



# Cranberry Station Newsletter

November 2003

UMASS CRANBERRY STATION  
1 STATE BOG ROAD  
P.O. Box 569  
EAST WAREHAM, MA 02538  
<http://www.umass.edu/cranberry>

## CRANBERRY MANAGEMENT UPDATE RADISSON HOTEL PLYMOUTH HARBOR

(FORMERLY THE SHERATON INN)

**Tuesday, January 13th, 2004 7:30 AM - 4 PM**

This educational program is a streamlined session with “how- to” information for growing cranberries effectively and economically by implementing the latest research. It is a combination of Cranberry Production Training and Research & Extension Update. **We plan to offer a Cranberry 101 (beginner) in late March and a Pesticide Management meeting in early April.**

This meeting will offer an opportunity for the Cranberry Station faculty and staff to present areas of research that have reached the grower-implementation stage.

\$15.00 charge includes a morning coffee, a mid- morning coffee break and handouts. Pesticide re-certification credits for the cranberry category will be offered - **4 contact hours**.

### TENTATIVE SCHEDULE

**7:30 - 8:00 Registration (with coffee)/poster setup**

**8:00 - 8:30 Station Update - Carolyn DeMoranville, Director**

**8:30 - 9:00 Weather and Management - Carolyn DeMoranville**

**9:00 - 9:30 IPM Perennial Weed Control - Hilary Sandler**

**9:30 - 10:00 Implementing new pesticides - Matt Beaton**

**10:00 - 10:30 Coffee and danish break with poster session**

**10:30 - 11:00 Physiology - Justine Vanden Heuvel**

**11:00 - 12:00 Black headed fireworm - Sheila Fitzpatrick, Ag. Canada**

**12:00 - 1:00 BREAK FOR LUNCH - ON YOUR OWN**

**1:00 - 1:30 Poster Session**

**1:30 - 2:30 Insect Management - Anne Averill**

**2:30 - 3:00 Invasive plants - Julie Callahan**

**3:00 - 3:30 Disease Management - Frank Caruso**

**3:30 - 4:00 Wrap-up and Paperwork for Credits**

**Please register using form on page 7**

## COMING EVENTS AND OPPORTUNITIES

### Massachusetts Farm Bureau Federation Annual Meeting

To be held on December 4-5, 2003 at the Radisson Plymouth Harbour Hotel. For more info., contact: (508) 881-4766 or go to [www.massfarmbureau.com](http://www.massfarmbureau.com).

### The New England Vegetable and Berry Conference

**Date:** December 16-18, 2003.

**Location:** The Center of New Hampshire  
Holiday Inn in Manchester, NH.

**Cost:** \$50 registration to attend for all three days (\$25 for additional members of the same farm) Pre-register by Dec. 5 to avoid a \$10 surcharge.

**Hotel conference rate:** \$85 single or double (603-625-1000).

**Information and registration:** [www.nevbc.org](http://www.nevbc.org), or call Sonia Schloemann (413-545-4347).

### 2004 UMass Garden Calendar Available Now!

The theme for this year's UMass Garden Calendar focuses on Garden Questions and Answers. The calendar addresses specific garden questions that have been frequently asked of Extension staff over the years. Each month, the calendar will feature a garden question and answer accompanied by beautiful color photos.

To order, send \$11 (payable to UMass), to UMass Extension Bookstore, Draper Hall, 40 Campus Center Way, Amherst, MA 01003-9244. Bulk orders are available for orders of 10 or more to one address: 10-50 copies (\$7 each), more than 50 copies (\$6 each), plus shipping and handling. For an order form or more information go to [www.UMassGreenInfo.org](http://www.UMassGreenInfo.org) or call (413) 545-0895.

### Schools want locally grown products!

Five public schools in Massachusetts have been chosen by the Massachusetts School Foodservice Association (MSFSA) to participate in their GET FRESH GET

LOCAL pilot project. Each of these schools will try to purchase and serve more locally grown products in school lunches. The pilot schools are BELCHERTOWN, HUDSON, MAYNARD, MIDDLEBORO, and WORCESTER.

