



Cranberry Station Newsletter

FEBRUARY 26, 2015

UMASS CRANBERRY STATION

1 STATE BOG ROAD

P.O. BOX 569

EAST WAREHAM, MA 02538

<http://www.umass.edu/cranberry>

UMass Pesticide Safety Training

Elk's Lodge, East Wareham

Tuesday - April 7, 2015 8 AM - 12 NOON

\$50 if signed up before 3/31/15, \$60 if after, sign up on page 7

4 pesticide recertification credits offered

- 8:00 – 8:10 Frost Update – Carolyn DeMoranville
- 8:10 – 8:30 Getting the most from herbicides – Hilary Sandler
- 8:30 – 8:45 Current Weed Work: Moss, PI and Poverty Grass – Katie Ghantous
- 8:45 – 9:05 Understanding GMO – Geoffrey Njue
- 9:05 – 9:20 Cost cutting IPM – Dawn Gates-Allen, CCCGA
- 9:20 – 9:30 Farm Safety – Hilary Sandler
- 9:30 – 10:00 Pesticide Safety Review and Zone II – Marty Sylvia
- 10:00 – 10:20 Coffee Break
- 10:20 – 10:40 Resistance Mgmt Review – M Sylvia, E Saalau, H Sandler
- 10:40 – 11:00 MRL's, Residues and Restrictions – John Wilson, Cranberry Institute
- 11:00 – 11:20 Fruit Rot Management – Erika Saalau Rojas
- 11:20 – 11:40 Insect Update, CFW Winter Moth and Scale – Marty Sylvia
- 11:40 – 12:00 State of the Bees and Bee Toxicity – Anne Averill

WELCOME TO THE NEW FARM MANAGER

We are pleased to announce the recent hire of Rick Leibe as our new Farm and Facilities Manager. Originally from Florida, he moved to Alabama where he owned a 50-acre tree farm and grew peaches, apples, pears, and figs along with hardwoods. He is comfortable aboard tractors, Bobcats and Kubotas. Rick brings to the table many talents including mechanical, electrical, and automotive skills, which will come in handy here at the Station. Although a newbie to cranberries, he is looking forward to meeting other growers and learning the trade. I hope you will join us and welcome Rick to the Cranberry Station and the cranberry community.





Cranberry Revenue Protection is a Possibility!

The 2014 Farm bill included a new crop insurance product that some cranberry growers may find great addition to their risk management plan. The Whole Farm Revenue Protection (WFRP) policy provides growers with protection from falling market prices as well as poor crop production. WFRP is a revenue based product that insures a producer's historical adjusted gross income up to 85% (80% & 85% only available to growers producing at least 3 commodities). These policies receive a subsidy (55% to 80%) to make them affordable for growers with more diverse operation (multiple commodities) receiving higher level of support.

Fresh fruit growers may find these policies particular attractive as they will provide some protection from loss of their fresh fruit incentive due to poor keeping quality as well as protection from poor yields or falling market prices.

WFRP can be purchased as a stand-alone policy or in addition to your traditional multi-peril cranberry policy (must be more than catastrophic coverage). Growers with a buy up multi-peril policy will pay lower premiums on their WFRP policy.

Growers' revenue would be the lower of;
an average of the adjusted gross income from their IRS schedule F from 2009 thru 2013
or the estimated 2015 farm revenue.

The sales closing date for WFRP is **March 15, 2015**.

For more information on WFRP please call your local crop insurance agent. Federal crop insurance policies are sold and delivered solely through private crop insurance companies and agents. A list of crop insurance agents is available at all USDA service centers or on the RMA website at: www.rma.usda.gov/tools/agents.

Producers can also visit the USDA Risk Management Agency (RMA) website to review the [WFRP fact sheet](#).

Producers can use the [USDA-RMA cost calculator](#) to estimate possible premiums and levels of coverage for their farm.

