



Cranberry Station Newsletter

JANUARY 2008

UMASS CRANBERRY STATION

1 STATE BOG ROAD

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THE 2007 YEAR IN REVIEW -

NOTES FROM THE FIFTH ANNUAL CRANBERRY SUMMIT

On December 18, a group of Massachusetts growers, handlers, and researchers came together at the Cranberry Station to discuss the 2007 growing season. We discussed management challenges, research and education needs, and as always — the weather. This is a summary of the discussion arranged by the topics covered.

General

Crops in general were down in 2007, although not as far down as in 2005. The consensus was that only Stevens produced well this year (even with significant sanding during the winter), with Ben Lear fair and both Early Black and Howes poor. Howes appeared to be the biggest problem with crops way down in 2007. Some data (average bbl/a) were provided from Ocean Spray:

| | <u>2005</u> | <u>2006</u> | <u>2007</u> |
|-------------|-------------|-------------|-------------|
| Early Black | 115 | 148 | 119 |
| Howes | 131 | 156 | 115 |
| Stevens | 163 | 211 | 213 |
| Ben Lear | 170 | 208 | 180 |

These data appear to indicate that non-hybrids have a strong tendency towards biennial bearing, that is, they alternate large and small crops. This trend is most noticeable with the Early Black and Howes, and less so with the Ben Lear (a WI native). However, Stevens did not show this trend. They were down in 2005 but similarly higher in both 2006 and 2007.

Color was not as good as last year but not surprisingly, sugars in the berries (Brix) were up. Since the berries were smaller, a concentrating of sugar in the fruit would be expected.

Berries were small (particularly Early Black) or average (Stevens) but of good quality. While the fruit appeared small, the weight per berry was not particularly low compared to other years. The consensus, however, was that there were just fewer berries, despite good to excellent bloom (based on number of flowers observed).

Poor crops were attributed to weather factors (see below) but also to the extensive sanding that occurred last winter with some thought that sanded Howes were particularly poor in production in 2007.

There was a discussion of possible downward crop trends in native cultivars (compared to hybrids) over the past 10 years. Howes in particular were the focus of discussion. Many possible ideas of a cause for this were discussed, but no definite causes were identified. We all agreed that this is an area requiring further examination and research, beginning now. We plan to look at trends in insects, diseases and fungicide use, weed infestations, management and nutrition, response to sanding, as well as genetic integrity as possible contributing factors.

Weather

The two big weather issues in 2007 were the winter and the late summer drought. Winter weather was a challenge with a warm fall and early winter followed by a month of below freezing weather beginning in mid-January and a late winter big cold snap in early March (specifically, March 6-9).

The issue of how to manage winter water was raised. This appears to be a question in need of further research. There were comments regarding the industry shift towards less time under a flood compared to the past or to other regions. It was noted that NJ growers place the flood in December and leave it until sometime in March (and for some as late as mid- to late April), with little ice formation; while in WI the flood goes on in early winter then ices down and stays as ice until the spring melt (water is removed from beneath the ice once significant freezing has occurred).

Poorest crops in 2007 seemed to be associated with bogs that either:

- 1) were not under flood when the January cold period began; or
- 2) were not under flood for the March cold snap.

Possible reasons for this were that since it was abnormally warm prior to the January cold, bogs were not fully hardy - that is, they were actually damaged by cold rather than winterkill (drying out after the soil freezes). If this were the case, damage could have occurred in the first days of the cold snap, even before the bog soil froze. For the March event, it would be a matter of either winterkill (since the soil in many bogs was frozen when the cold hit), or again cold damage, since by March, the plants are moving out of dormancy. When cranberries are fully dormant, the buds can tolerate temperatures as low as -20° to -30°F. But, this tolerance develops gradually in the fall in response to short days and cool temperatures, and declines gradually once the chilling requirement is satisfied (generally after mid- to late January) in response to warming temperatures. So in a warm fall, full tolerance may be late to occur and floods may be needed even prior to the soil freezing (see the December 2006 newsletter article on last year's summit for a full discussion of this issue). The 2007 fall was more

normal, and it is thought that the plants are now fully dormant this season and standard management recommendations would apply.

An indication of possible cold damage in the winter were the reports of umbrella blooms (uprights with flowers but no growth above the flowers). Normally, we associate this condition with mild spring frost damage, but in 2007 it showed up on bogs that had been fully protected from frost in the spring. The old literature indicates that umbrellas can result from winter damage.

