

Cranberry Station Newsletter

OCTOBER 31, 2017

UMass Cranberry Station

1 State Bog Road

P.O. Box 569

East Wareham, MA 02538

ag.umass.edu/cranberry

(508) 295-2212

UMASS CRANBERRY MANAGEMENT UPDATE

Thursday, January 18, 2018

7:30 AM – 4:00 PM

Hotel 1620 at Plymouth Harbor

Regency Ballroom

180 Water Street, Plymouth, MA

*****CHANGE IN VENUE*****

Please join us!

Registration
on page 9

Tentative Schedule of Events (4 contact hours)

- 7:30 Registration (with coffee)
- 8:00 What's new? – Hilary Sandler, Director
- 8:15 Fertilizer Management – Carolyn DeMoranville
- 8:45 Weed Management – Hilary Sandler
- 9:15 Herbicide Research Update – Katie Ghantous
- 9:45 COFFEE BREAK**
- 10:15 Irrigation, Frost, and Heat Stress- Peter Jeranyama
- 10:45 Virus in Cranberry & Wisconsin Pathogen Management
Guest Speaker, Patty McManus, Plant Pathology, University of WI-Madison
- 11:45 LUNCH BREAK (on your own)**
- 1:00 Grower Panel – Managing the New Hybrids
- 1:30 Cranberry Bogs Going into Conservation – Casey Kennedy, USDA
- 1:50 Resistance Management in Cranberry – Katie Ghantous/Marty Sylvia
- 2:10 MDAR's gone Electronic and WPS Worries – Marty Sylvia
- 2:30 Insects and Pollinator Update – Anne Averill/Marty Sylvia
 - Late Season Peculiarities: Scale, Weevil and CFW
 - Total Native Bees on Bog in Southeastern MA
 - False Blossom and Blunt-nosed Leafhopper
 - Thinking Tipworm Management
- 3:30 Wrap-up and Paperwork

WEED CONTROL AFTER HARVEST

Hand-weeding

Fall is a great time for hand-weeding and/or digging out weeds. Many weeds are still visible, and after harvest there are no cranberry fruit present to injure as you walk on the bog. In particular, Poverty Grass (PG) is a good target for post-harvest hand-weeding. Although most of the grass seeds have dispersed by now, some clumps of grass still have seeds clinging to the plants (even after harvest)! Removing these clumps will remove the adult perennial grass plant and will also remove some seeds that can become new plants next year.

Woody weeds like dewberry, sawbrier, and maples are still visible too. For extensive infestations of dewberry (and/or if you only have limited time), concentrate on removing the “daughter” plants and work on managing the margins. Find the main plant (“mother” plant) and cut and remove as many offshoots as you can. This will make the biggest impact as these plants reproduce very quickly (exponentially!!). Often, removing the mother plant will create a lot of damage to the vines but if you can manage the offshoots that are produced each year, you can keep the infestation down to a “low roar”.

Fall Herbicides

If you opt to apply a fall herbicide, allow at least 3 weeks between the time of application and the winter flood. Flooding within 3 weeks of application moves the herbicide into the water and away from the target. Flooding too soon will reduce efficacy, increase environmental risk, and waste money. Although temperatures will be lower and the risk of volatilization is lower (especially important for Casoron), it is important to plan your application just prior to a rain event to favor soil incorporation.

Evital: Works well when applied in the fall. Evital can be effective against sedges and rushes, and some grasses. It can suppress growth of existing PG, but does not seem to inhibit new plants establishing the following spring. Evital must be applied with a ground applicator. The fall rate can be as high as 160 lb/A on an established bog and up to 80 lb/A on new plantings; only one application can be made per year (12-month period). People tend to use higher rates in the fall than the spring. Evital can injure vines on bogs that drain poorly, so be careful. Varieties such as Stevens and MacFarlin are sensitive to Evital injury, so use lower rates. Sanding can be done on top of an Evital application, but be careful especially on bogs that have drainage problems or sensitive varieties. Sanding after applications of 50 lb/A or less has given good weed control. Growers have reported that applications of Evital (50-60 lb/A or less) on top of sanded vines work adequately on healthy well-drained beds. Although higher rates may injure cranberry, the product label does recommend using higher rates for poverty grass control (120-160 lb/A).

