

Cranberry

Crop Management Newsletter

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Mild Winter, Warm Spring...Rotten Summer?

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UW-Extension Fruit Crops Specialist

Our recent “non-winter” and record-setting temperatures in March have many growers wondering if cranberry fruit rot will be especially troublesome this year. Since these conditions are unprecedented, we have no research data or even experience to draw upon in predicting what will happen. Nevertheless, we do have some historic records of climate and fruit rot that serve as a basis for speculation. My opinion is that the mild winter, although conducive to overwintering of pathogens, is relatively unimportant compared to the warm spring. When vines are under ice and snow, temperatures are not all that different in mild compared to harsh winters. But when the spring is warm, fungal activity starts earlier, and there’s more time for bad things to happen to cranberry fruit.

Ancient history. Let’s start out a century ago. Neil Stevens (after whom the cranberry variety is named) analyzed weather data and “keeping quality” of fruit in Massachusetts from 1912 to 1935. “Keeping quality” is just what it sounds like—how well berries hold up in storage. In those days a large portion of fruit were consumed fresh over the winter, so keeping quality was very important. Stevens noted that the years with the worst keeping quality were also the years with the warmest May and June. The very worst years for keeping quality were 1914 and 1931 when May and June were warm and there was an exceptionally large crop, at least by the standards of the day.

Recent history. Fast-forward to the 1990s and 2000s. We have done some quick and

dirty analyses of “% poor” fruit at delivery, data kindly provided by Ocean Spray, and weather data from NOAA’s National Climatic Data Center. Without going into lots of detail, we noted that for 1996 to 2011, the greatest percentage of shipments with more than 3% “poor” were in the years with the warmest April temperatures in Wisconsin—2010, 1998, and 2006. Of course, there are at least two important caveats with trying to use these data as a proxy for fruit rot. First, some rot gets sorted out in the field, and therefore is not accounted for in “% poor” data recorded upon delivery. The efficiency of in-field cleaning varies among growers. However, since we are not attempting to correlate historic rot data with weather variables at individual farms, differences in sorting efficiency among growers should not affect the statewide analysis. Second, “poor” includes stuff other than rotten fruit—leaves, twigs, and other debris. Nevertheless, rotten fruit are a large component of “poor” fruit samples, making “% poor” a reasonable estimator of fruit rot.

Taken together, Stevens’s work and our observations suggest that in years with warm, early springs, fruit quality at the time of harvest and in storage suffers. I speculate that the earlier berries set, the longer time they have for something to go wrong, whether it’s fungal infection or physiological breakdown. Therefore, I will go out on a limb and predict that **if we continue to have warmer than average temperatures, and cranberries bloom weeks ahead of “normal,” then we will have rot problems come harvest time in early October.**

(Continued on p. 2.)

Winter, Warm Spring...Rotten**Summer?** (Continued from p. 1)**Patty McManus****UW-Extension Fruit Crops Specialist**

There are probably dozens of other factors from climate to fertility to irrigation that affect fruit rot. In the coming years, graduate student, Lindsay Wells, will be looking more closely at the historic data and conducting other research to try to identify the most important factors that lead to fruit rot.

What should you do with this information? That depends on what happens in the rest of April and May, and I am not willing to speculate on that. But if we do come into bloom early, I encourage you to spray 1 to 3 times during bloom and the early fruit set stages. Chlorothalonil (e.g., Bravo, Echo, Equus) has been the most consistently effective fungicide, although mancozeb (e.g., Dithane) has also been at the top. In most established beds, Abound is effective, but fenbuconazole (Indar) and copper compounds are not. Evito has had mixed results in our trials, but we need to collect more data on Evito and the newest fungicide, Fontelis, before recommending them.

Early rot—a special case. All the above information pertains to the fruit rot complex, which is comprised of at least eight and possibly more fungal species. Early rot is caused by a single fungal species, *Phyllosticta vac-cinii*. It is part of the rot complex, but early rot needs additional attention because of the serious leaf spotting and defoliation in newer plantings, especially of the newer hybrid cultivars. Even in 2011, when fruit rot in general was not too bad, early rot caused problems in some new plantings of new hybrids. To protect such beds, fungicides should be applied at the time that established beds are in bloom. Indar is very effective on early rot, even though it has done poorly in controlling the rest of the fruit rot complex. So, Indar would be a good choice for non-bearing beds of the newer hybrids.

