

Cranberry

Crop Management Newsletter



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Belay Insecticide-Follow-up

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In the last issue we summarized several aspects of the newly registered insecticide Belay. Since that article we have been contacted by the registrant, Valent, with some information that was overlooked which will have a significant impact on the usefulness of this product for the current growing season.

It was the intent of Valent to show a rate range on the label that reflected the rates that were recommended to be used in Jack's trials with this product. However, the current label rate of 4.0 oz/acre approved by EPA for foliar and fruit insects is well under the rates evaluated in our field trials.

Therefore, at the current labeled rate, Valent is **NOT** recommending Belay for the Lepidoptera complex (fireworm, sparganthis, and fruitworm). Similarly, the rates utilized in our tipworm trials were over twice the current label rate, and therefore we are not recommending Belay for tipworm control at this current rate. We believe it is Valent's intent to seek a label change for next year that would include higher rates more in line with our field evaluations.

Valent does support usage at the current 4.0 oz rate for leafhoppers, flea beetle adults, and cranberry weevil. Of these, only flea beetle is of concern in Wisconsin, and that only sporadically.

Valent is also recommending tank mixes of the 4.0 oz rate of Belay with its other new product, Knack, an insect growth regulator, at a rate of 16 oz/acre for control of the Lepidoptera complex. Jack has evaluated tank mixes of these products, with marginally increased control in some cases. However, in his trials the rate of Belay was higher than 4 oz and the rate of Knack was lower than 16 oz. In other words, we have no data on the specific rates being recommended by Valent and therefore cannot comment on the expected efficacy or cost effectiveness of their recommendation for a tank mix.

Note that these comments relate only to the fruit and foliar applications of Belay and not the soil applications, the rate for which remains at 12 oz.



Cranberry Crop Management Newsletter

Intrepid Insecticide Reminders

Dan Mahr, UW-Extension Fruit Crops Entomologist

Remember that new guidelines developed last year now allow the use of Intrepid® insecticide of **all** Wisconsin cranberry farms. Here are a few reminders.

- Intrepid® is an insect growth regulator insecticide with good activity against certain Lepidoptera pests of cranberry (such as fireworm, sparganothis, spanworms, gypsy moth) but it is a selective material, easy on beneficial insects, and therefore a good tool in Integrated Pest Management programs.
- Intrepid® is not effective against other types of insects.
- In the past, Intrepid® usage was very limited in central Wisconsin because of label restrictions designed to protect the federally endangered Karner blue butterfly.
- EPA, working in conjunction with the federal Fish and Wildlife Service and Wisconsin agencies, has approved labeling changes that allows usage on all

“To determine if your farm is in a Karner blue regulated area go to EPA’s Bulletins Live! website - <http://www.epa.gov/espp/bulletins.htm>.”

Wisconsin cranberry farms. Those farms that are within Karner blue protected habitat must use application practices designed to reduce spray drift. Those farms outside of Karner blue habitat (even within regulated counties) may use In-

- trepid® according to standard specimen and supplemental labels.
- To determine if your farm is in a Karner blue regulated area go to EPA’s Bulletins Live! website - <http://www.epa.gov/espp/bulletins.htm> - and follow the instructions to access your county.
 - If your county has no Karner blue regulated area, use according to standard specimen and supplemental labeling; no further specific drift reduction procedures are needed.

Follow this procedure if you are in a county that has regulated Karner blue habitat.

1. **Check the map provided with the county bulletin** to determine if the application site is within the regulated area (yellow on maps).
2. **If the application site is outside of the regulated area**, use the standard labeling to make your applications.
3. **If the application site is within the regulated area**, follow the bulletin guidelines to reduce spray drift.
4. **These guidelines include:**
 - √ using a drift retardant with ground application equipment,
 - √ using proper nozzles for ground application equipment and proper sprinkler heads for chemigation equipment that will assure droplet sizes in the specified range (refer to specifications at the website),
 - √ spraying at wind speeds 2-10 mph, and
 - √ aerial applications are prohibited in regulated areas.
 - √ You are encouraged to keep copies of the county/month bulletins and the supplemental label with your pesticide records.

