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Voles Management in Apple and Peach Orchards

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Tree Fruit Twilight Meeting
Wightman's Farms
Morristown, NJ

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Vole Identification

Pine Vole

Tail shorter than hind leg

Meadow Vole

Tail longer than hind leg (almost twice the size)

http://www.biokids.umich.edu/critters/

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Habitat

- Meadow voles primarily feed in open vegetation as long as there is enough ground cover, while pine voles prefer underground burrow systems just below the ground surface.

- Vole diets include many primary food sources other than tree bark. That includes seeds, bulbs and tubers for pine voles, and seeds, grain, grasses, sedges and insects for meadow voles.

- Both species can attack fruit trees during fall and winter when they run out of other food sources.

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Pine voles damage

- Pine voles are difficult to notice until the tree growth begins to decline by which time it is difficult to save the tree.

- Most pine vole damage will be seen as root damage and crown girdling under the ground surface.

http://curbstonevalley.com/blog/?p=8581

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Meadow Voles Damage

Un-damaged tree

Damaged tree

Tooth marks on peach tree

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Meadow Voles Damage

Girdling of peach tree trunk

Peach tree died after girdling

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Damage prevention and control: Voles Monitoring

- Identify the infested area.
- Meadow voles create extensive surface runways in the grass which are about 1.5 inch wide - often visible after close moving.
- Bits of leaves and vole droppings in pathways are the surest signs of meadow vole presence.
- Pine vole burrows and runways are just underground, but a “soft” feel of the soil under foot is one indication of pine vole presence.

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Damage prevention and control: Differentiate the species

- To differentiate the species, specifically the pine voles, place 20 traps per acre close to tree trunks, active runs, and heavily shaded areas.

- Next day check the traps;

  if the tail is shorter than its hind leg = pine vole.

  If the tail is longer than the hind leg = meadow vole.

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Damage prevention and control: Estimate the vole population

- In a simple apple sign test, place an apple slice at every 20-30 trees and 24 hours after placing them, inspect the teeth marks.

- Number of apple slices with gnaws (teeth marks) in relation to total number of trees gives a percentage index of vole populations.

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Damage prevention and control

- Regularly mowing the ground cover down to 3 to 5 inches is a recommended practice to include as part of an integrated vole damage management program.

- Maintaining a vegetation-free zone and orchard sanitation discourages voles from living close to the trunk where they can cause great damage.

- It not only limits the availability of food for voles' survival, but also make them exposed to predators.

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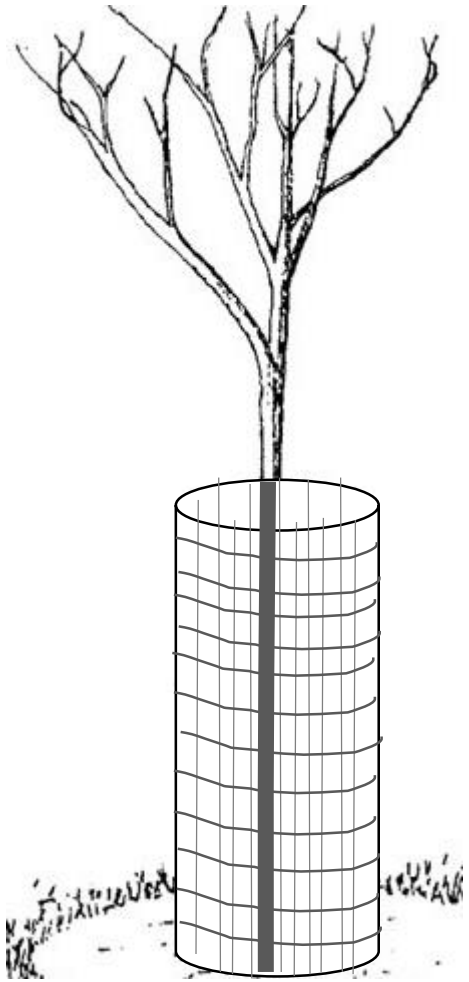
Wire guards are very effective against vole attacks.



- Cylinder-shaped wire guards made from hardware cloth mesh of 1/4 inch placed around the tree trunks can protect the young apple and peach trees.

- However, make sure to bury the hardware cloth at least 6 inches below the surface to control both meadow and pine voles.

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Spread a layer of gravel around the trunk

Courtesy, Anna Wallis, Cornell Extension

- The addition of a 12 inch diameter, 3-4 inch deep gravel layer around the trunk will also help.