So, why was there a good bloom (as all reported) if all this damage was occurring? We discussed the issue of 'functional' flowers. That is, a flower may appear normal visually, but if internal components have been damaged, two outcomes could occur: 1) the flower will not be attractive to bees, or 2) the bee might pollinate the flower but the internal structures cannot 'use' the pollen to make fruit. In either case, you would see flowers that never set any fruit.

There was some discussion of chilling hours, the amount of cold the cranberry must experience in order for dormancy to occur and for normal flowering in the following year. With average weather, chilling is satisfied by mid-January. There are some varietal differences with an indication that Stevens has a shorter requirement than natives and that younger plants (new planting) have a shorter requirement than that of older beds. This is an area in which research needs to nail down the best model for determining when chilling and dormancy are achieved.

All agreed that research and education efforts around winter management and decision making are needed.

Droughty conditions prevailed in much of the region in the late summer. In East Wareham there was no rain from mid-August to mid-September. During that period, fruit mass is increasing, primarily through that addition of water to the fruit. This could mean that dry conditions during that period lead to small berries. While irrigation was applied, it does not always allow the maintenance of a good water table under the bog and therefore, may not be adequate for good fruit sizing. There was

some discussion regarding the lack of impact on Stevens and some thought that Stevens may be less dependent on sub-irrigation (water table) compared to the native cultivars. Also, Stevens gain mass faster and earlier in the summer compared to the other varieties, therefore were sizing prior to the worst of the drought.

It was noted that at Rocky Pond bog, all irrigation was scheduled using water level floats. The crop there (Stevens) was the best ever at 217 bbl/a overall.

The whole water table discussion included the issue of impacts of urbanization on the overall water tables of the region. The low water level in ponds around the region this fall was noted; adequate water supplies for the pending winter flood remains a significant issue for many bogs at this point.

Pollination

Several growers were concerned about pollination. They observed good bloom and presence of bees but poor bee activity, in terms of actual visits to the flowers. This seemed to be especially associated with Howes. Both Anne Averill and Marty Sylvia reported that pollinator strength (both honeybees and native pollinators) was good at sites they studied in 2007 and colony collapse disorder (CCD) did not appear to have great impact in the region (except on rental prices!). So, what accounts for the disconnect between these observations? One possibility is the question of flower functionality (see weather section above). It may be that pollinators were not the problem but rather the problem may have been the attractiveness of the flower, or the ability of the flower to set fruit. This is supported by the observation that despite pollinator presence, the flowers hung on the plant for longer than usual, an indication that actual fertilization of the flower following pollination had not occurred.

In addition to potential weather-related flower injury, the question of injury by spray applications was also discussed. The general consensus was that the winter injury was the more likely culprit.

Diseases

It was a quiet and uneventful year, for the most part. In spite of a poor keeping quality forecast (3/16 points),

fruit quality was good. Examining data supplied by Ocean Spray, quality in 2007 (as determined at harvest, at three weeks and at eight weeks) was average or above average. The good quality was not always attributable to increased fungicide application. The good quality was a bit surprising, in light of the extended dry period from July into September. However, most growers reported using a rigorous fungicide schedule due to the poor forecast. Many used the allowed three applications of chlorothalonil fungicide.

There was more than the usual amount of upright dieback, particularly in Early Black beds. In all cases processed in the pathology lab, this was caused by the fungus *Phomopsis vaccinii*, the primary causal agent of the disease. It was noted that the drought may lead to carryover instances of dieback and fairy ring in 2008.

In May, there was slightly more than the usual amount of Protoventuria and Pyrenobotrys leaf spot in certain beds. Phytophthora root rot and fairy ring were noted in their usual incidences.

Weeds

Dodder control/Kerb

There was an extensive discussion regarding the use and efficacy of Kerb for dodder control. It was noted that sales of Casoron (the only other chemical alternative for dodder control) have been way down. One grower noted that he did not use Casoron on Stevens due to varietal sensitivity but most agreed that they found Kerb to be the preferable material for dodder control. However, there were some reports of reduced efficacy of Kerb compared to that in previous years. Some growers thought it might be a failure in application timing but others thought that the change in application methods with the recently developed BMPs may be playing a role. Under the new BMPs for Kerb, growers are advised to minimize rinse-off time following application (as compared to long, 1-2 hour, rinse times used previously). Using the recommended protocol, growers reported less than complete control and breakthrough of dodder later in the season. In general, it was felt that control was poorer. The BMPs were developed to reduce the risk of movement of the Kerb offsite in surface water.

The main problem is that dodder makes many long-lived seeds, so even a small escape from control has long term significant impacts. It was noted that seeds tend to get caught up in other weeds, pointing out the need for good sanitation, including trash flows.

Dodder remains a high priority weed problem and the focus of significant research. Effort to obtain a full label for Kerb and for an alternative compound remains a high priority.

