

# CRANBERRY STATION NEWSLETTER

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## News from the Entomology Lab

By Anne Averill and Marty Sylvia

### BE ALERT FOR PUTNAM SCALE OUTBREAKS NOW

**Management:** We recommend scouting for Putnam scale now. Outbreaks and vine injury were apparent on many acres this spring and scale was successfully managed in early June. However, new scale spots have appeared on other bogs. During bloom, many small areas that looked burned and had fewer flowers turned out to be scale spots. Now, the affected vines appear off color, and scales can sometimes be found on the leaves and berries. A vulnerable population of immatures (crawlers) emerge once again in August from under the protective cover of the female and can be managed with a well-timed spray.



*Putnam scale outbreak*

There is this second management window in early to mid August. It would be wise to be alert for possible scale spots now. We have seen unbelievable levels of scale on several beds in the past two weeks.

The scale insect is tiny, and its waxy cover adheres to the upright as a round greyish half shell. Scales prefer the old wood of the vine and blend in with the bark, requiring use of a 10x hand lens to see. In established infestations, the old wood can be encrusted with scales (see image, right).



*Old wood encrusted with scales.*

***We know diazinon is effective. The spray must be aimed at the crawlers.*** Diazinon has a 7-day pre-harvest interval. This is a harsh pesticide choice, used for confirmed problems. Planning for late water next growing season is an excellent alternative.

***Call us to drop off a sample for Putnam scale verification (Marty 508-265-6921).*** Scan for discrete dying/browning areas of vine and cut some growing uprights right around that area (select uprights with green leaves or off-color leaves, this year's growth). Cut upright at base, as scales prefer the old wood of the vine. Sample from as many dying areas as you can, since other problems may also be at work on the bed.

***Note that even fairly young plantings*** of hybrids such as Crimson Queen may be affected. Sites treated years earlier may also flare up. Infestations may be confused with golden casebearer beetle injury or *Phytophthora* root rot.

**Scales on berries and leaves:** Right now, in intense infestations, some immatures have established on berries and are easier to see, particularly on larger berries where the scale's feeding causes a bright red circlet on the berry surface. Fruit may be dimpled.





**Identification:** Scale insects are unlike any other you have seen. The immobile female is a legless yellow blob beneath a round wax covering that adheres to the plant (below, left). Eggs are laid under the scale cover and the immature crawler stage makes its way from under the cover. The crawler is the dispersal stage for the species. The crawlers are bright yellow and are less than a pinhead in size (below, right).



## News from the IPM/Weed Lab

By Hilary Sandler and Katie Ghantous

### QUICK UPDATE ON AQUATIC HERBICIDES

We have been fielding calls from growers who share or access public water supplies for use on their farms. Towns are applying aquatic herbicides to manage aquatic plants that are interfering with recreational activities such as swimming and boating. Some of the herbicides require a multi-day waiting period between application of the herbicide and the application of treated water for irrigating food crops. Since applications are typically made in June-July, this waiting period can present serious challenges for growers and their plants, especially when the temperatures are high. The most common herbicides utilized by Towns, housing associations or other groups are currently Sonar and Clipper.



*Algae near a junction box*

We presented information about aquatic herbicides at our June 2022 Bogside workshop, and we are preparing a fact sheet to discuss best-use recommendations and precautions to exercise with aquatic herbicides. A brief review of the products reviewed at the Bogside are discussed below.

**Sonar** (fluridone) has several formulations including SonarOne (granular) and Solar Genesis (liquid). They carry a Caution and Danger label, respectively. Cranberries or other small fruits are not specifically on the label but with reference to “established tree crops” (cranberries’ closest relative mentioned on the label), the label calls for a 7 to 14-day waiting period to irrigate after treatment. Fanwort and milfoil are typically the target species, and the application rate is usually less than 10 ppb.

The label does state that if the concentration of the herbicide falls below 10 ppb, there are no irrigation precautions for irrigating established fruit trees.

Data from a North Carolina lab indicated that cranberries do not show symptoms until treated with concentrations of Sonar at 50 ppb. Although we do not have direct field data, indications would be that the water should be okay to apply to cranberries once the water concentration is <10 ppb. SePro (the registrant) offers a FasTest to determine the herbicide concentration in water, but it can take several days to get the results, so if you submit for a FasTest, be sure to ask for expedited analysis. It is also possible that the town or applicator may be doing their own water monitoring and may be willing to share that information upon request.



