

Cranberry Crop Management Journal

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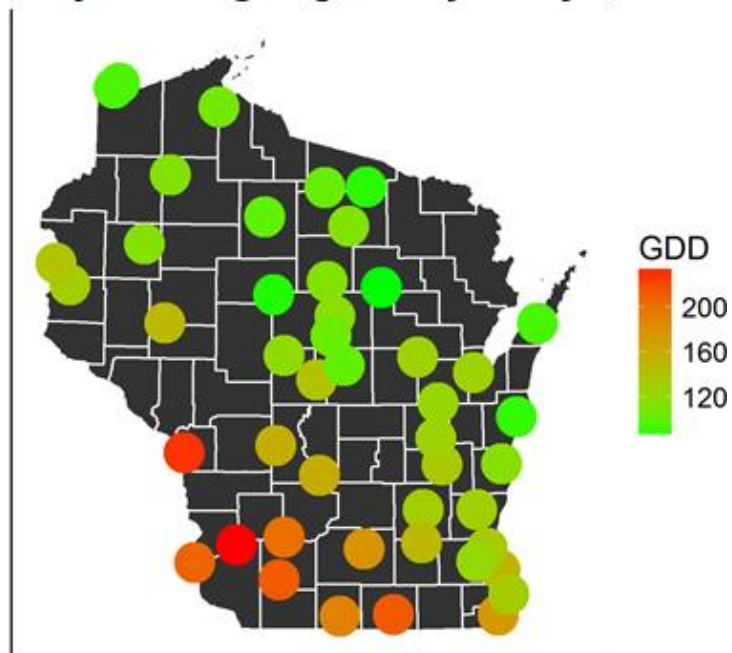
CRANBERRY PLANT AND PEST DEGREE DAYS– MAY 1, 2018

by Elissa Chasen and Shawn Steffan
USDA-ARS and UW Entomology

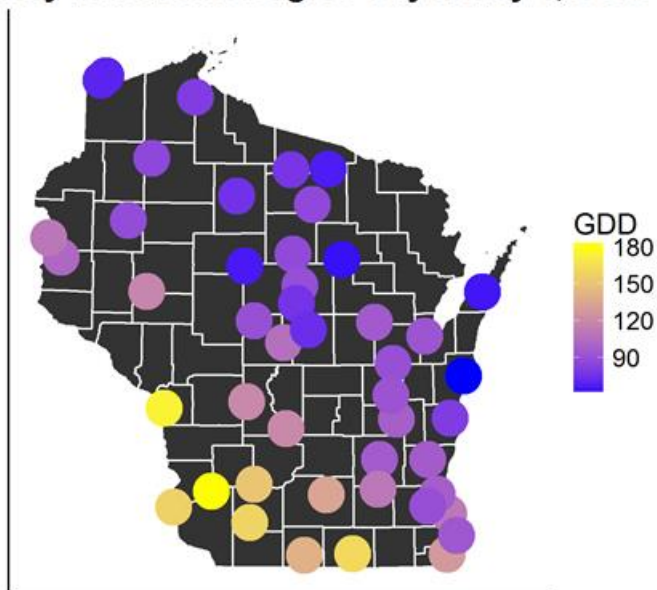
Happy spring! What a long winter that was; it feels good to be on the other side of it. I hope everyone is enjoying the warmer weather.

See the maps below for the degree-days of the cranberry plant and associated pests. You may recall that degree-days are calculated based on the daily high and low temperature accumulations and that they vary by species according to species specific temperature thresholds. Developmental thresholds for each species are: cranberry plant - 41 and 85°F; sparganothis fruitworm - 50 and 86°F; and cranberry fruitworm - 44 and 87°F. Interactive maps are posted online. The interactive feature allows you to click on the map locations, prompting a pop-up that names the location and gives exact degree-days. These are available through the Steffan lab website (<http://labs.russell.wisc.edu/steffan/cranberry-growing-degree-days/>). Once on the website, follow the link to the interactive maps.

