

2006 Extension Report to the Southern Region Small Fruit Consortium

Title: Preventing Wildlife Damage in Small Fruit Crops

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Objectives:

- 1) To identify species of wildlife causing crop and plant damage to small fruit plantings in the Southeast
- 2) To review and evaluate different options for preventing wildlife damage available in small fruit crops
- 3) To demonstrate methods of wildlife damage prevention in small fruit plantings
- 4) To develop a publication (both hard copy and online) regarding the selection, utilization (including costs) and evaluation of wildlife damage control options

Justification:

Crop losses due to wildlife damage are substantial. Eighty four percent of respondents to a survey listed bird damage as a serious problem in blueberries, with an estimated 10% of the crop being damaged (1). Fifteen states and British Columbia were included in this survey. If this damage was suffered throughout the United States, based on 1989 production and prices, bird damage to blueberries cost growers about \$8.5 million.

A survey of producers in 7 major fruit producing states in 1998 revealed that \$41 million, or 1% of the U. S. production of apples, blueberries and grapes was lost to wildlife damage (2). This survey, funded by USDA, APHIS, Wildlife Services included 8,850 producers and was conducted in California, Michigan, New Jersey, New York, North Carolina, Pennsylvania and Washington. Table 1 summarizes the results of this survey

Table 1. 1998 Estimates of Wildlife Damage to Apples, Blueberries and Grapes

Crop	\$ Loss	Wildlife Pest	\$ Spent for Control	Control Method
Apples (14%)	13.5 Million (1% of value of production)	Starlings (16%) Deer (14%) Mice & Voles (10%) Robins (9%)	4.0 Million	Pyrotechnics (21%) Flagging (15%) Repellents (15%) Frightening Devices Fencing (14%)
Blueberries (23%)	4.4 million (4% of value of production)	Deer (18%) Blackbirds (15%) Starlings (14%) Robins (11%) Crows, Ravens (10%)	443,000	Pyrotechnics (30%) Frightening Devices Fencing (15%) Repellents (10%) Flagging (9%)
Grapes (13%)	23.1 million (1% of value of production)	Starlings (14%) Ground Squirrels (9%) Blackbirds (8%) Deer (8%) Coyotes (7%)	5.4 Million	Fencing (24%) Flagging (18%) Pyrotechnics (18%) Frightening Devices Repellents (7%)

Methodologies:

This project was designed to involve at least two years. The first year was to determine potential sites and to find out what some of the problems are and what, if any, wildlife control practices have been utilized. The second year will be devoted to investigating specific control strategies for their effectiveness and their feasibility for use by growers.

Trials are being conducted with commercial small fruit producers and at University of Tennessee Research and Education Centers. During the 2005 growing season, efforts were directed at identifying sites where wildlife damage is a problem and where the size and location of plantings would lend themselves to control studies. In situations where some types of wildlife damage control efforts were expended, attempts were made to quantify the effectiveness and to discern reasons for success or failure.

Once suitable sites were located, identification of specific wildlife problems was investigated and evaluations of the sites were conducted to determine factors favoring the presence of wildlife and obstacles to control. Current methods of wildlife damage control under consideration include the use of taste repellents, scare techniques and exclusion.

Results:

Birds were cited as the major wildlife related problem in small fruit crops. For many of the growers, control options are limited. Scare devices such as ribbons, plastic owls and snakes and mylar tape seem to offer very temporary benefits at best. Noise devices such as propane cannons are no better. Birds quickly become used to them. Noise is an issue for many of the growers as their plantings are located fairly close to inhabited areas.

Trials were instituted at the Middle Research and Education Center in Spring Hill and at the Highland Rim Research and Education Center in Springfield, TN. At the Spring Hill site, an AV Alarm was set up for bird control. This alarm emits a distress call at programmed intervals and this call is supposed to serve as a deterrent to bird presence in the area. To be effective, it is essential to identify what types of birds are causing the problem and to get a distress call peculiar to that type of bird. Robins and mockingbirds were the main types of birds feeding in a blueberry planting and a vineyard near adjacent to where the alarm was placed. This alarm was the smallest unit available, but still had a coverage area of about three acres. Therefore, it was not possible to have a control at this site. However, losses to birds in previous years and evidence of bird feeding in both the blueberry and grape plantings did allow for some idea of the magnitude of crop losses.

The AV alarm did appear to have some benefit for a while after its use began. However, as is the case with other scare devices, if shooting is not used at intervals to reinforce the perception of danger, the effect appears to be temporary. Losses in the

vineyard due to birds varied from an estimated 20 percent in some early cultivars to complete crop loss in several later maturing cultivars.

At the Highland Rim Research and Education Center, work was done to quantify fruit losses due to birds. In this planting, Bluecrop was the primary highbush cultivar and Tifblue was the primary rabbiteye cultivar. With both cultivars, nets were draped over frames designed to enclose two plants. One plant adjacent to the covered plants was left unprotected. Yields were recorded on both the netted plants and the unprotected plants as a way to evaluate losses to birds.

With Bluecrop, no fruit was ever harvested from the unprotected plants. Birds consumed 100 percent of the yield. Harvest with Bluecrop at this site ran from the first week in June until the first week of July. Tifblue harvest ran from the second week in July through mid August - a total of six weeks. Fruit losses to birds in Tifblue were greatest in the early part of harvest and lessened with time. Early yields were decreased by about 65 percent. Near the end of harvest, losses were in the order of 30 percent.

Blueberries were harvested twice a week throughout the summer months and fruit weight were taken each time to determine losses to birds.

Plans are to expand the netting work for the coming year. Methods of netting application and removal will be investigated. Bird pressure will be determined by leaving some plants uncovered, similar to what was done this year.