Orchard Notes
November / December 2014
University of California
Agriculture and Natural Resources | Cooperative Extension

In This Issue

Submitted by:

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Sutter, Yuba and Colusa Counties

20th Annual Sacramento Valley Cling Peach Day

Wednesday, December 17, 2014
8:30 a.m. - Noon / Lunch: Noon - 12:45 p.m.
Ag Building Meeting Room, 142 Garden Highway, Yuba City

Meeting Program

8:30 a.m. **Registration** Coffee and Danish, *Courtesy of Growers Ag Services Inc.*

8:55 a.m. **Welcome** *Janine Hasey, UCCE Farm Advisor, Sutter-Yuba Counties*

Pest Management

The threat of brown marmorated stink bugs in peach production
Chuck Ingels, UCCE Pomology Advisor, Sacramento County

Plum Pox Virus – What you need to know
Kathy Kosta, Plant Pathologist, CDFA

Avoiding drift, dormant spray regulation updates, & top four 2014 pesticide violations, *Jan Kendel, Ag Biologist, Sutter County Agricultural Dept.*

10:20 a.m. **Break**

10:40 a.m. **California Cling Peach Board Nominations and Board Updates**
J.D. Allen, Sarb Johl (Chair), Michelle Paul (Foreign Promotion Mgr)

Peach Breeding Program

Breeding Peach Varieties for Mechanical Harvesting
Tom Gradziel, Pomologist, UC Davis

Noon **Lunch -** Mexican lunch provided by California Cling Peach Board

Meeting Sponsored by: University of California Cooperative Extension, Sutter-Yuba Counties

Co-Sponsored by: Sutter County Agricultural Department

PCA and Private Applicator Credit approved - 1.5 hours (.5 hour of regulations)
CCA Credit approved - 2.0 hours

Save the Date!

February 25, 2015, afternoon

2015 Sutter-Yuba-Colusa Walnut Day
Veteran's Hall, Yuba City
Topics will include: latest on managing Bot canker and blight
and the results of our 2014 walnut scale spray study.

March 3, 2015, morning

Walnut (7 year olds) No Pruning / Pruning Comparison Field Meeting
Nickels Soil Lab, Arbuckle
(In case of rain, backup day will be March 5, 2015)

March 3, 2015, afternoon

Walnut (2 year olds) No Pruning / Pruning Grower Comparison Field Meeting
Wheatland, CA
(In case of rain, backup day will be March 5, 2015)

Updates on a Potential New Disease in California and Management Concerns for some Spring Diseases of Cling Peach

J. E. Adaskaveg and H. Forster, Department of Plant Pathology and Microbiology, University of California, Riverside

Introduction. Last year, disease levels were very low across the state in the cling peach growing districts of California. Still, several diseases continue to develop even during periods of drought. Brown rot and peach leaf curl seem to be omni-present; whereas rust, powdery mildew, as well as bacterial canker and blast are more sporadic in their occurrence. Therefore, we provide an update of diseases of peach that we think are of notable concern.

New disease in the state. Last year, we reported with our UC colleagues the first occurrence of **bacterial spot** on selected varieties of almond and cherry. The disease mainly developed in the central part of the San Joaquin valley (e.g., San Joaquin, Stanislaus, Merced Co.) but was also found in the Sacramento valley on almonds mainly in Colusa Co. To date, this disease has **not** been found on peach in California but it affects many *Prunus* species including peach in other parts of the country. In the eastern United States, during high rainfall seasons, this is one of the major diseases of peach and cherry. Bacterial spot is caused by *Xanthomonas arboricola* pv. *pruni* and has also been referred to as bacteriosis, bacterial leaf spot, or bacterial shot hole. Bacterial spot occurs on leaves, twigs, and fruit of almost all *Prunus* spp. Therefore, it may be important to be aware of this potential disease on peach in California and to review some of the symptoms.

Bacterial spot on almond nut. Photo by Jim Adaskaveg

The most obvious leaf symptoms are yellow or chlorotic leaves with angular lesions at the leaf tip, mid-rib, or along the leaf margin. Infected leaves may prematurely drop. Developing foliar lesions are water-soaked, sometimes grayish colored, and angular in shape, being delimited by leaf veins. Initially, individual lesions are only 1 to 2 mm in diameter, they expand to 2 to 4 mm (generally < 5 mm). As lesions age, centers may darken, become necrotic, and abscise, resulting in a shot-hole appearance. Leaves are most susceptible before becoming fully expanded. Leaf symptoms usually are first visible 5 to 14 days after infection. Rapid symptom expression is dependent on warm temperatures.

