

**USDA - WESTERN REGION SUSTAINABLE AGRICULTURE PROGRAM  
INTEGRATED PEST MANAGEMENT CENTER  
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**Monitoring and Mass Trapping Olive Fruit Fly in California**

**Problem**

Since 1998, the olive fruit fly (*Bactrocera oleae*) (OLFF) has quickly become the most devastating pest for California's commercial table olive and olive oil industries. This pest threatens the 36,000 acre, \$60 million table olive industry, the rapidly growing olive oil industry with 6,000 acres in production (\$9 million), and the many hobby olive growers.

**Objectives**

Researchers in California are supplementing the European research with California-specific programs addressing phenology model development, varietal susceptibility, monitoring, pest dynamics, integrated control, classic biological control, non-target impacts of bait sprays, sterile insect technique, and mass trapping. Our objectives have been to develop specific economic thresholds based on trap catches from monitoring traps, evaluate various mass trapping techniques and compare efficacy with alternative sprayable pesticides, correlate fruit damage with oil quality, and disseminate this information to commercial and non-commercial olive growers.

**Progress to date**

Preliminary research was conducted in 2003-4. The continuation of this work was funded by USDA Western SARE starting in March of 2005. The trial design for the 2005 season compared four different mass trapping devices (at a rate of one per tree): the McPhail-type trap, the yellow sticky panel trap, the homemade OLIFE trap and an attract and kill device (Magnet OL). In addition to the traps, the trial tested the current standard treatment, a spinosad bait formulation called GF-120, and a barrier film made from kaolin clay (Surround WP). There were untreated control trees and a sticky panel monitor trap for each location. The 20 test sites (small orchards and landscape trees) were in an around the town of Sonoma; some of the sites had separate populations of trees and supported more than one treatment. There were four replications.

To test a wider area trapping program, we selected two sites in the Windsor/Healdsburg area that contained larger numbers of trees. In the two replications, the trial looked at OLIFE traps, attract and kill devices and kaolin clay in substantial blocks. As with the other sites, there were untreated controls and sticky monitor traps. All of the treatments were evaluated twice: once in late mid-season and again at harvest.

Our results last year indicated that the average damage level for each of the treatments was more or less in line with the previous year's findings: McPhail-type—16.7%; OLIFE 30.6%; yellow sticky—46.0%; attract & kill—41.6%; spinosad bait—7.8%; kaolin clay—2.3% and the untreated control—84.9%. There was no consistent relationship between fly catches in the yellow monitor traps and fruit damage at harvest (also in keeping with the previous findings). In the wider area program, the average success of the trapping was better: 3.5% for the OLIFE and 2.6% for the attract and kill. The kaolin was extremely effective, having less than 1% damage.

We have shared our results with other California researchers in two formal fruit fly talks (Asilomar 2005 and Riverside 2005) and with the UC olive fruit fly workgroup. Our website <http://cesonoma.ucdavis.edu> contains three very practical publications written for growers and gardeners that help them choose the best known control options. The *First Press* newsletters, Fall 2005 and Winter 2006, contained update articles on olive fly control.

Unfortunately, we have been unable, so far, to correlate monitor trap catches with damage at harvest or to adequately correlate fruit fly damage at harvest with the sensory quality of the oil. These two aspects of the research need more work. The design for our 2006 field trials is similar to 2005 for control comparisons, but also will focus more on finding correlations for better fly monitoring and the relationship between fly damage and oil quality.