A GOOD YEAR TO TRY A FALL FLOOD

Now that harvest is just around the corner it’s time again to think about fall floods. We have been studying the effects of fall floods for the past two years and are beginning to get ready for the third season of observations. The past two years have focused on the impact of a fall flood on dewberry (Rubus hispidus) populations, Cranberry Fruitworm (CFW) hibernacula survival, Phytophthora incidence and severity, and cranberry fruit rot disease. These experiments will continue again this year.

We present here some of the data collected that show the effect of fall floods on CFW hibernacula survival and dewberry populations. The table below shows data collected from bogs flooded for 3 or 4 weeks in the fall. All floods were established by holding the harvest flood for the time indicated. The flood length was determined beginning with the date that the vines were fully submerged during harvest.

<table>
<thead>
<tr>
<th>Flood Start Date</th>
<th>Flood Length</th>
<th>CFW Mortality</th>
<th>Change in dewberry crowns</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/8/98</td>
<td>4 weeks</td>
<td>100% (80% in control)</td>
<td>27% decrease (3% increase in control)</td>
</tr>
<tr>
<td>10/8/98</td>
<td>4 weeks</td>
<td>100% (80% in control)</td>
<td>31% decrease (3% increase in control)</td>
</tr>
<tr>
<td>9/26/99</td>
<td>3 weeks</td>
<td>100% (88% in control)</td>
<td>7% increase (3% decrease in control)</td>
</tr>
<tr>
<td>10/1/99</td>
<td>3 weeks</td>
<td>100% (no control)</td>
<td>41% decrease (no control)</td>
</tr>
<tr>
<td>10/3/99</td>
<td>3 weeks</td>
<td>100% (no control)</td>
<td>2% increase (35% decrease in control)</td>
</tr>
</tbody>
</table>

These data, and previous grower observations, suggest that a 4 week flood may be necessary for control of dewberry populations. On the other hand, CFW hibernacula seemed to be affected in all of our study bogs. One hundred percent mortality was achieved in every instance where CFW hibernacula were buried on bogs that received a flood of either 3 or 4 weeks.

Previous observations indicated that starting the flood early (September 20-25) was a key to good dewberry control. Franklin also recommended early fall floods for the control of cranberry girdler and CFW. However, we did get some control of dewberry with a four week flood starting as late as early October. CFW was controlled by 3 or 4 week floods starting as late as October 8. At this time we continue to recommend starting as early as possible if flooding for dewberry control. But if you are looking to decrease your fruitworm populations, holding the harvest flood, even when harvesting later, should be beneficial. Early floods are especially suited to early varieties or beds where a crop-destruct flood was applied this summer.

Our experience, and that of several growers, is that the fall flood has no impact on growth or next years crop, making it a more attractive pest suppression option than late water. It is important to remove the flood by early November at the latest to allow the vines to become dormant prior to winter. If an unusual cold snap occurs soon after the fall flood, the vines may be susceptible to winter injury.

This year we are hoping to expand our study by looking at some new pest species. Besides dewberry, CFW, and diseases, we are hoping to see whether or not fall flooding has an effect on hoplia grubs, oriental beetle grubs, and cranberry girdler. So far we have been unable to locate bogs that have these pests and where growers are able and willing to use a fall flood this year. If you have a bog with any of these three pest species and are willing to participate in this study please let us know! Call Dan at x27 or Carolyn at x25.

Dan Shumaker
Carolyn DeMoranville
WARM WEATHER COMING?

Bill Coli of the UMass Entomology Department forwarded me an email message from Jim Van Kirk at Cornell University where there is a first-class meteorology center. This is what he had to say:

“This spate of warm weather we’re in is no fluke. Nor is it temporary. Apparently a major high that has hung over the Rockies all summer is slowly flattening out, and sending warm weather East. We’re apt to see a WARM SEPTEMBER, warm both in day and night temperatures. We may see temperatures 3-5 degrees above normal throughout much of the month. No record heat wave, but things should still be warm. It will also be dry, with only occasional showers through this period.”

This forecast has implications for cranberry growers, if indeed, it does actually come to pass. With a very poor keeping quality forecast for this year’s crop, a warm September is the last thing we need. I know many growers are thinking about harvesting earlier than usual. This may be a viable reason for doing just that. With a warm September, only bad things can happen as far as fruit rot goes. Of course, the harvesting date is reliant on color development. I have seen some amazingly good color in Early Blacks I have visited, some of the best color in my 16 growing seasons.

A hurricane or tropical storm could change the entire weather prediction. At this point (as I write this), however, the tropics are mysteriously silent. Only time will tell what plays out.

WHAT TO DO WITH THOSE EXTRA BERRIES?

Those of you that did not flood up certain beds during bloom to destroy the forming berries will have berries that cannot be delivered to the handler and must be dealt with somehow. Some growers have asked me about the feasibility of leaving the berries unharvested, allowing the frost to “kill” them, and subsequently rolling or crushing the berries in the fall or late winter. After doing some homework on the issue, I cannot recommend this practice for the following reasons. You will probably not be saving anything in terms of time and labor because of the crushing process and the removal of the trash thereafter. You will need to dispose of this trash which will still present a problem. These berries will serve as a source of insect infestation and pathogen inoculum for the next growing season. The biggest negative, however, will be the sheer volume of seeds left behind through crushing the berries. In discussions with Dr. Nick Vorsa at Rutgers, he indicated that a 200 barrel/acre crop will leave 86,000,000 seeds per acre behind. These seeds will not be totally removed by a trash flood and a significant number will be left behind. Over several growing seasons, these seeds will germinate into our typical mongrel vines that can be vigorous in vegetative growth, overtaking the cultivar that is planted for production in that particular bed. As you know, these vegetative mongrels often produce few berries. Because of selfing between cranberry plants in the bed, some of the offspring will produce berries of different characteristics, and many of these mongrel berries may be prone to rot or fruitworm or be late in coloring, etc. If you started with a uniform planting of a certain cultivar, you will no longer have this characteristic in the bed.

