Integrated Cranberry Crop Management for Wisconsin

Cranberry

Crop Management Newsletter

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Special points of interest:

- **Varietal resistance to Insects**
- **2009 Crop Progress**
- **Fall weed monitoring**
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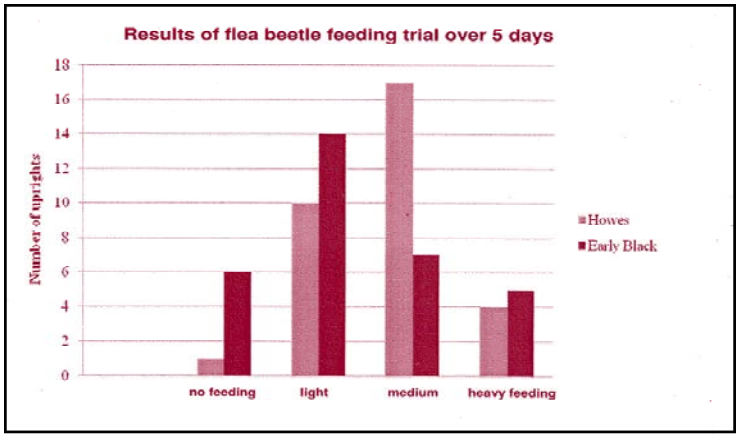
Varietal Differences in Insect Feeding

Matt Lippert, Wood Co. Agriculture Agent

Do you suspect that some cranberry varieties are fed on more heavily by insect pests than others? Could there be an active defense mechanism by the cranberry plant to fend off attacking foraging insects or is it just the opposite that some varieties are higher in sugars and are more appealing to the pests that feed on them? Researchers at the University of Massachusetts Cranberry Research Station took this question to the greenhouse and compared Howes and Early Black in a controlled environment. They compared feeding on uprights of these two varieties by gypsy moth larvae, cranberry weevil adults and red headed flea beetle. In the case of flea beetles Anne Averill, Station Entomologist and Marty Sylvia, Entomology Research Assistant found differential feeding with more feeding by flea beetles on Howes than on Early Black. These controlled trials confirmed field observations that Howes was fed on more readily than Early Black.



Averill and Sylvia, U Mass. Cranberry Research Station, 2005

Note the higher incidence of no and only light feeding on the Early Black uprights.