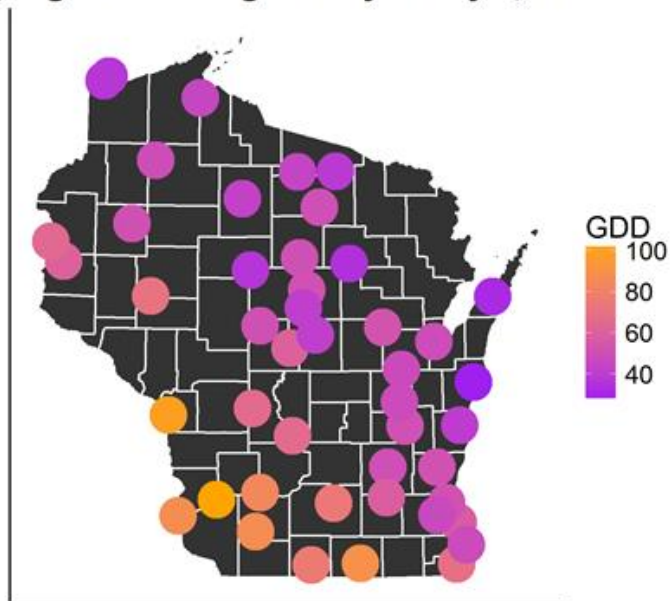
Cranberry Growing Degree Days: May 1, 2018



Cranberry Fruitworm Degree Days: May 1, 2018



Sparganothis Degree Days: May 1, 2018



With the longer and cooler early part of spring, we are a bit behind our typical degree-day accumulations. You can see that in the table below that compares degree-days over the last three years.

May 1	Cranberry DDs			Sparg DDs			CFW DDs		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
Northern WI (Minocqua)	230.4	189.9	101.5	85.3	64.2	44.4	169.3	137.2	77.9
Central WI (Wisconsin Rapids)	337.7	315.2	137.9	137.7	131.6	58.3	253.8	240.8	103.7

2018 FUNGICIDE UPDATE

by **Patty McManus**
 UW-Madison and UW-Extension

This article reviews some of the newer fungicides to be labeled for cranberry and their efficacy in controlling fruit rot and cottonball. For specific use instructions such as rates, timing, and precautions, see product labels, the *2018 Cranberry Pesticide Chart* from Cranberry Institute, and the *2018 Cranberry Pest Management in Wisconsin* (UW-Extension bulletin A3276). Be sure to have the current bulletin and chart on hand and get rid of the old versions to avoid confusion, or worse, doing something illegal. If you find inconsistencies between product labels and the UW spray guide or CI chart, *follow the product label*. Also, rules vary among handlers and rules change, so you should talk to your handler about restrictions they might have on various pesticides.

Quadris Top from Syngenta is a pre-mixed combination of the active ingredient in Abound (azoxystrobin) and difenoconazole, a fungicide new to cranberry. This registration is very recent, and I have not yet seen an updated label that includes cranberry, but it should be coming along soon. In 2017 we tested it in two fruit rot trials, and it was among the best treatments in the trials, right up there with Proline. I expect that the label will be for fruit rot but not cottonball control. While it's nice to have a new product, Quadris Top relies on two fungicide classes, FRAC group 11 and FRAC group 3, that we've been using for several years. Watch for

more information on this new fungicide.

Proline 480 SC (prothioconazole) from Bayer CropScience has been labeled since 2014. In our research trials Proline consistently has been an outstanding fungicide for fruit rot control when used at the full rate (we have not tested reduced rates). In one study a few years ago we wanted to collect rotten berries to test which fungi were present. In the Proline plots we sometimes could not find more than one or two soft berries in an entire 5' x 5' plot. Those plots, however, were in a well pruned, well drained, dry bed. Where berries remain wet for hours on end, all bets are off. Proline is also a top tier cottonball fungicide, performing as well as the cottonball standards, Indar and Tilt (formerly Orbit). Note, however, that it is in the same "triazole" class (FRAC group 3) as Indar (fenbuconazole) and Tilt (propiconazole). To avoid fungicide resistance, do not use the group 3 fungicides more than twice per year. If more than two sprays are needed for cottonball control, rotate group 3 fungicides with Abound (group 11).

Quilt Xcel (azoxystrobin + propiconazole) from Syngenta is a pre-mixed combination of the active ingredients of Abound and Orbit/Tilt. You could of course, mix the two fungicides on your own, but the pre-mix product is available for your convenience. We tested this combination (at the highest permitted rate) for in 2016 and 2017 and had good results with both cottonball and fruit rot control. The fruit rot control came as a surprise, since in the past we've not found Orbit/Tilt (propiconazole) highly effective on fruit rot. More testing to come, but for now, I'd recommend Quilt Xcel for cottonball control, but use something else (e.g., Proline, Abound + Indar, mancozeb) for fruit rot control until more data support it.

Kenja 400 SC (isofetamid) from Summit Agro USA is the first FRAC group 7, or SDHI (succinate dehydrogenase inhibitor) fungicide registered on cranberry. We tested it for the in 2016 and 2017 and found that it was not effective in our cottonball or fruit rot trials. Researchers in other regions report similarly disappointing results.

