DISEASES DURING THE 2000 GROWING SEASON

During the past two weeks, I have visited numerous beds that have had Phytophthora root rot in the recent or distant past. My impression is that the disease is most definitely still present in all these beds and has increased in its severity in several beds. This is attributable to several factors: puddling of the poorly drained areas due to rainfall or running the sprinklers for frost protection, drought stress in 1999 that weakened the plants and predisposed the roots to infection by the fungus, and reduced attention to disease management. The latter is a trap many growers will fall into during this and future growing season(s). I realize that financially things are very tough at the present time. For the management of root rot, drainage improvement and Ridomil application are extremely important. Costs cut in this area may result in a bed with numerous dead spots developing during the next few growing seasons. The remainder of the bed will also be unproductive as well. You will not be able to bring this bed back “on line” again very quickly if it is one of your reduced management beds. You will have to live with your cutbacks for many years to follow. In fact, the incidence of the disease may spiral upward for several of your adjacent beds if the water used for this reduced management bed is also used by the other beds. Inoculum will be spread to these other beds very easily. If you have any questions, please call me.

Of course, we are also interested in increased incidence of other cranberry diseases or the presence of other diseases we are not accustomed to seeing very often. Reduced management may be responsible for this occurring as well.

FLOODS FOR CROP DESTRUCTION

No final word has come from Washington, DC on a cranberry marketing order or a crop set-aside for the 2000 growing season. It would have been nice had this process started long before it actually began. Decisions need to be made NOW as far as whether a particular bed will be allowed to produce a marketable crop or not this season. Some growers have already chosen beds to be taken out of commission for this year and have allowed frost to injure the buds or have mowed these beds. Some beds that experienced severe winter injury have already taken care of things by themselves. A flood during bloom is another option for eliminating a crop.

To destroy the crop, a bed should be flooded at 80% out-of-bloom for one week. This recommendation is based on the experiences of growers in Falmouth and Mashpee who had to destroy their crop due to EDB contamination in 1998 and 1999. If the bed is flooded during a particularly hot period, the duration of the flood should be reduced to five days. As usual, we are always interested in which techniques were successful and which techniques failed.

If you have a bed that experienced significant winter injury but are considering a flood to destroy the crop on the rest of the uninjured uprights in the bed, the flood will probably kill all regrowth on the winter-injured uprights. Do not flood in such a cranberry bed. Call us if you have any questions or concerns.

FRANK L. CARUSO
PLANT PATHOLOGY
**STATION TIDBITS**

- Handouts are available for pick up for anyone who registered for the Cranberry Production Training (Sheraton Inn, Plymouth) and was unable to attend.

- Handouts for the Research Update Meeting (Sea Crest, Falmouth) are available on the Web or at the Station.

- Please check out our New Web Site: http://www.umass.edu/umext/programs/agro/cranberries

- Keeping Quality Reports will be available on the web as soon as all weather data is available.

- Pesticide exam package now available on the web: http://www.massdfa.org/pesticide/htm

- Cranberry Insects of the Northeast, a new publication by Anne Averill and Martha Sylvia is available at the Cranberry Station for $28.00.

**WORKER PROTECTION TRAININGS**

**CRANBERRY STATION LIBRARY**

**JUNE 28  2-4 PM**

Worker Protection Trainings for cranberry workers in the Handler category will be offered on June 28, anyone working on the bog must be trained 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 Debbie (ext. 10) or Marty (ext. 20) to sign up.

**TWILIGHT BOGSIDE WORKSHOPS**

**5 -7 PM**

This season, we will be hosting twilight bogside workshops in June and July. These workshops will replace the old ‘open-lab’ morning workshops held in previous years but will cover similar topics and current happenings. We hope that by having the workshops in the early evening, more of you will be able to participate. A list of topics and workshop dates follows. In addition to those speakers scheduled, all of the Station Faculty will make an effort to attend. Let us know if there are other topics you wish us to address. We are always open to suggestions.

