



# Cranberry Station Newsletter

FEBRUARY 2002

UMASS CRANBERRY STATION

1 STATE BOG ROAD

P.O. Box 569

EAST WAREHAM, MA 02538

<http://www.umass.edu/umext/programs/agro/cranberries>

## MEETING TO DISCUSS THE FRUIT ROT SITUATION IN 2001

January 15, 2002

Approximately 30 people convened in the library at the Cranberry Station. This is a summary of the questions posed and comments made regarding various fruit rot topics discussed in the 90 minutes the meeting convened. Several questions were posed as part of an informal agenda:

- \* Why was there so much fruit rot in 2001?
- \* Are our fruit rot fungicides working sufficiently?
- \* What are the consequences of reduced management?
- \* Why was the quality of Stevens berries so poor in 2001?
- \* How much of the poor fruit was due to scald as opposed to fruit rot?
- \* What direction(s) should Station research program be heading?

Frank Caruso (FC) made comments regarding each of the above questions. The amount of fruit (field and storage) rot that occurred in 2001 was predicted according to the keeping quality forecast (KQF), whereby only one of a possible 16 points was achieved. At the conclusion of the growing season, Ben Lear and Early Black had good quality, whereas Stevens and Howes had poor quality. The poor quality of Stevens was especially surprising, and it is likely that much of the poor fruit was injured by scald rather than fruit rot caused by fungi. It was conjectured whether some of the instances of rot were due to ineffective fungicides. In one of FC's field trials, the treatment that had three applications of Bravo WeatherStik at 5.5 pt/acre resulted in 33% field rot. Treatments including three applications of this fungicide normally result in only 3-5% field rot. It was noted that the untreated control had 96% field rot, a value much higher than the normal 80-85% rot. Consequently, inoculum pressure was severe in 2001. Nonetheless,

three applications of one of the other fungicides in this trial resulted in 18% field rot. These results are not what we would have expected. Reduced management (and/or abandonment) of numerous cranberry beds is an issue that will certainly relate to fruit rot levels during the next few years, and may have had an impact in 2001. Berries remaining in these beds, especially in those beds not treated with fungicides or treated with reduced fungicide inputs, will harbor more fungal inoculum and this inoculum could spread to neighboring beds.

FC commented on collaborative efforts of the cranberry pathologists (Peter Oudemans in NJ, Patty McManus in WI, and Pete Bristow in WA) to obtain funds to study two areas pertaining to fruit rot: (1) assessment of the overwintering inoculum, the timing of infection, and the latent phase of three of the most important fruit rot pathogens, *Coleophoma*, *Phyllosticta*, and *Physalospora*, and (2) an evaluation of the present KQF to determine how accurate it is in MA and to apply it in other growing areas.

At this point, FC opened up the discussion to the audience. There was a general consensus that our fungicides are working well in most instances; in fact, higher fruit rot levels are unquestionably the exception rather than the rule. They fail when their timing is not ideal and other factors come into play. The most important of these factors include poor drainage and particular weather events or a set of weather conditions that may combine to result in an additive effect. One grower indicated that he had a terrible rot problem in his Howes for five successive years. In the sixth year, he applied the first fungicide at 1% bloom followed by six subsequent applications at 10-day intervals. There was excellent fruit quality that year and rot has never been a problem in the following growing seasons. It was possible that the extreme fungicide schedule in this particular year served to clean up the inoculum pressure in these beds. Another grower noted that he had applied Bravo on some of his acreage and a rainstorm shortly afterward washed off the fungicide into the soil. He applied another fungicide to those beds the next day. However, he observed that he had better fruit quality where the

fungicide had been washed into the soil in comparison to the other beds where this had not occurred. The question was posed whether fungicides were effective if they were applied to the bed surface? Another question was raised whether any such soil applications had ever been tried. FC mentioned that post-harvest fungicide applications are used in apple orchards to reduce the inoculum of the fungus that causes apple scab. Soil or ground fungicide applications have not been attempted by any researchers in cranberry to date, but it would be worth experimenting with post-harvest soil applications. The fallen leaves and berries that remain in the duff layer on the bed and the plants themselves most definitely harbor overwintering inoculum, and perhaps a single Bravo application would help to reduce the inoculum going into the following growing season. FC thought that it would be easier to include a post-harvest application in a revised label than including one during the growing season. This latter registration might reduce the number of applications of fungicides with a limited number of applications (e.g., Bravo with three) that could be utilized on the flowers and berries.

