

Controlling Damages of Vertebrate Pests of Grapes

Birds and mammals cause varying amounts of damage to grapes, grapevines, grape root systems, and leaves. As with any animal damage control program, identification of the pest is required before proper controls can be selected and applied. Control method(s) selected vary according to species causing damage, length of damage period, and plant part(s) damaged.

Bird damages and control

By far the greatest losses to grapes caused by birds usually occur as sugar content of the grapes peaks. This peak coincides with large influxes of migrating pest birds, resulting in a high potential for damage for 30 to 60 days.

Major problem species are robins, starlings, blackbirds, cedar waxwings, and house finches. Damage caused by the first four species is total removal of grapes, observed after flocks of 20 to 1,000 or more birds are seen in vineyards. Because house finches and other pest birds are somewhat smaller, their damage is characterized by a triangular peck mark on the fruit, which renders the fruits unsaleable. These smaller birds often do not flock, and their presence in vineyards often goes unnoticed until the damage is discovered.

Robins and starlings are known to almost everyone, and no description is necessary. Brewer's blackbird is a robin-sized bird, all black, with very distinctive bright yellow eyes. Starlings and Brewer's blackbirds often occur in mixed flocks. Starlings and other blackbirds often stage before flying into vineyards. Staging consists of flying into and perching on adjacent trees, power lines, or other readily available perch sites from which hundreds to thousands of the birds can be seen before they descend into the vineyards. Robins do not stage but rather fly low, close to the ground, as they approach vineyards.



The cedar waxwing is slightly smaller than a robin, and is pale dun in color. Usually a crest is visible on the head as is a yellow band across the tips of the tail feathers. Often a red droplet or two of color is observed on the wing close to the shoulder when the bird is perching. These birds fly in large flocks and enter directly into the fields as a flock. The house finch is a sparrow-sized bird of a pale red to pinkish color. These birds do not flock or stage.

Preventive methods often are best. These methods tend to be more costly, however, so you need to have a history of consistent damage occurring from year to year or have neighbors with a history of damage so that

the application of controls will be to prevent predictable damage.

The repellent Mesurol is probably the best method for preventing loss. It is sprayed on the grapes once from early to mid-September before damage occurs and then applied successively at 1- to 3-week intervals as birds are seen visiting the vineyards. Tests indicate that the chemical does not present a hazard to people or to other wildlife, does not impart a flavor to the wine, and does not inhibit fermentation processes. Be sure to prevent drift of Mesurol into ponds or streams; low concentrations are toxic to fish. Mesurol was used effectively under an emergency exemption granted for the 1981 season. It cannot be used in subsequent years unless another

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Recommendations for Controlling Bird and Mammal Pests of Grapes

Pest	Control method	Application	Remarks	
Birds	Repellant	Check with Extension Service, consultants, or dealers to determine if the use of Mesurol is permitted and, if so, what directions to follow.	Cost \$50 to \$150 per acre. Reduces loss 60 to 95 percent.	
	Netting	Support netting above vines on frame, or drape over vines in mid-August. Remove immediately before harvest.	Initial cost high (\$600 per acre) but net life of 7 to 10 years reduces cost to \$50 to \$85/acre. Nearly 100 percent effective.	
	Scare devices		Distress calls: Play on portable tape deck with speakers directed at birds. Be prepared to use dawn to dusk, 7 days a week.	Effectiveness of scare devices usually declines over time as birds become accustomed to them. Tapes hard to get. Equipment costly, about \$100. Requires separate tape for each bird species. Works well with starling, blackbird; poor with robin, waxwing.
			Exploder guns: Place at various locations in field 200 to 400 feet apart. Best results when placed on platforms above level of trellis. Change locations every 1 to 2 weeks.	Units fairly expensive (\$150 to \$300). May be objectionable to neighbors. Best with starlings, blackbirds. May not work as well for robins, waxwings. Operate automatically; don't require human presence.
			Cracker shells: Exploding shells fired from 12 gauge shotgun or blank pistol. Shoot dawn to dusk, 7 days a week.	Expensive (\$60 per shell). Work best with starling, blackbird. May misfire; some personal hazard.
			Visual devices: Raptor balloons need to be moved at least 75 feet to new location daily.	Costs \$50 per balloon/kite. Balloons holding kites blow down into vineyards and puncture after only 5 days. High winds damage kites and balloons.
			Visual devices: Fake snakes and metal foil pie plates need to be attached to trellis or other support at 10- to 20-foot intervals.	Birds rapidly lose fear of these devices.
	Shooting	Dawn to dusk, 7 days a week. Permit required to shoot all birds except starling, blackbird. Obtain permit from U.S. Fish and Wildlife Service.	Usually ineffective. Kills few birds; constant influx of migrating birds requires constant shooting.	
Mammals				
Mice	Habitat alteration	Keep grass and other vegetation between and under vines mowed to 1/2 inch to 1 inch.	Prevents damage from occurring. May be done in conjunction with other cultural practices.	
	Poison baiting	Zinc phosphide on wheat seed (commercial bait). Apply down hole and in surface runways. Best results in winter when other foods are scarce.	Cheap; takes little time. May poison nontarget animals.	
Pocket gopher	Trapping	2 traps placed per burrow system. See Extension agent for brochure on trapping. Trapping in early spring will kill females before they can breed.	Requires some skill, but effective and cheap. Used in small acreages (less than 10 acres).	
	Poison baiting	Baits placed in each burrow system. See Extension agent for brochure on baiting. Baiting in early spring will kill females before they breed.	Cheap, rapid, no hazard to environment. Hazardous to pets?	
	Gassing	Place gas cartridge down burrow, shovel dirt over burrow entrance and other entrances if gas is seen seeping out.	Works best in wet soil (in spring).	