**Workshop 2**  **Tues., June 13**  
**Cranberry Experiment Station**  
**5:00 to 7:00 PM**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter</th>
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<tr>
<td>Diseases</td>
<td>Frank Caruso</td>
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<tr>
<td>Fertilizers</td>
<td>C. DeMoranville</td>
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<tr>
<td>Cranberry fruitworm</td>
<td>Anne Averill</td>
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**Workshop 3**  **Wed., July 5**  
**rain date July 6**  
**5:00 to 7:00 PM Location - TBA**

<table>
<thead>
<tr>
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<tr>
<td>Weeds - post emerg.</td>
<td>Thomas Bewick</td>
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<tr>
<td>Fall floods</td>
<td>C. DeMoranville</td>
</tr>
<tr>
<td>Current topics</td>
<td>TBA</td>
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**IPM PHONE MESSAGE**

The IPM Phone Message (ext. 61) is posting scouting information. The Phone Message is available 24 hours a day, 7 days a week. The message will also be posted on the Web page. This year, the messages will be much shorter than in past years. The content will focus solely on which pests are out and any specific problems. Additional IPM information (such as management and treatment options, pest life cycles, etc.) will be published in future issues of the Cranberry Station Newsletters.
BROWN SPANWORM
Ematurga amitaria

PEST PROFILE

This insect can appear in high numbers on some bogs year. It has a wide host range that includes such plants as chokeberry (Pyrus melanocarpa), dewberry (Rubus spp.), highbush blueberry (Vaccinium corymbosum), sheep laurel (Kalmia angustifolia), leatherleaf (Chameadaphne calyculata), and other plants, many of which are common cranberry weeds.

DAMAGE. Infestations of brown spanworm tend to be very patchy. Larvae will feed on the leaves and eat through the flower buds, leaving buds with holes. Larvae feed on and may cut off flower pods and flowers as well as developing fruit. They may eat the majority of the inner part of the fruit. Late season damage to the vines may inhibit bud development and reduce the following year's crop. In severe infestations, more than one year may be needed for the vines to recover from the feeding damage.

EGGS. The eggs are in irregular clusters containing up to 20 eggs. They are laid on litter on the bog floor. The elliptical eggs are 1/27" long and are light green when first hatched, but turn yellow as they mature. Hatch usually occurs just prior to bloom.

LARVAE. Larvae are light brown with a pale white stripe running along the length of each side and another along the middle of the back. The middle stripe may become less apparent as the worm matures. When newly emerged, the larvae resemble tiny brown threads. They have only 2 pairs of posterior legs as compared to the four pairs found in the cutworms. Mature larvae are grayish brown and slightly over 1" long. Larvae mature in late July and early August, then change into pupae to overwinter on the bog floor.

ADULTS. Adults emerge in late May to June, but can be active into July. The female moth has a wingspan of nearly 1 inch; the male spreads somewhat more than 1 inch. The female has front wings that are light brown with dark brown stripes that run parallel with the wing span. These markings can be somewhat obscure and variable. The hindwings and upper surfaces of the body are yellow with liberal sprinklings of brown. The front wings of the male are coffee brown with two or three indefinite dark brown markings running from front to back. The hind wings are mostly deep yellow above with strong general markings of brown. Underneath, they are deep yellow with a general sprinkling of brown.

The body, head, and legs of the male are yellow, but the back of the female is dingy brown. Males fly freely and are observable during daytime often swarming over historically infested areas of the bog. The female, heavy with eggs, is an extremely poor flyer. Females can lay as many as 300 eggs in their lifetime.

PUPA. Brown spanworm overwinters as a pupa, settled amongst the leaf litter on the bog floor. The pupae are brown and about 3/8" in length. This life stage is very resistant to injury by flooding.

MANAGEMENT. The action threshold for brown spanworms is an average of 18 larvae per sweep set. Moths can be seen on the bog in early June and July. Begin looking for larvae within a few weeks after noticing the moths. Young larvae tend to hang on the rim of the sweep net. Early instars may be particularly hard to see. In severe infestations, sweep counts can exceed 100 larvae. Brown spanworm can be very patchy. If you have a history of brown spanworm (or even if you are not sure), sweep different parts of the bog each time you go out to minimize the chance that you may miss an infestation. Small localized infestations can be spot-treated with insecticides if desired.