Unfortunately, I cannot offer you an alternative for disposal of these extra berries after harvest. Jeff LaFleur of the CCCGA is exploring every possibility as we inch closer to harvest of this year’s crop.
The Frost Warning Service is provided in the spring and fall to all members of the Cape Cod Cranberry Growers’ Association. Vine or fruit tolerance forecasts are based on conditions at State Bog in East Wareham, MA.

When should you protect the fruit? To make this decision, you must know the tolerance of the fruit and the temperature on the bog. If you are not familiar with assessing cold hardiness based on fruit or bud development, please purchase the UMass Extension Frost Fact Sheet written by Carolyn DeMoranville. It has excellent photographs depicting the various stages of cold tolerances (for fruit in the fall and buds in the spring). It is important to run sprinklers for frost protection only when necessary. This helps to conserve water for harvest and other activities.

How should I protect fruit? The industry standard is to use sprinkler irrigation systems to protect fruit, but shallow floods may also be used on occasion. Sprinklers should be started PRIOR to reaching the critical temperature in case there are system failures and to insure adequate protection is in place when the critical temperature is reached. It is also important to keep your systems running until the temperature is above the tolerance. In the fall, this may be well after dawn.

OTHER TIPS:

• As always, know your own bog. You should know which bogs tend to run warmer or cooler on a typical frost night. Place your thermometers in the coldest part(s) of your bog(s).

• Minimum bog temperatures are based on the frost formula and may run warmer or cooler than your bog. To get the most accurate information, use your own thermometers and compare the temperature of your bogs with the formula minimum to determine your own bog minimum. Do not rely on temperatures taken from other bogs or off-bog locations!!

• Be sure all sensors are working properly and that thermometers are properly calibrated. You should be using at least two thermometers that have been compared to each other. Thermometers should be placed at the level of the vine tips.

• Temperatures will fall much below the computed minimum in October after two or more cold nights in succession if other factors, such as clear skies and calm conditions, are present.

• Immature berries in the white color stage will tolerate 28°F. Berries overtopped by vines are somewhat protected and will tolerate lower temperatures, even if they are not well-colored. Small berries freeze more easily than large berries. Berries lying on the sand are not easily frozen.

• Tolerance charts are based on color development since different varieties will arrive at a specific tolerance on different dates. Recent research indicates that berries may be able to tolerate lower temperatures than listed below, but this is still unpredictable. Thus, conservative tolerances are given below.

  * Dark-red Early Black berries will tolerate a temperature of 23°F, but absolutely no lower.
  * Ben Lears will tolerate 24°F at full color maturity.
  * Stevens will tolerate 22°F at full color maturity.
  * Fully-ripe Howes during late October will tolerate 20°F, but will show a small percentage of injured berries at 18°F.
  * Howes and Stevens lose tolerance when they become over-ripe.

• In MA, there has never been a report of serious frost injury to cranberry buds in the fall, except in the case of bogs that were flooded until mid-July for pest control purposes. On such bogs, bud development is delayed, and buds should be protected in the fall despite the lack of crop to protect.

• Whenever the frost advisory refers to uncertainties, such as ‘if the winds die out’ or ‘if it remains clear’, growers are cautioned to remain alerted because these unsettled conditions could result in frost damage.

• Subtracting 20°F from the US Weather Bureau’s forecast of minimum temperature for Boston indicates a possible minimum bog temperature.

• The East Wareham dew point at 7 PM EST is an important indicator of minimum bog temperature.
• Thermometers should be set at vine tips. This is where the lowest temperatures will occur. Use these temperatures for start-up decisions.

• Water in the sprinkler lines can freeze at 25°F, so keep your lines open on cold nights by starting up and running on idle.

• Do not turn your sprinklers off too soon. Always monitor the temperature outside the influence of the sprinklers before turning them off.

• In the fall, the lowest temperature usually occurs in the early part of the night. This can be as early as dusk in the late fall.

• Shallow floods can be applied to protect bogs where the sprinkler heads have been removed for harvest.

REFERENCES

HILARY SANDLER, IPM SPECIALIST

RED LEAF SPOT
Within the past two weeks, I have observed red leaf spot, caused by the fungus Exobasidium vaccinii, in Ben Lear and Early Black beds. This disease is present every growing season and tends to be confined to those areas of a bed where the vines are lush; Ben Lear is particularly susceptible (what else is new??!). It can be found more generally in the vines this season. The wet and humid weather during the past month has been especially conducive for infections by the spores. Extensive spotting of individual leaves will result in defoliation, but the vines will not be killed and there will not be any spotting on the berries. There is no reason to spray fungicides, as the disease will disappear as quickly as it arrived, and there will not be any long-term deleterious effects on the vines. There are spectacular photos of the symptoms in the Compendium.

FRANK L CARUSO, CRANBERRY PATHOLOGY