Note that you must have either an up-to-date specimen label that includes cranberry, or the supplemental label specific for cranberry. The supplemental label can be printed from <http://www.cdms.net/LDat/ld6IK049.pdf>.



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.

Fruit Rot Management

Patty McManus, UW-Extension Cranberry Specialist

Bloom and early fruit set stages are key times for fruit rot pathogens to infect young berries. Cranberry fruit rot is caused by a complex of at least 12 different species of fungi in Wisconsin. However, in recent years two fungi have been especially important in Wisconsin: species of *Colletotrichum*, which cause bitter rot, and *Phyllosticta vaccinii*, which causes early rot. *Colletotrichum* rots fruit every year, whereas *Phyllosticta vaccinii*, which was prevalent in newer beds in 2006-2008 took a mysterious leave of absence in 2009. This can possibly be explained by the very cool July in 2009 and the fact that more growers are treating new beds with fungicides. I do not think this fungus has disappeared, however. If 2010 is warm, especially in mid to late July, I expect we'll see early rot in newer beds.

Colletotrichum fungi infect fruit during bloom and early fruit set stages but then go dormant until later in the summer, sometimes just before harvest. Chlorothalonil (brand names Bravo, Echo, or Equus) and mancozeb (e.g., Dithane, Penncozeb) are the best fungicides for controlling most fruit rot pathogens, including *Colletotrichum*. Applications should be made during bloom and early fruit set stages. Unfortunately, these fungicides have drawbacks. Mancozeb reduces fruit color if sprayed during bloom and early fruit set. The chlorothalonil fungicides sometimes are phytotoxic, and have been associated with burned blossoms, red flecks on fruit, and reduced fruit set, especially if applied in low volumes (less than 20 gallons/acre) and/or on hot days. Abound has been good in Wisconsin, but in our hands Indar and copper-based fungicides have not been effective on late-season rots caused by *Colletotrichum* and *Phomopsis*.

Early rot is so-named because the fungal pathogen, *Phyllosticta vaccinii*, causes leaf spots and fruit rot in July and August, several weeks prior to harvest. Similar to other fruit rots, fungicides should be applied during bloom and fruit set. Chlorothalonil is the most effective fungicide against early rot. In New Jersey, Indar also has been effective, but based on a limited amount of research, Abound is not effective. Our 2009 early rot fungicide trials were a bust, due to the complete absence of this disease. We are trying again this year. Factors associated with early rot are excessive vigor (soft vines are delicious to this fungus) and excessive heat which leads to vine stress, especially in open canopies. Some growers sprinkle newer beds for 20-30 minutes to lower the temperature on especially hot days. We have not researched this practice, but it makes a lot of sense to me. I am not concerned about the added moisture favoring fungi, because on a hot day, plants will dry quickly once you turn off the sprinklers; therefore, fungi won't have enough time to infect. Although no one wants this disease, it's encouraging that after vines fill in, the disease tends to subside.



Observations from the Field

Jayne Sojka – LADY BUG IPM, LLC

Second generation Black Headed Fire Worm (BHFV) have begun. Most of my growers with HOT SPOTS have treated with Confirm or Intrepid to get control and keep the bees longer.

Cranberry Fruit Worm (CFW) egg lay has also begun. Early varieties and young beds are near or completely out of bloom and those are the beds that we found CFW eggs. We are encouraging Intrepid applications or confirm to keep the larvae in check as they hatch out. Our research in 2009 clearly showed that we MUST get Intrepid in place at egg lay so that we control the pest early on.

This is the first year that we have swept the Eastern Tent Caterpillars in cranberry beds. Earlier this spring, you may have noticed that alongside the highway the Eastern Tent Caterpillars have spun a tent with masses of larvae. They were feeding on the leaves of trees, saplings, and any tender leaves they could reach. Well in one of the many wind storms that we had, these larvae blew into our cranberry beds. Luckily it was about the time of our 1st generation pest control measure and we were able to rid our beds of this new pest as well.