The MSFSA is providing start-up assistance to each of the schools and would like to hear from farmers or co-ops that may have interest in selling to schools. Please contact Kelly Erwin at [kelerwin@localnet.com](mailto:kelerwin@localnet.com) or call (413-253-3844).

### Agricultural Business Planning Courses to be offered in Northampton and Grafton, January-March 2004

The Massachusetts Department of Agricultural Resources (formerly MDFA) will once again provide experienced instructors, a nationally acclaimed NxLevel© curriculum tailored for agriculture, dynamic guest speakers and wonderful peer networking opportunities through its course "*Tilling The Soil of Opportunity*". Both sessions are limited to 12-15 agricultural enterprises, with the option to bring a partner for the same \$300 registration fee if space permits.

\* Contact: Rick Chandler (413) 577-0459 or [rchandler@umext.umass.edu](mailto:rchandler@umext.umass.edu).

### 2003/2004 Massachusetts Agriculture Calendars still available

The calendar, published by Massachusetts Agriculture in the Classroom, Inc, in cooperation with the Massachusetts Department of Agricultural Resources, features a winning photograph for each month as a result of a photo contest held earlier in the year. The winning photos portray local farms and products throughout the seasons. Photos of the calendar can be viewed at the website: [www.state.ma.us/dfa/events/index.htm](http://www.state.ma.us/dfa/events/index.htm).

Calendars may be purchased for \$10 each (\$5 wholesale for orders over 5). Send check payable to Massachusetts Agriculture in the Classroom with your name and address to: Calendar, Massachusetts Agriculture in the Classroom, c/o [Debi Hogan](#), PO Box 345, Seekonk, MA 02771, (508-336-4426).

UMass Extension Mailing Signoff

Dr. Carolyn DeMoranville, Director

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## CRANBERRY SUMMIT MEETING - THE 2003 SEASON IN REVIEW

“This season, everything that could go wrong, did go wrong” - was the consensus of about 25 growers, handlers, and researchers that met Friday November 14<sup>th</sup> at the Cranberry Station. The group included UMass Cranberry Station faculty, representatives of CCCGA and CI, IPM providers, handler representatives, and growers. For growers the biggest challenges in 2003 were: cranberry weevil, fruit rot, and poor fruit set/retention (pollination in some cases). Other insects also were problematic, particularly cranberry fruitworm. Researchers presented information regarding weather factors that impacted crop and pests, insect management prospects, fungicide choices and scheduling, and the keeping quality forecast. The following is a report of the discussion as well as some management recommendations.

We began the discussion with a review of various weather factors that played a role in the 2003 season. Weather impacts on **plant physiology** during the past 2 years could be significant, combining the drought in 2002 and the cold 2002-2003 winter. Long floods and early sanding last winter may have depleted plant resources leading to reduced ability to support the crop in 2003.

Plants use the carbon compounds that result from photosynthesis, along with water and minerals (from fertilizer and soil resources), to renew vegetative structures (new shoot growth and roots) and to make fruit. Plants also use up carbon compounds in stress situations through increased respiration. This use is accelerated if the plants experience oxygen stress (winter) because they switch to anaerobic respiration. Anaerobic (without oxygen) respiration uses 16-18x or more carbon compared to normal respiration to generate the same amount of energy. Even worse, toxic compounds are generated and the plant uses even more energy from carbon to detoxify them. Cranberries, as a flood-tolerant plant, do this rather well, but they pay a price in loss of carbon reserves. If oxygen deprivation is too extensive, leaves may drop in the spring, removing additional resources from the plant. The status of the carbon reserves going into the season determines new shoot and root production. This in turn determines the ability of the plants to support the crop via photosynthesis in new shoots and mineral and water uptake by roots.

Compounding the drought and winter stresses was a cold, wet spring. This delayed natural nitrogen release in the soil and response to fertilizer nitrogen. Prolonged saturated soil was detrimental to root renewal and function. In contrast to the drought conditions in 2002, water tables were excessively high in many cranberry beds throughout the spring and early summer in 2003. For example, it was so wet at Rocky Pond Bog, that we only had to irrigate once all summer and the bog was too wet most of the season.