This summer, a town put out a rate of 7 ppb of SonarOne and Sonar Genesis to control milfoil and fanwort. In this case, there was no restriction on using water for irrigation since the concentration was below the 10 ppb threshold. The concern here for the nearby grower was that they had just put in new cranberry vines. We do not know how new vines would respond to or be affected by Sonar, but we have set up small trials this summer to collect preliminary data.

**Clipper** (flumioxazin) is a granular aquatic herbicide that carries a Caution label. It is a fast-acting contact herbicide in Group 14. The label specifies a 5-day waiting period for irrigating food crops after herbicide application. This herbicide could be applied multiple times during the season for aquatic weed control; concentrations of 200-400 ppb per application are typical. We do not have any data for Clipper and its impact on cranberries but work with this active ingredient has shown that cranberry vines can tolerate it when applied prior to the breaking of dormancy. Application in the summer with actively growing cranberry vines with fruit present is an entirely different situation.



Although these products are not registered for use directly on cranberry, these compounds have either an “*indirect or inadvertent residue*” tolerance or other tolerance, which allows for legal residues on fruit that received exposure to the herbicide from use of irrigation water containing following applications to aquatic sites. If you know or anticipate that your irrigation supply source will be treated with an aquatic herbicide, you should absolutely reach out to your handler to notify them so that you can safely deliver your fruit at the end of the season. It is not clear whether detectable residues will be found on fruit from exposure to treated irrigation water, so while these residues are permitted in the US, the impact to fruit destined for foreign markets is unknown.



We are getting clarification about the use of **Cutrine Plus** on cranberry bogs for algae control, especially in late water floods. This has been a long-time practice in MA. Interpretation of the language has varied over the years as the label is unclear about whether one can (should) apply it to a flooded cranberry bed or not. Due to this lack of clarity, we removed our recommendation to use Cutrine Plus from the 2021-2023 Chart Book. Following discussions at the June Bogside, we have posed the question to MDAR and will let you know when we receive their interpretation of the label language.

## HERBICIDE CLARIFICATIONS

**QuinStar and NIS.** Crop oil is the best and recommended adjuvant to use with QuinStar. The registrant informed us that efficacy will be lost if an NIS or any other type of adjuvant is used.

**Use of triclopyr or Crossbow on areas to be renovated.** We have been fielding questions about whether or not one can use Crossbow or triclopyr to kill vines in preparation for renovation. The confusion likely stems between label language of “noncrop area” versus “nonproducing area”. It has been our position that these products are for off-bog use only and the Chart Book supports these recommendations; the label specifies “noncrop” usage only. A renovated bog is still considered a “crop area”, although it may be in a nonproducing phase, and thus the use is prohibited. MDAR supports the position that use of these “noncrop” products is not allowed on a cranberry bog, even if a crop will not be produced for 12 months or longer.

Please reach out if you have any questions or concerns. Hilary at 413-800-6531 and [hsandler@umass.edu](mailto:hsandler@umass.edu) or Katie [kghantou@umass.edu](mailto:kghantou@umass.edu).



*Sun scald on Mullica Queen*

## News from the Plant Nutrition/ Physiology Lab

By Peter Jeranyama

### MANAGING SUN SCALD ON LARGE FRUITED CULTIVARS

**'Classic' Scald: the New Jersey model.** Temperature and sunlight, along with soil and air moisture can play a role in the development of heat scald. Scald is not caused by damage from water droplets left on the fruit following irrigation during daylight hours.

Transpiration is a plant process used to maintain hydration and internal temperature in a plant as water is moved from the soil, through the roots and shoots and out through pores (stomata) in the leaves. When this process occurs, moisture is depleted from the soil. Plants can control the rate of transpiration by using the adjacent guard cells to open the leaf stomata to let water out. The water lost from the leaf surface cools the

plant through evaporative cooling. The stomata are regulated by two major factors. These factors are (i) boundary layer resistance (weather factors) and (ii) leaf stomatal resistance (plant factors).

#### **Scald Forecast Checklist for New Jersey**

*adapted from Croft (1992)*

##### *Meteorological Predictors:*

- Dew points of 55°F or less during midday hours.
- High ambient air temperatures of 80°F or more (sheltered).
- Clear or scattered sky conditions.
- Recent development of high pressure moving in behind a low, often associated with a strong storm, that is pulling away to the north.

##### *Contributing factors:*

- Low moisture in the bog soil.
- Wind speed of more than 11 mph.
- No rainfall or irrigation in the past 48 hours.

