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Address Correction

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Thank you!



Cranberry Viruses

By Patty McManus and Lindsay Wells
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Two viruses have been associated with berry scarring in Wisconsin cranberry beds over the past two years. First, tobacco streak virus (TSV) was identified in 2012 and confirmed in 2013. TSV has been found almost exclusively in newer hybrid cultivars, although it was identified in Stevens at one marsh. In 2013 we identified blueberry shock virus (BISHV) in scarred berries from older plantings of Stevens and LeMunyon. This article will review how to differentiate virus-associated scarring from other types of berry injury and steps you can take to minimize spread of viruses.

Diagnosing the problem.

Scarring from TSV or BISHV appears immediately after fruit set. In 2013 we noticed that early berry scarring symptoms associated with TSV and BISHV were similar, with brown or black scars and crevices of various sizes on the berry surface. We also noticed some flower and tip



Figure 1. Blossom blast symptoms on TSV-infected upright.

blighting associated with TSV infection (Figure 1), although there are other diseases that can cause similar symptoms. By mid August, we noticed that berries testing positive for TSV were disfigured with deep grooves, whereas berries testing negative for TSV (and later confirmed positive for BISHV) had a lot of scarring, but usually were not misshapen by deep grooves (Figure 2, p. 2). Keep in mind, however, that symptoms can vary widely from what is shown in the photos. Usually, but not always, if one berry on an upright is scarred, then all berries on that upright are scarred, whereas fruit on nearby uprights might show no symptoms. Sometimes berries are so badly scarred that they abort, but in other cases they size up and hang on until harvest.

Injury from chlorothalonil (e.g., Bravo, Echo, Equus, Daconil) can vary from superficial speckling to deep, disfiguring burns (Figure 3, p 2). However, chemical injury is generally worse on the exposed surfaces of berries, and it appears more generally in a bed rather than just on certain uprights. Sometimes all berries on an upright shrivel in late July and into August. We have seen this when uprights are girdled by stem gall, or when affected by the “bronzing” malady that’s become so common in recent years. In these cases, the berries shrivel within a few days, but they don’t have scars.

We continue to do research on TSV and BISHV, but we are not conducting a survey or providing routine virus testing this year. To confirm viruses, we recommend the commercial lab Agdia (agdia.com or 800-622-4342). The fees and other information for

Cranberry Viruses *Continued from p. 1*

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Figure 2. Dark scars and dimpling associated with TSV infection (left) and tan, superficial scarring associated with BISHV.

submitting samples are on the web site, and the staff is very helpful addressing questions by phone as well. You should request that they test scarred BERRIES rather than leaves. We have found that leaves often test negative, while scarred berries on those same uprights consistently test positive for either TSV or BISHV. Do not let samples heat up in the field, and do not freeze them. Rather, keep them in a cooler or a refrigerator until they can be sent to Agdia. The viruses seem to hold up fine for a day or two in shipping.

What can we do? It appears that both TSV and BISHV overwinter in Wisconsin and persist from one year to the next. Eliminating these viruses will not be possible, but we can take steps to minimize their spread.

1. Minimize traffic in and out of virus-infected beds, especially during bloom when infected plants are shedding virus-infected pollen. We do not know how readily TSV and BISHV are spread on pollen or the exact role of insects, but in other cropping systems spread on contaminated pollen is significant.



Figure 3. Superficial scarring following chlorothalonil application.

2. Sanitation. Where viruses are known to be present, consider wearing disposable plastic boot covers and change before entering a new bed. Note of caution: disposable boot covers are slippery! A less slippery option is to wash pollen and other plant material off boots between beds and then, disinfect by spraying boots or stepping into

10% bleach, rubbing alcohol, or disinfectants such as Virex or Lysol. Wash hands between beds if you are touching plants.

3. Work in virus-infected beds last, if you must enter them at all. We suspect the risk of spreading virus after bloom is low, but where possible, wipe weeds, scout for pests, and conduct other “in bed” tasks in infected beds last.

