**2005 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
5) To conduct replicated research trials on the use of methyl anthranilate as a taste repellent for birds in small fruit plantings

## 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** | 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 (14%) Fencing (14%) |
| **Blueberries** | 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 (23%) Fencing (15%) Repellents (10%) Flagging (9%) |
| **Grapes** | 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 (13%) 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.

For the 2006 growing season, control strategies to be investigated will include:

1. Methyl anthranilate as a taste repellent. Methyl anthranilate has shown promise for bird control in some areas and with some crops. One potential drawback has been an off flavor detectable with some crops, such as grapes.

2. Scare alarms. Noise makers such as carbide cannons tend to be ineffective in scaring off birds and other forms of wildlife as they soon become used to the noise. Alarms which simulate bird distress calls can be effective under certain situations. It is essential to know the type of birds causing problems since the distress calls must be specific for them. It is also important to have the calls broadcast at irregular intervals and from varying sites to prevent birds from detecting a pattern to the calls. Remote cameras will be utilized in some sites to aid in determining what types of birds and other wildlife are causing crop damage.

3. Exclusion. Wildlife will physically be excluded from sites through the use of fencing for deer and netting for birds. Fencing designs will be evaluated for cost and effectiveness. Different netting strategies will be utilized to determine effectiveness, cost and ease of use.

## Results:

Growers of small fruit crops list wildlife damage as one of the major problems they encounter. Experiences attempting to control damage have varied considerable and most growers cite wildlife damage to their crops as a growing concern.

Numerous locations have been identified for testing various control practices. These sites are both on private farms and on UT Research and Education Centers.