



Wildlife management in apples

Paul Curtis, Associate Professor, Department of Natural Resources

First published in *New York Integrated Fruit Production (IFP) Protocol for Apples*, 2006,

ecommons.cornell.edu/handle/1813/5219.

Close and regular mowing of orchard drive lanes and surrounding fields to minimize available protective habitat and food sources during the growing season is essential to reduce vole and rabbit populations. Enhancing natural predator populations (kestrel, owl, hawks, fox, etc.) by manipulating or providing habitat will assist with vertebrate management, but cannot be relied upon to provide control during vole outbreaks. In areas prone to deer damage, 8-ft-high (2.5 meter) barrier fencing should be considered in orchard establishment costs for long-term (20+ years) protection of fruit trees. Always monitor orchards for vertebrates and their damage.

Vertebrate Damage Mitigation Practices

Animal Pest	Preferred Practices Under IFP
Beaver	Wire trunk guards, exclusion drift fencing, electrified exclusion fencing.
Birds	Netting; visual scare device (scare-eye balloons, silhouettes, raptor models, reflective tape); auditory frightening device (recorded alarm calls, pyrotechnics, propane cannon).
Rabbits	Wire trunk guards on trees at least 2 ft. (60 cm) high; habitat manipulations including removal of brush piles & protective cover within or near orchards.
Raccoons	Electrified exclusion fencing.
Voles	Wire trunk guards; close mowing of orchard middles; vegetation reductions (<40% ground cover) under trees; removal of dropped apples and prunings; habitat manipulations including elimination of unmowable areas within orchards; monitor to determine the need for rodenticides.
White-tailed Deer	Exclusion fencing 8 ft. (244 cm) high-tensile woven wire, or 5 to 6 ft. (152 to 183 cm) electric exclusion fencing; invisible fencing with dogs; habitat manipulation including elimination of protective cover within orchards.
Woodchucks	Exclusion fencing (individual wire trunk guards or electrified exclusion fencing); habitat manipulation including removal of brush piles within or near orchards.
Animal Pest	Practices where Restrictions and Caution Apply*
Beaver	Population reduction through trapping by licensed trapper or licensed nuisance wildlife control operator.
Birds	Population reduction through shooting by licensed hunter of permitted species in appropriate season (crows, turkeys); or unprotected species (European starlings). All songbirds are protected wildlife.
Rabbits	Population reduction through shooting by licensed hunters or landowners in appropriate seasons; through trapping by landowner or by licensed nuisance wildlife control operator.

Raccoons	Population reduction through shooting by licensed hunters or landowners in appropriate seasons; through trapping by landowner, by licensed trapper, or by licensed nuisance wildlife control operator.
Voles	Population control through trapping by landowner.
White-tailed Deer	Population reduction through shooting by licensed hunters and landowners, or their agents with DMAP permits or Deer Damage Permits.
Woodchucks	Population reduction through shooting by licensed hunters or landowners; through trapping by landowner or by licensed nuisance wildlife control operator.

* Conduct shooting and trapping only as defined by New York State Department of Environmental Conservation regulations. Shooting for nuisance wildlife control is allowed only when neighboring occupied buildings are >500 ft. distant; shooting when neighboring buildings are less than 500 ft. distant requires neighbor permission. Also check local ordinances, as shooting and trapping are prohibited in some areas.

Vertebrate Control Chemicals

Green Materials For Vertebrate Management – Preferred under IFP	
Materials	Uses and Precautions
ammonium soaps (Hinder)	Deer/rabbit repellent; direct plant application or on flags on exclusion fencing; not during bloom; potential fruit finish problems after petal fall under hot, humid conditions.
egg solids (Deer Away, Big Game Repellent)	Deer repellent; direct plant application, or on flags on exclusion fencing; on dormant bearing and non-bearing trees.
capsaicin (Hot Sauce Animal Repellent)	Deer/rabbit/rodent repellent; not within 60-90 days of harvest.
egg solids+capsaicin+Allium sativum (Deer-Off, Bonide Shot Gun Deer & Rabbit Repellent)	Deer/rabbit/rodent repellent; direct plant application, or on flags on exclusion fencing; not within 2 weeks of harvest.
Yellow Materials For Vertebrate Management – Restrictions and Cautions apply	
Materials	Uses and Precautions
thiram (Chew-Not)	Deer/rabbit/rodent repellent; for dormant applications; worker hazard.
thiram (DeerPro, Gustofson 42S, Optima 4F)	Deer/rabbit/rodent repellent; on non-bearing trees that will not bear within one year of application; worker hazard.
zinc phosphide pelletized bait (Bonide Orchard Mouse Bait, Hopkins Zinc phosphide Bait, ZP Rodent Bait AG)	Rodenticide; post-harvest; hand-bait method or use of bait stations preferred; non-target/beneficial species effects; worker hazard; bait-shyness concerns.
zinc phosphide grain-based bait (Zinc phosphide oat bait, Zinc phosphide corn bait)	Rodenticide; post-harvest; hand-bait method or use of bait stations preferred; increased non-target/beneficial species effects; worker hazard; bait-shyness concerns.
chlorophacinone (Rozol Paraffinized Pellets)	Rodenticide; post-harvest; hand bait only; non-target/beneficial species effects; worker hazard; must have SLN permit on person during application.
gas cartridges	Woodchuck control in burrows; non-target/beneficial species effects; worker hazard; potential fire hazard in dry conditions.

The information, including any advice or recommendations, contained herein is based upon the research and experience of Cornell Cooperative Extension personnel. While this information constitutes the best judgment/opinion of such personnel at the time issued, neither Cornell Cooperative Extension nor any representative thereof makes any representation, endorsement or warrantee, express or implied, of any particular result or application of such information, or regarding any product. Users of any product are encouraged to read and follow product-labeling instructions and check with the manufacturer or supplier for updated information.

Cornell University provides equal program and employment opportunities.