Oso 5% SC (formerly Tavano) from Certis USA has **polyoxin D zinc salt** as its active ingredient. Polyxin D is a fermentation product of *Streptomyces*, a soil bacterium, and is considered a relatively safe biofungicide exempt from a pre-harvest interval (in practice, a 0-day PHI). The registrant is undergoing steps to get Oso approved for use in organic production, but to my knowledge, that is not yet complete. Polyoxin D has an entirely novel mode of action that inhibits chitin, the major component of fungal cell walls. Tavano/Oso mixed with a non-ionic surfactant (NIS) was more effective than the untreated check in 14 of 15 fruit rot trials conducted since 2014. It was not statistically different from the best fungicides in 9 of the 15 trials. For cottonball, Tavano/Oso was more effective than the untreated check in 7 of 8 trials, but as effective as the best fungicides (e.g., Orbit/Tilt, Proline) in just 2 of the 8 trials. To sum up, it's a potentially promising new mode of action with low environmental toxicity but not consistently a top performer.

Regalia from Marrone Bio Innovations is a "soft" fungicide that is approved for use in organic production. The active ingredient is **extract of *Reynoutria sachalinensis***, giant knotweed, which when applied to plants is believed to "turn on" defenses. It is registered for use against many diseases of many crops. For fruit rot control, it performed better than the untreated check in 14 of 16 trials conducted since 2013, and as well as the top fungicides in 8 of the 16 trials. For cottonball control, it was better than the untreated check in 5 of 8 trials and as good as the top fungicides in 2 of the 8 trials. Obviously, consistency among trials is a challenge with Regalia.

CHILLING HOUR ACCUMULATION AND PREDICTION FOR BUD BREAK

by Amaya Atucha
UW-Extension Fruit Crop Specialist

During the spring grower meeting last week, we talked about how the cool spring we have had might affect the timing of bud break in cranberries. Cranberry vines enter dormancy in the fall, mostly due to the drop in temperatures and the days getting shorter. These cues tell the plant that winter is coming and that they should stop producing new growth and remobilize nutrients and reserves to storage organs, such as roots and stems. Once the vines are dormant, they need to figure out when the winter is over, and when it is safe to start producing new growth. For this they use a “chilling requirement”. The chilling requirement can be compared to a very complex internal clock in the plant, that allows the vines to track how much time they have spent during the entire winter within a certain temperature range, usually between 32 to 45 °F. Once the vines have accumulated enough hours in this temperature range, or the clock reaches the set time, then buds are ready to resume growth. Here in Wisconsin, the winters are very cold, so even if the vines have completed the required chilling to break out of dormancy in January or February, buds will not burst, because a period of warm temperature (>55-60°F) is needed after the chilling requirement has been met for the vines to start growing again.

So, what does this mean? And how does it affect what might happen in the next weeks? This spring, specially during late March and April, there have been many days with temperature between 32 to 45 °F, which means the cranberry vines have accumulated more chilling than what they would in a normal and warmer spring. When vines accumulate more chilling than what they need to break out of dormancy, they need fewer heat units to reach bud burst. So, even when the first part of the spring has been cooler than normal, and things seem to be delayed this year, it does not mean that bud break will happen later than on previous years. Because vines have accumulated more chilling than they required, they will only need a few weeks of warm days (>55-60°F) to reach bud break, so you should be prepared to start the new growing season soon.

In summary:

- Cranberry vines use a “chilling requirement” to measure the length of the winter, and know when it is safe to resume growth.
- After the chilling requirement is satisfied, vines need a period of warm temperatures to be able to reach bud break.
- When vines accumulate more chilling hours than those required to break out of dormancy, they will need a shorter warm period to break bud (i.e., the more chilling the vines accumulate, the faster they will break bud once it gets warm).

TAKING A STEP BACK IN TIME

by Jayne Sojka
Lady Bug, IPM LLC

Most recently I came across an article dated February 25th 1957 with comments of the 1956 growing season.

At this time I would like to quote some of the highlights of George L. Peltier a consultant for Indian Trail, Inc.

“Owing to a backward spring and cool summer, the harmful insects appeared late and were less prevalent than other years.” Fireworm were completely absent throughout the season on a number of bogs, light infestations (mostly first brood) occurred on some bogs, while on only one bog did a second brood appear in sufficient numbers to produce a “brown out” on parts of two sections difficult to reach with the available equipment. The first two flights of fruitworm were fairly light and caused very little loss. Tip and Span worms, leafhoppers and other miscellaneous insects were held to a minimum by proper dusting schedules during the season. No leaf miners were seen during the entire season, for the first time in years. Thus, on the majority of bogs the control of cranberry insects was exceptionally good during the 1956 season.”

