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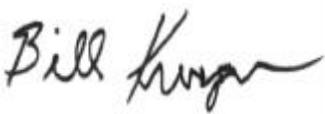
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Freeze Damage and Olive Knot

The December 1998 freeze caused some damage to olive trees in Glenn and Tehama Counties. Later, defoliation was noted mostly on shoot growth from the previous summer. A few small bark splits were seen in some of the most severely damaged orchards. No discoloration was seen in the cambium and no death of branches or twigs was noted. Damage was seen only on the Manzanillo and primarily in orchards four to ten years of age. In general, the initial damage was less severe than what resulted from the December 1990 freeze. This was to be expected because temperatures were much colder and of longer duration in 1990 than 1998. This spring some young Manzanillo orchards which had freeze injury which resulted in defoliation began to show shoot and twig dieback which was quite severe in some cases. Close examination of these trees revealed developing olive knot under the bark of affected twigs and wood. Apparently, leaf scars provided an entry for the olive knot bacteria into the tree and wind and rain which followed the defoliation spread it around the tree. Because the disease relies on growth of the tree for knot development, infection was not apparent until tree growth resumed in the spring. As galls develop, transportation of water and nutrients is limited and twigs and branches can be killed. Orchards with freeze damage (defoliation) with little or no olive knot present in the orchard are not showing limb and twig dieback. Therefore, it appears that even though freeze damage and resultant defoliation may have opened the door for olive knot infection, it is olive knot and not freeze damage which is responsible for the most severe damage.

In retrospect, additional copper sprays when defoliation became apparent may have reduced olive knot infection and limited damage. Now that the extent of the damage can be judged, dead and, as much as possible infected wood, should be pruned out. This should be done as soon as possible to allow regrowth to provide "insulation" for the tree and to avoid excessive vegetative stimulation prior to the next cold season.

Spots on Manzanillo Olives

In mid to late June, I became aware of some small black spots which were showing up mostly on fruit on young Manzanillo trees. At first the spot was about 1 to 2 millimeters in diameter and black or dark brown in color with a water soaked green halo around it. As the spots have developed, a yellow halo has developed around them and they have become sunken as the fruit continues to grow. There can be one to many spots per fruit. These symptoms have been seen mostly on Manzanillos and to a very limited extent on Sevillanos. Symptoms have been seen from Northern Tehama County to Southern Glenn County. In the most severely affected orchards, between 20 and 40 per cent of the fruit can be damaged. These symptoms are generally more severe in orchards which had some freeze damage and subsequent olive knot damage.

The cause of this problem has been the subject of a great deal of investigation and speculation. Both Glenn County Cooperative Extension and the Glenn County Agricultural Commissioner's office has been actively investigating the cause. No insects have been correlated with the damage. We have not found any eggs or larvae on or in the fruit. At first there was some speculation that these spots may be caused by Olive Fruit Fly. Thankfully, this is not the case. Olive fruit fly usually does not attack fruit at this early stage. No eggs or larvae have been found on any of the fruit and no adult flies have been caught on any of the approximately 350 traps which are being monitored by Agricultural Commissioners in Glenn and Tehama Counties.

Both the CDFA plant pathology lab and a University lab has isolated *Pseudomonas savastoni*, olive knot bacteria, and other bacteria from these spots. Whether olive knot bacteria is a primary factor in the development of these spots or is a secondary infection is not clear. These are not typical olive knot symptoms. But then this is not a typical year. Unusual weather events of this year which may be factors include: 1) the December freeze which resulted in defoliation which opened the door to olive knot infections; 2) the freeze of April 9th with temperatures as low as 28 degrees F; 3) rain and hail storm on June 2nd and 3rd. In the Orland area .8 inches of rain was reported for this period and hail was reported from

many areas. Hail may have damaged the fruit in some places and rain would have spread the olive knot disease. At this time it is my opinion that the olive knot bacteria is a factor in the development of these spots. What will happen from here on out is not clear. Will these olives persist on the tree until harvest or will they drop off? Only time will tell.

Black Scale in Olives

In the Central Valley, black scale produced one generation per year. Adult females are about .2 inch in diameter and are dark brown or black with a prominent H-shaped ridge on the back. They mature in the spring and begin laying small, pink eggs underneath the scale body. Young scale (crawler) hatch during the spring and summer and move onto the leaves to feed and are yellow to orange with a flattened elliptical shape. The crawlers excrete a honeydew which makes the leaves shiny and sticky, then a blackish mold known as sooty mold develops in the honeydew. Heavy infestations reduce vigor and productivity and can result in reduced bloom the following year.

Pruning to open up tree canopies and increase heat mortality is often all that is necessary to reduce scale populations to non-damaging levels. There are a number of parasites that provide partial control of black scale and can work in combination with pruning. If scale populations are resulting in honeydew production, it may be necessary to chemically treat the crawler. This should be done after crawlers emerge, usually by mid-July and before the first of August (a little later this year because of delayed development) to avoid reduced flowering the following year. See *UC IPM Pest Management Guidelines for Olive* (available from our office for \$1.00) for recommended materials and rates.



“““““ Olive News enclosed”””””

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