The boundary layer of resistance is the layer of undisturbed air next to the leaf surface through which water vapor must diffuse, after it exits the stomata, to reach the turbulent air of the atmosphere. If the vapor exiting the stomata cannot dissipate, evaporative cooling will not occur. The thickness of the boundary layer is determined by wind speed and leaf size. If the boundary layer is not impeding transpiration, the plant can cool itself if water in the soil is adequate. However, the layer of undisturbed air on the surface of the leaf may become so thick that it becomes the primary deterrent to water vapor loss from the leaf. Increasing stomatal opening under conditions with a thickened boundary layer has very little effect of the transpiration rate. Therefore, other mechanisms of cooling, such as in-day sprinkling, can be valuable.

The behavior of the guard cells in regulating the stomatal openings is very erratic in cranberry and in general it appears that stomatal control in cranberry adjusts poorly to changing light, temperature, and moisture conditions. As a result, cranberry has poor control over its transpiration process and additional cooling from in-day sprinkling may be especially useful.

***Typical conditions for high-temperature scald are sunny and still days with high humidity and air temperatures greater than 85°F.*** Such days are also associated with a thick boundary layer, decreasing the ability for the plant to cool the fruit. An 85°F air temperature translates to approximately 105°F on the bog measured with an exposed frost monitoring temperature probe. Anecdotal evidence has shown that starting in-day sprinkling before 105°F based on an exposed sensor might be too soon. From a plant disease standpoint, keep in mind that most fungi prefer hot and humid environmental conditions so beware of setting your temperature threshold too low, especially in bogs that have not been sanded or pruned recently and may have a thick canopy. Otherwise, triggering cooling off periods too frequently may result in the perfect conditions for fruit rot development.

When scald conditions like high heat, high relative humidity, and still air occur, the plant canopy becomes important in providing shade to the growing fruit. Consequently, cultivars that produce large fruits or a heavy fruit load (newer hybrids) and beds with a thin canopy (new plantings) pose more risk to scald in these conditions. We do not have any evidence showing that the small-fruited cultivars such as Early Black and Howes are prone to scald with the exception of 'classic' low humidity condition.

Some growers have used pre-dawn irrigation in anticipation of a high heat day or raised the water in the ditches hoping that the plant's transpirational pull will be adequate to protect the maturing fruit from sun scald. Although berries have stomata, they are few and are found only around the calyx of the fruit. This further justifies the need for brief intermittent sprinkling to help the cooling process.

**Here is some guidance on keeping your vines and fruit cooler. When to run:** run sprinklers mid-day when there are temperatures greater than 85 F, if the dew point is less than 55 F during midday hours, wind speed more than 11 mph, and no rainfall in the past 48 hours.

**How long to run:** If the heads on your sprinkler system complete their rotation quickly, that is advantageous as you get the evaporative cooling effect in a short time frame. The irrigation system can shut down sooner and minimize the increase in soil moisture. **Run for 10 minutes.** With older systems and/or those with slow rotating heads, the opposite is true, and the balance is harder to maintain. **Run for 20 minutes.**

## Station News

By Hilary Sandler, Director

Work is on-going at the Cranberry Station. We hope that the Lab Building will be inspected and ready for occupancy in August. The schedule currently shows the new building should be ready for occupancy by the first of November. The administrative staff (Robyn Hardy, Dawna Gauvin and myself) will move into the new building as soon as we can. Plans are to re-purpose the current Admin Building to provide office space for UMass employees and our Post Docs; we plan to have the current Director's Office become our library with space available for small meetings.



*Hilary next to the tight tank*

We are in the market for PICKUP TRUCKS. If you have an older but working vehicle that you are thinking of moving off your business, please contact me at 413-800-6531 or [hsandler@umass.edu](mailto:hsandler@umass.edu). We can purchase vehicles or would be willing to accept donated vehicles.

The IPM Message will be posted regularly for a few more weeks. As a reminder, to listen to the recorded message call **508-258-9191** or read to the message and view photos, visit our website at: <https://ag.umass.edu/cranberry/ipm-message>. Messages are updated by Friday each week.

## SCALE BOGSIDE WORKSHOP

**Mark your calendar!** We will be hosting a **Bogside Workshop (via Zoom) on Tuesday, August 9th from 9-10 AM** and 1 contact hour will be offered. We will be covering scale scouting and timing for the August generation. Heat stress and scald will also be covered. Please contact Robyn Hardy at [rmhardy@umass.edu](mailto:rmhardy@umass.edu) or 413-800-7274 to get the link sent to you.



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