

Cranberry Crop Management Newsletter

University of Wisconsin—Extension

Volume XXII Issue I
May 1, 2009

Special points of interest:

- Review the current fungicide arsenal,
- What fungicide products will and won't do.
- Fungicide name changes and label modifications.
- White Grubs
- Rose Chafers
- Welcome to our newsletter
- Nitrogen

CRANBERRY FUNGICIDE UPDATE

By: Patty McManus, UW-Madison Extension Plant Pathologist

Several changes in cranberry culture, including the push to higher and higher yields, have raised the profile of fruit rot diseases in Wisconsin. There have been only a few new fungicides registered for use on cranberry in recent years, but there have been some name changes and label modifications to keep us on our toes. Below I review the current fungicide arsenal, and briefly, what the products will and won't do in the cranberry marsh. I tried to be thorough, but it is possible that I have overlooked some products. Exclusion of a product should not be viewed as a negative endorsement. On some fungicide labels you will see a listing for "Berry" which includes a long list ending with "and other berry crops." Surprisingly, this does not include cranberry, even as an "other" berry. Cranberry is in its own category on most labels, and unless you see it by name, the product is not registered on cranberry. Labels do change without notice, so be sure to follow the instructions on the label of the product in your hands.

Abound. Active ingredient is azoxystrobin, which is in the strobilurin class of fungicides. Its relative low toxicity to mammals has earned it "reduced-risk" status by EPA. Three sprays are permitted, starting in early bloom and then at a minimum of 7-day intervals. This product is primarily for control of fruit rot, which is caused by a complex of a dozen or so fungal species. Its performance in controlling fruit rot has been spotty, working well in some situations and not at all in others. Although we have never had intense disease pressure when we've tested it for cottonball control, it does have some efficacy. However, it is not as good as Indar or Orbit for controlling cottonball.

Bravo, Echo, Equus. Active ingredient is chlorothalonil, a broad-spectrum fungicide. I've always referred to chlorothalonil as the "Cadillac" of fruit rot fungicides, but with the demise of General Motors, I may have to come up with a better analogy. In every trial conducted in Wisconsin, and almost all of them conducted elsewhere, the chlorothalonil products have topped the competition. The different names and formulations appear to perform equally well. The cloud behind the silver lining, however, is toxicity to the cranberry plant. Applied during bloom, chlorothalonil sometimes reduces yields. Applied during bloom and especially if applied to pinhead-sized fruit, it causes red flecks and burns on fruit. These problems are worse if chlorothalonil is applied on hot days (temps reach 85 F or more) or in low spray volumes (less than 50 gallons/acre). In 2008 we put out several trials to compare the products for efficacy and toxicity. While the various chlorothalonils were equally effective, we saw NO phytotoxicity in 2008! Frank Caruso's 2008 data from Massachusetts showed more fruit scarring with Bravo WeatherStik than Bravo Ultrex.

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Cranberry

Cranberry Fungicide Update Continued

Copper-based fungicides. Several different formulations are registered on cranberry, but I don't know why. They have consistently been at the bottom of the pack (often not better than the untreated check) in fungicide trials for fruit rot and cottonball. Since copper has some bactericidal activity, some growers have used it the year following a bad outbreak of stem gall (sometimes erroneously called "canker"). The bacteria that cause stem gall, however, amass deep inside stems where copper can't reach them. It used to be that copper was cheap, but that is no longer the case. Perhaps its high price will bring an end to futile application of copper!

Indar. Active ingredient is fenbuconazole, which is in the sterol demethylation inhibitor class of fungicides, same class as propiconazole (below). The best use of Indar in Wisconsin is for cottonball control. Indar has been equal to or just a shade better than Orbit for cottonball control in trials conducted 1996-2006. Like Orbit, pre-bloom applications are permitted to control the tip blight phase of cottonball. Indar is also labeled for control of fruit rot, but results have been inconsistent in our trials. This may be due to its specificity for certain fungal species, something that we will be testing in 2009.

Mancozeb. Mancozeb is marketed as Dithane, Penncozeb and some other names. A related fungicide is **maneb**. These are old, broad-spectrum fungicides. In our trials and in trials conducted in the eastern U.S., mancozeb has been very effective in controlling fruit rot. In our trials it lags just a bit behind Bravo, but it has been a much more consistent performer than Abound or Indar. The downside is that it can reduce fruit color if applied during bloom and/or fruit set stages (and that's when you need to apply it to control fruit rot!). In a Searles trial conducted several years ago, our untreated check had an anthocyanin count of 19.2 mg/100 g berries compared to a reading of 16.2 when Dithane 75 was applied at the 6 lb rate during bloom or after bloom. Due to a factory shutting down, Dithane will not be available in 2009, and the other brands of mancozeb have doubled in price over recent years.