UMass Extension works in partnership with the USDA Risk Management Agency (RMA) to educate Massachusetts producers about Federal Crop Insurance and Risk Management Programs. For more information, please visit www.rma.usda.gov or contact UMass Risk Management Specialists Paul Russell at pmrussell@umext.umass.edu or Tom Smiarowski at tsmiarowski@umext.umass.edu

"This institution is an equal opportunity provider."

As in previous years, the Station is supported financially by State funding through UMass Amherst (\$600K); income generated from our cranberry crop (\$100K), meetings and publications (\$10K), financial donations from individuals (\$2K), industry contributions (\$4K), and grants (\$470K including \$50K from growers!). We very much appreciate the many years of harvest services provided by Cranberry Growers Service and the A.D. Makepeace Company. Our crop in 2014 for State Bog and Rocky Pond combined was just shy of 3000 barrels.

CRANBERRY IPM/WEED PROGRAM Hilary Sandler and Katherine Ghantous

Management Tools for Poverty Grass. Poverty grass (PG) is a serious weed problem in cranberry beds. Many growers report that PG is difficult to manage and that the populations are increasing in coverage on their farms. We compared three graminicides (herbicides specific for grass control) for postemergence control in July. All three herbicides were effective at reducing the biomass of PG by approximately 65-75%, and the herbicides prevented the PG from making any seeds. We also tested several fall and spring applied herbicides for preemergence control. Our research indicated that no single tactic will control PG, as existing plants and newly emerging plants from seeds produced the previous year must both be managed. This requires a diversified approach. We are currently working on a Fact Sheet to inform growers of our finding and management recommendations.

Poison Ivy Management. Anecdotal observations from several growers are that repeated spot treatment applications of a tank mix of sethoxydim (Poast) and mesotrione (Callisto) will control poison ivy (PI) populations. We concluded a 2-year study (initiated in 2013) that showed this treatment significantly reduced PI cover in treated areas. Callisto alone, at chemigation rates, has not been observed to affect PI. Spot treatment mixtures used a higher concentration of herbicide. We initiated a study in 2014 that looked at the effects of each herbicide individually at the higher rate, as well as in combination. Initial results suggest that high rates of Callisto play an important role in PI control.



Prototype Sprayer Built. We worked with Cranberry Growers Service, Wareham, MA, to build a prototype walk-behind sprayer that could be used for accurate spot treatments with liquid products. The cantilevered sprayer has a spray swath of 15 feet. Development was supported by a Special Call Grant Program through the UMass Center for Agriculture.

PLANT NUTRITION PROGRAM Carolyn DeMoranville

Reducing Phosphorus in Cranberry Waters. Previous work demonstrated that growers can reduce P application to an average of 10 lb/A without sacrificing yield. Reductions in P use on-bog reduces P discharge into surrounding water bodies. In some situations, bogs interact with already impaired ponds, enriched with P, and additional reductions may be needed. Collaborations with USDA-ARS and UMD-SMAST scientists are looking at filtration or water treatment as extreme possibilities for P reduction.

Cranberry nitrogen budgets for varied bog configurations. Partnering with CCCGA, the Coalition for Buzzards Bay, USDA-ARS, and Marine Biological Laboratory, we continue our study of nitrogen budgets at 6 sites. This study is comparing bogs with tailwater recovery to those that pass water through from a source to a receiving body. This information will identify nutrient management and bog system design components that can be manipulated to reduce the environmental impact of nitrogen use in cranberry production. We sampled six sites through two harvest and one winter flood cycle. In the coming winter we will begin the next phase during which we will more intensely monitor floods (one harvest, 2 winter cycles) and large rain events to quantify the nitrogen budgets for cranberry.

Tile drainage in Massachusetts cranberry production. This project has engaged a grower team with Station scientists to study tile drainage and identify BMPs for its installation on new and existing bogs. We will also quantify the benefits of this practice and coordinate with our grower partners to extend this knowledge to their peers. We are studying tile drainage on a renovated farm in Carver, a location with varied tile depths and will implement a second set of depth comparisons on State Bog in the coming year.

