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OLIVE FRUIT FLY MANAGEMENT GUIDELINES FOR 2006.

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Introduction

In the decade prior to 2000, California olive orchards were infrequently treated with insecticides for any arthropod pests. Of the most significant pests, black scale, *Saissetia oleae* (Olivier), could be managed by pruning of the interior tree canopy to increase the temperature in summer, and olive scale, *Parlatoria oleae* Colvée, was under good biological control (Daane et al. 2004). In 1998, the olive fruit fly (OLF), *Bactrocera oleae* (Rossi), was discovered in California (Rice 2000). It has now spread to most locations where olives grow within the state (Rice et al. 2003). In nature, this insect only reproduces in olive fruit. The developing larval stages

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(i.e., maggots) feed upon the internal fruit tissues and complete three larval instars before pupating. During the summer months in California, the larva usually remains within the fruit to pupate. As fall approaches, a greater proportion of the larval population leave the fruit and drop to the soil surface to pupate within the soil. The factors that determine whether a larva pupates within or outside a fruit are unknown. After emerging as an adult, males seek out females to mate. Females attract males by emitting a spiroketal pheromone.

Commercially grown olives in California may be pressed for oil or cured for consumption (i.e., table olives). Most of the olives grown in the combined area of the San Joaquin and Sacramento Valleys (i.e., the Central Valley) are used to make table olives (Connell 2005). In addition, most of the acreage used for oil production is also found in the Central Valley, although 25% is found along the coastal areas of the state (P. Vossen, unpublished data). The processors that purchase olives for curing enforce a zero tolerance for OLF. Thus, table olive growers must keep their olive crops free of OLF infestations. Olives pressed for oil can tolerate some infestation (estimates vary from 10 to 30%) without a significant loss in quality if the fruit are processed immediately after harvest (Vossen 2005). Although growers of both types of olives are encouraged to manage OLF populations in their orchards, table olive producers are under greater pressure to deliver a damage-free product.

Because OLF was a newly introduced pest to California and no information was available on its biology, ecology, and management within the state, a workshop has been held annually since 2004 to facilitate state, federal, university, and industry personnel to review new findings and revise OLF management guidelines. Topics included the need to treat for OLF, the use and application of insecticide bait spray, how to monitor adult OLF populations and the meaning of trap catches, recent findings on alternate OLF control tactics (e.g., biological control, cultural control), and an update on biological and ecological studies that had a practical application for OLF management. These workshops were held at UC Davis on 28 April 2004 and 18 March 2005 and at the UC Kearney Agricultural Center at Parlier on 19 May 2006. Representatives from the following institutions, agencies, organizations, and companies participated in the discussions: University of California at Berkeley, Riverside, and Davis; UC Exotic Fruit Fly Workgroup; California State University at East Bay (Hayward); California Department of Food and Agriculture, USDA Agricultural Research Service, California Olive Committee, UC Cooperative Extension (counties of Amador, Butte, Contra Costa, El Dorado, Fresno, Glenn, Marin, Monterey, San Benito, Santa Clara, Santa Cruz, Sonoma, Sutter, Tehama, Tulare, Yuba), Glenn County Pest Control District, Tehama County Pest Control District, Bell-Carter Foods, Inc., Lindsay, CA, Dow AgroSciences LLC, and Pest Management Associates, Exeter, CA. The information provided below is an overview of the management guidelines that were developed over the 3 year period and are reflected in the specific OLF management guidelines provided to growers and consultants in June 2006.

Determining the Need to Treat for OLF Adults

OLF is present throughout the olive production areas of California and infests olives in both rural and urban areas. Infested fruit may be found in abandoned orchards and on olive trees used for ornamental landscaping, and roadside plants. Any untreated olive tree with fruit may provide a refuge and act as a source for dispersing flies. To guarantee that fruit will be free from OLF injury, prophylactic applications of insecticide are required to control ovipositing females. During the last five years, spring populations of OLF in some locations have increased compared to the preceding year. All olive trees that produce fruit are at risk if left untreated, but little or no damage has been observed to oil varieties with small fruit in some locations. Table olive processors will not allow OLF-infested fruit in their products and cannot readily separate infested fruit during processing. Table olive processors have set a "zero tolerance" for OLF infested loads. The tolerance for OLF in oil olives depends on the individual processor, but is usually around 10%

damage. Growers must control OLF populations that threaten their crop.