Several insecticides are available to manage brown spanworm populations including Bt products, Confirm, Orthene, Pyrenone, and Lorsban. Due to their small body size, brown spanworm can be managed quite well with Bt products. Read page 28 of the 2000 Chart Book or consult with an entomologist or IPM practitioner for specific recommendations.

Franklin noted that early June refloods can adversely affect the development of infestations by interfering with egglaying, if flooding is practiced regularly. 36-hour floods when moths reach peak flight may also help manage the population. Flooding against the larvae is not practical because the infestation occurs late in the season and coincides with bloom.

HILARY SANDLER
CRANBERRY IPM SPECIALIST
Cranberry Fruitworm Management

The larvae of cranberry fruitworm (Acrobasis vaccinii) are incredibly destructive, more so than any other pest of cranberries in MA (Averill and Sylvia, 2000). The host range is very narrow, encompassing only two genera, Vaccinium and Gaylussacia (Neunzig, 1986). This insect has been detected in blueberry plants, to a limited extent in Massachusetts and to a greater extent in New Jersey. The larvae feed directly on the cranberry fruit and can cause significant economic loss.

Current cranberry fruitworm (CFW) management is targeted to control the eggs only. Do not spray in an attempt to control the larvae. The first spray should be carefully timed based on the phenology (% out-of-bloom; % OOB) of the cranberry plant. This is an estimate of how many flowers have lost their petals and have become fruit. Moths may be present and egg-laying may continue through August.

**Sampling to Determine % Out-of-Bloom.** Sample at least one area per acre; more is preferable if possible. Randomly select the site. For example, toss an object onto the vines and sample there, or walk a predetermined number of steps and start at the tip of your shoe. Try to eliminate any bias by not looking down on the vines to select your site. Your eye will be naturally drawn to either flowering or nonflowering areas.

Randomly pick 10 flowering uprights. Again, predetermined how you will do this. For example, select the first 10 uprights in a straight line at the tip of your right foot. This will help minimize sampling bias. Gently shake the vines to remove any loose petals. This step helps reveal any pinheads that have already set, but where the petals just have not fallen off yet.

To correctly time your spray, you should sample the %OOB every couple of days as pinheads begin to set. Minimally, you should calculate %OOB on at least two sampling dates; 3 times is preferable if you can. You must take one count PRIOR to and one count AFTER, so you can accurately estimate when 50% OOB occurred.

**Calculations.** Count the total number of unopened blossoms (pods), flowers, pinheads and fruit from your 10 randomly selected uprights. Divide the total number of set fruit (pinheads and fruit) by the total number of all fruit and flower parts (pods, blossoms, pinheads, and fruit) counted. This number, multiplied by 100, is your % OOB.

\[
\text{Pinheads + Fruit} \times 100 \\
\text{Pinheads + Fruit + Pods + Flowers}
\]

For example, on June 22, you have 32% OOB. On July 2, you have 61% OOB. The number of days that have passed is 10. The amount of bloom change is 29%. Divide 29 by 10 to get the change in %OOB per day (~3% in this case). Back-calculate (i.e., starting with July 2, subtract 3% per day and count backward) to determine when 50% OOB occurred. In this example, the date would be June 28, four days prior to your second sampling.

**Management Options.** Three options presently exist for managing CFW: standard practice, scouting practice, and late water practice.

*Standard Practice.* The first spray should be applied 7-9 days after 50% OOB for Early Blacks and Howes; 5-7 days for Ben Lears; and 3-5 days for Stevens. The timing of the first spray is often very critical for obtaining good CFW management. Ten days after the first spray, a second spray is applied. One week after the second treatment, begin monitoring for eggs (see below) and treat as needed.

*Scouting Practice.* Apply the first spray [time interval dependent on variety] after 50% OOB. Five days after treatment, begin monitoring for eggs (see below) and treat as needed.