**Art or Science****Matt Lippert****UW-Extension Wood County****Agriculture Agent**

In this Extension publication we base our observations and recommendations on scientific research. As a grower, you should want it that way. The information that we provide is developed from scientific principles and careful observation. It is not possible, however, for there to be a scientific trial in advance for every problem or unique situation that you find on your marsh. This spring is a clear example of that case. When buds are pushed by early warmth and then appear to be contracting or hardening off due to more seasonable weather, how will they react to frost events? Will they be exactly textbook typical for the stage they appear to be at? Possibly physiologically more tender due to the early warmth?

When spring developments are highly atypical, can we rely on phenology associations that possibly rely on more typical seasonal conditions? Probably not. If we use a prolonged flood to hold the crop back, have we successfully unlinked the marsh from the natural environment around it? Clearly there are more questions than answers.

That is where art comes to play. While I strongly suggest that you base your practices strongly on scientific principles, we don't have all of the studies completed, nor all of the answers generated. You have to take some actions without all of the answers predetermined.

Isn't spring flood an interesting practice? Not only does it provide frost protection, but it can be used to control early pest stages, it can be used to control the development of the crop, it can be used to remove detrimental trash from the marsh. But the favorable aspects are nuanced depending on the oxygen and temperature of your water, when you put it on, how long you end up leaving it out there, how quickly your soil can drain afterwards, and a number of other factors as well...

Last week at the spring growers' meetings I heard frustrated comments such as "Should I leave the flood on too long and suffocate the crop, or remove it and freeze it?" or "In all my years, I've never seen a spring like this one!"

Anyhow, even though we don't have all of the answers, we will be working all season to share what science is known about what this season will bring.

A new season, it does feel kind of good to be out working on a new crop again. It feels good to be working on a new set of newsletters for another year. Science or art, another tool that makes things go a bit better is a healthy dose of optimism. So, here, I wish a super growing season for you in 2013.



OBSERVATIONS FROM THE FIELD

Jayne Sojka
Lady Bug IPM, LLC

On April 4th I spot checked a few marshes that had Black Spanworm “problems” in 2011 and guess what? Yes, I found young larvae in my sweeps! YES, APRIL 4th, better than one month before I typically start checking marshes. Luckily the growers were about to put a flood on for frost protection. That flood not only protected the crop from frost but it also destroyed all hatching insects!

On April 10th as I traveled from our Mini Clinic in Warrens towards Cranmoor where the 2nd Mini clinic was held I was looking at all the Eastern Tent Caterpillars webbing in the young trees along the road way. This pest is one month early as well. What does this mean? It simply means that we are going to have early challenges. We need to be on our toes and have a game plan in place.

Let’s talk about that game plan for one minute. Following you will find an insecticide chart which I have named “Insecticides in a “NUT SHELL”. Let me draw your attention to the second column. See the Type*/Group section. Please pay close attention to the fact that we have a good number of choices which include Organophosphate, Insect growth regulator, and Spinosyn.... and others. Always remember that it is IMPORTANT to mix things up a bit to avoid resistant issues. If you use a product from the same GROUP year after year for the same generation pests, you are asking for TROUBLE. Think seriously about flooding for 1st generation pests or simply use a different TYPE/ Group of insecticides.

Over the past few years my technique for scouting has changed. Let me explain.....look closely at the *MODE OF ACTION/How insecticides control pests-* column. If you chose a **contact insecticide** you will get knock down of small, medium and slightly larger cranberry pests. But, let’s say that you are addressing BHFV (Black Headed Fireworm) and chose to target an egg or much smaller larvae with a **growth regulator** your timing MUST be even more accurate! With that kind of control method I would be looking for eggs, and one does not do that with a sweep net! My technique would be based on trap counts, Growing

Degree Days specifically using that data to try to predict egg hatch, history of the marsh’s HOT SPOTS, and the dreaded egg hunt, plus an understanding of the specific insect. My point is, “One MUST know and understand HOW each and every INSECTICIDE works.

I encourage you to check with the manufacturers or your suppliers on the correct pH of your water for mixing insecticides. Get the BIGGEST bang for your \$\$ by doing everything YOU CAN DO to make the product you chose work to the BEST of its ability. Do NOT use a product that is pH sensitive unless you take a few minutes to buffer it down or up. Believe me IT DOES MAKE a DIFFERENCE.