Unfortunately, adult OLF trap counts do not reliably correlate with fruit damage, but trapping OLF adults does allow one to monitor fly activity and population trends in local areas. More importantly, the efficacy of sprays directed at OLF adults can be evaluated with the traps by comparing OLF counts before and after treatment.

Trapping to Monitor OLF Adults

For tracking OLF population trends, growers may use yellow-panel traps with both a spiroketal pheromone lure and a feeding attractant (i.e., ammonium bicarbonate or ammonium carbonate). It is important to check the expiration date on the spiroketal pheromone lure to ensure that it remains attractive. To obtain trapping supplies check with local pesticide and fertilizer dealers. If unavailable locally, OLF yellow-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/).

A more effective trap is the plastic McPhail-type trap (e.g., the IMPT trap) baited with a liquid mixture of Torula yeast tablets and borax in water. McPhail-type traps and Torula yeast are available in California from: ISCA Technologies Inc., Riverside, CA (Phone: 909-686-5008; website: www.iscatech.com), Irv Boxer – ERA Intl. Ltd., Freeport, NY (Phone: 516-379-5579), Great Lakes IPM, Vestaburg, MI (Phone: 989-268-5693; website: www.greatlakesipm.com), and Better World Manufacturing Inc., Fresno, CA (Phone: 559-291-4276; e-mail: bettertrap@aol.com).

To evaluate treatment efficacy, a minimum number of two traps placed per block of trees (e.g., 5–10 acres) is currently recommended. However, using more traps within a block should provide more accurate evaluation of OLF adult activity and densities. Based on the combined experiences of growers, consultants, and researchers over the last 5 years, it is recommended that Trece's Pherocon® AM/NB traps with Supercharger food attractant or the plastic McPhail-type traps baited with Torula yeast pellets be used.

Adult OLF traps should be placed in fruiting trees no later than March 1 (OLF tend to occupy fruiting trees more than fruitless trees). Placement of traps within the second tree row or farther in from the grove's edge will help reduce dust accumulation on traps. Traps should be positioned in the shade (north side of tree) in an open area within the mid-canopy of the tree (avoid locations where leaves may block traps). Weekly inspections for trapped OLF adults should be made and captures recorded. Males have rounded abdomens and females have pointed abdomens. Pherocon® AM traps should be changed at intervals based on manufacturer or supplier recommendations, or more frequently if the trap's sticky surface becomes covered with non-target insects, dust, or other debris. UC studies have shown that there is no difference in captures if the AM trap lures are changed more frequently than 4 weeks (H. J. Burrack and F. G. Zalom, unpublished data). Larger packets of ammonium bicarbonate or ammonium carbonate slightly increase trap captures. To count the number of olive flies in a McPhail-type trap, the solution must be poured through a sieve that captures the flies. McPhail-type traps should have the yeast solution changed at least once per month. In the summer, due to high evaporation rates, additional water may be added to the yeast solution to maintain proper concentrations. One should use 3–4 Torula yeast tablets per trap. After examination, one should pour the old solution into a bucket and remove it from the orchard. Do not dump the Torula yeast solution on the ground because it could attract flies away from the trap, thereby reducing the accuracy of trap counts.

The numbers of trapped flies indicate flight trends over time and relative OLF population levels within the grove. This information is useful in evaluating a spray program's efficacy. The absence of flies on a trap does not always mean that an infestation does not exist in a grove, especially during periods of high summer temperatures (≥ 100°F) (see discussion below on high summer temperatures). Make sure to change spiroketal pheromone lures and feeding attractants as needed based on manufacturers' recommendations.

Treating OLF with GF-120

Currently, GF-120 NF Naturalyte Fruit Fly Bait (a formulated Spinosad bait produced by Dow AgroSciences LLC) is the only product registered as a sprayable, insecticidal material. It currently has 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 approved for organically-grown olives. Individuals should check with their local Agricultural Commissioner to verify if an exception can be made for non-commercial trees.

The GF-120 label allows between 10 and 20 fluid oz. of formulated product per acre per application, with a minimum of seven days between applications. Based on prior experiences in California and Europe, an application rate of 14 fluid oz. per acre was recommended for 2006. In areas where fly populations are low to moderate, GF-120 may 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). Diluted solutions of GF-120 should be used immediately because microorganisms may grow in them and the product may become ineffective. If not used immediately, diluted solution can be refrigerated for a short time until used.

