

Integrated Pest Management (IPM) Resources

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Integrated Pest Management for Voles



Voles can cause damage in alfalfa, grass or grain fields or pasture by forming networks of runways which may be concealed by dense vegetation. These runways cut through the vegetation and connect subterranean burrows through the sod and among plant roots. Voles feed on plant roots and stems, especially grasses.

To properly evaluate a vole problem, frequent scouting or inspection of areas prone to voles (dense vegetation or areas with good vegetation cover, areas near ditch banks, etc.). Look for narrow runways through the grass and small piles of brownish droppings and short grass clippings scattered along them. Producers should monitor vole activity regularly to identify any increases in vole activity and populations, or note where new populations have established. Proper management of grass/pasture and weeds year-round is the best means of preventing or reducing the problem. Mowing grass in overgrown areas or management-intensive grazing will help reduce desirable vole habitat. Significant vole damage can be done in winter under the cover of snow.

Voles are very prolific and breed several times a year and produce litters of up to eleven young each. The female is sexually mature at four weeks of age, and may have as many as eight to ten litters per year, but one to five litters is most common. The gestation period is 21 days. At this rate, when conditions are favorable, vole numbers can increase rapidly in a short period of time. Populations are cyclic, with peaks occurring every four years or so. Populations vary depending on climate, food, habitat availability, disease, rodenticide use, and the presence of predators. Natural enemies include hawks, crows, owls, snakes, and skunks. These should be protected whenever possible to help in vole control. Lack of adequate perch sites in the area limits effectiveness. Vole predation is an under-estimated control measure. Providing predator habitat can form the basis for long-term control. A project in California reported good control of rodent pests using an IPM approach including the use of owl and kestrel nest boxes and raptor perches. Project participants reported a reduction in damage, or no damage, and a reduction in the use of traps or baits.



Before initiating any pest control measures, the producer should be absolutely certain his/her actions are necessary and should be sure to consider all alternatives. Evaluate the amount of

damage that has already occurred, damage anticipated without control, benefits of control vs. cost, and the effect the control program might have on non-target animals and the environment.

Poison baiting can be done by hand or by using mechanical baiting. Hand baiting is the most flexible method. It is well suited to conditions where soils are not suitable for mechanical equipment, or for supplemental baiting during the winter when the ground is frozen or covered with snow, or in smaller areas of mouse/vole activity. Zinc phosphide bait is most commonly used, but strychnine, warfarin or diphacinone poisons are also used. Make sure to follow all label specifications and consider all safety precautions when using poison baits and fumigants. Many products may require a pesticide applicators license. Baiting is most effective in fall, winter and early spring. Once natural foods become available, voles are less likely to accept the bait. Poison baits have the potential to impact non-target species, especially birds, so proper application is very important. Domestic animals may also be at risk. Bait containers reduce the risk of access by non-target species, and protect the bait from moisture. Some poison baits are limited to use on specific sites, such as in orchards, so make sure to read the label specifications.

Mechanical baiting with a mouse trail builder is a fast, safe and economical method of control. Mechanical baiting is especially suited for large areas. Prepared strychnine and zinc phosphide treated baits are recommended. A single trail should be made on each side of the area to be treated. The soil should be moist enough so that the artificial runways will remain intact until the voles contact the bait through the intersecting natural runways. The ground should not be disturbed for several days following application.

Aluminum phosphide fumigation is sometimes used within the burrows. However, the complexity and shallow depth of the vole burrow system typically allows fumigants to escape, with reduced effectiveness.

Trapping is an option for areas with low vole populations. Trapping is best performed in the fall because the voles accept baits more readily once the first hard frost has occurred. Also, it's best to reduce populations before the winter when concentrated damage often occurs. Ordinary mouse traps (snap traps) or live-trap cages can be used. Set traps at right angles to their runways in the grass. Peanut butter or apple baits work well. Traps can be covered with a cardboard box or pan. Dead rodents and traps should be handled very carefully, as serious diseases have been attributed to rodent contact in some states.

Additionally, there are commercial devices that inject gases, such as oxygen and propane, underground to cause a shockwave that kills the voles and that may collapse the burrow and runways.

References

This guide was developed from the following sources:

Animal damage control in Washington. Washington State University Cooperative Extension, Extension Bulletin EB 1147.

Predator control of rodent pests. Final report for the Western IPM Center 2006 project, Polk SWCD, CA.

Reducing vole damage to plants in landscapes, orchards, and nurseries. University of Maryland Cooperative Extension, Fact Sheet 654.

Voies. Pennsylvania State University Cooperative Extension, Wildlife Damage Control 9.

Voies in Montana – Their biology, damage and control. Montana Department of Agriculture.

Zenith Vineyard – Sustainable farming in Oregon’s Willamette Valley.
<http://www.zenithvineyard.com/the-vineyard.html>