At several points, it was noted how rot levels are always significantly higher on newly established beds compared to well-established mature beds. It is likely that in these new beds, more applications of fungicides at shorter intervals may be necessary for good fruit quality. The issue of poor drainage also came up at several junctures. The quality of sand was central to the attainment of good drainage. Fine, loose sand is preferable to coarse, hard sand in the establishment or renovation of beds or in the sanding practice employed every 3-4 years.

There is no question that scald took its toll on the quality of both Stevens and Howes berries in 2001. The key period during which this injury to the berries occurred was most likely August 7-9, when temperatures exceeded 95° F in most beds. This was followed by a prolonged drought that carried through harvest and above average temperatures in September and October. These latter conditions also favored the development of field rot. Many of the fruit rot fungi infect berries and reside as endophytes or in a latent phase through the remainder of the time the berries are intact, in the field and in storage. Warmer temperatures in the latter part of the growing season induce the fungi to develop further in the berries, thus resulting in visible rot symptoms. That is precisely what occurred in 2001. Scald is not an easy injury to understand or to prevent. It is a very quick event with immediate deleterious effects on fruit quality. It was concluded that running the sprinklers in the early morning for 3-4 hours is as effective as running the

sprinklers from 11 am until 2 pm on the hottest days in August (the critical month when scald is most likely to occur). Dr. Paul Croft at Rutgers developed a discrete set of conditions that are likely to result in scald. These are outlined in the 'Diseases' section of the Chart Book. One grower suggested that it would be helpful if growers could be alerted by the Station when scald was likely, similar to the frost warning that has been very useful for decades. It will require further research on scald as it occurs in Massachusetts before such a warning can be used in practice.

A grower asked whether any work had been done on post-harvest applications of fungicides in order to preserve the fruit quality in storage. FC indicated that he had dipped cranberries in several registered and unregistered fungicides, and none of the fungicides resulted in improved storability of the fruit. The reason for the failure is that the fruit rot fungi infect the berries and are within the fruit, and the fungicides are unable to reach the target organisms. Even systemic fungicides have been ineffective at reaching these fungi. Another question was raised on the use of irradiation to improve long-term storage. Some research was performed at Ocean Spray more than ten years ago, and nothing promising emerged from that work. A thorough examination of different forms of irradiation should probably be revisited, particularly in light of those years when poor keeping quality is forecast.

There are no clear explanations why late water failed so miserably for fruit rot control in 2001. There were numerous instances where growers had to discard the fruit from these beds, even when fungicides were used. A closer inspection of this cultural practice should be performed in the future in order to understand why it was unsuccessful this year and why it works well in other years.

This was a very worthwhile meeting for me because I learned from hearing about growers' experiences. I have always been impressed at the way cranberry growers are never shy about sharing their knowledge with other growers. This was certainly true for this meeting. I thank those of you who attended and welcome any other comments from you or other growers that were unable to attend. Although fruit rot has been with us for 150 years, there is still much we do not know about it, its pathogens, and how to best manage it in our cranberry beds.

**FRANK L. CARUSO**  
**PLANT PATHOLOGY**

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## THE RETURN OF BLACKHEADED FIREWORM

Blackheaded fireworm is making a comeback on an increasing number of Massachusetts beds, largely as a result of reduced inputs. We saw several beds in a shambles owing to fireworm this past season. In the old days, this species was a severe problem and today, it frequently destroys the vines on both abandoned and wild Cape bogs. The caterpillar, which is greenish or grayish with a black head, does all the damage. The adult is a moth, and eggs are flattened yellow disks laid on leaves.

**The problem:** Caterpillars appear at two points in the season (although in warm years we may see a third generation). The first generation originates from overwintering eggs that hatch in spring, usually right as the vines break dormancy. The caterpillars feed from about the middle of May (can be earlier) through the middle of June. The second generation begins when eggs are laid in late June and July—often during bloom, creating a management problem. To add insult to injury, a bad infestation this year may adversely impact next year's crop as well.

**Management:** We have several good management tools, and survey of growers and our experience suggests that the most effective and practical are the insecticides Diazinon and SpinTor; Confirm also works. Of non-insecticidal approaches, mating disruption using sprayable pheromone is registered and a short spring re-flood is possible. Regarding this latter flooding option, in Wisconsin, where infestations have long been high, Dan Mahr suggests that egg hatch be monitored by taking egg-infested uprights and holding them under moist, room conditions. Then a re-flood is recommended immediately after the peak of spring egg hatch (ca. mid-May). In Massachusetts, Henry Franklin recommended a 10-hour flood ca. the first week of June—but, at this point, the vines are actively growing and there are high risks of crop damage. Late water flooding is not effective.