Researchers have reported some difficulty in controlling extremely high OLF populations (such as those found along the California coast) with the dilution rates described above. Efforts are underway to determine if more dilute applications of GF-120 (i.e., more droplets with less toxin per droplet) can effectively suppress these populations. It has been observed that when the product is moderately dilute (e.g., 1 part GF-120 to 4 parts water), high densities of OLF adults can completely consume most of the GF-120 residue droplets before the OLF populaton is effectively suppressed (R. Van Steenwyk, unpublished data). By increasing the number of droplets in the orchard by using higher dilutions, there will be more droplets for the flies to feed upon. The downside of this approach is that the droplets may quickly lose their attraction to the flies, particularly under arid conditions, as the residue loses moisture and becomes less attractive to the flies. Evaluations are continuing to assess the value of this approach when OLF populations are extremely high.

Ground application is recommended for GF-120. For best effect, large droplets (4–5 mm in diameter) are needed so they do not dry out quickly. Aerial applications may be less effective due to the resulting small droplet size (< 4 mm in diameter). 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. The following week, the alternate unsprayed rows should be treated in a similar manner.

If one uses 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. Flat fan nozzles should not be used. For best results, about three to six 5 mm diameter droplets per square foot of foliage are necessary. At the dilution rate of 1 part GF-120 to 4 parts water and an application rate of 14 oz./acre of GF-120, the volume of the diluted spray solution will be 70 fluid oz./acre (14 fluid oz. of GF-120 added to 56 fluid oz. of water). Divide the amount of solution per acre (e.g., 70 fluid oz. in the above case) by the number of trees per acre to determine the amount of solution to apply per tree. Higher concentrations (e.g., 1:1.5) may be more difficult for spray equipment to easily deliver without becoming clogged.

The timing of the first one or two sprays should occur when increasing numbers of flies are trapped. If springtime weather conditions are unusually warm, first sprays should be started before June 1 (as early as March or April depending on the weather and the observation of adult fly activity in traps). After June 1, or about two weeks before olive pit hardening, weekly protective insecticide sprays should be initiated. Although OLF may start laying eggs in olive fruit earlier, the period of fruit susceptibility starts around the time of pit hardening. Evidence to date suggests that this is when the largest fruit are approaching 9-10 mm in diameter or about 600 mm^3 in volume for the primary California table olive varieties (L. Ferguson, H. J. Burrack, F. G. Zalom, W. H. Krueger, and J. H. Connell, unpublished data). Until then, the eggs and larvae do not normally survive. Control depends on protecting the fruit by reducing the number of flies. If flies are present in a grove in the spring, it would be worthwhile to apply an early GF-120 spray to control that generation, perhaps even before bloom.

To ensure effective control through each OLF generation, it is recommended GF-120 be applied to every other row every seven days starting 2 weeks in advance of 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.

Currently, post-harvest sprays of GF-120 are not recommended. More effective control can be obtained with springtime sprays (as discussed above) or post-harvest sanitation.

Additional Control Methods

Post-harvest sanitation. Olives remaining on trees after harvest are the primary source of next year's infestation because they provide a place for continuing development of the fly. Remove remaining fruit from trees as soon as possible after harvest, and destroy them on the ground by any method possible including mulching or disking. If fruit are buried, they must be at least 4 inches deep. Remove fruit from all olive trees within one half mile of the olive orchard. It is important to note that if OLF infestations are high in surrounding groves or landscape trees, sanitation may provide minimal protection because OLF adults can disperse great distances.

Soil cultivation (disking). Although some OLF overwinter as adults, many OLF overwinter in the soil as pupae. The pupae are found no more than 4 inches deep, with most occurring closer to the soil surface. A one-year study in Butte County showed that cultivation before the major spring and late summer flights reduced OLF fruit stings (i.e., oviposition) in a moderately infested grove by 75 percent (F. G. Zalom, H. J. Burrack, and J. H. Connell, unpublished data). It is possible that a late summer disking is unnecessary. Although promising, additional work to confirm the efficacy of this approach is needed.

Mass trapping. Mass trapping of OLF adults has not been demonstrated as a highly efficient management technique in California. It could possibly lower adult populations in orchards, but economically significant fruit damage can occur. Mass trapping may be most effective in locations where the OLF adult densities are already low and the olives are processed for oil content (Vossen 2005).

