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OLIVE FLY (OLF) UPDATE 2004 FOR TABLE OLIVE INDUSTRY OLF MANAGEMENT FAQ's *

Determining Need to Treat for Olive Fly (OLF)

Will trapping OLF adults help determine the need to spray? No, not with our current knowledge of what adult trap counts indicate relative to larval damage inflicted to the fruit. Research is in progress to gain more understanding about trapping efficiency and how the resulting counts relate to local OLF numbers in an orchard. Due to OLF infestations throughout the valley and your need to deliver uninfested fruit, prophylactic applications of insecticide will be required this season as last year. However, trapping adult OLF does allow you to monitor fly activity and population trends in your own grove. More importantly, the efficacy of your sprays can be evaluated with the traps by comparing OLF counts before and after treatment.

Will I need to spray OLF this year? Yes, if you want assurance your fruit will be free from OLF injury. OLF has generally infested both rural and urban areas. During the last three years, spring populations of OLF in some locations have doubled each year over the preceding year counts. All olive blocks are now at risk if left untreated. Olive processors will not risk OLF infested fruit in their products and cannot readily separate them during processing. Processors have essentially set a "zero tolerance" for OLF infested loads. You need to control OLF.

Trapping to Monitor Infestations

If I do want to monitor, how do I do it? Use yellow-panel (YP) sticky traps baited with a

pheromone sex lure (spiroketal to attract males) or a YP trap with both a pheromone and a feeding attractant such as ammonium bicarbonate or ammonium carbonate (emits a stronger ammonia odor). Also, check the expiration date on the spiroketal pheromone to ensure attractancy. An alternative trap is the plastic McPhail trap baited with a liquid mixture of Torula yeast tablets and borax in water. To evaluate treatment efficacy, a minimum number of two traps per block (e.g., 5-10 acres) are recommended at this time. However, larger numbers of traps used within a block should provide a better estimate of the OLF numbers present. Based on experience over the last 3 years, it is recommended that Trece's AM Supercharger Traps or the plastic McPhail Traps be used instead of the ChamP Traps, which will no longer be available when state supplies are exhausted.

By no later than June 1, place traps in fruiting trees (OLF tend to occupy fruiting trees more than fruitless trees) in at least the second tree row in from the grove's edge to avoid contamination with dust. Position traps in the shade (north side of tree) in an open area (avoid locations where leaves may block traps) within the mid-canopy. Monitor traps weekly for OLF and record your catches. Males have rounded abdomens and females have pointed abdomens. AM Traps should be changed at intervals based on manufacturer or supplier recommendations, or more frequently if the trap's sticky surface becomes non-sticky due to non-target insects, dust, or other debris.

Obtaining Traps

OLF panel traps with pheromone and food lures are available from Trece Inc. in Adair, Oklahoma (Phone: 918-785-3061; website: www.trece.com) and Suterra LLC in Bend, Oregon (Phone: 866-326-6737; website: www.suterra.com/). McPhail Traps and Torula Yeast are available in California from: ISCA Technologies Inc., Riverside, CA (Phone: 909-686-5008; website: www.iscotech.com) Better World Manufacturing Inc., Fresno, CA (Phone: 559-291-42276; e-mail: bettertrap@aol.com).

What will my trap counts mean? Numbers of trapped flies indicate flight trends over time and relative OLF population levels within the grove. This information is useful in evaluating the spray program's efficacy. The absence of flies on a trap does not always mean that there is no infestation in a grove. Rotate traps among trees to ensure flies are encountering traps. Make sure to change spiroketal pheromone lures every 4 months and food lures every 2 weeks.

Treating OLF with GF-120

What materials can I use commercially? Currently, GF-120 NF Naturalyte Fruit Fly Bait (a formulated Spinosad bait produced by Dow AgroSciences LLC) is all that is available as a sprayable, insecticidal material. It currently has only a Section 18 emergency registration so a permit will be required for its application to any property. As a Section 18 material, it must also be applied by a qualified applicator. It is now approved for organically grown olives.

How much GF-120 do I use? The GF-120 label allows between 10 and 20 fluid oz. of formulated product per acre per application, with applications being made no more frequently than every seven days. Based on prior experiences in California and Europe, an application rate of 14 fluid oz. per acre is being recommended for 2004.

Dilution

GF-120 can be diluted to 1:1.5 (1 part GF-120 to 1.5 parts water) up to 1:4 (1 part GF-120 to 4 parts water). NOTE: diluted solutions of GF-120 should be used IMMEDIATELY because microorganisms grow in them and the product becomes ineffective. If not used, REFRIGERATE diluted solution until future use.

How is the bait applied? Ground application is recommended; aerial applications may be less effective due to resulting small droplet size. For best effect, large droplets (4–5 mm in diameter) are needed so they do not dry out quickly and become ineffective.

When using an "all terrain vehicle" (ATV), the solution should be applied to the upper half of each tree, in every other row each week (divide the amount of solution per acre by the number of trees per acre to determine the amount of solution to apply per tree). The following week, the unsprayed rows should be treated in a similar manner.