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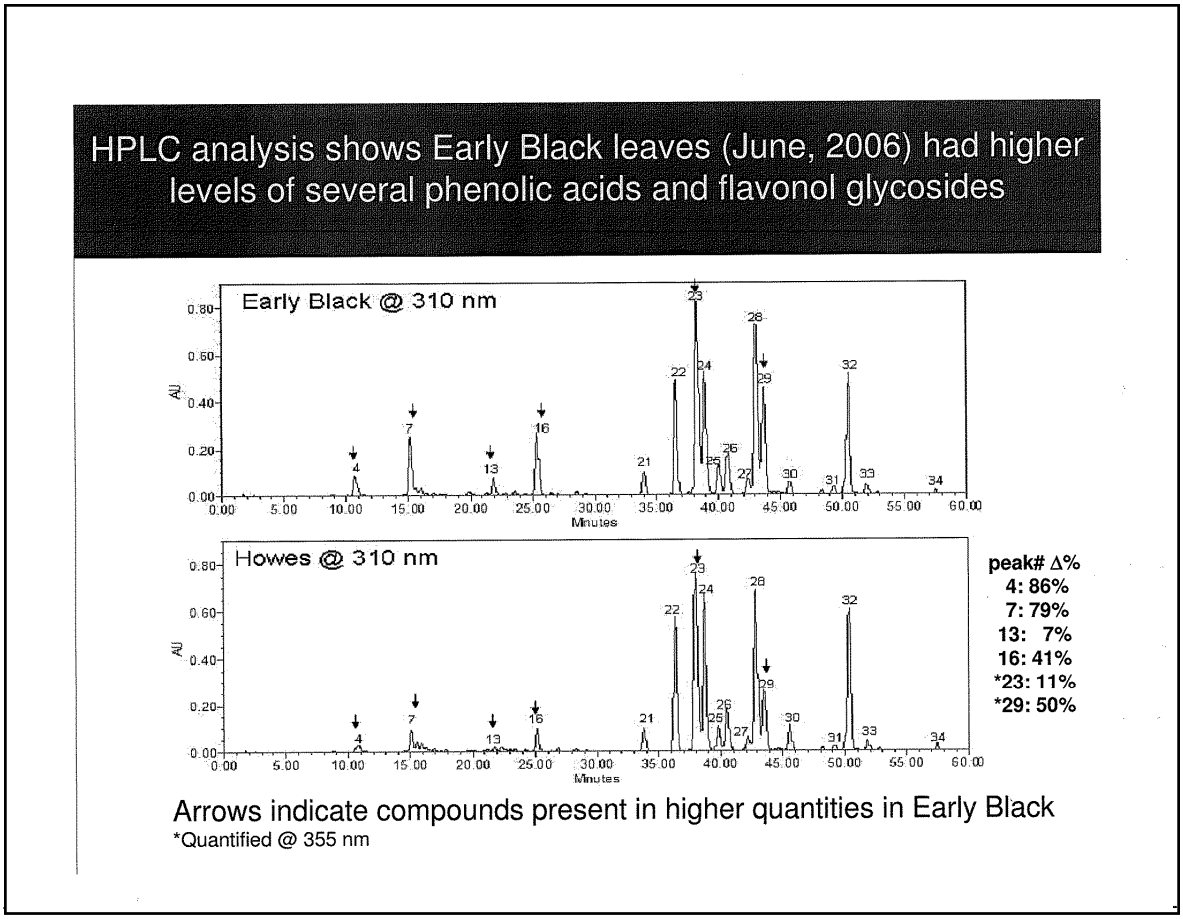
Varietal Differences in Insect Feeding

Matt Lippert, Wood Co. Agriculture Agent

As a follow up to the feeding study, researchers sought to characterize differences in the chemical components in the foliage and fruit of these two varieties.

Using High Pressure Liquid Chromatography (HPLC) they found six phenolic compounds that were present to a higher level in Early Black than Howes. These phenols were present from 7 to 86% more in Early Black than in Howes.



Neto, Carurso and Vanden Heuvel; U Mass.- Dartmouth, U-Mass Cranberry Research St. and Cornell; 2006.

The researchers noted that foliage extracts prepared in 2008 showed similar levels and variety differences as those from 2006.

Researchers are also looking at plant compound levels as the basis for varying resistance to plant disease. In addition to variety differences they have been able to detect that as fruit are attacked by rot organisms their natural defensive capacity diminish as natural compound levels are altered. I believe this is the biological basis for the old idiom “one bad apple spoils the barrel.”

A Receiving Station Dilemma

Matt Lippert, Wood County Agriculture Agent

It has been an interesting growing season for everyone and cranberry growers are no different than the rest. Growing degree accumulation at the UW-Arlington Experiment station were the lowest in mid-August of any in the station's forty seven year history. Predominantly cloudy and cool weather at pollination time was a concern for many growers. Fruit set did happen but on many marshes it occurred over a longer period of time creating concerns about fruit that will be late to size and color during the harvest season.

It wasn't just the summer that was cool at a historic level. Last winter perhaps was not a record as far as cold temperatures in Wisconsin but it seemed to be more like the memories of winters from the 1960's rather than the string of mild winters that we have experienced during the last decade. Perhaps more difficult to measure than actual temperature of the winter was its duration. Snowfall and ice were already a major impediment for much of last fall's harvest and spring was especially late in coming as well, or was it that we were just more anxious for it to bring us its reprieve?