Recommendations for Controlling Bird and Mammal Pests of Grapes (continued)

Pest	Control method	Application	Remarks
Mammals (continued)			
Ground squirrel	Trapping	Place Conibear 110 trap, baited with bacon, over burrow entrance. Secure trap to ground with stake. Flag stake for easy location.	Do not use in areas where children, cats, or dogs might be exposed to trap.
	Gassing	See above under pocket gopher.	
	Shooting	Ground squirrels are an easy target as they emerge from burrow. Use 22 short cartridges to reduce damage of ricocheting bullets.	
Rabbit	Repellant	Paint repellant (Hinder, Repel, Thiram) on base of grape plant to height of 18 inches in late fall, before peak of damage. Reapply if rain occurs within 24 hours of application.	Fairly inexpensive; no hazard to environment.
	Poison baiting	Place bait (½ cup) in prepared bait stations 100 feet apart in damaged area. Check stations weekly to replenish baits. Remove and bury dead rabbits.	Some hazard to nontarget wildlife (mostly other rodents).
Deer	Frightening devices	Exploder guns—see above under birds.	Good control for 2 to 3 weeks only.
	Repellants	See above under rabbits. Also may place on leafy parts, especially on plants along border of vineyard.	
	Fencing	Use only when vineyard is large (over 10 acres) and damage can be expected for many years. See Extension agent for details of building fence.	Expensive (\$6,000+ per mile), but long life (15+ years) stretches out cost. Nearly 100 per cent effective.
	Shooting	Requires permit from State Departments of Fish and Wildlife. Difficult, as deer usually feed at night.	Often most damage has occurred before permit to shoot can be obtained. Usually does not solve problem.

emergency exemption or registration is granted. Check with consultants, dealers, or the Extension Service to determine if the use of Mesurol is permitted and what directions to follow.

An alternative to repellants is the use of netting, which is draped over the trellis, usually 2 to 3 weeks before the anticipated peak of sugar content in grapes. Netting can be a nuisance to use, as it tangles in the vines and grapes and may cause some damage. It is the most effective method, however, in terms of reducing damages, as little to no damage occurs when netting is properly used.

When the occurrence of bird damages is not a certainty, you may wish to apply scaring techniques after the birds begin damaging grapes. Scare devices using noise (such as alarm bird calls), firecrackers (shot from shotguns and pistols), or acetylene guns often are used to frighten birds out of fields.

These scare devices work best on starlings, which tend to leave immediately and often

do not return for some time. They do not work well with robins and are ineffective against warblers, which simply move to another part of the field.

You must use sound scare devices from dawn to dusk throughout the period of vulnerability of grapes to damages, thus requiring a large investment of time and money.

