

Specialty Crops Research Program
Quarterly Report:

Report Period: Inception of Project - March 31, 2003

Project Title: Ecological Management System for Controlling Olive Fruit Fly in California
Olives

Principal Investigator(s): Frank G. Zalom and Louise Ferguson

Summary: Systematic collections of olive fruit flies were begun in September, 2002, in 12 California counties which represent diverse climatic zones suitable for conducting phenology studies. Fly and weather data from each site are being transmitted electronically to the Zalom lab at UC Davis.

Major Activities: Protocols were established for trapping and monitoring olive flies in different climatic regions of California. Supplies and meteorological equipment were purchased from other sources and deployed. Biologists in cooperating Agricultural Commissioner's Offices were trained to do the monitoring, and olive fruit fly trapping and associated weather data were collected from 12 counties during this period. Data were returned to UC Davis for summary and graphing. Sites and cooperators for the 2003 field season have been identified. Monitoring and dissection of flies, and associated fruit development and weather data will begin again in the next quarter. Information on olive fruit fly and olive fruit development were presented at several industry meetings since the inception of the project, and a web site is in development which will provide general olive fruit fly information and trapping results.

Objectives Addressed:

1. Determine seasonal phenology for olive fruit fly in selected table and oil cultivars throughout the various climatic zones of California. Progress - olive fruit fly phenology data collections were initiated in September, 2002, in diverse climatic zones. Table and oil cultivars have been identified for more intensive study in the 2003 season.
2. Adapt or develop an olive fly degree-day model for California. Progress - a literature search for olive fruit fly phenology and general development information was completed.
3. Develop a degree-day model to determine timing of fruit development in olives. Progress - this objective will commence in 2003.
4. Instruct growers and pest managers in use of the phenology models to improve olive fly management and reduce damage to olives. Progress - Zalom, Ferguson and Zalom's grad student have made presentations at industry meetings on the project and on what is known about olive fly phenology and development. A web site is being prepared.

Procedures and Methods Established: Protocols for trapping flies were established for our cooperators in the Agriculture Commissioner's Offices. Protocols for sending trapping data and meteorological data electronically to the Zalom lab was established and data for 2002 have been transmitted. Two procedures for dissection flies to determine mating and reproductive status were evaluated and one will be selected for our research. Sites for trapping, fruit collections and caging of flies in 2003 have been identified. Effect of fruit cultivar on olive fruit fly success will

be assessed in the USDA germplasm grove at the UC Davis Wolfskill Experimental Farm and required permission to do so has been obtained.

Significant Observations, Results or Impacts: Fly populations are much greater in coastal areas than in the central valley. Flies remain attracted to yellow pheromone and ammonium bicarbonate baited traps throughout the year in coastal areas, but are not commonly trapped by this method during mid-summer or winter in the central valley. McPhail traps appear to be more attractive to olive fruit flies during mid-summer and indicate that adults are present and can be trapped by this method.

Narrative Summary of Budget Activities and Anticipated Activity for the Next Quarter: During the initial quarter, Graduate Student Research Assistants were employed in the Zalom lab (PhD student) and the Ferguson lab (MS student). A small amount of supplies were also purchased for research conducted by both labs, and travel expenditures were made for research and training. In the next quarter, it is anticipated that the Zalom lab will spend about \$5600, primarily for student assistance and supplies, and the Ferguson lab about \$5600 primarily for lab assistance and travel. Ferguson has also identified and will hire a qualified lab assistant to run the olive maturity tests which will begin late in the next quarter.