I caught up with Tim Dittl, Ocean Spray field services, for some brief comments on his assessment of the 2009 crop now coming in. "The tremendous crop that we brought in in 2008 coupled with rough winter really put a stress on some of our beds. It appears that some of the top yielding beds from last year will be down the most on a percentage basis for 2009. Some of them will be down 30%. Already last summer the bud counts indicated that the crop was 23% behind the pace of 2008 and our August fruit counts indicated the crop to be 15% behind within the cooperative. The warmth that we experienced in September really helped the crop out but the crop continued to be slow to color causing many growers to request rescheduled harvest dates to give the crop more time to develop. I expect our in-house yield to increase as the season progresses. We took in some fruit with hail damage with reduced yield and Wisconsin's white fruit harvest in 2009 means that as the season progresses our average yield will increase. I would estimate the crop to be 15% behind last year when all is done." One of the blessings of a smaller crop is that fruit rot seems to be less of a problem than it was in 2008. Dittl indicated that he sees a correlation with a larger crop and increased fruit rot.

A reduced crop in the nation's largest cranberry producing state won't have a negative impact on cranberry prices. On September 17 the USDA Cranberry Marketing Committee released their final position on the 2008 cranberry crop. That report listed barrels in inventory at 4.3 million, the largest number in the last ten years, including some of the most difficult years for cranberry prices. Just two years ago cranberry inventories hovered around 2.9 million barrels.

A bright spot for cranberry growers has been the increase in foreign sales. The foreign sales reported for 2008 at 1.83 million barrels is over three times the level found in the 2001 report.

On October 12, 1-3" of snow accumulated across much of the cranberry growing areas of Wisconsin, reminding growers that like last year's harvest it appears that winter may be again coming early. Even for Central and Northern Wisconsin this snowfall caught many by surprise. With the harvest season well on its way and a little snow to prod growers along few are waiting any further to bring their fruit to receiving stations.

With increased acreage coming on line and renovation to newer higher producing vines becoming a common practice the Wisconsin crop is still expected to be the second or third largest crop in the state's history.

Fall Weed Assessment

Matt Lippert, Wood County Agriculture Agent

Fall is a great time to assess the success of your weed management program. Although you are busy with harvest, don't assume that you will recall each weed encroachment and be able to map each bed in January when the snow is blowing and you have more opportunities to think about next year's weed management strategies.

In addition to being unsightly, weeds do the obvious by competing with the cranberry vines for light, water and nutrients. Other affects of weeds are more subtle. Weeds can discourage pollinating insects and delay pollination and decrease the uniformity of fruit set. The shading and dense canopy created by some weeds can slow the drying of vines after rainfall and irrigation and thereby encourage the development of plant disease. Weeds make harvest more difficult and increase the amount of trash in the fruit.

Weeds are excellent indicators of environmental conditions. The presence of upland weeds is often a sign of increasing pH in the bed. The proliferation of wetland species such as sedges and arrowhead may mark an area of poor drainage or excessive applications of water. Low fertility will open up the canopy and opportunists that do well where few other plants can grow well will begin to colonize. In addition to luxuriant vine growth the presence of annual grasses is often a sign of surplus nitrogen in the ecosystem.

Management of ditch banks and access roads is also critical, frequent mowing of these areas will prevent many weeds such as clover from having the chance to spread by seed. Mowing will also increase the density of the sod and reduce the introduction of other non-grass species into the support areas. We have begun to discuss the importance of wild areas to promote the presence of beneficial insects and pollinators. Immediately adjacent to the bed may not be one of those areas.

Cranberries can be a weed. This year I observed a relatively new bed built in peat soils with peat ditch banks. The peat in the banks was very acid and dried out quickly and grasses and clover had failed to establish in this area even after a few years. This created several problems. The bank was not stabilized and would continue to erode and slump and fill in the perimeter drainage around the bed requiring the continued attention of landscaping equipment for maintenance. The other problem was volunteer cranberries. Fruit that was allowed to stay on the bank after harvest were more successful than any other species at colonizing this acidic peat soil. These volunteers seemed to be more successful at generating vegetative growth but probably aren't going to be as productive as the planted variety. These seedlings are greatly increasing the genetic diversity in the bed, not such a desirable situation to be occurring in a newly established bed! In addition to lowering productivity and creating uneven performance the bed will no longer be a good candidate to harvest for future cuttings.