Visual frightening devices are of limited effectiveness. Strips of colored cloth or metal foil, tied to string or trellis wires, flutter in the breeze but do not keep birds out for long. Tin pie plates, tied in pairs to flash and clink together in the wind, have kept starlings out of small vineyards. Raptor-kite balloons, simulating hawks flying overhead, reduced damages by an average of 41 percent in three California vineyards but cost more than the damage they would have prevented. Plastic snakes have been used in small gardens to frighten away birds, but their use is untested on vineyards.

Birds can be shot in fields with varying results. Remember that at the time of damage birds are migrating through your area. Killing today's birds will have no effect on those that will migrate into the area in the next few days. Shooting, therefore, is a continual process, expensive, and less effective than preventive control methods.

Mammal damages and control

Mammal damages to vineyards are much less serious than bird damages, and they often affect parts other than the fruit. The damages usually occur over a longer period of time than those caused by birds.

Meadow mice often gnaw on the lower part of the grape plant, removing bark and sometimes killing the plant if the bark is girdled completely around the plant. This damage usually occurs in winter, often under snow when other foods are not available for these animals. Damage by mice is obvious as

no other animal has such small teeth marks or nibbles as close to the ground.

The presence of meadow mice is indicated by small holes in the ground about the size of a 50-cent piece and tunnel systems that come above ground and are woven under grass.

Pocket gophers generally cause damage by eating the roots of grape plants or sometimes girdling, as do meadow mice, the lower part of the stem. Tooth marks by gophers are larger than those of meadow mice and higher on the plant, usually 2 to 7 inches above ground. The only evidence of root feeding by gophers is when the grape plant begins to lose its leaves and looks sick over a fairly long period of time.

Do not confuse gophers with moles, which do not damage grape plants. The mole mounds are volcano-shaped, with a hole directly in the middle. Usually the mounds are arranged in a single line. Gopher mounds are flatter and horseshoe-shaped, with the entrance generally visible but often plugged at one edge. Gopher mounds are arranged in clumps rather than singly in a line.

Ground squirrels may nibble on bark or eat the grapes. Usually these animals cause little damage; more often, it is their presence in the vineyard that causes concern rather than actual damage. The ground squirrel can be indentified by the burrow, which is a fairly large, open tunnel, the size of a small orange, with no mound.

Rabbits cause damage primarily by girdling the bark of the grape plant near the ground but often extending to a foot above ground. The tooth marks of rabbits are larger than those of mice or gophers. Rabbits also will eat leaves from seedling grapes, usually within 8 inches from ground level. Rabbits usually don't have a burrow system. Their presence is indicated by seeing the animal but rarely by any other means.

Deer may bark the lower part of the grape plant, and their large tooth marks separate them from the smaller mammals. Deer also may strip bark by biting at the base and then ripping up towards the top of the plant. Deer will eat leaves and the small maturing grapes. This damage is typified by ragged edge of the leaf or the stem supporting the maturing grapes.

In all cases for control of mammal damages, you should be sure that the extent of the damage is such that the losses will be more expensive than the cost incurred by using control methods. The control methods are specific for individual mammal species.

Often mouse problems can be prevented by keeping the area between rows of grape plants closely mown to within 1/2 inch of the ground. This habitat manipulation reduces the amount of cover that mice must have for

protection against predators and often prevents any mouse problems from occurring. When mouse damage is serious and can't be solved by mowing, the problem should be controlled by the use of poison baits. Place wheat seed treated with zinc phosphide down individual mouse holes and in shallow runway systems that are found woven under grass.

Gophers often can be trapped (the preferred method), but poison baits can be applied. Check with your local Extension agent for a circular on these two methods. Ground squirrels often can be captured by placing a number 110 conibear trap, baited with a piece of bacon, directly over the entrance of a tunnel system.

When rabbits and deer are damaging the plant by stripping bark from the base, often the application of a repellent provides adequate control.

If damage is caused only by rabbits, strychnine-treated pellets placed in bait stations may resolve the problem quickly.

If deer are the only marauders, repellants on the base of the plant or on leaves often will provide the necessary degree of protection. If the damage by deer is persistent and over a large area of the vineyard, you might consider constructing an antideer fence. These fences are costly; however, considering their longevity, they often are a good long-term investment.

You can acquire a permit to shoot depre-dating deer, but often this is unsatisfactory as the location of the vineyard may be such that it is not safe to shoot. The solution is temporary—other deer will return to continue damaging. Often the damaging deer are in the vineyard only at night, when it is impossible to shoot them.



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