Other weeds/herbicides

Nutsedge has continued to be a big problem for many growers, especially on new or renovated plantings. Loosestrife is out there but not the top problem identified, although it may serve as an initial host for dodder, making that weed problem worse.

Devrinol 10G will no longer be available. Rather, the material will be available in the 50DF, dry flowable form.

Insects - insecticides

Early spring insects — green spanworm was reported to be a bigger problem than in some years.

Black Headed Fireworm — There was a report of a third generation in the late summer at one site. Other than that, fireworm was not mentioned.

Cranberry weevil — In general, populations were way down in 2007. Actara appears to be very effective against this insect. It was noted that after spraying some population remained, however, this could be due to immigration from surrounding uplands.

Southern red mites — were a problem for the first time in the past 5-6 years. Reports of this pest came in both early and late in the season, but growers treated with miticide and reported good control.

Sparganothis fruitworm — populations were high both early and late in the season. High counts in pheromone traps were reported, but in some cases, larval infestations were not subsequently found or growers were successful in managing this pest. Still, it remains a major issue for fresh fruit growers responding to a zero worm tolerance mandate. Total resistance of this pest to organophosphates makes it critical to use alternative materials.

Cranberry fruitworm (CFW) — Pressure was about average but CFW remains the most important pest in MA cranberry production and the primary focus of research programs. Growers reported finding eggs into the late summer despite use of controls such as Diazinon. Anne Averill emphasized that this pest continues to lay eggs through the summer, although peak egg laying coincides with early berry sizing.

Flea beetles — populations have increased over the years and as a result, sprays are being used to target this insect.

Tipworm — was observed in greater numbers than in recent years. Howes are known to be the most heavily attacked by this insect, but high infestation in Ben Lear was also reported. While the plant can recover from tipworm, it may be a drain on plant resources. Anne Averill is studying this insect in conjunction with colleagues in British Columbia.

Pesticides — Canada will revoke all cranberry uses of Diazinon by 2012. In the US, use is becoming restricted to fewer applications. As a result, much research effort is being directed at finding an alternative material for the management of CFW.

Diazinon AG500 and AG600 will be available in 2008 with a three application per season limit. 2008 will be the last year for Diazinon 14G.

Use of Lorsban is declining.

Labor

One issue that many agreed was important is the availability of a well-trained labor force, particularly for management (e.g. foreman) positions. In the past, growers hired a person and if they had potential, groomed that person to advance to management level. With the advent of the use of labor agencies, that long-term relationship seldom develops.

It was noted that ag high schools should be a possible source for recruiting such individuals. Jeff LaFleur reported that the new Commissioner of Ag, Doug Petersen, has identified bringing young people into agriculture as a priority.

Other sectors of agriculture in MA have identified this same problem. SEMAP is addressing the continuity of farmers to farm the land in all commodities through their Farms Forever Program. The SARE program is also working on this issue.

Salt

Environmental contaminants, in particular road salt runoff, were discussed. With the advent of more roads in the region, this is a high priority issue with potential to impact water resources. Municipalities are often using straight salt as opposed to salt/sand mixes but this has huge implications for impact to bogs (direct runoff) and water supplies. This is a financial decision for a town but has big implications to the viability of the cranberry operation near such roads. Making towns aware of the potential adverse effects on cranberry production is critical. This points out the need to interact with town governments and to stay active in town affairs, including serving on boards and committees.

Another grower reported that as a result of his concerns regarding runoff from a parking lot at a commercial development adjacent to his farm, the developer installed a biofilter basin to handle runoff, including salt laden water from that site that might otherwise have run directly into his bog and water supply.

Carolyn DeMoranville reported that she has been researching this issue for some years with the support of MassHighway. The impacts of direct runoff are obvious in vine dieback along bog edges, but the more subtle impacts of salt in the water supply were less well understood. As a result of this research, we have determined that up to 100 ppm of chloride (Cl) in irrigation water is not a problem, but as this level is exceeded, cranberry plants become more vegetative and less productive. So with these lower impact salt effects, what you see is more growth and less flowering rather than vine dieback (as seen with high exposures like direct runoff). We have also identified fertilizer materials that can be used to mitigate salt-laden cranberry soils.

Miscellaneous

Fertilizers — growers are successfully implementing low phosphorus (P) materials. Common analyses have 8-10 as the middle number. One common choice is 18-8-18.

Yellow vine syndrome — was reported to be prevalent in 2007. This is often associated with late season droughts and is thought to relate to poor rooting. It has been observed that yellowing was less in the shade of pheromone traps on the bog. As a result, Peter Jeranyama, the new plant physiologist at the Station, has begun to research the role of light in yellow vine.

