny serviceberry	Cranberry cotoneaster	Japanese tree lilac	Rose of Sharon
Anthony water spirea	Dawn redwood	Judd viburnum	Rugosa rose

Basswood	Deciduous azaleas	Koreanspice viburnum	Saucer magnolia
Border forsythia	Doublefile viburnum	Late lilac	Silver maple
Bradford callery pear	Douglas fir	Leatherleaf viburnum	Smokebush
Bridalwreath spirea	Downy serviceberry	Northern red oak	Smooth hydrangea
Bush cinquefoil	Eastern hemlock	Oldfashion weigelia	Staghorn sumac
Carolina hemlock	Eastern red cedar	Panicled dogwood	Sugar maple
Carolina rhododendron	Eastern white pine	Panicled hydrangea	Sweet cherry
Chestnut oak	European larch	Paperbark maple	Sweet mock orange
China girl/boy holly	Firethorn	Persian lilac	Trumpet creeper
Climbing hydrangea	Greenspire littleleaf linden	Privet	Virginia creeper
Common horsechestnut	Japanese cedar	Red maple	White fir
Common pear	Japanese flowering quince	Rockspray cotoneaster	White oak
Common witchhazel	Japanese holly	Rosebay rhododendron	Willows

Herbaceous Plants Occasionally Damaged by Deer

Annuals and Biennials		Perennials	
Pansy	Coneflower	Iris	Sedum
Sunflower	Cranesbill geranium	Meadow rue	Wood hyacinth
	English ivy	Peony	

Woody Ornamental Plants Frequently Severely Damaged by Deer

American arborvitae	Cherries	English/Japanese yew	Fraser fir
Atlantic white cedar	Clematis	Japanese yew	Hybrid tea rose Plums
Apples	Cornelian dogwood	Pinxterbloom azalea	Rhododendrons
Balsam fir	English ivy	European mountain ash	Wintercreeper
Catawba rhododendron	English yew	Evergreen azaleas	

Herbaceous Plants Frequently Damaged by Deer

Annuals and Biennials		Perennials	
Hollyhocks	Cardinal flower	Daylily	Rose
Impatiens	Crocus	Hosta	Tulips
Mexican sunflower			

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