Use of controlled release (CR) fertilizers. In cooperation with Casey Kennedy and Christine Worthington (Ocean Spray), we studied a site with 4 CR fertilizer formulations and a soluble fertilizer control. We found that one of the formulations, a 19-6-12 supported plant growth with a steady supply of N in the soil water, little leaching or runoff potential and a reduced P rate. Next steps (begun in 2014) are to look at reducing the N rate compared to soluble fertilizer to take advantage of the presumed increased efficiency of CR and to follow release up until harvest (the previous study only sampled though July).

PLANT PHYSIOLOGY PROGRAM Peter Jeranyama

Irrigation water management. Development of a Crop Water Stress Index (CSWI) using soil moisture monitoring devices such as tensiometers, moisture sensors alongside with water level floats continues. Traditionally, cranberry beds receive 1 inch of water per week from either rain, capillary action from the groundwater, irrigation or some combination of these. Based on 4 years of work we have concluded that the saturation zone (when to stop irrigation) in cranberry bogs is reached at a tension of -2kPa (2 cbar) or volumetric water content (VWC) of 30-36%, while field capacity (when to start irrigating) at a tension of -5kPa or 10% VWC in sand; and -4.5kPa or 15% VWC in peat bogs. Going by the 1 inch water per week rule might result in over watering.

Leaf Gas Exchange in Cranberry Cultivars. Plant gas exchange and photosynthesis and stomatal activity data can provide a highly sensitive measure of the degree of water stress to which a plant is exposed. Currently there are no studies comparing the photosynthetic capacity of new cultivars of cranberry with that of established cultivars. Photosynthesis measurements and gaseous exchange readings were collected from EB, H, ST, Crimson Queen, DeMoranville, and Mullica Queen. Measurements included photosynthesis rate, transpiration, stomatal conductance of water vapor and sub-stomatal cavity CO₂ concentration using an PP Systems CIRAS3 portable gas analyzer.

PLANT PHYSIOLOGY PROGRAM Peter Jeranyama (continued)

Automated irrigation cycling in cranberry frost protection. The objectives of this project are to (i) demonstrate the efficacy of automated irrigation cycling for frost protection by evaluating cranberry buds for frost damage following frost events with cycling implemented (ii) determine the effective set points for automated frost cycling by evaluating several options selected from grower experience and the literature on the science of frost protection, (iii) quantify the amount of water applied and fuel used during the evaluated cycling protocols for both mild and severe frost events and compare to water use in a non-cycled protocol, (iv) field test various sensors and compare temperature measurements of the bud/canopy and (v) synthesize the information gathered and develop BMP guidance for automated irrigation cycling in cranberry frost protection.

PLANT PATHOLOGY PROGRAM Erika Saalau Rojas

Bravo Restriction. Another major event this season involves the recent announcement made by the European Union (EU) to restrict allowable maximum residue levels (MRLs) of the commonly used fungicide chlorothalonil, on cranberry fruit. Also known as Bravo®, this fungicide is **critical** to effectively control cranberry fruit rot, a disease complex that can cause over 50% fruit loss. In order to comply with EU market guidelines, Bravo will essentially have to be eliminated from fruit rot management programs in 2015. Given that chlorothalonil MRL restrictions will be in effect as early as 2015, the development of alternative fruit rot management guidelines has become a top priority for MA. Since Bravo is one of the 5 effective fungicides registered for fruit rot control, a significant investment of resources will be devoted to fruit rot pathogen biology and management research over the next couple of years. In the short term, field trials will focus on testing and retesting chemical products that can be incorporated into a fruit rot management program without Bravo.

Additionally, Bravo restrictions are likely to result in increased use of newer fungicides such as Indar, Abound, and Proline. When used properly, these fungicides can effectively control fruit rot. However, inadequate use of these products may result in fungicide-resistant fruit rot pathogens. Over the next couple of years, major fruit rot pathogens will be collected from beds with a history of using Indar, Abound, and/or Proline to assess whether fungal populations have developed resistance or reduced-sensitivity to these products.