Bacterial spot on almond leaves. Photo by Jim Adaskaveg

On peaches and nectarines, twig symptoms usually consist of cankers on the previous year's growth associated with leaf and flower buds and infected buds usually fail to open. These overwintering cankers are often termed 'spring cankers' and they are visible during bloom. 'Summer cankers' are formed on current-season shoots later in the spring or summer. When a terminal bud is infected and the canker progresses down the shoot, the symptom is termed 'black tip'. Fruit lesions are normally observed about three weeks after petal fall. Fruit infection is favored by moist and warm conditions from petal fall to early shuck split. Developing fruit lesions have a water-soaked appearance with a small necrotic area in the center. Early season infections may enlarge and develop to the pit. Lesions that develop after pit hardening remain near the fruit surface. Lesions may coalesce and cracking of the fruit surface may occur.

Bacterial spot on almond. Photo by Jim Adaskaveg

Strategies for peach leaf curl and bacterial canker and blast. Peach leaf curl is caused by the fungus *Taphrina deformans*. In culture and on twigs and bud surfaces the fungus grows as a yeast – single cells reproducing by budding. As it infects leaves and occasionally young fruit, it develops as mycelium. As the fungus colonizes the tree it grows as a saprophyte between the bud scales during winter rains. Infection of emerging leaves from shoots occurs with high populations of the organism under cool (10-20C), wet environmental conditions. Although dormant applications of copper have been used commonly because of their long-lasting residual activity, we have shown that ziram also has long residual activity and remains one of the best peach leaf curl control materials available.

Most growers are also concerned about bacterial canker and bud infections during the winter and blast of emerging flowers in the spring. Under similar cool, wet conditions as for peach leaf curl, pathovars of *Pseudomonas syringae* can invade buds and flowers causing cankers and blast symptoms. This bacterial pathogen is an epiphytic organism living on the surface of plants. Under conducive environmental conditions for growth, the organism can invade plant tissues. Historically, copper has been the only bactericide available and dormant applications have been used with inconsistent results. Recently we have shown that many populations of *P. syringae* pv. *syringae* from selected *Prunus* spp. are less sensitive to copper.

Still, strategies for integrating copper and ziram into management programs for both peach leaf curl and bacterial canker during the dormant period include rotations or mixtures. Usually the first dormant treatment is applied at the end of November or early December. Copper materials such as Bordeaux mixtures (copper sulfate and lime) or copper hydroxide, copper oxide, or copper oxychloride - hydroxide mixtures mixed with an agricultural oil (e.g., summer or winter oils used at 3.5%) can be applied at this time. With the fixed coppers, we have obtained higher performance with the higher labeled rates (e.g., 7 lbs/A instead of 4 or 5 lbs/A). Later in late January or early Feb., ziram can be applied in a rotation program. We have obtained excellent results against peach leaf curl with ziram applied as a dormant (early Dec.) or delayed dormant (late Jan.) treatment at 6 or 8 lb/A (also applied with 3.5% oil). Mixtures of these products and other products such as fixed copper and chlorothalonil or dodine at lower labeled rates can also be used with very good to high efficacy.

Powdery mildew of peach. Powdery mildew is caused by the fungus *Podosphaera pannosa* (formerly *Sphaerotheca pannosa*). We have demonstrated that overwintering conidia (asexual stage) and chasmothecia (sexual stage) on stem infections of the previous growing-season shoots can provide primary inoculum in the spring for infections of new leaves and shoots. The disease was very low this past year. Still, in recent years we showed that blossom rather than petal fall applications are very important in preventing epidemics from getting started. With the recently registered fungicide quinoxyfen (e.g. Quintec), a spore germination inhibitor, we emphasized early applications were necessary for optimal performance. If the fungicide is applied after infection when diseased tissue is already present the fungicide was less effective and this practice may lead to resistance. Unfortunately, the fungicide has been reported by some growers to have reduced efficacy in selected orchards last year. In trials on cherry, we have also observed reduced performance. Thus, we emphasize early (blossom) applications in mixtures with fungicides for brown rot blossom blight and rotations to other fungicides like DMIs (FRAC group or FG 3) and SDHIs (FG 7) including pre-mixtures such as FG 3/11 and FG 7/11 fungicides in subsequent applications. If fungicides with high activity against brown rot and powdery mildew are used during bloom, then quinoxyfen may be used in rotations during early petal fall. We do not suggest applications of quinoxyfen in the weeks following petal fall especially when powdery mildew fungicides have not been used earlier. At this time, low level infections in the orchard may be present and applications of quinoxyfen may lead to selection of resistant populations.