Attract and kill traps. The attract and kill device (Magnet OL®, manufactured by AgriSense) uses a food attractant on each trap and sex pheromone on every fourth trap to attract OLF adults and is impregnated with the pyrethroid insecticide lambda cyhalothrin to kill them. The traps have been registered for use in California, but currently there is not a distributor for the traps within the state. The traps are hung in the trees and will last for up to 5 months. They are not recommended as a "stand-alone" control method unless OLF populations are extremely low. Two years of research in small orchards in coastal northern California have indicated that the attract and kill device may provide adequate control in isolated populations for olives intended for oil production (P. Vossen and A. Devarenne, unpublished data). The devices may be particularly useful in non-commercial settings where convenience is paramount. The traps were not as effective as GF-120 bait in two small Central Valley studies, except when olive fly densities were extremely low (Vossen 2005; F. G. Zalom, W. H. Krueger, and H. J. Burrack, unpublished data). The traps could be deployed once a season to give some control, particularly early season, and hopefully keep OLF populations from exploding.

Kaolin clay. Kaolin clay has been used to protect plants from various insect pests. Kaolin clay is registered for OLF control in California. It is a protective barrier film (Surround WP® produced by Engelhard Corporation). Surround WP contains highly refined kaolin clay, with a small particle size, as well as a spreader sticker. Data from several small-scale trials in California indicated very good success with the product. Treated trees had significantly reduced numbers of stings even with high OLF pressure (P. Vossen, F. G. Zalom, W. H. Krueger, and H. J. Burrack, unpublished data). In some trials, only two to three applications were made at 5–6 weeks intervals starting at pit hardening, when the fruit becomes vulnerable (Vossen 2005; P. Vossen, unpublished data). However, as few as two applications made 6 weeks apart during the period of fruit susceptibility significantly reduced the number of stings in one study. The efficacy of Surround WP is still being investigated for OLF control in California, and no specific UC guidelines for its use can be made currently.

Status of biological control. Although some generalist natural enemies have been reported attacking the OLF in California (C. H. Pickett and R. Rodriguez, unpublished data; H. Nadel, personal observations; H. J. Burrack, personal observations), these have not suppressed OLF to sub-economic levels. Efforts are underway by researchers from the University of California (Berkeley and Riverside campuses), the California Department of Food and Agriculture, the USDA ARS San Joaquin Valley Agricultural Sciences Center (Parlier, CA), and other organizations to locate, import, introduce and establish new species of parasitoids that are highly specific to OLF. Given the need to minimize non-target impacts from introduced natural enemies, much time has been required to verify that any introduced biological control agent has a highly limited host range (i.e., it only attacks pestiferous fruit flies). As of today, only the braconid parasitoids *Psyttalia concolor* (Szépligeti) and *Psyttalia lounsburyi* (Silvestri) have been approved for release. Efforts are underway to establish them in California. Hopefully, some suppression will be evident over the next few years.

The Impact of Summer Heat on OLF

Laboratory, greenhouse, and field cage studies indicate that high summer temperatures in parts of the Central Valley can kill OLF eggs, first instar larvae, and adults (M. Johnson and H. Nadel, unpublished data; V. Yokoyama, unpublished data). OLF eggs within fruit die quickly (about 2 days) at temperatures of 100°F and greater. First instar larvae within fruit exposed to similar high temperatures take about 5 days to die, but some (about 10%) may survive the high temperatures. OLF adults that have plenty of water and food (e.g., honeydew) can withstand long periods of high temperatures (100°F and greater). However, flies that are unable to obtain both food and water can die within 5 days if temperatures remain high. Work is underway to understand what proportion of the OLF population is unable to find food and water during hot periods. Control of black scale populations via cultural controls may deprive OLF adults of food (i.e., honeydew) needed to survive the hot periods.

