



Cranberry Crop Management Journal

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PROS & CONS OF PROLINE

by **Patty McManus**
*Extension Fruit Crop Specialist
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Proline (prothioconazole) fungicide was introduced in cranberry production a few years ago. In many trials it has been the top performer for fruit rot control and it has been as good as the industry standards (Orbit/Tilt and Indar) for cottonball control. Those are the “pros” of Proline.

The “cons” are that work by Christelle Guedot’s group has shown a significant decrease in the amount of cranberry pollen collected by honey bees 24 and 48 hours after application of Proline (5 fl oz/acre). They did not collect pollen samples later than 48 hours because growers needed to use other products that would have made it impossible to compare beds at later time points. Thus, just how long the negative effect of Proline persists is not known. For more information on that work, see 2019 Cranberry School Proceedings, pages 2-3. Although that study showed Proline deterring honey bees, we have included Proline in several fungicide trials since 2011 and have never found it to reduce yield. How do we reconcile what seems to be contradictory results? *Here are a few possible explanations:*

- McManus et al. fungicide trials were done by treating small plots, with the entire experiment taking up a small fraction of a cranberry bed. By contrast, Guedot et al. collected data at marshes where Proline was applied to whole beds. Perhaps the amount of Proline applied to several small plots intermixed with plots treated with other fungicides was not enough to deter bees. But when whole beds are sprayed, the amount is great enough to deter honey bees.
- Guedot et al. measured amount of cranberry pollen collected, but they did not measure yield. Although the amount of pollen collected declined after Proline was applied, perhaps the deterrence, although statistically significant, is not severe enough to inhibit yield. They did not measure yield because cooperating growers needed to apply other pesticides later in the season, which would have made it impossible to sort out the effect of Proline on yield.
- Yield in the McManus et al. fungicide trials was determined by weighing berries hand harvested from very small plots—1 or 2 square foot areas. There sometimes is great variability in yield even among replicate plots of the same treatment. We do not know how well our yield estimates based on such small sample areas “scale up” to whole beds. It’s the best we can do, but it’s far from perfect.
- Perhaps pollinators other than honey bees are not deterred by Proline, and they are doing enough pollination so that yields were not reduced in the McManus et al. fungicide trials.

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- One might speculate that the amount of cranberry pollen collected by honey bees drops off after 24 or 48 hours, simply because there is less pollen available as bloom advances. This is likely NOT the case, however, because Guedot et al. also monitored pollen collection after treatment with Abound + Indar and did not see a significant reduction in pollen collection at 24 and 48 hours after treatment with that fungicide combination.

Aware of possible concerns with fungicides and pollinators, in 2017, Jack Perry and I tested the efficacy of fungicide programs that varied in when two sprays were made: twice before bloom; twice during bloom; or twice after bloom. We rated fruit rot control at three locations and cottonball control at one location. In 2018 we tested those three spray timings and a fourth in which fungicides were applied just before bloom and again during early bloom. We added a second cottonball site in 2018 as well.

In general, the best level of fruit rot control with Proline (and other fungicides) was achieved when sprays were applied during bloom rather than before or after, but the difference was often not statistically significant. Sub-optimal timings (i.e., before or after bloom) did consistently control fruit rot significantly better than the untreated check. Similarly, cottonball control was best when fungicides were applied during bloom, which was expected since the cottonball fungus mimics pollen by germinating on floral stigmata and growing down the style to developing ovaries. For cottonball, spraying before bloom was usually as effective as spraying during bloom, but spraying only after bloom resulted in cottonball similar to the untreated check in several cases. The data tables are quite “busy,” so I don’t include them here, but please contact me (pmcmanus@wisc.edu) if you want to see the detailed reports that include not just Proline but some other fungicides as well.

Further work to determine the relative risks and benefits of fungicide use is warranted. But in the meantime, what should you do? I believe that if you have disease bad enough to justify fungicide use, then you should apply the fungicide at a timing that will provide the best level of control. For cotton ball, that is during bloom and for fruit rot, at least one application should be during bloom. If you want to avoid bee deterrence by Proline, you could apply a different fungicide during bloom and follow up with Proline at late bloom or after bees are gone during early fruit set. The Guedot work showed that Abound + Indar did not deter honey bees. However, with that combination or Quadris Top, there is a 14-day water-holding restriction. As mentioned above, applying yield information from small plots to whole beds is imperfect. In trials conducted over many years, we sometimes have rot or cottonball around 30% with no statistically significant yield loss, but I would never suggest that 30% disease is acceptable! However, when we do detect a significant yield loss among fungicide treatments, it has almost always been because of high disease in the untreated controls or an ineffective fungicide treatment. We have never seen a loss in yield with Proline or other effective fungicides.