4. Do not establish a new planting with cuttings from infected beds. In other cropping systems, viruses are readily spread on propagation material. We have no reason to think that TSV or BISHV on cranberry will be different.

5. Keep everything in perspective. We are taking viruses seriously and believe growers should too, because there are many unknowns. But viruses are just one of many production problems facing cranberry growers. Where TSV and BISHV have been identified, beds produce well despite infection.

What Pesticide Can I Use?

By Matt Lippert

Wood County UW-Extension Agriculture Agent

As we learn from reports from specialists and consultants new products do receive approval for cranberry growers to use as a result of industry efforts to support research. New products tend to be more specific, less harmful to beneficial insects, have less residual time and are safer in general for the environment. At the same time existing products may be reformulated with label changes and some older products have been lost to the industry.

While new products are approved for the domestic market, approval for markets outside of this county often lags, making the product not an option for many growers through their marketing partners. This makes for a difficult mix of products that are now available but possibly not for us and our markets. There are products that are discussed in field days, newsletters and workshops. There are products that we may want to gain some experience to learn how they work or how they may address current issues on our marsh. These products may not be available for us to use but possibly can be used by other growers.

Table I on p. 4 is a chart provided by Suzanne Arendt of Red Forest IPM Consulting, showing a snapshot of criteria for crop protection products this season.

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.

Thank you to Suzanne for compiling this and helping us see where we are as an industry in 2014. We have removed the names of the markets for reasons including:

- 1) These standards are subject to change even during the growing season.
- 2) This information needs to be accurate and communication should be directly with your market outlet.
- 3) Never assume that because a product is not mentioned on the list that it can be used due to omission, in fact you should assume the opposite.



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Table I: 2014 SUMMARY OF HANDLER PESTICIDE RESTRICTIONS

| Chemical | Market A | Market B | Market C | Market D | Market E | Market F | Market G | Market H |
|-------------------------------|-----------------------------------|----------------------------|----------------------------|----------|----------------------------|----------------------------|----------------------------|-------------------------|
| ACEPHATE (ORTHENE) | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM | | | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM |
| ASSAIL (ACETAMIPRID) | 60 d PHI | 60 d PHI | | | NO RESTRICTION | NO RESTRICTION | | 60 d PHI |
| CARBARYL (SEVIN) | 7-25 | 8-1 | 6-22 OR SCATTERED BLOOM | 40 d PHI | 6-22 OR SCATTERED BLOOM | 8-1 | 8-1 | 7-25 |
| CHLORANTRANILIPROLE (ALTACOR) | 9-1 | 9-15 | | | | | | 9-1 |
| CHLORPYRIFOS (LORSBAN) | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM | | | 6-22 OR SCATTERED BLOOM | 6-22 OR SCATTERED BLOOM | | 6-22 OR SCATTERED BLOOM |
| CLOTHIANIDIN (BELAY) | 8-1 | 30 d PHI | | | NO USE | NO USE | MANDATORY RESIDUE TESTING | NO USE |
| PHOSMET (IMIDAN) | 30 d PHI | 40 d PHI | | | 40 d PHI | 40 d PHI | 30 d PHI | 40 d PHI |
| QUINCLORAC | 100 d PHI MUST CLEAR W/ PAPPAS | 100 d PHI SEGREGATION | | | NO USE | NO USE | 100 d PHI | NO USE |
| CHLOROTHALONIL (BRAVO) | 7-25 | 7-25 | 7-25 | 7-25 | 7-15 | 7-25 | 7-25 | 7-25 |

summary by Liz Pivoschuk
RedForest Crop Consulting,
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Handler restrictions for chemical use are a common site these days. Due to worldwide differences in tolerance of pesticide residues, it is important to ensure that you are following your Handler's guidelines. In order to sell cranberries in other countries and even within the United States, strict adherence to these restrictions are paramount. Your Handler should provide you with a detailed list of their restrictions which you should have nearby when you are making decisions on your farm. If you have questions in regards to restrictions, please call your Handler representative.