Overly wet soil was the next factor to be discussed. Research by Bruce Lampinen and Carolyn DeMoranville has shown that when a ‘Stevens’ bed was consistently too wet (based on tensiometer data), there was a significant increase in the number of flowering uprights that set **no** fruit. In addition, yellow vine syndrome was reported again this year. This research also showed that yellow vines result when the soil is too wet (high water table) or too dry. In a field situation, saturated soil leads to poor, shallow rooting. As the water table drops in mid-summer and fruit sets, increasing demand on plant resources, the yellow symptoms appear. Many growers reported excellent bloom but poor fruit set/retention. Poor fruit retention may have been the result of saturated soil conditions.

Finally, the possible cumulative impact of reduced management along with weather-related stress was discussed. It was noted that any factors that contribute to decline in plant ‘health’, (e.g. water stress or reduced carbon reserves), will impact the ability of the plants to produce fruit and also might impact fruit quality, as well as the ability of the plant to resist fungal infections.

**Management recommendation:** Drainage is critical. Monitor soil moisture with a tensiometer or water table with a float (fact sheet available at the Station) and do everything possible to avoid conditions that favor soil saturation. Conversely, monitor moisture throughout the season and into the fall to make sure that the plants are not subjected to drought stress. During the winter months, be cognizant of the impact of oxygen deficiency on plant reserves and limit activities that might reduce oxygen in the winter flood (e.g., early sanding, or holding water under cloudy ice). If plants are stressed going into winter, consider fall fertilizer (use low N materials) or apply spring fertilizer at bud elongation stage (late May).

The next topic to be discussed was diseases, particularly **fruit rot**. Factors that may have driven the extensive incidence of fruit rot in 2003 included: delayed and compressed bloom, poor weather during bloom and inaccuracies in the Keeping Quality Forecast (KQF). Scattered bloom (the timing for first fungicides) was delayed by about 10-15 days in 2003 compared to an average year. Five percent bloom on State Bog was not reached until June 24. However, once bloom began, it went from 15% to 93% in one week. These circumstances, coupled with adverse weather conditions for applying sprays may have led to badly timed first fungicides. Prolonged poor weather conditions resulted in many instances of more than 14 days between sprays. Poorly timed sprays can lead to failure to control fruit rot.

Frank Caruso reported that in his field trials, Bravo outperformed the new fungicide, Abound (3.9% vs. 14.5% rot respectively with three sprays of each). Keep in mind, however, that these trials were on bogs with >90% rot in the untreated areas. On the plus side, we had excellent control with one Abound followed by two Bravo sprays on State Bog and on one of the two bogs at Rocky Pond. Poor control on the other bog was related to poor drainage. Frank stated that drainage problems can be associated with chronic *Phytophthora* infection leading to increased susceptibility to fruit rots. This can occur in the absence of obvious patches of dying vines. An additional factor that may have increased fruit rot infections was the extremely humid weather during and after bloom for about a 3-week period.

The KQF was not a good predictor in 2003. This may be due to the change to using the sunshine hours data from Blue Hills instead of data from Logan Airport. The Logan data is no longer being collected. Using the Blue Hills data, the decision to award 4 points for sunshine was right on the borderline. We erred towards adding those points to the KQF. Our decision to award them turned out to be incorrect. This was a learning experience for us. The good news - Frank has a large USDA grant to revisit and refine the KQF over the next few years.

**Management recommendations:** Do everything in your power to correctly time fungicides. Again, improve and maintain good drainage to prevent chronic *Phytophthora* infections. Maintaining an open plant canopy will help to reduce humidity and conditions conducive for infection of the flowers and berries. Prune and sand regularly and avoid using excessive nitrogen. Use judgment along with the KQF - if conditions are

deteriorating during bloom (wet, humid) after the final forecast is issued, consider increasing your fungicide program in response.