The number one question that I have been asked this week is, "Will this wet weather during bloom time cause problems with disease?" My opinion is, "if you have had challenges with rot or disease in the past and you feel that you lost crop because of it, then take action on your own marsh." "If your receiving station did not dock you for cottonball disease and your scout does NOT see cottonball disease pressure in your beds then you do not have to treat

Managing Soil pH

Rebecca Harbut, UW-Extension Fruit Crops Specialist

What is pH? pH is the measure of the amount of H⁺ ions in the soil solution. (Equation 1) It is measured on a scale that ranges from 1 (VERY acid) to 14 (Very alkaline). This is a 'log scale', which means each increase in pH of 1 is a 10-fold increase in the concentration of H⁺ ions. A low pH soil (acid) has greater amounts of H⁺ ion compared to OH⁻ whereas a high pH soil has the opposite with high amounts of OH⁻ and lower amounts of H⁺. (Figure 1)

$$pH = \log \frac{1}{[H^+]}$$

Soil pH=5 → 0.00001 H⁺ in 1L of water

Soil pH=6 → 0.000001 H⁺ in 1L of water

NOTE: An increase in pH of 1 is a **ten-fold increase** in the amount of H⁺ ions in the soil! Even though the number may seem small, the impact on soil chemistry is huge!

Equation 1.

Why does it matter? The soil pH directly affects how chemicals (including fertilizers and nutrients released from organic matter) will react in the soil. Each nutrient has a pH range in which it is most available for plants to take up, therefore, as the pH of a soil changes, the availability of nutrients changes. The ideal pH for cranberries is 4.2-5.5, which is quite acidic compared to other crops. If the soil is higher than 5.5, the availability of nutrients dramatically changes. Calcium, magnesium and potassium become much more available and can become 'toxic' by creating nutrient imbalances in the soil. (Figure 1)

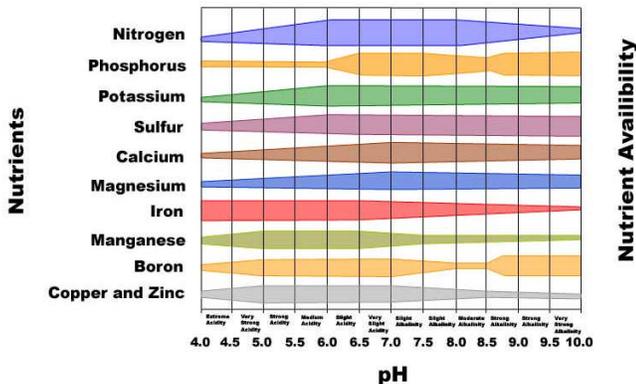
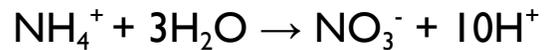


Figure 1. Influence of soil pH on Availability of Plant Nutrients. Thickness of bars indicates availability of nutrient. Ideal pH for cranberry soils (4.5-5.5). Redrawn from S.S.S.A.P., 1946. 11:305

High pH can also affect availability of nitrogen (N). Cranberries take up N primarily in the form of ammonium (NH₄⁺), which is the form of N present in an ideal cranberry soil (pH 4.2-5.5). As soil pH increases, the ammonium in the soil is converted to nitrate (NO₃⁻) which is not taken up by cranberries as effectively and is leached out of the soil more quickly.

Transformation of ammonium (NH₄⁺) to nitrate (NO₃⁻) with increasing soil pH.



Ammonium
Low soil pH

Nitrate
High soil pH

If the pH of your soil is not in the appropriate range for cranberries, it will be very difficult to meet the nutritional demands of the plant. In a high pH soil, the plant does not receive appropriate amounts of nutrients because they are in the wrong form, not because they are not present. Adding nutrients will have little to no effect until the pH has been corrected. Managing soil pH should be the first step in managing your crop.

Lowering soil pH with sulfur. It is possible to adjust the soil pH by addition of amendments. Lime can be added to the soil to raise the pH and sulfur can be added to lower the soil pH. When sulfur is added to the soil, bacteria in the soil convert the sulfur to sulfate. There are few key factors that should be considered when adding sulfur to adjust soil pH.