Glyphosate (Roundup): Many Roundup and glyphosate products are available on the market. Please read the label of any product you use to ensure compliance. Certain products allow for post-harvest sprays. Follow the label directions. For example, if using Roundup PowerMax, a 48.7% a.i. product, you would make a 0.4 – 0.7% solution (3-5.5 tsp or 15-27 ml per gallon water). The risk of vine injury is lower when cranberry is dormant, but even vines that appear dormant can be injured by glyphosate.

Glyphosate only works when applied to actively growing green weeds. It is mainly absorbed through the leaves, and will not

work on the stems of weeds that have had their leaves stripped off during harvest. Spot-treat weeds carefully and minimize contact of spray solution with cranberry vines. Growers have reported getting good PG control by placing the spray wand into the center of the grass clump to maximize contact with the green leaves in the center. Some products are also labeled for spray use in DRY ditches. The ditch should be dry for 1 day before application, and ditches must remain dry for 2 days after application.

Casoron: Fall applications of Casoron were popular 30+ years ago, but are not utilized much in recent years. Avoid applying sand over Casoron, although Casoron can be applied to sanded bogs. You can only apply 100 lb/A in a 12-month period, so if you used Casoron the previous spring or intend to use it this coming spring, you must factor that amount in.

Grass herbicides (sethoydim and clethodim): These herbicides only work on actively growing grasses, and will not work on dormant grasses or those without green leaves. The effectiveness of Poast or Select/Intensity for post-harvest grass control has not been evaluated extensively by our lab. Some demonstration style trials showed moderate PG control with Poast sprayed directly into the center of clumps where the most green leaves are. If you try these herbicides after harvest, please let us know the results.

Devrinol: The effectiveness of Fall applications of the newer formulations of Devrinol (DF-XT or 2-XT) has not been documented by our lab. Fall Devrinol applications may be effective for managing “winter annuals” – weeds that germinate in the fall, overwinter, and grow rapidly the following spring. Some of these types of weeds, like horseweed (*Conyza canadensis*) can be found on new plantings.

Hilary Sandler and Katie Ghantous

CRANBERRY STATION UPDATE

Hilary A. Sandler, an extension associate professor of cranberry integrated pest management (IPM) and weed science at the University of Massachusetts Amherst, has been named Director of the Cranberry Station. She will become the sixth director in the 106-year history of the internationally respected center for research and education on a native fruit of Massachusetts. Hilary takes over from long-time director Carolyn DeMoranville, who retired in February 2017.

Jody Jellison, assistant vice chancellor for Agricultural Research and Engagement and director of the UMass Amherst Center for Agriculture, Food and the Environment, says, “Hilary will bring many strengths to the Cranberry Station. We are extremely lucky to have her and look forward to continuing the station’s world-recognized excellence in cranberry research and outreach. I’m confident the station will continue its strong partnership with the cranberry industry under her leadership and I’m delighted she has accepted the director position.” Hilary will lead a multidisciplinary team whose members have expertise in plant pathology, weed management, water and nutrient management, plant physiology and entomology.