*Late Water Practice.* Late water is an excellent tool for managing CFW populations (Averill et al., 1997). Recent research indicated that CFW moths are highly mobile and can easily move around from site to site. Thus, it is highly recommended to inspect fruit even when using late water.
Begin monitoring berries for eggs as fruits set. Late water floods may effectively reduce CFW pressure. It may be possible to eliminate sprays, but berries must be monitored throughout the fruitworm season as moths are very mobile and may move in from external sources.

**Monitoring For Eggs.** Start monitoring at the appropriate time depending on the management option you have chosen. Randomly select 50 berries per acre. Pick a minimum of 200 berries per treatable piece. Pick no more than one berry from any single upright. Pick all sizes of berries, from pinheads up to full-sized fruit. Do not sample all berries from one small area; walk across the bog to minimize sampling bias. Every pump system should be scouted as a separate piece.

Inspect the calyx end (opposite the stem end) of the berry for viable, unhatched eggs. Use a magnifier when inspecting fruit (10X hand lens as a minimum; a microscope is preferable). Eggs may be laid under the fringes of the calyx, so be sure to inspect carefully. All eggs that you see in the calyx end may not be viable. Eggs can also be hatched, parasitized, or dead. Only unhatched viable eggs count in determining whether a spray is triggered.

Repeat sampling every 3-4 days until August 15. If viable unhatched egg numbers are above the threshold and trigger a spray, apply as soon as possible. All research indicates that it is not necessary to combine different insecticides to obtain effective control. After an application, you can wait about 5 days before returning to the 3-4 day sampling schedule.

Follow the guidelines below to determine if an additional spray is warranted. Treat and/or repeat sampling as described above. If CFW pressure is low throughout fruit set, it may be safe to relax the interval between sampling dates.

### ACTION THRESHOLDS GUIDELINES FOR MANAGING CRANBERRY FRUITWORM

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<thead>
<tr>
<th># of fruit checked</th>
<th># viable eggs to trigger a spray</th>
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<tr>
<td>0-5</td>
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<td>5-7</td>
<td>2</td>
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<td>7-9</td>
<td>3</td>
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<td>9-11</td>
<td>4</td>
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<td>11-13</td>
<td>5</td>
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<tr>
<td>13-15</td>
<td>6</td>
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<tr>
<td>each 2 A</td>
<td>add 100 berries</td>
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<tr>
<td></td>
<td>add 1 egg</td>
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**References**


**HILARY SANDLER**

**CRANBERRY IPM SPECIALIST**

**PHONE EXTENSIONS**

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<th>OFFICE</th>
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<tr>
<td>DEB CANNON</td>
<td>PHIL BAILEY</td>
<td>BRUCE LAMPINEN</td>
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<td>YVONNE FOOTE</td>
<td>RICK RAMSEY</td>
<td>LAB</td>
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<tr>
<td>MARTY SYLVIA</td>
<td>HILARY SANDLER</td>
<td>FRANK CARUSO</td>
</tr>
<tr>
<td>ANNE AVERILL</td>
<td>JOEY MASON</td>
<td>JANE MIKA</td>
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<th>WEED SPECIALIST</th>
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<th>FLORICULTURIST</th>
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<tr>
<td>TOM BEWICK</td>
<td>CAROLYN DEMORANVILLE</td>
<td>PAUL LOPES</td>
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<tr>
<td>BOB DEVLIN</td>
<td>DAN SCHUMAKER</td>
<td>PAUL LOPES</td>
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University of Massachusetts, College of Food and Natural Resources, United States Department of Agriculture, and Massachusetts counties cooperating. UMass Extension offers equal opportunity in programs and employment.
FINAL KEEPING QUALITY FORECAST

Weather data through June 1 show a total of 2 points of a possible 16 points that favor VERY POOR keeping quality for the 2000 Massachusetts cranberry crop. Based on the point allotment system, two points were attained only from the values for March sunshine. All of the other components in the system went the other way.

Consequently, this will not be a growing season to cut corners on fungicide application numbers or fungicide rates. Healthy vines should be maintained as best as one’s management scheme allows through rainy periods or intervals of inadequate precipitation. If you have any questions on fruit rot management, please call me. This will be a growing season with many difficult decisions to make, and this forecast makes some of these decisions even harder.

FRANK L. CARUSO
PLANT PATHOLOGY