PropiMax and Tilt (formerly Orbit). Active ingredient is propiconazole, which is in the sterol inhibitor class of fungicides. After more than a decade of Section 18 registration, Orbit got a regular label in 2007 for cottonball control. When the patent on propiconazole expired, Dow AgroSciences released PropiMax. This year, Syngenta's Orbit has undergone a name change and is now sold as Tilt—same product, same maker, different name. You may use remaining Orbit stocks according to the old Orbit label. We have not tested PropiMax, but I would expect it to perform as well as Orbit/Tilt. Propiconazole and fenbuconazole (Indar) are both excellent fungicides to control cottonball, but because they belong to the same chemical class, fungicide resistance is a concern. Indar and PropiMax/Orbit/Tilt each are permitted in four sprays per season, but you should not apply more than a TOTAL of four sprays of sterol inhibitor fungicides in a season. The best "bang for the buck" in controlling cottonball comes with spraying during bloom. So, unless you have serious cottonball problems (e.g., greater than 10% of fruit affected), you should probably forego the bud-break sprays and focus on protecting flowers. In over 10 years of testing both Orbit and Indar we have never seen a negative effect on yield or fruit quality.

Phosphorous acid products. Aliette, which is an aluminum salt of phosphorous acid, was the first in this group. Now we have **Phostrol** and **Prophyt**. These are effective in controlling *Phytophthora*, but have not been tested on other cranberry pathogens. The active ingredients in phosphorous acid products are one or more phosphite salts (potassium phosphite, sodium phosphite, ammonium phosphite). From a practical standpoint, you can consider these products all the same. However, these fungicides do not contribute to P nutrition. Phosphorous acid releases the phosphite (also called phosphonate) ion, which is transported in the plant to the roots. While the phosphite ion is fungicidal to *Phytophthora*, it does not provide P for the plant. Phosphorous acid products do not release the phosphate ion, which is the form of P that plants use.

Cranberry Fungicide Update Continued

Ridomil. The active ingredient is mefanoxim, which is a slight modification of the old active ingredient, metalaxyl. Ridomil is effective on some species of *Phytophthora* but not the ones that predominate in Wisconsin, according to a survey we did in collaboration with Peter Oudemans of Rutgers University. Improving drainage is the first step in *Phytophthora* management, and often the problem goes away without fungicide input.

Serenade. The active ingredient in this biocontrol product is the bacterium *Bacillus subtilis*. Promising results from blueberry research inspired us to test Serenade on cranberry, especially for cottonball control. Unfortunately, it did not control cottonball as well as the standards, propiconazole and fenbuconazole, and in some cases, not better than the non-sprayed check. In separate tests, it did not control the fruit rot complex.

Additional information on fungicides and their uses can be found in several bulletins listed on the UW-Extension website at <http://learningstore.uwex.edu/Berries-C84.aspx>, the Pesticide Chart from Cranberry Institute, and in further articles in this newsletter.

Patty McManus
Professor and Extension Plant Pathologist

Mass Trapping and/or Mating Disruption

By Jayne Sojka, Lady Bug IPM, LLC

Starting early in May, numerous growers will be conducting Mass trapping/mating disruption studies on their marshes for White Grub (June Beetle) the species *Phyllophaga anxia*. Last year we were surprised at the total catches –For example: one marsh with six sets of traps captured 674 June Beetles, another with 31 sets of traps captured 1622 Beetles while another with 8 sets of traps captured 598. We are curious to see what 2009 brings because this pest has a three year life cycle. Simply stated, not all white grub were in the adult stage in 2008. We have no idea how many actual grubs are out there in the larval stage as they are soil insects. Unfortunately, we look for the damage before we know of their presence

On another note, I would like to encourage any/all growers interested in Rose Chafer (*Macrodactylus subspinosus*) (Fabricius) trapping to order supplies early. When we place a rush on supplies we are at the mercy of very expensive shipping arrangements. If you were planning on Mass trapping/mating disruption of this pest, we would want the traps out mid to late June depending upon the growing degree days. Remember, that we still have a great deal to learn about this pest, but we will never know unless we try things on our own marshes. In 2008, we did **indeed** witness damage from the Rose Chafer on our tender pink blossom. One very conscientious

grower placed 30 traps out 50 feet apart – he placed them where he saw rose chafer flying and feeding. In the first 45 minutes of trapping one trap captured 50 rose chafers.