As we implement IPM programs cultural methods are as important for the control of weeds as it is for insect and plant disease. Weed control is often thought of as one of the early season practices, but good assessment in the fall, listening to what our vines and their unwanted companions are telling us can be a key for a better performing crop next season.

National Sustainability Standards: Implications for the Cranberry Industry

Jed Colquhoun, Department of Horticulture UW-Madison

See everything; overlook a great deal; correct a little.

Pope John XXIII

From environmentally-concerned groups to buyers, retailers and consumers, "sustainability" is certainly the current buzzword in many industries, including agriculture. Several retailers and agricultural industries are independently developing sustainability standards, indices, and certification programs for their business and others throughout the supply chain. Additional, national sustainability standards, which would ultimately encompass all agricultural crops have been proposed or are in development by multiple groups. Given the rapid pace of developments and fluidity of the situation with these sustainability standards, the intention of the this abstract is to "set the table" for discussion.

While the concept of sustainable agriculture has been a point of discussion for several years the desire to use it as a marketing tool or to add value to products in the marketplace is a relatively recent development. Individual retailers and suppliers, such as Wal-Mart, are developing sustainability scorecards and standards. As a result, growers may be required to fill out several surveys to sell to multiple buyers, in addition to current requirements for good agricultural practice (GAP) surveys.

In response, multiple entities are developing national standards that would be applicable to agriculture in general and could be used to certify agricultural production with a single survey, thus reducing the duplicative efforts required to satisfy multiple buyers. Two proposed national standards in particular have floated to the top: one in development by Scientific Certification Systems and one in development by the Keystone Center.

Scientific Certification Systems developed the "Draft American National Standard for Trial Use for Sustainable Agriculture." This standard was proposed to the American National Standards Institute (ANSI) in 2007, an organization that develops and implements voluntary standards for a variety of industries. The Leonardo Academy, a Madison-based organization accredited by ANSI, will lead the standard development process. After an initial meeting of the Standards Committee in September 2008, the initial draft standard will be re-tooled. Those critical of the initial draft standard have cited two primary issues: 1) the standard set organic production as the highest level of sustainability, and may in fact be duplicative of current organic standards in many areas; and, 2) the initial standard prohibited the use of genetically modified crops. The groups involved in this standard development are in the process of developing a new draft standard.

The Keystone Center Field to Market group consists of entities with varying interests, including several food and fiber national commodity groups, environmental organizations, end-users and retailers, and academia. The goal of this group is not to develop a certification system, but to develop a grower tool that can be used to gauge producers of a given crop. The proposed tool would allow growers to identify potential areas of improvement as well as to follow sustainability trends through time in terms of production efficiency per unit of production area. The Keystone Center participants are currently investigating methodology and feasibility of quantifying sustainability parameters, such as water quality and energy use, at the grower level

Pittsville's Cranberry Science Class

Pittsville High School students have a unique opportunity to receive instruction about cranberry production in a one of a kind Cranberry Science Class.

Recently agriculture curriculum at the primary level has faced challenges as student's tight schedules leave limited opportunity to take electives. Some departments have applied and received certification for their agriculture courses to fulfill science credit requirements.

Prior to the harvest season Pittsville students prepare to give public tours by studying cranberry statistics and learning about cranberry production practices. While some student's families are cranberry growers the majority are not.

During harvest, tours are available twice a week to the general public. The tour includes new crop establishment, harvest, receiving, cleaning and storage.

Crystal Apples and Cranberries in Pittsville

A recent article in the Chicago Tribune has resulted in a flush of agri-tourists taking the five hour commute to participate in the tour run entirely by the high school students.

In addition to science the course is a great opportunity for students to practice their communications and public relations skills.

Gardner Cranberry and Cold Storage provides their production beds and facilities for the tours. The Pittsville Food Science students prepare a meal including cranberry products for the tour attendees.

Pittsville agriculture instructor, Bill Urban, recently received a prestigious award, the Crystal Apple, presented by the Marshfield Area Chamber of Commerce and Industry, Partners in Educational Excellence and Workforce Development, in part for his development of this innovative curriculum.

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