I find this very interesting due to the fact that Wisconsin’s spring in 2018 sounds similar. Does this mean that our insects will be less prevalent? Will we see a delay in pest pressure? Time will tell.

I enjoyed the terminology that Mr. Peltier used in describing Black headed Fireworm damage. He stated, “Brown out” which give me a vivid picture of serious damage.

Wow, 62 years ago growing cranberries had to be extremely difficult and very few control measures available. Every crop was hand raked and yield was low.

We are so lucky to be growing a crop today with all of our modern technology and support. I believe that it is important to take a step back in time to appreciate what we have and where we are at.

INTERESTING BEE BUZZ

There are 140 species of Mason Bees found in North America of the 200 species found World Wide. They are here naturally and are doing well. How can we help this Mason Bee family thrive near or on our cranberry marshes?

After reading an interesting article on them, I did some further research and discovered that we can use strips of a corrugated cardboard boxes and roll it up place it in a PVC Pipe. The bees will house in the holes of the corrugated strips. One can also cut bamboo stakes and strategically stack them in a PVC Pipe, making sure that the hole is easy accessible. Another idea for native bees is nesting blocks of wood. See attached article from the Xerces Society on how to make these types of nests.

www.xerces.org Nests for Native Bees.



This type of bee is called a solitary bee. In a tube you will find only one male & one female. Where honey bees are social and they survive in a hive with many other bees serving different purposes.

The Male Mason Bee lives about 2 weeks while the female lives about six weeks. They mate and then she lays 15 – 20 eggs. These bees carry pollen in an unsophisticated manner; they roll in the pollen of a blossom and lose a great deal of that pollen as they travel from one blossom to another. Remember this bee does not make honey. Mason Bees are incredible pollinators. Each one visits as many as 1000 blossoms per day – 20 times as many as a Honeybee!



This bee makes a cocoon and hibernates during the winter and when the spring temperatures reach 55 degrees it emerges and goes to work.

Place housing on the East side of a tree (where the early morning sun shines and warms them)

Additional BEE Tidbits: While shopping at a grocery store I discovered on the back of the box of Honey Nut Cheerios an article on bringing the bees back. The article went on to say how important bees are in bringing food to the table. General Mills even included a sample seed packet of flower seeds for each box of cereal sold.

What a wonderful method of teaching our young children the importance of doing our part in providing a food source for the bees.



A selection of home-made bee nests: (clockwise from left) wooden block, bamboo bundle, and bumble bee box.
Photo: Xerces Society

There is a current research project through our UW Madison Christelle Guedot on establishing pollinator gardens to improve pollination services from wild pollinators.

If you are interested in helping in any way please volunteer.



WANT TO LEARN
about our
#1 STATE FRUIT ?

FARM TECHNOLOGY DAYS – CRANBERRY EXHIBIT AT INNOVATION SQUARE –

Is a three day event to educate and promote agriculture. D&B Sternweis and Weber's Farm Store - Heiman Holsteins, located in Marshfield, have been selected to host this year's show. The last time Wood County hosted the show, then called "Wisconsin Farm Progress Days", was in 1960 at the Marshfield Research Station. We have been told Clarence Searles was Chair of this event – see those strong cranberry ties!

Wisconsin boasts a thriving agribusiness economy and Wood County's biggest claim to fame, is being the number one cranberry producing county in the state. Our cranberry exhibit will be an authentic representation of our unique cranberry industry. We intend to share our grower story by building a cranberry marsh experience into the exhibit.

It will be an interactive 'live' exhibit with grower volunteers helping answer questions about our growing, harvest, and farming practices. Other components will feature a variety of displays such as: A flooded 10'x20' bed of floating berries, a 10'x20' dry bed, an information/sampling tent, an agriculture & wildlife education tent, designed for young families, and an equipment display area.

Visitors will walk away knowing who cranberry growers are, how cranberries are grown, the versatility of the cranberry, cranberry farming technology advances, and how cranberry farming is regenerative agriculture (AKA- the new word for sustainability).

CALL TO ACTION – WE NEED YOUR HELP & PARTICIPATION

- EQUIPMENT = We're seeking harvest & specialty cranberry equipment, old & new, and fresh fruit equipment. We have a list we're working from. This is the most time sensitive due to planning & space.
- SET UP/TAKE DOWN
- 'BOG TOURS' – OF THE EXHIBIT'S FLOODED/ DRY BEDS
- AG. EDUCATION TENT = We're looking for a volunteer to help execute this tent (We have a format pre-planned) & volunteers to help assist.
- SAMPLING TENT = hand out cranberry products & share cranberry information.
- SNAP CHAT FILTER – Create a filter for the three day event

Please email Heidi Slinkman at gaynorcranberry@gmail.com or contact Mary Smedbron (715)-213-2821 or Stephanie Bennett (715) 323-0199 to let us know how you can help.

