

COMPLETED PROJECT REPORT

Project Title: Electronic repeller system and field protocol for bird control in wine grapes

Research Agency: University of California Davis

Principal Investigator: M. Delwiche

Budget: \$146,754

Background: Birds are a major pest in table and wine grape vineyards of California. The main problem species are the European starling, the house finch, and the American robin. Control strategies for birds in vineyards include acoustical repellants (propane cannons and electronic sound devices), visual repellants (mylar tape), and physical exclusion (netting), as well as grower hazing with shotguns and pyrotechnics. Netting is the most effective method for controlling damage, but is also the most expensive alternative. The remaining techniques provide only limited control.

Previous research funded by VPCRAC has developed an electronic repeller (broadcast unit) for controlling crows in almond orchards. This study expands upon the results from the crow study by modifying the electronic circuit and adapting the field protocol to minimize bird damage in wine grape vineyards.

Objectives: The overall goal of this project is to develop reasonable and effective alternatives to netting for controlling bird damage in vineyards. Specific objectives are:

- 1) Assess the potential for hazing specific species of birds in vineyards with alarm and distress calls.
- 2) Modify the current bird repeller circuit for use in vineyards with multiple pest species.
- 3) Determine a strategy and protocol for field control.
- 4) Measure the effectiveness of control in the field.
- 5) Make call, circuit designs, and control protocol readily available to all growers.

Summary:

A manuscript has been prepared and submitted for publication. The abstract from the paper describing the results from this project is provided below.

Abstract: Certain species of birds are pests for wine grape growers. In California, serious problems are caused by house finch (*Carpodacus mexicanus*), American robin (*Turdus migratorius*), and European starling (*Sturnus vulgaris*). The objectives of this research were to evaluate the effectiveness of different alarm and distress calls at hazing these species, to determine a protocol for use of broadcast calls in the field, and to measure the effectiveness of control. Species specific alarm and distress calls from birds being restrained, placed near a natural predator, or dosed with a toxicant were collected. Based on call testing and bird activity surveys, four starling calls, three finch calls, and one robin call were selected for use with the

broadcast units. The units were deployed about the time of veraison at a density of 0.6 ha per broadcast unit, concentrated on the perimeter of the vineyard, and moved weekly in a fixed pattern. Three control strategies were compared: netting, conventional methods (reflective tape, propane cannons, pyrotechnics), and conventional methods supplemented with broadcast alarm and distress calls. Three different regions were selected in the Carneros American Viticultural Area and three commercial Pinot noir vineyards were chosen in each region to test the control strategies. Damage data were measured over two consecutive seasons, first to evaluate the effect of treatments without broadcast calls (year 1, 2004), and then to determine the effect of broadcast calls (year 2, 2005). From these tests it was found that broadcast distress calls significantly reduced damage compared with conventional control (5.7% vs. 13.0%) and netting yielded the least damage (2.3%).

Final Update:

09/27/06