Zone II — all were reminded that the Zone II and Interim Wellhead Protection areas (IWP) change frequently and that growers should check to make sure that new ones are not now impacting their acreage.

CAROLYN DEMORANVILLE
STATION DIRECTOR

CRANBERRY MANAGEMENT MEETING **Thursday January 24, 2008** **7:30 AM - 4:00 PM**

This educational program consists of updates on research, advances in cranberry management, and research-based management recommendations.

This meeting will offer an opportunity for the Cranberry Station faculty and staff to present areas of research that have reached the grower-implementation stage. \$20.00 charge includes a morning coffee, a mid-morning coffee break and handouts.

4 contact hours will be granted for this program towards pesticide recertification in the cranberry category.

SCHEDULE ON NEXT PAGE

**CRANBERRY MANAGEMENT UPDATE
JANUARY 24, 2008**

| | | |
|---------------|---|--|
| 7:30 - 8:00 | Registration (with coffee) | |
| 8:00 - 8:15 | Station Update | Carolyn DeMoranville, Director |
| 8:15 - 8:50 | Nutrition | Carolyn DeMoranville |
| 8:50 - 9:10 | Plant Physiology Research Agenda | Peter Jeranyama |
| 9:10 - 10:10 | Flood Management | Guest Speaker Justine Vanden Heuvel |
| 10:10 - 10:40 | Coffee break | |
| 10:40 - 11:10 | Cranberry Weed IPM Update | Hilary Sandler |
| 11:10 - 11:50 | Cranberry Disease Update | Frank Caruso |
| 11:50 - 12:00 | New Spinosad Compound, Delegate | Greg Comeau, DowAgroScience |
| 12:00 - 12:20 | Fruitworm and Flea Beetle Trials | Marty Sylvia |
| 12:20 - 1:30 | LUNCH BREAK (on your own) | |
| 1:30 - 2:10 | Insect Management | Anne Averill |
| 2:10 - 2:30 | SARE, Sanding Pruning Study | |
| 2:30 - 3:30 | Application technology - Grower Panel Mist blowers, pop ups, and ground rigs | |
| 3:30 - 4:00 | Wrap-up and Paperwork for Credits | |

MARK YOUR CALENDARS!!!

Upcoming Meetings

**March 19, 2008 Cranberry Beginner School
Cranberry Station Library
(sign up form on next page)**

**April 09, 2008 Pesticide Safety
Elk's Hall - E. Wareham
(more information in next newsletter)**

WORKER PROTECTION TRAININGS

Worker Protection Trainings for cranberry workers in the handler category will be offered in the spring of 2008: April 23, May 28, and June 25. There is a \$5 fee to cover the cost of the WPS training manual. If you have a pesticide license, you do not need this training.

Contact Martha Sylvia: 508-295-2212, ext. 20 to sign up or for additional information.

COMMENTS ON CHART BOOK...

We are in the process of updating recommendations in the Cranberry Chart Book. If you have ideas, changes, or comments that would help us make it better for you, let us know!!

Contact Martha Sylvia: 508-295-2212, ext. 20 or email at martys@umext.umass.edu

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Dr. Carolyn DeMoranville, Director

January 2008 Issue
Deborah Cannon, Editor

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CRANBERRY STATION NEWSLETTER & REVISED 2008 CHART BOOK RENEWAL

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**Registration Form for Cranberry Beginner School
 Wednesday, March 19, 2008 8:00 AM - 12 Noon
 Cranberry Station Library**

Please register for the meeting using this form.

COMPANY _____

CONTACT _____

PHONE _____

**Return with payment by:
 March 14th, 2008**

NAMES OF ATTENDEES _____

Include check made out to:
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 In the amount of:
\$10 per person.

Return to:
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Attach additional sheets as necessary.

WHAT VARIETIES DO YOU GROW?

NUMBER OF ACRES?

please list other varieties and acres:

EARLY BLACKS _____

HOWES _____

STEVENS _____

BEN LEAR _____

PILGRIM _____

FRANKLIN _____

BERGMAN _____

GRYGLESKI _____

CRIMSON QUEEN _____

NUMBER OF ACRES RENOVATED IN THE PAST FIVE YEARS _____

NUMBER OF ACRES UNDER POP-UP SPRINKLER SYSTEMS _____

TOTAL ACRES OF FRESH FRUIT HARVEST _____ TOTAL ACRES OF WATER HARVEST _____

REMINDER - MEETING
JANUARY 24TH -- SEE PAGE 6

UMASS EXTENSION
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