Finally, the discussion turned to **insect** problems. Anne Averill reported that for the first time in many years, the behavior of cranberry fruitworm (CFW) was out of synch with the phenology of the plant. In 2003, the CFW moths laid eggs as soon as berries formed rather than conforming to the 7-9 days out-of-bloom (OOB) timing which is the basis for standard management practices for 'Early Black' and 'Howes' (the OOB timing interval is shortened by about ½ for 'Ben Lear' and 'Stevens'). The long delay in the onset of bloom and prolonged set are likely the culprits here - the moths were flying at the usual time but 'gave up' waiting for the fruit to size prior to egg-laying. In plots on State Bog where we timed sprays based on the standard rules, we suffered 25% infestation (67% with no sprays).

Black headed fireworm (BHF) is making a big comeback in MA. Bogs that are abandoned or minimally managed are a clear target for this pest. Three generations of BHF occurred in 2003. This pest can quickly devastate an area — the first generation had come and gone before some growers recognized a BHF infestation. Vigilance, scouting, and understanding of the life cycle of the pest are keys to management. BHF will be the topic of a presentation at our January meeting by our guest speaker Sheila Fitzpatrick of Ag Canada. Sheila is an expert on BHF, having worked on it for many years in BC and Wisconsin. The Cranberry Station will also release a new BHF fact sheet this winter.

Several instances of high numbers of *Sparganothis* fruitworm were reported. Behavior and phenology of this insect appeared to be greatly influenced by the weather in 2003, with first generation larvae appearing late into the spring and second generation outbreaks continuing into late August. Outbreaks were reported to be associated with beds where growth was rank and lush. Anne had expected Spag populations to have declined by this point based on the reduced use of broad-spectrum insecticides and her experiences on abandoned bogs. While this is the case on many bogs, the insect remains problematic for some growers. She theorized that there may be some other aspect of a managed bog, in addition to pesticide use, that favors Spag over its natural enemies.

Cranberry weevil continues to be a key problem for many growers. Avaunt seems to do a good job of controlling the first generation (active pre-bloom) but is less effective

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against the second generation. Anne and Larry Dapsis of Ocean Spray discussed the possibility that the second generation, newly-emerged adults are more 'robust' - having more 'fat body' than those that have spent many months overwintering — fat body is the insect tissue that is involved in detoxifying insecticides. In addition, this year the second generation remained on the bog much longer than in previous years and 'drilled' fruit were often observed. There is some concern that these late-active weevils may also affect next year's crop because they also attacked newly formed flower buds. Anne continues to research alternative compound against weevil, two have better summer activity than Avaunt and are being actively pursued. Shepherding registrations for weevil controls also remains a priority for the Cranberry Institute, according to Jere Downing. A long discussion involved the fact that while excellent control with Avaunt occurred in spring applications, within a week or two, populations were back up. According to Anne, the lack of control in previous years, plus the moderate control of summer populations with Avaunt has led to large populations of adults in the uplands (where they overwinter). The spring migration of adults back onto the bogs is stretched over a longer period, creating the need for multiple sprays. Management of this pest will continue to be a high priority in our research program.

**Management recommendations:** We continue to support the standard timing for CFW spraying. However, if we experience another season of long-delayed bloom, shortening the interval for the application of the first spray after 50% OOB should be considered. Educate yourself about BHF and scout carefully for this pest. Expect abnormal patterns in insect infestations when weather is unusual — step up your scouting efforts. Stay in touch with the Station newsletter to learn about new control options as they become available. Next season - we will be offering monthly mini-workshops to review timely management and scouting information.

General discussion covered several topics. **Fertilizer** use patterns were discussed. Many felt that fertilizer applied around bloom encouraged excess vine growth this season. This probably was a result of basing the dose on the excellent bloom and then the vines failed to set a good crop. The N was then channeled into vegetative growth. Another contributing factor may have been N inputs in the numerous summer rain events. Natural rainfall, particularly in lightning storms, carries

a certain N load. Normally we ignore this input, since it is minimal in our normal low-rainfall summers. For whatever reason, growth response was excessive this year (including on some areas of State Bog). It seemed that the overgrowth was worse on peat-based beds — this may relate to those beds also being wetter. However, some reported overgrowth on mineral beds as well. The link between lush vines and fruit rot was discussed — lush vines promote humidity and fruit on these vines (particularly those in the deep canopy where fungicide coverage was poor) may also be more susceptible to infection. We have shown in plot studies that bogs receiving excessive N doses tend to have increased field and storage rot. A thick canopy is a negative factor for fruit color, as less light penetrates to the fruit.