If using a handgun applicator for individual trees, cover approximately a 2-foot diameter area within the tree canopy on the north or east side of each tree. Do not use flat fan nozzles. For best results, about three to six 5 mm diameter droplets per square foot of foliage are necessary. At the dilution rate of 1:4 GF-120 to water, and application rate of 14 oz./acre of GF-120, the volume of the finished spray solution will be 70 oz./acre (14 oz. of GF-120 added to 56 oz. of water). Higher concentrations (e.g., 1:1.5) may be more difficult for your spray equipment to easily deliver without becoming clogged.

How do I time the sprays? Timing of the first spray should be June 1 or when fruit are susceptible. If springtime climatic conditions are unusually warm, first sprays should be started before June 1. OLF treatments should begin when a sharp increase in the number of males responding to a pheromone-equipped trap occurs.

However, if fly numbers are low in an orchard, a sharp increase in males may not be apparent on traps. Usually, this increase in males coincides with the beginning of olive pit hardening, about four weeks following bloom. A safe guideline would be to initiate insecticide sprays near June 1 (or 2 weeks before pit hardening) unless blooming occurred unusually early in your area, then initiate sprays before June 1.

How often do I have to spray? To ensure effective control through each OLF generation, we recommend GF-120 be applied to every other row every seven days from the time of pre-pit hardening until harvest. There will be little additional cost to implement this procedure because only one half of the orchard is being sprayed each time.

What about a post-harvest application? OLF populations are quite active when the temperature drops in October and November; some of the highest trap catches have been recorded then. To reduce potential for heavier fly populations the following spring, we recommend applications continue through mid-November.

Use of Kaolin Clay as a Protectant Against OLF

Kaolin clay has been used to protect plants from various insect pests. The product Surround WP (produced by Engelhard) contains highly refined kaolin clay, with a small particle size, as well as a spreader sticker. Many insects will not infest plants that are treated with kaolin for a variety of reasons including: a) kaolin particles may stick to individuals that land on treated surfaces, thereby disturbing their normal behavior and potentially repelling them; b) the highly reflective white coating may impede an insect's perception of the plant as an acceptable host plant, thereby reducing attraction; and c) treated surfaces may be rejected as unsuitable host substrates for feeding or egg laying. It is registered for use against the olive fly. However, the efficacy of Surround WP is still being refined for OLF control in California. For more information, please contact: Mitchell King (cell phone: 209-613-8543).

Other Options

Post Harvest Sanitation. An ongoing effort to pick up and destroy fallen fruit can help reduce olive fly populations. Remove as much fruit as possible from trees during the harvest process and thoroughly collect fallen olives. Olives remaining on the tree after harvest are the primary source of next year's infestation by providing a place for continuing development of the fly. Knock down remaining fruit from trees as soon as possible after harvest, and destroy them on the ground by any method possible including mulching or mowing. If fruit are buried, they must be at least 4 inches deep. Remove fruit from all olive trees within 1/2 mile of your orchard.

Mass Trapping. Studies to date indicate that mass trapping of OFL adults can significantly lower adult populations in orchards, but not completely eliminate the flies or reduce larval infestations to near zero levels. Mass trapping will probably be more effective in locations where the OFL adult numbers are already low. A "homemade" OLIFE trap, which was developed in Spain, can be used for mass trapping. One can use Torula Yeast tablets and spiroketal pheromone to attract flies to this trap. Information on trap construction and use is available on the web at:

http://cesonoma.ucdavis.edu/HORTIC/olive_fly/olive_trap.pdf

On-going Research on Management of OLF

To better understand and control the OLF, research is being conducted where information is lacking. These efforts are being funded by several sources including the California Olive Committee, University of California, USDA Agricultural Research Service, USDA APHIS, and California Department of Food and Agriculture. Research topics include but are not limited to: a) maximization of the efficacy of GF-120 bait treatments used within olive groves; b) discovery, introduction, and establishment of parasitic wasps that attack OFL (i.e., classical biological control); c) estimation of the flight abilities and short-range

movement patterns of OFL within and between agricultural and urban areas; d) development of mass rearing and sterile male release to manage OLF; e) development of degree-day models for OLF and olive fruit to improve treatment timing and potentially reduce number of sprays; f) mass trapping alternative controls / devices; and g) effects of cultural practices on overwintering OLF populations.

Summary

Olive fly populations have increased dramatically over the last three years in both commercial and urban settings in the state. This translates into a higher potential for OLF damage this season if management treatments are withheld. Because

processors have essentially established a zero tolerance for infested fruit and with significant OLF populations encountered thus far this season, high rates of insecticide and more frequent application intervals are being recommended.

For further information contact your County Farm Advisor or Ag Commissioner's office, or the California Olive Committee at 559/456-9096.

For information on OLF in the urban or landscape setting, see the UC Pest Note on Olive Fruit Fly, UC Publication 74112, available online at: <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74112.html>

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