OBSERVATIONS FROM THE FIELD

*by Pam Verhulst
Lady Bug IPM, LLC*

An unseasonable cool and wet weather pattern has consumed the first part of June. We are seeing a slight delay in our insects as a result. Growers are finishing addressing their spring pest about a week later than last year. This week we expect to see any remaining BHFV or SPARG to be webbing. The week of June 11th we had our first adult SPARG in the pheromone traps and expect the other species to start flying soon.

Spanworm/Looper hotspots will be easy to see as the hooks and blossoms emerge. They love to eat hooks and the hot spot area will appear green as the rest of the bed takes on a pink hue. With their large size you will no longer be able to sweep them. They hold onto the vines very tightly! You’ll have to look close because they also try to mimic the appearance of a stick, like the Spiny Looper in the picture.



In addition to the delay in the insect world the plants are also behind last year. Many Growers are getting calls from their Bee Keepers wondering when to bring bees in. We did see our first blossoms last week (June 11th) but not even the “banana belt” (Warrens/Tomah) had enough blossoms to keep the Bumble Bee or Honey Bees busy.

On June 19, 2018 a Crimson Queen, in Cranmoor, was peak bloom with 10-12% out of bloom. We were projecting when the CFW spray was going to be applied. This year the same bed on June 17, 2019 some hooks are still emerging, one or two blossoms have been spotted and we are projecting when their first Fruit Rot fungicide application will go on. We do expect to see more blossoms this week and plan to start calculating percentages in bloom to help time fungicide applications.

Crimson Queen - Cranmoor



6-19-2018



6-17-2019

GROWER UPDATES

GARDNER CRANBERRY

Plant stage is finally starting to catch up around here! Spring bug control has been across the board for us. Our properties up north that have a history of spanworm all treated the second week of June and found great control. Whereas some of our properties (northern and central) didn't have to treat at all or only spot treated.

As of 6/14, most of our properties have still been frost protecting on cooler nights.

We do have our bumblebees here, anxiously waiting for the bloom to pop. The properties that apply fungicides, have product ordered and on hand, ready to go. It is amazing how each property is unique, even if they are across the street from one another. We tend to naturally want to jump the gun and be on top of our bugs, but this spring forced us to sit on our hands and watch the temperatures. Like we heard at this spring's mini clinic, insects are slaves to temperatures.

Happy Honey Bee Season!

Willow Eastling

RUSSELL REZIN & SON INC.

Back in my day, spring used to last an entire season, not just a few weeks! June came in HOT! The bud development really went fast after Memorial Day weekend and we are expecting about 15% bloom by Father's Day. With bloom coming in full swing, we expect to have all our honeybees in place over the next few weeks. Mowing and weed whacking are now a part of our daily vocabulary while in preparation for the bees.

With all the sunshine we have been having, we are already noticing fresh growth on our new plantings. We are working on building and installing new bulkheads for the new beds. We have been closely monitoring their moisture levels due to the hot days and they received their first, light, application of fertilizer this week. With all the growth happening around us, we are preparing for our fungicide application next week.

June has also brought our marsh's first hatchings of goslings and ducklings! We also welcomed the birth of twin loons to our pond. A small fawn was even spotted in one of our fields a few weekends ago. Spring has so much new life and development to offer- but now we are on to the dog days of summer!

Amber Bristow

WISCONSIN CRANBERRY RESEARCH STATION UPDATE

With the cool nights and endless rain, the month of June has not started out how many growers would have wanted to but it seems that things are still moving along. We are currently in a heavy hook stage with scattered blossoms starting to appear. We got our bumble bees last week and they seem to be out and about. On the renovation side of things, we are currently putting the last few bulkheads in and should be ready to plow in drain tile by the end of the week. This week Jackson Electric is plowing in phase 3 power to our irrigation station, which I hope to then have our electric pumps running by the end of the week also. I am hoping to have the renovated acres planted by the 4th of July, but the 2" of rain in the last 5 days has slowed are progress down. Again less rain and more sunshine!

Wade Brockman

References to products in this publication are for your convenience and are not an endorsement of one product over similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

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