- 1) **It takes time!** The speed at which the soil pH decreases depends on how many bacteria are in the soil and how quickly they are working. When you first add sulfur to the soil, the amount of bacteria in the soil is relatively low and it will take time for populations to increase. The rate at which the conversion happens will also depend on the soil temperature. Bacteria are not very active in cool soils, therefore sulfur applications in the fall and spring will take longer to effect soil pH due to cool soil temperatures. Do not wait to address pH issues, this should be done as soon as possible.
- 2) **Oxygen is needed.** Bacteria require oxygen to convert the sulfur. If conditions are very wet, or you are planning to flood, you should delay the sulfur application until after the flood.
- 3) **This is usually not a one-time fix.** Often, marshes that require sulfur applications to lower the soil pH will need to be adjusted on a regular basis. This is just one more good

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for cottonball. At this moment, I would have a difficult time predicting Bitter rot or field rot. Often times August and September are our challenge months with HOT, HUMID weather. With a heavy deep crop we find that the duff area seldom dries out and the berries may sit in a humid environment for an extended period of time. Like the weather man, I just cannot tell you what those months will be like.

When the weather broke, I was simply amazed at how well our bees worked. I saw 12 honey bees in a three-foot observation sight! The amount of natural pollinators is quite impressive as well.

I have to share success stories with flooding on Mother's Day. It you recall that weekend it reached 16 degrees. Many growers that flooded on that weekend did NOT have to treat for 1st generation insects. Today the sparganthis fruit worm flights are much lower than their neighbors that did not flood and had to use insecticides for a control measure. As an added BONUS those growers did NOT have any BHFWS hot spots to deal with.

We have some marshes that have high Girdler flights. I get uncomfortable with 60 in one trap! Jack Perry will be doing some research on controlling this pest, so stay tuned to his Cranberry School presentations in January. This control measure is an August project but I wanted to give some of you HOPE with this challenging pest. ❖❖❖

NOTES FROM THE ARCHIVES...

Rebecca Harbut, UW-Extension Fruit Crops Specialist

When I first landed in my office here at UW-Madison, I was welcomed by a sizable stack of boxes left for me by my predecessor Teryl Roper. Upon exploration of the contents, I discovered a collection of documents about Wisconsin's cranberry industry produced by Teryl and several other cranberry researchers dating back to the late 1800s (Teryl's contributions are a little more recent J). It was a humbling moment to think of the very large shoes in which I now stand! I have very much enjoyed looking through these old documents and learning about the history of the industry and so I thought I would share some excerpts just to remind all of you from whence you came!

Last issue, I discussed nutrient management. I have selected some excerpts from previous nutrient management recommendations. **Note- these are not the current recommended practices for cranberry production!**

1924- USDA Farmers' Bulletin 1401-Managing Cranberry Fields:

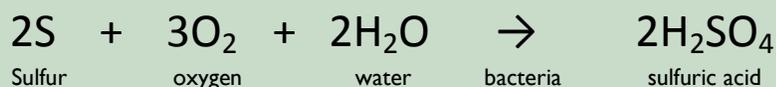
"At present it is only by making tests of different fertilizers on each field that the plant-food needs of the soil can be determined, and until the need has been proved no general use of fertilizers should be practiced. The application of fertilizers on most cranberry fields with deep peat bottoms is not advisable, for they generally fail to increase yields..certain fertilizers have increased yields on fields with sand bottoms."

1966- UW Extension Bulletin: Cranberry Growing in Wisconsin:

"A suggested program for fertilization of marshes consists of split applications of nitrogen and one application of a complete fertilizer....A grower will need to experiment with fertilization to determine the best amount and time of application for his own conditions. This may be done by determining the growth status of the plant that produces the most fruit and then fertilizing to attain that growth status. This optimum growth will vary with varieties and conditions."



Continued from *Managing Soil pH* p. 4



to make soil sampling part of your regular routine. It is also important to consider the pH of the water being applied to the marsh. High pH water will continuously add carbonates to the soil which will raise the soil pH over time. ❖❖❖



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