Lady Bug IPM, LLC

Jayne Sojka

When you do the common things in life in an uncommon way, you will command the attention of the world.

George Washington Carver

Tell me and I'll forget; show me and I may remember; involve me and I'll understand.

Chinese Proverb

When I was a boy of 14, my father was so ignorant I could hardly stand to have the old man around. But when I got to be 21, I was astonished at how much he had learnt in 7 years.

Mark Twain

Cranberry

WELCOME

By: Matt Lippert, Wood County Agriculture Agent



Cranberry Harvest Rake

"The art of being happy lies in the power of extracting happiness from common things."

Henry Ward

Beecher

Welcome to another years installation of the Cranberry Crop Management Newsletter. This year the newsletter will originate from the Wood County UW- Extension Office. You probably will notice a little different look. We will have the same timely content available to you from state specialists and cranberry crop consultants. The newsletter is available to any cranberry grower in the state free of charge, due to financial support from the Wisconsin Cranberry Board and cooperating marketers. If you would like to add, drop or change an address either by US mail or e-mail, please contact the Wood County Extension office (715-421-8440.)

During the last week of April and the first two weeks of May, the UW-Madison Horticulture Department has invited candidates for the state Fruit Crops Specialist position to present to the department and interview. The position was widely posted, and has received priority during this time of many open positions not being filled. I know that many are interested in where the university is in the process for replacing Teryl Roper. Hopefully, soon we will be able to report to you that the College of Agriculture and the successful candidate have been able to come to agreement and we will be welcoming a new fruit crops specialist to our state.

Several of the specialists found themselves too busy with the candidate selection process to contribute to this issue. Considering the importance of them selecting a great specialist, I had to agree that it was best that they focus on their selection task.

A few housekeeping pointers from our office: If you have added employees just in advance of the season and still need them to certify for pesticide application our county (as well as nearly every county Extension office in the state) can still provide materials and administer the PAT Exam. In addition to the Fruit Crops book, copies of the video presentations are available. Under the self-study option DATCP requires 70% correct answers on the open-book exam. Call our office and schedule an appointment at your convenience.

Spring has been slow to come in Central Wisconsin, and until last weekend it was dry too. Hopefully this last weekend's rain is a sign that life is ready to come back to the marsh. I look forward to working with you as the 2009 cranberry crop season unfolds!

Matt Lippert
Wood County UWEX Agriculture Agent



Cranberry Harvest Equipment

NITROGEN

By: Matt Lippert, Wood County Agriculture Agent

While research has shown that cranberry responds to moderate amounts of ammonia based nitrogen fertilizer, we often hear more concerns about over-application of Nitrogen than we do about Nitrogen deficiency.

Over application of Nitrogen increases production cost, may increase nutrient runoff and is associated with decreased yield, poor fruit coloring and increased fruit rot. Higher yielding varieties appear to support slightly higher nitrogen application rates.

Last year's tissue tests, in combination with this spring's evaluation of crop development, plant color and upright length are all helpful to evaluate the timing and amount of Nitrogen to apply. Nitrogen in the water and mineralization of nitrogen from soil organic matter are possible means of N getting to your crop from non-fertilizer sources. Soil temperature is the main factor affecting soil microorganism's ability to produce Nitrogen from soil organic matter. Sand soils are quite unresponsive to soil

temperature for the production of nitrogen producing only 0.2-0.3 lbs/ of N/ acre/day across a wide range of soil temperatures from 55-75° F. There is minimal organic matter reserve for sand soils to generate nitrogen from. Peat soils, on the other hand, produce more nitrogen in all situations, but are especially responsive to soil temperature with the ability to produce 20 lb. of N/ acre/ day at soil temperatures of 70°F.

We often notice that growers with organic soils tend to keep cranberry beds wetter. While these soils are not as well drained and maintain moisture more readily, possibly keeping these soils wetter and therefore cooler is part of a strategy of avoiding excess late season nitrogen production.

Matt Lippert
Wood County Ag Agent

Figure 9 The influence of soil organic matter content and temperature on production of available N in cranberry beds.

From EM 874I Nitrogen for Bearing Cranberries in North America

Soil Temp

		55°F.	60°F.	65°F.	70°F.	75°F.
Soil Type	% organic matter	-----N lb. /acre/day-----				
Sand	0.5	0.2	0.2	0.2	0.2	0.3
Sanded Peat	5.0	3.0	3.0	3.0	4.0	5.0
Peat	25.0	2.0	2.0	4.0	20.0	50.0
Muck	35.0	10.0	12.0	12.0	14.0	20.0



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