Infestations move rapidly and we've seen control failures where a spray has been delayed. In some cases, the larvae evaded the spray because they had entered the pupal (metamorphosing) stage. If a low infestation of small larvae is detected, it is advisable to monitor vines at least twice a week to better pinpoint the actual degree of infestation.

**Scouting:** Scouting is difficult. We recommend treating if an average of 1-2 caterpillars is found in 25 sweeps.

BUT this can pose a problem because the infestation most often is patchy and averaging over the whole bog leaves the infested section to be destroyed. Spot treatment is desirable here.

In Wisconsin, Dan Mahr reported that the youngest stages of the caterpillar are most susceptible to chemical treatments but they are hard to sample. He found that there is a very poor relationship between the infestation level of young caterpillars on a bed and the number picked up in a sweep net. He feels that visual inspection is far more effective—i.e. counting caterpillars in a 1x1 ft grid at 4 sites on a bed. He also suggests that one search the edges of bogs near ditches to pick up the earliest caterpillar activity—allowing you to be prepared to begin more thorough sampling in the main sections of the bog. When the caterpillars are half-grown or larger, they are more readily picked up in a sweep net and the numbers reflect the actual infestation level—but at this point, Mahr warns that you are beyond the point where the most effective management could have been applied.

Pheromone traps allow timing of treatments for second generation, and among-year catches can give an indication of population levels. The traps should be put out ca. June 1—see the Cranberry Chart Book for up-to-date recommendations.

ANNE AVERILL  
CRANBERRY ENTOMOLOGIST

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Deborah Cannon, Editor

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UMass Extension Mailing Signoff

Carolyn DeMoranville, Acting Director



**UMASS Cranberry Station  
PESTICIDE SAFETY MEETING**

**East Wareham Elks  
April 23<sup>rd</sup>, 2002  
8 AM – 12:15 PM**

The Cranberry Station will be offering a cranberry specific pesticide safety meeting this year. Since more growers are applying their own pesticides, proper pesticide training is critical. Basic concepts of proper personal protective equipment and applying pesticides safely will be covered. Topics will include newly implemented security measures for aerial operators as well as emergency procedures required by fire departments that respond to fires or spills involving pesticides. We will also emphasize protecting water quality. Qualified experts from the industry will give a detailed chemigation demonstration.

4 contact hours will be offered towards pesticide re-certification. **Cost is \$25.**

Pre-registration is required. Complete the sign up form below and return by **April 12<sup>th</sup>** to the Cranberry Station if you wish to attend.

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**Registration Form for Pesticide Safety Meeting  
Tuesday, April 23, 2002  
8:00 AM - 12:15 PM  
Wareham Elks Lodge**

Please register for the meeting using this form.

COMPANY\_\_\_\_\_

CONTACT\_\_\_\_\_

PHONE\_\_\_\_\_

NAMES OF ATTENDEES\_\_\_\_\_

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Return complete form with payment by **April 12<sup>th</sup>, 2002**, include check made out to **UMASS, \$25 per person.**

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

Attach additional sheets as necessary.

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## STATION TIDBITS

### OPEN HOUSE DAYS!

Many Cranberry Growers are exploring alternative agricultural enterprises. Open House Days is an opportunity to visit and explore wholesale greenhouse operations in Massachusetts. The enclosed brochure outlines the two day event.

The Massachusetts Flower Growers' Association and UMass Floriculture Extension Program organized Open House Days, scheduled for April 24, 2002, in Eastern Mass. and April 25, 2002, in Western Mass.

If you have any questions you can call Paul Lopes at the Cranberry Station, 508-295-2212 x 24.

- Proceedings from the Third Organic Cranberry Growing Conference, May 2001, are available at the Cranberry Station.
- Nitrogen for Bearing Cranberries in North America, by Carolyn DeMoranville is available at the Cranberry Station for \$4.50.
- Please check out our Web Site:  
<http://www.umass.edu/umext/programs/agro/cranberries>
- Pesticide exam package now available on the web:  
<http://www.massdfa.org/pesticide/htm>
- Cranberry Insects of the Northeast, by Anne Averill and Martha Sylvia is available at the Cranberry Station for \$25.00.
- **MISSING!!!** The Station's 2 inch black notebook of historical pictures is missing from the Library. Anyone with information please call Deb at 295-2212 ext. 10.

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