NACREW 2017

Massachusetts was the host for the 2017 North American Cranberry Research and Extension Workers (NACREW) Conference, Aug 28-30. We had approximately 60 attendees from across all of the growing regions in the US and Canada. There were 24 oral presentations that covered a wide variety of topics including fruit quality, new and emerging pests (e.g., toad bugs, scale, moss), cranberry growth patterns, spring frost, pollinators, variety trials, water use, and biocontrol. Monday and Wednesday events were held in Plymouth with tours of grower properties during Monday and Tuesday afternoons. On Tuesday, we hosted a panel discussion (with several growers in attendance) on fruit quality at the Cranberry Station. During lunch, 11 posters were presented on topics such as Carolina red root, phytochemical properties of cranberry, fruit firmness, bees, and soil moisture management. Brian Wick (CCCGA) and Terry Humfeld (CI) gave industry updates to the group. Thanks to growers Gary Garretson, Matt Beaton, Monika and Keith Mann, John Porter, and Drone Pilot David Price for sharing their innovations and expertise with the NACREW group. Abstracts of the talks and many of the slide presentations will be available on the Cranberry Station's ScholarWorks site (<http://scholarworks.umass.edu/cranberry/>) within the next month or so. Thanks to the many folks who helped out "behind the scenes" and made the conference a big success.



LATE SEASON SCALE

New infestations of scale continue to be reported on cranberry in SE MA. Nearly a dozen new or repeat sites have been confirmed this summer and fall in Rochester, Wareham, Middleboro and Carver. All are Putnam Scale, the small darker species, and two were detected by seeing scale on the berries! Since 2010, reports of infestations of scale have been growing with 10-20 confirmed infestations and damage in each of the last few years. If you hold late water or spray Diazinon in mid-June targeting crawlers, it will wipe out the population. However, many growers have had new populations turn up on adjacent fields. The Tremont St./Federal Furnace Rd. corridor has been particularly hard hit.



Scale are small insects that attach to the cranberry uprights and can usually be seen along the base of the upright - the female insects are immobile and protected under a waxy covering. The female feeds on the plant, but with their cover it blends in with the bark. The eggs develop under the scale covering in the spring and are released as tiny crawlers, generally in June.

Putnam scale undergoes two generations in MA, and if the spring population is not controlled, there is another set of crawlers in August. This is the activity we are seeing now on the berries. The 2nd instar overwinters and will continue development in the spring.

Scale feeding weakens the vines and, under high enough numbers, eventually causes reddening of the foliage and vine death. Putnam scale, in very bad infestation, will form a crust over the vines, most pronounced on the old wood. The scales are most abundant on the upright, but as infestations increase, they may be found on leaves and fruit as well, particularly in the 2nd generation in late summer.

If you have dead areas, or see little spots on the berries, it is wise to confirm it is scale to plan accordingly to manage them in the spring. A sample of vine, down to the root, collected along the edge of the dieback can be brought to the cranberry station for inspection in a plastic bag with name, site, and phone number.

Marty Sylvia and Anne Averill, Entomology



**SUNSCALD:
How Plants Cope, Measuring Internal
Fruit Temperature, and Field
Observations**

High summer air temperatures (> 85°F) can potentially cause physiological stresses on cranberry vines. If these high temperatures occur after fruit set, sun scalding can result and further weaken the immunity of the fruit so that they become more susceptible to fruit rot. Other possible physiological effects include reduced cell growth and cell wall synthesis, poor stomatal conductance and low rates of photosynthesis. All of these can negatively affect fruit yield.

Plants can cope with heat stress much like we do; they avoid it or they tolerate it. Avoidance involves maintaining hydration and internal temperature as water is moved from the soil, through the roots and shoots and out through pores (stomata) in the leaves. When this process occurs, moisture is depleted from the soil. Plants can control the rate of transpiration by opening or closing the stomata (pores). The water lost from the leaf surface cools the plant through evaporative cooling. The stomata are regulated by two major factors: (i) boundary layer resistance (weather factors) and (ii) leaf stomatal resistance (plant factors).

The heat tolerance mechanisms help to prevent cellular injury. The structure of normal plant protein is altered by excessive heat; we are concerned about this because the function of proteins is affected by their shape. The final shape of a protein determines how it interacts with its environment. However, some plants contain "Heat Shock Proteins" (HSP) and they help refold altered proteins to their original shape so they may start to function as normal again.



