

Protect your fruitlets

A Washington State grower-shipper has reduced sunburn by applying protectants earlier and more frequently.

By Melissa Hanson

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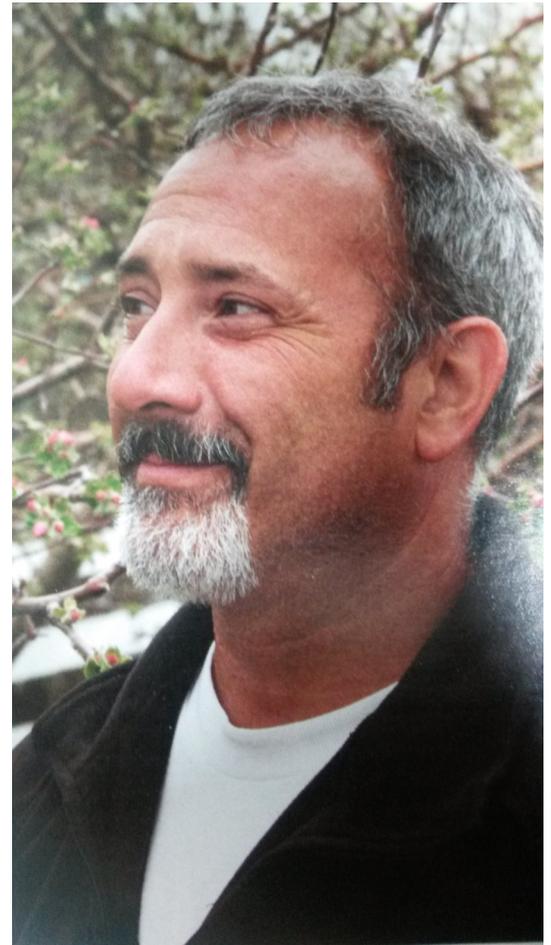
I imagine a baby's bottom exposed for the first time to the sun. That's how a Washington State crop consultant thinks about apple fruitlets when they lose their protective fuzz and become vulnerable to environmental effects.

In the last decade, Jeff Leonardini with Washington Fruit and Produce Company has changed his way of thinking when it comes to efforts to reduce sunburn in the apple orchards of the Yakima-based grower-shipper. He now starts thinking of sunburn long before the dog days of summer and begins his sunburn protection efforts when the "young, innocent, and vulnerable" fruitlets lose their fuzz and the canopy has not yet developed enough leaves for protection.

"The fuzz comes off at a time when the fruitlet is moving constantly, going from the calyx end pointing straight up to rolling over and pointing down," Leonardini said. "It's also at a time when you are hand thinning, removing other fruitlets so the one left is now exposed, with the sides wide open."

Timing of sunburn protection sprays has traditionally started around the end of June or first week of July when the first real heat wave typically hits eastern Washington. "There was some merit in that thinking and in waiting that long to begin your sunburn protection sprays," Leonardini said. "But that was in the days when you could still make money with only a 60 percent packout."

With pencil-thin profit margins due to higher fuel, labor, fertilizer, and chemical costs, coupled with low prices for juicing or cull apples, growers now must pay attention to their pack-out report and take steps where they can to improve quality.



Jeff Leonardini starts sunburn protectant sprays when fruitlets have lost their fuzz (24 to 28 millimeters in diameter) and temperatures exceed 80 degrees

Washington State University researcher Dr. Larry Schrader estimated a few years ago, based on cull reports from packing houses, that between 8 to 12 percent of Washington's total apple crop was lost annually to sunburn damage. He found, in studying apple skin disorders, that sunburn often leads to other skin orders, such as Fuji staining, lenticel marking, and sunburn scald. The damage can be as high as 50 percent in orchards with varieties that are susceptible to sunburn. In addition to variety sensitivity, sunburn can be a problem in certain trellis systems, like the V trellis and those with open exposure.

Earlier approach

Leonardini began a quest more than five years ago to maximize yields and profitability by reducing sunburn in several of Washington Fruit's susceptible orchards. In Grannies, it's not unusual to see 30 percent or more culls from fruit taken out of a late-season controlled-atmosphere room, he said, adding that up to about half of those culls are related to sunburn. "We determined we needed to take an earlier approach to eliminate sunburn," he said. He set up a trial comparing earlier and more frequent sprays to standard treatments in orchard blocks from several growing regions. At the time, the industry standard was to put on two to three protectant sprays, spaced about a month apart, beginning around the first of July.

The first year, Washington Fruit applied four protectant sprays. After following the fruit through the packing line and not seeing any noticeable differences, they increased to five sprays the following year, starting earlier in June, with three-week intervals, until they ended the sprays in early September.

"The biggest issue with five sprays was swallowing the lump of money that we were spending," he said, noting that each spray costs around \$35 per acre for material, not counting the tractor and driver. "But from the five sprays, we saw a reduction in sunburn cullage and the severity of sunburn in 60 percent of the orchards. The packouts showed we still had sunburn, but at much lower levels."

Cost effective

Leonardini then took the bold step of starting sunburn protection in the last week of May, when temperatures typically reach 82 to 85°F and fuzz is gone from the fruitlets, re-treating every two weeks regardless of weather. This was done in four blocks of ten acres each, out of a 190-acre Granny Smith orchard in Cold Creek, near Mattawa, Washington.

"We put on 12 sprays that year," he said. "But when we ran the fruit through the warehouse, the culls were down by at least 50 percent. It was huge. Well more than enough to offset the cost of the program."

He explains that at a cost of \$35 per acre applied 12 times, the cost per acre for material was \$420. If the grower normally averaged 60 bins per acre, but the packing house was throwing away 25 percent, that's 15 bins of lost grower income. At a value of \$200 per bin, the grower had a potential loss of \$3,000, far less than the \$420 spent to eliminate sunburn. Even if cullage was only 10 bins, Leonardini estimates that the grower still put about \$1,600 more into the bank. The grower needs to gain only three bins to pay for the extra sprays.

Late May

Washington Fruit now starts sunburn protection the last week of May in a few key orchards when temperatures climb to the 80s. While several protectant materials are available, they use Eclipse for all of their sunburn protection. Eclipse, supplied by D & M Chemical Company in Moxee, Washington, is a calcium carbonate and boron micronutrient solution that blocks ultra-violet rays. Eclipse is compatible with nearly all fungicides and insecticides as a tank mix, he said, noting that they try to be as efficient as possible and dovetail their sprays together. He advises growers to always do a jar test before mixing materials.

Leonardini said that they initially used another product for sunburn, but had to switch products when new rollers were installed on the packing line. With the gentler rollers, the previously used material that worked with brushes was now hard to remove from the fruit. He describes Eclipse as warehouse friendly, but notes that the dump tank water must be slightly acidic to remove all residues from the calyx and stem ends.

He encourages growers to look at their packout reports and review their sunburn history. If sunburn is high, he suggests they consider making adjustments. A trial can be conducted within their orchard to compare results, but the trial must be large enough so that harvested fruit can go separately through the packing house and not be mixed together with the control fruit.