Justine Vanden Heuvel reported that by late in 2003, stored resources looked good going into 2004. She also noted that cranberry uprights remained photosynthetically active, thereby actively storing reserves, as of November 13 (the day before the meeting).

**Sanding** was also discussed, since many acres were sanded this past winter. Carolyn reported that in all controlled studies of sanding, crop in the first year is reduced. Further discussion suggested that early sanding may have blocked light to the vines for much of the winter, leading to carbon depletion going into the growing season. Research in Wisconsin has shown that photosynthesis can continue throughout the winter, but only if light is reaching the plants. Carolyn noted that she would like to see a long term comparison of sanding and pruning both for cost evaluations and as a possible way to limit the yield losses in the year after sanding. This might mean that sanding would not be required as often, an important factor considering the reduced availability and increased cost of sand.

**Poor bee activity** was reported at many locations. Many noted that all bee types, not just honey bees, seemed less this year. Carolyn raised the possibility that flowers may have been less attractive due to sublethal oxygen deficiency effects on flower buds formed during the winter. Stresses on the bee populations, including diseases, mites, and weather were also noted. It was noted, that based on research by Dan Schiffhauer of Ocean Spray in New Jersey, only eight viable seeds are required for a fruit to set and size. Of course, if no pollination occurs, even these

eight seeds will not form. A question was raised regarding the effect of Avaunt sprays on bee activity. At State Bog, we sprayed Avaunt four times and still had good bee activity.

The possible effect of excessive summer rain on pesticide longevity (residual activity) was put forward as a possible reason for poor control of pests this year. Most of the activity is washed away with the first tenth of an inch of rain or irrigation. However, in some instances, we were seeing this within hours of our sprays due to frequency of rain events this summer.

**Management recommendations:** Split the summer fertilizer application - this allows more leeway to reduce dose as needed if excessive response is seen or conditions change. Make every effort to minimize vine lushness to promote good quality and light penetration for color formation. Carefully consider the timing of sanding. Check bee hives to make sure you are getting a full complement of healthy bees.

**Looking ahead:** The IR-4 program will continue to be a good resource for pesticide registrations but fewer new pesticides are being developed and less money has been available for screening tests. The good news is that the registrants seem to be willing to support the use of their products on cranberries. Areas for future research were put forward: KQF, sanding vs. pruning, insect management, dewberry control, pollination, a better understanding of the basic physiology of the cranberry plant, impact of low management and abandoned properties as reservoirs for insects and diseases. The need for continued education in the use of available management options was stressed. And finally, all attendees agreed that this dialog among growers, associations, handlers, and researchers was very beneficial and should become a standard practice at the conclusion of each growing season.

## **Harwich Conservation Trust (HCT) Request for Proposals Lease of HCT-owned Cranberry Bogs**

**BACKGROUND:** Proposals are being sought from applicant cranberry growers and/or applicants with related agricultural experience for leasing and operating of the following cranberry bog (owned by the Harwich Conservation Trust, a non-profit 501c3 organization founded in 1988, also herein referred to as HCT) and for other accessory agricultural uses on the land which is not part of the bogs (wetland area), as outlined in Massachusetts General Law Chapter 128, for a term of up to ten (10) years.

**PREMISES:** Bank Street Bogs, located off Bank Street, Harwichport, Barnstable County, Massachusetts, shown on Harwich Assessors Map 23 as Parcel C-1 and C1-1, containing approximately 60 acres, and being further shown on a plan recorded in the Barnstable County Registry of Deeds in Plan Book 341, Pages 90-93 and described in the deed recorded in Barnstable County Registry of Deeds Book 13958 Page 31.