We are all so very excited that we have Altacor to use this season. I will be doing some experimentation during bee time to “mix” things up with our IGR (Insect Growth Regulators). My intention is to discover if it is indeed “Bee Safe” and I truly want to avoid resistances with using same products back to back.

Remember that Altacor is a brand new TYPE/ GROUP as it is diamide and will be a perfect fit with our IPM programs. I encourage each of you to TRY a section of your marsh and see how it will fit into your own program. Do a side by test, for example; one mix tank with Altacor and another with what you would have applied if you did NOT have the new product.



INSECTICIDES IN A NUT SHELL

JAYNE SOJKA
LADY BUG IPM, LLC

INSECTICIDE	TYPE*/GROUP	MODE OF ACTION	TARGET PESTS	pH		OTHER THOUGHTS	POLINATOR SAFE
				SENSITIVITY			
		How insecticides controls					
Altacor	diamide 28	ovicidal, ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	I have no experience yet
Confirm	IGR 18A	ovicidal, ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	Bee safe
Intrepid	IGR 18A	ovicidal, ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	Bee safe
DiPel, BT	Bt 11B	ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	Bee safe
Rimon	IGR 15	ovicidal, contact, ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	Bee safe
Knack	IGR 7D	ovicidal, contact, ingestion	BHFW, Sparg, Spanworm, CFW	no		Relatively non toxic	Bee safe
Diazinon	OP 1B	contact, ingestion	All leps and flea beetle	yes		Highly Toxic	
Imidan	OP 1B	contact, ingestion	All leps and flea beetle	yes		Moderately Toxic	
Orthene	OP 1B	contact, systemic value, ingest	All leps and flea beetle	no		Highly Toxic	
Lorsban	OP 1B	contact, systemic value, ingest	All leps and flea beetle	yes		Highly Toxic	
Spintor/ Delegate	spinosyn 5A	contact, ingestion	Sparg, BHFW, Spanworm	no		Moderately Toxic	
Belay	NeoNic 4A	systemic, ingestion	Girdler, White grub, Flea Beetle, BHFW, CFW	no		Toxic	
Assail	NeoNic 4A	systemic, ingestion	CFW, BHFW, Sparg, Spanworm	no		Toxic	
Sevin	carbamate 1A	contact, systemic	All leps and flea beetle	yes		Toxic	

* OP = organophosphate; IGR = insect growth regulator; Bt = Bacillus thurgensis; NeoNic - neonicotinoid

THIS IS JUST MY OPINION- ALWAYS READ THE LABEL BEFORE USING A PRODUCT

Wisconsin Cranberry Herbicide Mode of Action

Herbicide group	HRAC group	Herbicide examples*	Site of uptake	Translocation	Selectivity	Symptoms
Growth regulators	O	Stinger**, 2,4-D granular	Primarily post	Phloem mobile (with sugars)	Broadleaves	Distorted, twisted new growth on leaves and stems, callus growth on stem
Lipid synthesis inhibitors (ACCase inhibitors)	A	Poast, Select Max	Post	Phloem mobile (with sugars)	Grasses	Growing point rots, new leaves pull easily
Amino acid synth. Inhibitors (EPSPS inhibitors)	G	Glyphosate (Roundup and other trade names)	Post	Phloem mobile (with sugars)	Non-selective	Chlorotic new growth and death, sometimes takes 10-14 days
Carotenoid biosynthesis inhibitors	F1	Evital	Soil	Xylem mobile	Grasses, rushes, sedges	Whitening between the veins on leaves and shoots
4-HPPD inhibitors	F2	Callisto	Soil and post	Xylem and phloem mobile	Broadleaves, rushes, sedges	Whitening of leaves and shoots
Cellulose inhibitors	L	Casoron	Soil	Xylem mobile	Broadleaves and grasses	Susceptible seedlings typically don't emerge
Seedling shoot growth inhib. (Acetamides)	K3	Devrinol	Soil	Minimal	Grasses more than broadleaves	Leafing out underground, wrapped leaves, no emergence

*Herbicide labels change often, so some of these products may not currently be registered for use in cranberry. Always read and follow the label prior to use.

**Wisconsin 24c Special Local Needs label for cranberries that expires 12/31/2012. Check Wisconsin Department of Agriculture, Trade and Consumer Protection website for potential registration updates: <http://www.datcp.state.wi.us/arm/agriculture/pest-fert/pesticides/special.jsp>.

(Revised 3/12 by Colquhoun, University of Wisconsin-Extension)



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