

Scab, rust increasing with almond orchard humidity

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History is never wrong. It's whether paying attention to it is the right thing to do.

For [California almond growers](#), looking into recent past seasons can offer plenty about the disease propensity of an orchard today.

If leaves are falling prematurely in late summer or early fall, chances are it is due to two diseases, scab and rust, according to University of California Cooperative Extension Farm Advisor David Doll who is based in Merced County.

Doll joined UC IPM specialist Walt Bentley recently for a foggy morning almond pest management field meeting at Rushing Ranch just west of Fresno, Calif.

It was sponsored by the San Joaquin Valley Sustainable Farming Project.

Scab, according to Doll, is the more insidious of the two diseases because it is a relative of alternaria, a disease common to the southern San Joaquin Valley. This relationship is a challenge to an almond disease control regime because treating both with similar fungicides can create cross-resistance.

Left untreated, scab and rust can cause pre-harvest defoliation and weaken trees, thus compromising future production.

Foliar diseases are becoming more problematic in California almond orchards. One reason is due to late, spring rains the past few seasons creating high orchard humidity. Another is the growing trend toward high density plantings and the almost constantly running micro sprinklers keeping orchards wetter longer.

“With the tighter spacings in orchards, it takes longer for the orchards to dry out in the middle of the day,” Doll said. “Just because the temperature increases outside the orchard, does not mean it is increasing inside.”

This 2012 dormant season has been one of the driest on record. Doll warns that a dry year may reduce scab and rust levels, but a wet season or high humidity in an orchard can cause the problems to persist or explode anew.

History plays a key role in whether a grower should treat for either disease. Premature in-season defoliation is one way to tell if there is a problem. In-season scouting can confirm the presence and severity of the diseases.

Rust appears as pale yellow-green spots, which turn bright yellow and become somewhat angular, in late spring on both leaf surfaces. Orange-brown pustules form in lesions on the lower surface of the leaf.

Scab overwinters as mycelium in twig lesions and sporulates on lesions beginning in late March. On leaves, the disease appears as indistinct, green-yellow lesions on the underside and, later, on both sides of the leaves. Once the fungus sporulates, the lesions turn olive green.

On fruit, small green to olive-colored circular spots develop on the upper surface. The spots grow and darken as the disease develops.

If scab has evolved into a serious problem, Doll recommends first a delayed dormant application of copper and oil.

“Ten years ago, you would hear us tell you not to spray during dormancy,” said Doll. However, the increasing humidity issue is changing that recommendation.

Spray timing

“I hate to be a nozzle head and tell growers to spray, but it will do an effective job in cleaning up an orchard to reduce pathogen populations in the long run,” he said.

This delayed spray is effective in reducing and delaying sporulation of scab twig lesions. It should be used in combination with properly timed bloom and petal fall sprays. Doll said orchards with significant scab outbreaks in 2010 that followed the above recommendations had obvious suppression of the disease in 2011, and were able to keep the leaves on the trees until late November.

This delayed dormant period is just when the buds begin to swell, about two weeks before a grower sees bloom, Doll explained.

A spring fungicide spray to control scab should be made between two to five weeks after petal fall.

Orchards with a history of rust should be treated with a fungicide five weeks after petal fall.

With spray timing so close for both scab and rust, many growers try to catch both with one spray.

“If you try to split the difference between the spray timing for scab and the timing for rust, you will usually miss (timing) for both,” Doll told growers and PCAs at the Fresno field meeting. He recommends scab treatments more toward the two week side of the window.

“A spray for rust five weeks after petal fall can be very effective,” he said. Even better he said, if a grower treats for rust with an early May treatment followed by an early June treatment, “I would be shocked if they have a rust problem.”

Another rust control strategy is to apply zinc sulfate (20-40 pounds per acre) in late October/early November. This should be made to help reduce overwintering populations of rust. The zinc will hasten leaf fall, and prevent the rust inoculum from increasing. In orchards of severe infestation, applying a low rate of nitrogen to the surface leaf debris will help speed up the natural degradation of the leaves.

Resistance management

There is a wide array of fungicides available for disease control. However, there is the ever-present threat of resistance from overuse or misuse.

Doll believes this concern is being heightened by the marketing of pre-mixed products with different active ingredients in the mix.

“They are great fungicides mixed together, but my concern is how to manage resistance with these pre-mixes,” according to Doll. “It is not effective resistance management if you follow one of these pre-mixes with the same

active ingredient as one of the two products in the tank mix.

“Following a strobilurin and DMI tank mix with a single mode of action strobilurin or DMI is not good resistance management.”

He recommends following a pre-mix with sulfur, copper, sulfur or chlorothalonil.

“I do not blame farmers for using these pre-mix products, but I would highly recommend they rotate with something completely different,” he added.

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