Presently, we are unable to accurately predict whether high summer temperatures will kill enough flies to eliminate the need for bait spray treatments during the summer. Based on analysis of climatic maps, it is apparent that periods of high summer heat (e.g., 100°F or greater for 3 to 5 days in length) vary dramatically within and between olive production areas of the San Joaquin and Sacramento Valleys. Behavioral observations also show that OLF adult behavior changes at temperatures greater than 95°F (Avidov 1954). The absence of captured flies in monitoring traps during hot periods does not necessarily mean that flies have died, but may mean that flies are remaining inactive or have moved to nearby sites with more favorable conditions to survive the heat. Work is continuing to better understand the interaction between OLF and high temperatures. Of significant importance is the necessity of protecting the olive crop when temperatures decline in the latter part of August and early September and beyond. Flies that survive the high temperatures will return to their normal activity when temperatures decrease. This temperature decline will happen at different times within the Central Valley and in different years.

Conclusions

OLF populations have increased dramatically over the last five years in both commercial and urban settings. Thus, a higher potential for OLF damage now exists if management treatments are withheld. Table olive processors have established a zero tolerance for infested fruit.

To better understand and control the OLF, research is being conducted to reduce information gaps. These efforts are being funded by several sources including the University of California, USDA Agricultural Research Service, USDA Animal and Plant Health Inspection Service (APHIS), California Department of Food and Agriculture, and the California Olive Committee. 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 OLF (i.e., classical biological control); c) development of phenology models for OLF and olive fruit development to improve treatment timing and potentially reduce number of sprays; d) effects of cultural practices on overwintering OLF populations; e) use of climatic data to estimate impacts of summer heat on the mortality of OLF eggs, larvae, and adults in various regions of California; g) establishment of damage threshold levels for oil production; h) identification of more attractive compounds produced by yeasts for use in traps and baits; i) comparison of olive varietal susceptibility; j) impact of water management on olive fly damage, and k) efficacy of mass trapping techniques to lower OLF damage in olives used for oil production.

For further information, one should contact a local UCCE County Farm Advisor, Agricultural Commissioner's office, or the California Olive Committee at (559) 456-9096. For information on OLF in the urban or landscape setting, see Zalom et al. (2003), which is available online.

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A COLOR VARIANT OF THE COWPEA APHID. *Charles G. Summers, Department of Entomology, University of California, Davis and Kearney Agricultural Center, Shannon C. Mueller, University of California, Cooperative Extension, Fresno County and Peter B. Goodell, UC Statewide IPM Program, Kearney Agricultural Center.*

In mid-May, Dr. Shannon Mueller submitted aphid specimens collected on cowpeas, (*Vigna unguiculata* L. Walp.), being grown as a cover crop in organically produced grapes in Fresno

County. The grower was uncertain of the species identification and also was concerned that the aphid may move off of the cover crop onto the grapes. The aphids were heavily attended by ants and there was a concern about future ant activity. The aphids presented atypical characteristic of any species known to infest cowpeas. These aphids were light brown to pink in color (Fig. l) and superficially did not match any known species of aphids infesting cowpeas.

Figure 1. Cowpea aphids on cowpeas grown as a cover crop in organically grown grapes in Fresno County.

Upon further examination and reference to two well known aphid keys (Blackman and Eastop 1984, Kono and Papp 1977) the aphids were determined to be the cowpea aphid, *Aphis craccivora* Koch. The identification was confirmed by Dr. John Sorensen, aphid authority, California Department of Food and Agriculture. Dr. Sorensen remarked about the specimens, "If you say they lack the classic patch in the key they'd go to *fabae* (bean aphid), because of the dark cauda, but the posterior patch is way too developed and there is no sclerotization on the thoracics, which *fabae* almost always has. *Fabae* also usually shows some white wax in life, which your photos lack. The color you mention and the photos show is probably due to less sclerotization on the immatures - *craccivora* is usually much darker with dark red internal color. *Gossypii* (cotton aphid) also goes on cowpea but has a lighter cauda and no abdominal sclerotization". This description covers the basic differences between three frequently confused species, *A. fabae, A, craccivora, and A gossypii.* Based on the above information and our own interpretation of the two aphid keys, we conclude that these unusual looking specimens are *A. craccivora*.

In early June, Peter Goodell recovered specimens matching this description from Pima cotton in the Westside of Fresno County. These were consequently determined to also be *A. craccivora*.

We are not suggesting that a new biotype of *A. craccivora* has been detected in the San Joaquin Valley, there are many conditions, above and beyond color, that must be met to qualify a population as a new biotype. All three species are members of a complex which conveys a number of various characteristics on individuals within that complex. This is likely the situation here; we are dealing with a population of the *craccivora* complex that exhibits some characteristics not considered normal for the species. At this point, we have no information that suggests that this color form is any more or less susceptible to parasites, predators, or disease activity than is the more commonly observed form.