Figure 1. Mullica Queen berries experiencing sun scald (those fully exposed to the sunlight and showing light color on the exposed side of the berry). Picture taken on September 27, 2017 at 2:30 pm.

Mullica Queen berries suffer sun scald under conditions of high heat, high relative humidity, and still air. Under such conditions, the plant canopy becomes very important in providing shade to the reddening fruit, but notice (fig. 1) how scant the plant canopy was above the sun scalded berries (showing two color variations of red). This problem is typical of large fruited cultivars with a small canopy above the fruit. Maybe, such a condition justifies brief irrigation sprinkling to modify the temperature of the immediate environment.

The current way we measure the temperature of a maturing and coloring berry has been crude and not very accurate. We use an external temperature probe placed at the height of the plant canopy. Data show that the berry temperature could be very different from the plant canopy temperature. Berries at different stages of development experience different temperatures at the same point of measurement and exposure (see Figure 2 from the work done in New Jersey by Dr. Peter Oudemans). The internal temperature of the red fruit compared with green fruit are quite different, with the red and more advanced fruit experiencing a higher temperature.

Internal Fruit Temperatures

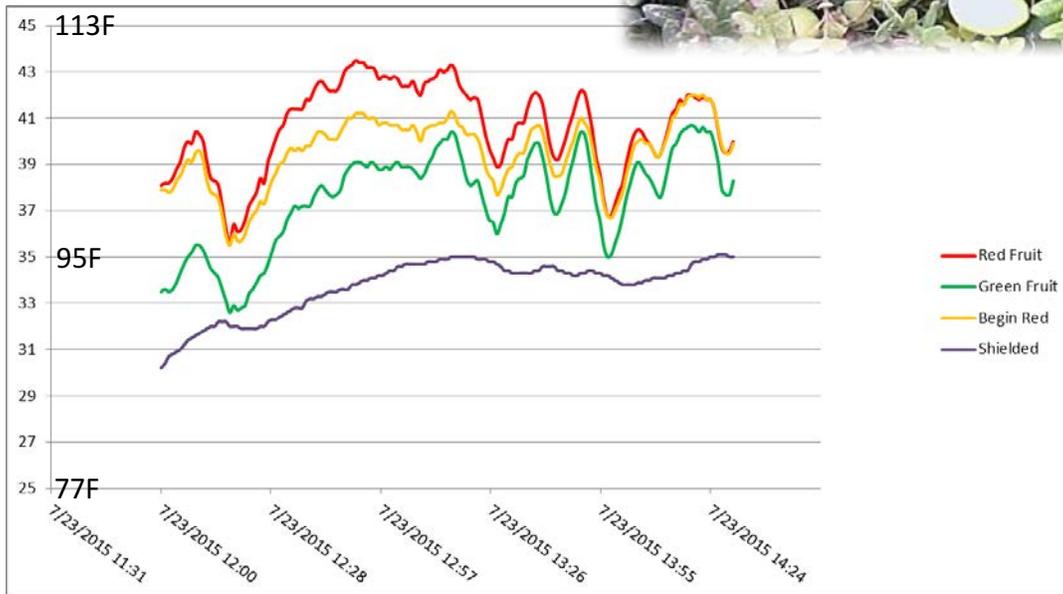


Figure 2. Internal berry temperature as affected by the color of the berry or the stage of ripening. Source (used by permission: Dr. Peter Oudemans- NJ 2015)

The differences we see in temperature among different berries at different stages of growth is to be expected. The green berries absorb light in the blue and red parts of the spectrum. The red light is a low energy light, hence lower temperature compared to the red fruit. On the other hand, the red berry absorbs light in the blue and green, which are high energy wavelengths, hence the higher temperature reading relative to the green berry.