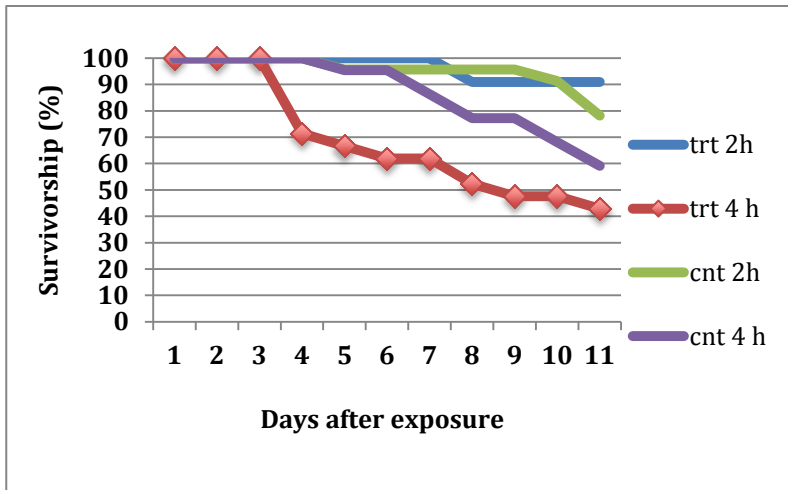


Symptoms caused by TSV and BShV viruses

Fruit Scars Caused by Virus. The 2014 growing season proved to be an interesting year for cranberry pathology. Season highlights include the detection of 2 cranberry viruses new to our state: **Tobacco Streak Virus (TSV)** and **Blueberry Shock Virus (BShV)**. Both diseases are also relatively new to cranberries and our knowledge about their impact is somewhat limited. Preliminary studies carried out in Wisconsin suggest that both TSV and BShV can spread through pollen and infected plant material and so far, crop yield appears to be unaffected. However, until we learn more about how these viruses affect cranberries, we will continue to monitor their distribution and encourage growers to restrict movement of plant material from infected to healthy beds.

CRANBERRY ENTOMOLOGY PROGRAM Anne L. Averill and Martha M. Sylvia

Studies on the Health & Conservation of Bees in Cranberry. Cranberry flowers need pollination to set fruit. Bees are in decline. The most important pollinators in MA cranberry are bumble bees, many species of *Andrena* mining bees and sweat bees, and managed honey bees. We finished our third year of bee survey at 22 sites to determine which species of wild bees appear during bloom and what pollen was being used, establishing a baseline to assess changes in these populations over time and under various management practices. Our surveys show that there are five bumble bee species collected in Massachusetts bogs. Two of these are increasing and three are decreasing. The species in decline appear to be more vulnerable to bloom sprays. Growers could be hastening the decline in bumble bee diversity via bloom sprays.



For a second season, we showed disturbing mortality of bumble bees following **exposure to bloom sprays**. We set up field-cage trials that exposed foraging bumblebees to commonly recommended combinations of insecticides and fungicides (results of one combination are show at left). Compared to bees released in cages with untreated bloom, within 2-3 days there were significant differences in patterns of survivorship of the pesticide-exposed bees, suggesting a delayed physiological impact on the bee's system.

Figure 1. Survivorship of cohorts of bumble bees allowed to forage on treated or control cranberry bloom in cages. We treated bloom with a standard bloom mixture of fungicides (Indar and Abound) and insecticide (Altacor) and allowed the vines to completely dry before we introduced bees. Bees foraged on the bloom and were removed after 2 or 4 hours, each was held individually, and observed in the lab for 2 weeks.

We finished our second year of **survey of pathogen and parasite prevalence levels** in five species of bumble bee. We sampled 1,252 bumble bees at 22 different sites. After examining bees for infection under the microscope, bees were submitted to UMASS cooperators for molecular identification of pathogens. A new species of trypanosome gut parasite that has only previously been reported in the US for Alaska bees was quite common. Honey bee viruses were more commonly detected in bumble bees where local honey bee hives were established, in comparison to sites where migratory honey bees were rented and then removed. A 2nd year of bee collections at 6 non-agricultural sites to compare infection levels in natural settings saw no differences in pathogen patterns.