- Gravel collapses in hollow space and on a vole runway, and helps prevent vole access to the trunk and crown area of the tree.

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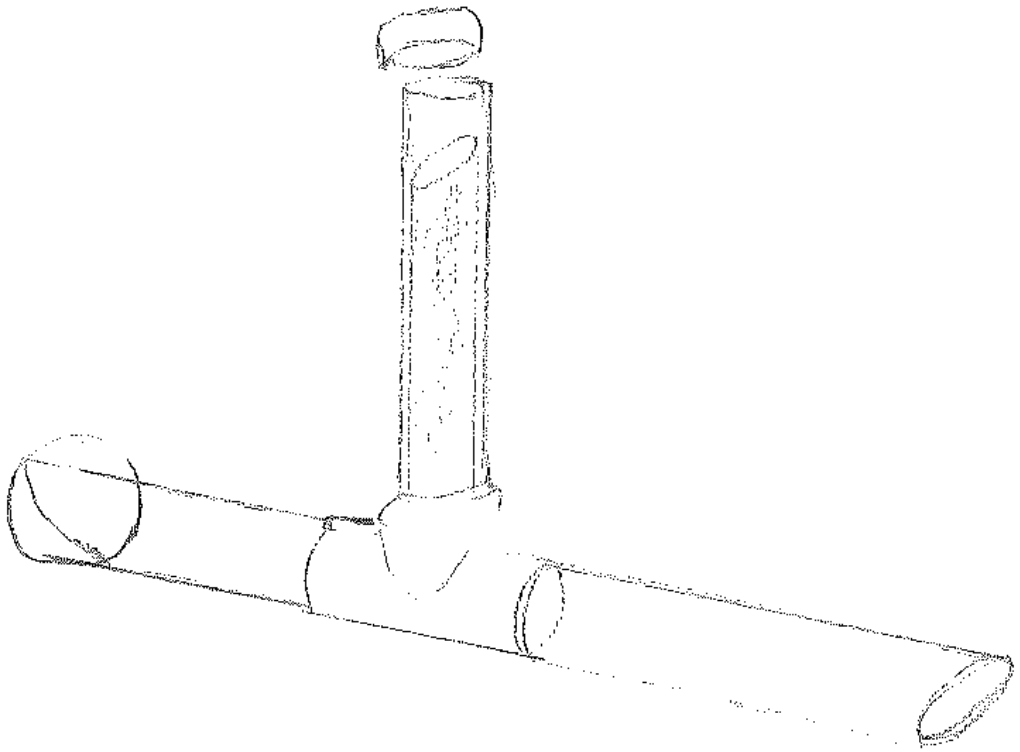
Commercially available rodenticides for orchard use

Name	Type of bait	Product Formulation	Comment
Zinc Phosphide	Fast acting, acutely toxic	Pellet or Grain	More effective against meadow voles However when applied by coating an apple slice at 1-2 spoons per quart of water, it was effective to control pine voles.
Chlorophacinone	Slow acting anticoagulants	Pellet	More effective against pine voles. Weather resistant hence can be used any season. Several applications at 3 week intervals may be required for effective control.
Diphacinone		Pellet or Grain	

Bait stations



Courtesy, Joan Medany

- Broadcast placement of toxicants is discouraged, since it is inefficient and can put wildlife at higher risk.
- Bait stations can reduce the chances of bait getting into contact with non-intended animals or humans.
- Easy to make using ‘T’ or ‘L’ shaped PVC pipes.

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Considerations for bait stations

- Place bait stations at lest a month before baiting.
- Place stations into or near active runs.
- Avoid placing bait immediately before or after a rain storm.
- The reliance of one bait over another is discouraged,

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Remember!

- Regular moving and weed free strips are the best control measures to prevent the damage.
- Zinc phosphide is very effective but highly toxic bait. Acquire any necessary permits before you apply any type of bait.
- Predatory wild life such as an owl and cats are good for small orchards.
- Subscribing to IPM programs can prevent voles damage.

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Subscribe to IPM program for early warning and recommendations

Un-damaged tree

Tooth marks on peach tree

Girdling of peach tree

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Thanks

- Daniel Ward,
  Extension Specialist in Pomology, Rutgers University

- Dean Polk,
  Statewide IMP Agent, Cooperative Extension of Rutgers University

- You