It is possible for ripening berries to experience a sun scald event while the air temperature on the bog is less than 95°F as was the case this September 2017 in Carver, MA. It must be noted that maximum day-time air temperatures recorded in East Wareham reached more than 90°F on 7 occasions and all occurred in July for the period of July to September.

Peter Jeranyama

THANK YOU!

On behalf of the Cranberry Station we want to thank our grower partners for providing in-kind harvesting services for the State Bog and Rocky Pond Bog.

Once again this year, the A.D. Makepeace Company provided all the labor and equipment for harvesting State Bog at the Cranberry Station.

Cranberry Growers Service, Rob Rubini coordinating, and Jeff LaFleur from Mayflower Cranberry provided labor, equipment and trucking for the Rocky Pond harvest.

The money we save from these donations will be used to support our research and extension mission.

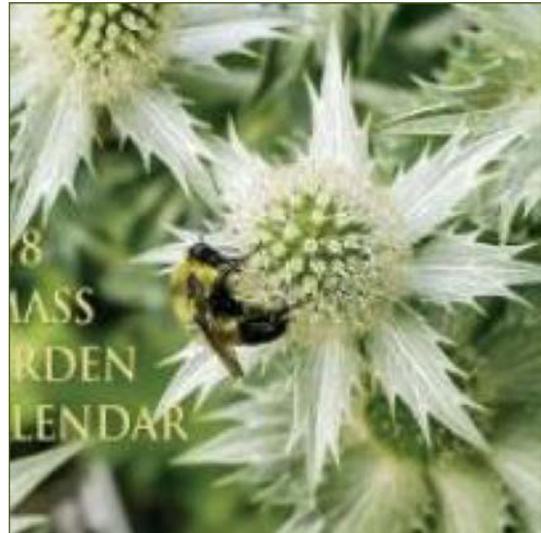
REMINDER: The Station will be closed the following dates:

Thursday, November 23, 2017
Monday, December 25, 2017
Thursday, December 28, 2017
Friday, December 29, 2017
Monday, January 1, 2018

The Station will be open November 24th, the day after Thanksgiving; expect reduced staff due to holiday leave.

We wish all of you a happy and safe holiday season!

Hilary Sandler, Station Director



2018 UMASS EXTENSION GARDEN CALENDAR

The 2018 edition of the popular UMass Garden Calendar, featuring "Insects to Look for in Massachusetts," is available for purchase online or on campus. Along with a short segment on beneficial pollinators, the calendar includes key information on and photos of invasive insects of note. The cost is \$12 online at umassgardencalendar.org or in person at 104 French Hall.

CRANBERRY STATION NEWSLETTER

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≈Annual subscription sent postal delivery for out-of-state growers and industry personnel is \$15.

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All out-of-state growers and industry personnel who choose to receive their annual subscription by postal delivery, please include a check payable to **UMass** and return to: UMass Cranberry Station, PO Box 569, East Wareham, MA 02538.

MEETING REGISTRATION FORM

UMass Cranberry Management Update

Thursday, January 18, 2018

7:30 AM – 4:00 PM

Hotel 1620 at Plymouth Harbor

Regency Ballroom

180 Water Street, Plymouth, MA

*****CHANGE IN VENUE*****

**\$30.00 per person
postmarked by 1/8/18**

\$40.00 per person (after 1/8/18)

Please make checks payable to **UMass** and return payment to:

**UMass Cranberry Station
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***Don't forget your Photo ID and Pesticide Number**

PLEASE PRINT

ALL meeting attendees **MUST** register and pay (whether receiving credits or not)

Registration Fee is non-refundable after 1/8/18

NAME: _____

COMPANY: _____

EMAIL: _____

PHONE: _____

ADDITIONAL ATTENDEES:



**CRANBERRY STATION
NEWSLETTER**

INSIDE THIS EDITION:

- Winter Meeting Registration
- 2018 Newsletter Sign-up
- Weed Control After Harvest
- Late Fall Scale
- Sunscald
- Station Updates

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