

**Paul D. Curtis, *Wildlife Management in Vegetable Crops***

**Summary:**

In New York State, wildlife negatively impact a variety of fruit, vegetable, and ornamental crops. Based on a grower survey, deer damage to agriculture has been estimated at about \$59 million dollars annually in NYS, and damage to vegetable crops likely exceeds \$6 million. Deer, birds, and raccoons are the wildlife species most often responsible for vegetable losses, especially in sweet corn. However, as black bear populations expand across the Sothern Tier, reports of bear damage to corn are increasing.

Localized deer damage may be reduced by increasing the harvest of female deer on and near farms. Growers should encourage hunters on their land to take female deer with Deer Management Program (DMP) tags (regular doe tags issued to hunters in parts of NYS) during the regular NYSDEC big game season. If the damage levels are still not tolerable, landowners can obtain Deer Management Assistance Program (DMAP) permits from NYSDEC for taking additional antlerless deer during the regular hunting season. However, sometimes deer damage is severe outside the hunting season. For this situation, NYSDEC will often issue Deer Damage Permits (DDPs) for taking antlerless deer on specific farm lands. DDPs are not hunting tags, and program participants can use methods that would not be legal during hunting season. For example, DDPs may allow the use of lights after dark, baiting deer into safe shooting zones, and possibly the use of rifles in shotgun zones. All local laws and statewide firearms restrictions apply, so lethal deer removal may not be possible on all farms.

Fencing is another way to reduce wildlife damage during the growing season. Given the acreage and crop value for most vegetable farms, 8-foot-high deer exclusion fencing is seldom practical. Woven-wire barrier fences used to protect apple orchards or nursery crops often costs \$6.00 - \$8.00 per linear foot. Electric poly-tape or poly-wire fencing on fiberglass poles with insulators 30 inches above ground have protected sweet corn and other vegetables from deer damage on fields 5 to 8 acres in size. If the area is 10 acres or more, often the effectiveness of the fences will decline. A high-voltage charger designed for deer is needed, and make sure it is well-grounded. Baiting the electric fence with attractants (peanut butter on aluminum foil tabs) or repellents (egg-based deer repellent sprayed on cloth strips) will increase the effectiveness of the fence. The total package for fencing 5+ acres should be <\$400, and most of the cost will be for the fence charger. Such a fence should cost about \$1.50- \$2.00 per linear foot. With electric fencing, if woodchucks are also a problem, you can easily add a second strand of poly-tape about 6 inches above ground to exclude them.

Raccoons take sweet corn during the milk stage, usually just a few days before harvest. A two-wire electric poly-tape fence with strands 5 and 10 inches above ground can exclude raccoons from sweet corn. If deer are also a problem, add a third electric wire about 30 inches above ground as noted above. Trapping can also be used to remove raccoons causing damage. There are foot-encapsulating traps (e.g., Duffer, Li'l Griz) that are designed only to catch raccoons, and will not trap or harm non-target wildlife or pets. Raccoons are rabies-vector species in NYS,

and anyone trapping raccoons should have rabies pre-exposure immunization. Under NYS Environmental Conservation Law, raccoons and other wildlife causing damage cannot be transported off of your property. The animals must be humanely euthanized and buried on site, or released alive.

Several species of birds may cause damage to vegetable crops, especially ripening sweet corn. The most common are red-winged blackbirds and crows in field settings. Starlings and cowbirds are more likely to damage stored field corn or other grains. Several auditory and visual scare devices can reduce bird damage for short periods of time (days to a few weeks). However, birds are smart, and can quickly learn to identify real danger from non-lethal scaring methods. Scare devices eventually fail, but may provide growers with sufficient time to harvest a block of corn. Tips for increasing the efficacy of scare devices include moving them every few days, presenting sounds at random intervals, and reinforcing scare methods with real danger (occasionally shooting birds with a shotgun).

Staff from Cornell Cooperative Extension of Delaware conducted a pilot crow/bird damage study in corn fields on five farms. Two bags of Dairyland seed were supplied per farm, including one bag of untreated control seed, and another bag that was treated with Avipel (anthraquinone) bird repellent. Population counts of seedling corn were conducted at each of three plots (Dairyland control seed, Dairyland Avipel-treated seed, and the farmer's usual corn variety) on the five farms at the V3, late V4, and V5 stages. Corn pulling and bird damage was also photo documented. Field observations showed that birds (mainly crows) preferred pulling seedling corn in the farmer's corn variety, but there was some feeding on the untreated Dairyland seed. The Avipel-treated corn seed exhibited very little to no bird damage. Corn seedling counts taken from the most damaged field were: 29,700 plants/acre in the Avipel-treated seed, 27,000 plants/acre in the untreated seed, and 25,700 plants/acre in the farmer's seed. Both the Dairyland treated and untreated seed produced much better looking corn as opposed to the producer's variety. Avipel currently costs \$10 per acre to treat (as applied on Dairyland seed). With a value of \$45 per ton on corn silage, it would require approximately 0.25 tons/ac more silage to break even on this cost. If we assume on average, NYS farms have silage corn populations of 30,000 plants per acre and on average, a yield of 15 tons/ac across all farms, (=0.0005 ton/plant), then each to achieve 0.25 tons more yield would require 500 more plants per acre. The pilot study showed in treatment areas were achieving an average of 2000 plant more per acre than the control.

Lethal control of birds depends on the species and specific regulations. Shooting birds usually does not remove many individuals, but it can be effective for reinforcing other bird-scaring methods such as propane exploders. European starlings are non-native and have no federal or state protection. They can be killed at any time with any legal control method (trapping or shooting). Other bird species causing damage to crops are native and have both federal and state protection. Regulations for protecting crops from damage vary by species. Crows are considered a game bird in NYS, and there is an open crow season from September 1 to March 31, during Friday through Monday each week. In addition, Environmental Conservation law § 11-0523 – 1 states that, "Owners and lessees and members of their immediate families actually occupying or cultivating lands, and persons authorized in writing

and actually employed by them in cultivating such lands, may take (a) unprotected wildlife other than birds and (b) starlings, common crows and, subject to section 11-0513, pigeons, when such wildlife is injuring their property or has become a nuisance thereon.” So if starlings and crows are causing crop damage, landowners can trap or shoot them.

Regulations are different for blackbirds. Environmental Conservation law § 11-0523 – 3 states that, “Red-winged blackbirds, common grackles and cowbirds destroying any crop may be killed during the months of June, July, August, September and October by the owner of the crop or property on which it is growing or by any person in his employ.” So these bird species can be shot or trapped if they are causing sweet corn damage during the growing season. All local laws and statewide firearms restrictions apply (e.g., 500-foot discharge requirement), so shooting blackbirds may not be possible on all farms.