**PROPOSAL PROCESS:** Proposals will be evaluated by the criteria outlined in the proposal guidelines. Selected proposal(s) will provide the best benefit to HCT over the period of the lease. Proposals will be received until February 14, 2004. For proposal guidelines, please send self-addressed, stamped envelope marked "Bank Street Bogs" to the following mailing address: Harwich Conservation Trust, P.O. Box 205, Harwich Port, MA 02646.

### **WORKER PROTECTION TRAININGS CRANBERRY STATION LIBRARY 2 - 4 PM**

Worker Protection Trainings for cranberry workers in the handler category will be offered in the spring of 2004: April 28, May 26, and June 30. Anyone working on the bog must be trained every five years unless they are a family member or already have a pesticide license. There will be a \$5.00 charge that includes training book and EPA verification card.

Contact Martha Sylvia: 508-295-2212, ext. 20  
for additional information.

Advanced sign up is a **MUST!!!**

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**CRANBERRY STATION NEWSLETTER RENEWAL**

**YOU MUST RETURN THIS FORM EACH YEAR TO STAY ON OUR MAILING LIST!!**

The Cranberry Station Newsletter is provided **free to all MA growers, cranberry researchers and IPM consultants nationwide**. **Subscription fee of \$15** (for a single one-year subscription) is required for **out-of-state growers and industry personnel**. All persons wishing to receive this newsletter (whether paying or not) must complete and return this renewal form to maintain a subscription. Include a check (made out to UMass) with the renewal form if you are out-of-state or are industry personnel. **All out-of-state and or industry personnel subscriptions sent by email are FREE**.

**Everyone must respond to this notice by Dec. 31, 2003  
or your name will be taken off of our mailing list for 2004!**

NAME _____	Change of address? (Y or N) _____
COMPANY _____	Please check one:
ADDRESS _____	Owner _____
TOWN _____	Employee _____
ZIP _____	Researcher _____
PHONE _____	Consultant _____
EMAIL: _____	Industry _____
	Private sector _____
	Return to: UMass Cranberry Station P.O. Box 569 East Wareham, MA 02538

***Please Choose One!!!:*** Postal delivery \_\_\_\_\_ or Email \_\_\_\_\_

**Registration Form for Cranberry Management Update  
Tuesday, January 13, 2004 7:30 AM - 4 PM  
Radisson Hotel Plymouth Harbor  
(formerly the Sheraton Inn of Plymouth)**

Please register for the meeting using this form.

COMPANY _____	
CONTACT _____	
PHONE _____	Return complete form with payment by:
NAMES OF ATTENDEES _____	<b>January 6th, 2004</b>
_____	Include check made out to:
_____	<b>UMASS</b>
_____	In the amount of:
_____	<b>\$15 per person.</b>
	Return to:
	<b>UMass Cranberry Station</b>
	<b>P.O. Box 569</b>
	<b>East Wareham, MA 02538</b>

Attach additional sheets as necessary.

## WHEW, WHAT A SEASON!

For many of us, 2003 will be a season that we would be happy to forget. But before we put it behind us, we need to learn as much as we can from what went wrong. First and foremost - the weather. Since we cannot control the weather, we need to respond to the extent we are able and then realize that we can only do our best and then roll the dice! For the things we can control, we need to renew our efforts in educating ourselves regarding best management options, learning about our pests, and making our best efforts in maintaining our bogs. In this issue you will find a long article discussing opinions about the poor 2003 crop and recommendations for future response. Also you will find the announcement for our winter workshop and a sign-up form for the Station newsletter. In future issues we will announce the dates for other educational opportunities provided by the Station staff, including: a Cranberry 101 beginner training and refresher course (late March), a pesticide use and safety workshop (early April), and a series of mini-workshops on IPM and general management (beginning in May). I encourage you to take advantage of these programs.

Nature dealt us a lousy hand this season, let's look at it as an opportunity to learn. We at the Station remain committed to addressing the research and education needs of our growers. Please call on us as a resource and share your experiences so that we can all go forward together. At the risk of sounding like a Red Sox fan — let's look ahead to next year!

CAROLYN DEMORANVILLE