We provide this information to alert Farm Advisors, PCAs and growers of the likelihood of encountering this unusual looking cowpea aphid and encourage them to seek a positive identification before believing they have encountered a new species or before taking any control action.

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ABSTRACTS

AMERICAN PHYTOPATHOLOGICAL SOCIETY, PACIFIC DIVISION MEETING, June 13-16, 2006. Boise, Idaho.

Corn stunt. *C.A. Frate[1], C.G. Summers[2], D. Opgenorth[3]; University of California Cooperative Extension, Tulare County[1], Department of Entomology, UC Davis and Kearney Agricultural Center[2], California Department of Food and Agriculture, Sacramento[3].*

Corn stunt, caused by *Spiroplasma kunkelii* and vectored by the corn leafhopper *Dalbulus maidis*, has been observed in California's southern San Joaquin Valley since the 1960s, with periodic outbreaks lasting 1 – 2 years. In 1996 the disease was detected using ELISA but, unlike previous outbreaks, it is now found on a yearly basis and both the pathogen and vector appear to be increasing in incidence and distribution. Corn stunt reduces silage quality and yields and may make corn unacceptable for silage. Studies using PCR confirmed that infected leafhopper adults survive southern San Joaquin Valley winters on volunteer and unharvested corn, alfalfa, winter forage, and in riparian areas. Increased corn and winter forage acreage and an extended growing season are factors thought to contribute to vector survival and the continued yearly existence of corn stunt. Foliar and seed treatment insecticides were evaluated for control. The most significant management tools, however, are to plant early, harvest all corn by November 1, and eliminate volunteer corn plants.

Emerging fungal diseases in fruit and nut crops in California. *T.J. Michailides, D.P. Morgan, D. Felts, and H. Reyes; Department of Plant Pathology, UC Davis and Kearney Agricultural Center.*

Following a severe epidemic in 1998 of panicle and shoot blight of pistachio, caused by a *Fusicoccum* sp., increased incidences of diseases with the same cause were also found in walnut, almond, pecan, and a number of ornamentals. The disease in almonds was initially reported causing band canker on the trunks, but recently the same pathogen was found causing fruit blight and cankers in the canopy. In walnuts, what was described as branch wilt (caused by *Hendersonula toruloidea* (syn. *Nattrassia mangiferae*)) most likely is also caused by *Botryosphaeria dothidea*. Cedar trees planted along streets or on private properties very frequently show shoot blights caused by a *Fusicoccum* sp. similar to that causing panicle and shoot blight of pistachio. In grapes, a canker disease found several years ago continues causing problems, and is caused by *Aspergillus* sect. *Nigri* spp., especially *A. niger*. The fungus attacks vigorously growing grape cultivars and creates large canker areas in the vine trunks, killing either individual cordons or entire vines. In figs, a severe limb dieback was found to be caused by *N. mangiferae.*

Susceptibility of kernels of walnut cultivars to *Aspergillus flavus* and *A. parasiticus*. *T.J. Michailides, and M.A. Doster; Department of Plant Pathology, UC Davis and Kearney Agricultural Center.*

We wanted to determine whether walnut kernels of cv. Tulare possessed resistance to infection and aflatoxin contamination by *Aspergillus flavus* and *A. parasiticus*. Research by others using triturated kernel tissues in agar media suggested that walnuts of cv. Tulare (which are high in tannins that after breaking down release gallic acid) inhibited the production of aflatoxin by *A. flavus*, relative to other widely grown walnut cultivars in California. However, studies were not extended to intact walnuts. Kernels of cvs. Tulare and Chico were inoculated with each *A. flavus* or *A. parasiticus* and incubated at 30°C for 4 weeks. Analyses indicated that Tulare and Chico kernels were contaminated with 580 and 446 ng/g (*A. flavus*) and 1,027 and 1,071 ng/g (*A. parasiticus*) of aflatoxins respectively. Also inshell nuts of Tulare and Chandler were inoculated, incubated, and analyzed as above in 2 years. Both Tulare and Chandler walnuts were contaminated with comparable levels of aflatoxins suggesting that gallic acid present in kernels of intact walnuts of Tulare does not confer significant resistance to aflatoxin contamination.