We are proud to be able to represent our cranberry industry! We thank you in advance, The Cranberry Exhibit Committee: Heidi Slinkman, Mary Smedbron, Stephanie Bennett, Nicki Ryner, Ben Rezin & Ben Tilberg.

Find us on Facebook/Instagram @explorecranberriesFTD18

Innovation Square - Cranberry Exhibit

An Interactive Tour of a Cranberry Farm with a Live Bog Experience , Equipment Display, & Cran Education hosted by local Cranberry Growers

Find us on Facebook/Instagram @explorecranberriesFTD18

Exhibit Messaging Points:

Who Are Cranberry Growers? The Faces/Stories of Growers

Farm Technology – Old & New Machinery Displayed

Dry Growing conditions, Wet Harvest Bog

Regenerative Agriculture - Sustainability & Ag Education Area

“Versatility of the Cranberry” Represented by Variety of Cranberry Companies with Sampling.

Dry Growing Bog: 10x20 Vines donated by Cutler Cranberry and grown in Evergreen Nursery Co. Display will have a mulched path around the perimeter of the bog as guests can kneel down for observation. Walking on vines will be discouraged.

Wet Harvest Bog: 10x20 bog dug into the ground to model an authentic cranberry bog at time of harvest. Bog will be flooded with Cranberries donated by Gardner Cran. will be boomed into one end, with Harvest Equipment set up to illustrate a harvest operation. Guests will be invited to walk into the bog with Bog Boots available.

Sampling/Info Tent: We’re inviting Cranberry Food/Bev. Manufactures to donate bite size/single serve samples to represent the Versatility of the Cranberry. Companies such as Ocean Spray, Gardner/Badger State Fruit Processing, Mariani, & Honestly Cranberry, etc. **Special Guests** may include Cranberry Mascot, CranFest & Blossom Fest Royalty, & Cranberry Kid – Packer #45, Vince Biegel

Ag Education Tent Components: Mini ‘Hand’ Bog Display, Cross Section Soil/Vine Displays using Mini Glass Square Flower Vases, a 10 Gallon Aquarium to illustrate Cross section & Vines at Harvest with floating berries, Hand Press Cranberry Juicing Station, a Sand Box with farm equipment toys & construction tools, a small pool with Marsh Environments; Frogs/Turtles, and a Take a Bog Home Station.

Information/Resource Outreach for Material:

WSCGA (Harvest Brochures, Recipe Books & Children Coloring Pages) Disc County Museum, Sand Hill Crane Refuge, Necedah National Wildlife Refuge, Sanctuary

UWSP - Natural Resource Department

Social Media: #Cranlife, #Cranberries, #CranExhibit, #FTD2018



GROWER UPDATES

GAYNOR CRANBERRY COMPANY

Hello, I am Jenna Dempze from Gaynor Cranberry Company in Wisconsin Rapids. We are very excited that spring has finally arrived. Like most growers we are working hard to get our irrigation pipe out and our systems up and running. We are looking forward to warm temperatures this coming week and anxiously await our vines to come out of dormancy. In the up coming weeks we will be making our Casoron application and planning our fertilizer program for the season. In the spirit of my Grandpa Gordie, we are excited for the "Action" to get started!

Jenna Dempze

JAMES POTTER CRANBERRY MARSH

Hello! My name is Sandy Nemitz. I am a 7th generation cranberry grower in Warrens. Whenever someone asks me what cranberry marsh I work on, I always hesitate because I never know how to properly answer. My family cranberry marsh is James Potter Cranberry Marsh Inc. I spend most of my time working both out on the marsh and in the office there. My father also has three other marshes in our area that I help with as well.

I was also blessed to marry into a family that grows cranberries. Over the years, I have had the opportunity to start helping with their marsh, J R Nemitz Cranberry Co Inc. Then, since we didn't have enough to do, my husband, Adam and I decided to take on another cranberry marsh down the road from our house, Beaver Creek Cranberry, LLC.

We are raising our two little girls on the marsh, the same way we grew up. I love the country life and all the wonderful opportunities that the cranberry industry has provided me. Now that spring has finally arrived in WI, we are so excited to begin our growing season!

Sandy Nemitz

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