University of California Cooperative Extension • Tulare County

Olive Notes

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Need to Manage Black Scale on Olives?

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Black scale (*Saissetia oleae*) may cause economic damage to olives, particularly where conditions favor summer survival of the crawlers (1st instar nymphs) and second instar nymphs. These life stages are sensitive to hot, dry conditions and tend to dessicate in the heat of summer; however, conditions promoting a cool microclimate in the canopy (i.e. reduced pruning and/or use of flood irrigation) may reduce summer scale mortality, resulting in enhanced damage to the crop.

Damage: Black scale feeds on phloem tissues by inserting needle-like mouthparts into leaves and twigs. The young black scales exude sticky 'honeydew' on plant surfaces, and the carbohydrates in the honeydew support growth of sooty mold. Heavy scale infestations may cause severe defoliation and reduce the subsequent season's crop. The sticky honeydew and associated sooty mold may render harvest operations a challenge and result in downgraded fruit. Additionally, excessive honeydew may promote survival of olive fruit fly in orchards.

History: Black scale is native to southern Africa, but has been established in California prior to 1880. Before 1970, black scale was generally controlled by insecticide treatments targeted at the olive scale (*Parlatoria oleae*); however, the successful biocontrol of olive scale eliminated the use of insecticide treatments, allowing black scale to emerge as the most important insect pest on olive until the recent introduction of olive fruit fly.

Life Cycle: The adult female is 3-5 mm long, black, and has an H-shaped ridge on its back. The adult female coloration changes from brown to black as it matures. Mature females deposit eggs under the scale covering, and egg hatch may proceed from May-July in the San Joaquin Valley, with the egg hatch taking several weeks to complete. The cool spring and early summer conditions experienced in 2010 may promote a delayed egg hatch. First instar nymphs (crawlers) are pale yellow to light brown and only 0.5 mm long, making them difficult to detect without a hand lens. After hatching from eggs, crawlers may spend up to 7 days searching for a feeding site. The first molt occurs in the summer, around 3-8 weeks after hatching, depending on temperature and host plant condition. The second molt occurs around 2-1/2 to 3 months after egg hatch, revealing the third instar, a sexually immature adult. The third instar, commonly referred to as the "rubber stage," is 2-3 mm long, has ash gray to brown coloring, and a distinct H-shaped ridge on its back. In the San Joaquin Valley, black scale tends to overwinter as second or third instars. By April, most black scale has progressed to the rubber and adult stages.

Pest Management: In the southern San Joaquin Valley, biological control of black scale may be ineffective; therefore, a combination of cultural practices and chemical applications may be employed for black scale management. Additionally, recent studies in Spain have suggested that processed kaolin sprays reduce populations of both olive fruit fly and black scale. The impact of kaolin sprays on black scale have not been investigated in California; however, investigations by Paul Vossen, Farm Advisor, Sonoma County, have found that kaolin may protect olives from olive fruit fly.

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Cultural Control: Opening the canopy by pruning aids desiccation of the scale by eliminating the cool microclimate that promotes black scale survival. Pruning is the best cultural control practice available.

Chemical Control: Insecticide applications for control of black scale are most effective after egg hatch (typically mid-July, but early-mid August in

2010) and before the rubber stage (late fall-overwinter). In orchards with severe infestations, chemical treatments should be conducted soon after egg hatch is complete to avoid damage to next year's crop. To determine progress of egg hatch, check for the pink-orange colored unhatched eggs under the adult female scale. Always read the label of the product being used, and note that all registered pesticides are not necessarily listed on the UC IPM Online website (http://www.ipm.ucdavis.edu) or in this newsletter. Always check with the certifier to determine which products are organically acceptable.

During the summer, a narrow range oil application may be applied for light-moderate infestations (less than an average of 4 adults/branch), and a narrow range oil plus carbaryl insecticide (Sevin) may be applied for heavy-severe infestations (greater than an average of 4 adults/branch). If temperatures are expected to exceed 90ºF during the day, oil applications should be completed either at night or in the early morning. Note that good coverage and large spray volume (500 gallons/acre) is essential for effective black scale control.

Esteem®, an insect growth regulator (IGR) produced by Valent, is now registered for use on black scale on olive. It should be applied after the crawlers emerge (early-mid August 2010). As an IGR, Esteem inhibits metamorphosis; therefore, evidence of activity will take longer than traditional contact insecticides. Note that the impact of Esteem may not be observed until the second molt, which may be in late August-September. As with oil applications, good coverage is essential for black scale control.

Post-harvest chemical treatments should be made before the scale enters the third instar "rubber" stage. Narrow range oil may be applied for light-moderate infestations, whereas narrow range oil plus Methidathion (Supracide) 25 WP may be applied for severe infestations. Note that the application of methidathion should precede the application of any fungicides containing lime, because lime will negate the efficacy of the insecticide.

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References:

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ANNOUNCEMENT

Central California Olive Day

Wednesday, September 1, 2010

Registration 8:00 A.M. – Meeting 9:00 to Noon

Exeter Veterans Memorial Building, 324 No. Kaweah, Exeter

Presented by Olive Growers Council

Presentations Followed by Lamb BBQ

Topics include: Pest and disease management, Soil and leaf sampling strategies, Update on Olive Marketing Order, High density orchard design for mechanical harvest and pruning operations.

To assist in luncheon planning, please RSVP to Adin Hester (559) 734-1710.

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