Cranberry Scale Outbreak. Two species of armored scale insects, Putnam scale and Dearness scale, were in outbreak populations causing devastating vine death on several bogs, with moderate to high injury at another dozen sites. Starting in mid-May, many sites in all regions of MA cranberry were evaluated for infestation in the field and thousands of vines were examined under the microscope. Growers used diazinon successfully in 2014 to manage these insects, and timed their applications based on our vine inspections to determine when the vulnerable crawler stage appeared (mid-June). For Dearness Scale, the populations we monitored were a full 2 weeks ahead of Putnam scale and had crawlers with white caps developed already by the second week of June! We monitored two late water sites, and found this to be an effective management approach.

Outbreaks of other insects. A case-bearing beetle was found in large numbers at two sites and populations were monitored to determine life history on cranberry. This species has never been reported in cranberry. Red-striped fireworm, rarely found previously, was also found at 2 sites.

**Registration Form for UMass PESTICIDE SAFETY TRAINING
Tuesday April 7, 2015 8 AM - 12 Noon
Elk's Lodge, East Wareham**

Please register for the meeting using this form.

PLEASE PRINT

NAME _____

EMAIL _____

PHONE _____

ADDITIONAL ATTENDEES _____

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

Attach additional sheets as necessary.

PLEASE NOTE: Registration fee is **non-refundable** after 3/31/15

**Return with payment by:
March 31, 2015**

Include check made out to:
UMASS

In the amount of:
\$50.00 PER PERSON
IF POSTMARKED BY 3/31/15
AFTER THAT DATE, REGISTRATION
INCREASES TO \$60.00 PER PERSON

Return to:
UMass Cranberry Station
P.O. Box 569
East Wareham, MA 02538

UMass Extension Symposium:

**Pollinator Health for
Agriculture and Landscapes**

Thursday, March 26, 2015

8:45 AM to 4:00 PM

4 pesticide recertification credits

Campus Center Auditorium
UMass, Amherst

For information go to:

<http://extension.umass.edu/landscape/events/pollinator15>

**CRANBERRIES: A NUTRIENT MANAGEMENT GUIDE FOR
SOUTH COASTAL OREGON**

During the past year, Carolyn DeMoranville worked with a group of cranberry nutrition scientists, led by John Hart, now retired from Oregon State University, to revise and expand the nutrient management guide for Oregon cranberries. This is a great resource, with illustrations about cranberry growth and yield in addition to the nutrient information. While the nutrient recommendations are for Oregon, much of the information will be valuable to MA growers. The 52-page guide can be downloaded for **free** from Oregon State at this web address:

<https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/54896/em8672.pdf>



Carolyn DeMoranville, Director

**2015 PESTICIDE APPLICATOR
LICENSE TRAINING WORKSHOPS**

Held at the UMass
Cranberry Station Library
April 16 & 17, 2015

For more information and registration form:
http://www.umass.edu/pested/training_workshops/
or contact: Natalia Clifton at 413-545-1044

Sponsored by Pesticide Education,
Agriculture and Landscape Program

**WORKER PROTECTION STANDARD
HANDLER TRAININGS**

Last Wednesday of spring months
CRANBERRY STATION LIBRARY, 2-4 PM

Worker Protection Trainings for cranberry workers in the handler category will be offered in 2015: April 29th, May 27th, and June 24th. There is a \$5 fee to cover the cost of the WPS training manual. If you have a pesticide license, you do not need this training. **Contact Martha Sylvia:** 508-295-2212, ext. 20 to sign up or for additional information.

IRRIGATION COOPERATORS?!

Looking for volunteers to participate in a State CIG Irrigation Study (Conservation Innovation Grant). The project will test tensiometers and other water sensors on cranberry bogs. Volunteers must be EQIP eligible. Call me 508-295-2212 x29 or email at peterj@umass.edu. Peter Jeranyama

UMASS PESTICIDE SAFETY TRAINING

Tuesday, April 7, 2015, 8 AM – 12 Noon, \$50
4 pesticide recertification credits offered

Agenda on front page
Sign up on page 7