SARE Project ANE94-021



Cranberry Station Winter Meetings

Cranberry School - Advanced Topics

January 9 or 16, 1996 8:30 AM to 4:30 PM Cranberry Station Library

Seating limited - Call the station to register for one day or the other. Pesticide re-certification credits for the cranberry category will be offered - 4 contact hours.

One program will be repeated on two days. Sign up for one day only. This is to cut down on crowding in the Station Library and offer a better venue to answer individual questions. The program for the Cranberry School will focus on advanced concepts in cranberry culture. In these presentations, we will discuss underlying mechanisms of cranberry production and how these relate to successful disease, insect, and weed management as well as to your fertilizer program.

Tuesday, January 9th or 16th

Pathology - Fungus and fungicides Entomology - Insect management IPM -New scouting ideas Weeds - Weed ID and herbicide use Nutrition + Physiology Photosynthesis and carbon budgets Chilling and dormancy Late Water: nutrient management

A Beginner's Cranberry School will be offered in April or May for those who need to learn or review the basics of cranberry management. Watch for the Spring Newsletter for more specifics.

1996 UMASS Annual Cranberry Research and Extension Update

Wednesday - March 13, 1996 at the Taunton Holiday Inn 8:30 AM - 4 PM

Cranberry Station.Personnel will present highlights of their 1995 research projects. <u>4 contact hours</u> (cranberry category) will be offered for the day towards pesticide re-certification.

\$22.00 charge includes coffee breaks and a deli buffet lunch. You must pre-register and pre-pay using the enclosed green registration form.

Massachusetts NOFA Winter Conference Saturday - January 20, 1996

The MA chapter of the Northeast Organic Farming Association (NOFA) will hold its 9th annual winter conference on Saturday January 20, 1996 at the Quabbin Regional High School, 800 South Street in Barre, MA.

The program will offer 20 different workshops, as well as vendor exhibits, a farmer's market, a children's program, the annual meeting, and a pot luck lunch. For more info or registration, contact Elaine Peterson at 92 New Westminster Rd, Hubbardston, MA 01452 or call (508) 928-4707.

Cranberry Newsletter 1

University of Massachusetts, College of Food and Natural Resources, United States Department of Agriculture, and

THOUGHTS REGARDING WEATHER, CRANBERRY GROWTH AND YIELD, AND FERTILIZER PRACTICES

As the harvest comes to an end, it is a good time to reflect on the events and problems of the past season. Many of you suffered poor crops this season and are understandably distressed. You are also very likely itching to take some action to make sure that this 'doesn't happen again'. Unfortunately most of the factors that contributed to the poor 1995 crop were weather related and thus generally unavoidable.

The warm winter of 1994-1995: Cranberry plants must accumulate chilling hours, time in the 32-45° F range. Chilling is necessary for proper flowering in the following year and to bring about deep dormancy and maximum cold tolerance. When temperatures are too high during the chilling period, plants can actually *lose* chilling hours. These hours must then be gained back, adding to the total needed. Last winter was extremely mild, particularly in January. If a bog was kept out of flood during this period, some chilling was probably lost. We saw many Howes buds that never broke dormancy this spring (never grew). Improper chilling was likely the cause. This of course would be a contributing factor in lower Howes yields. Adding fertilizer would not cause such buds to break.

A cold snap in early April: This is not a particularly unusual event: we often experience bog temperatures in the single digits on nights in early April with no apparent effect. However, with less than optimum chilling (see above), cranberry plants do not achieve maximum dormancy and in the spring, they will lose cold tolerance more rapidly. We may have been frost damaged early in April of 1995. If you noticed fewer flowers and/or reduced fruit set, this may have been the case on your bogs. This may have been especially problematic in areas like Carver where the warm spell in the winter was pronounced and early April nights were especially cold. Based on the Howes buds I saw in the spring, I suspect they would have been hardest hit.

A cool spring: Cool weather in the spring may have made fertilizer applications less effective. Plants take up soil nutrients poorly when soil temperatures remain below 50° F. This could have contributed to upright stunting and poor fruit size later on. Stunted plants cannot grow large fruit as they cannot produce enough carbohydrates, sugars and acids, the products of photosynthesis.

Perfect pollination weather: This seemed like a good thing, leading to great fruit set, especially on Early Blacks. The problem came later when a large fruit load contributed to late summer plant stress during the drought.

The drought and the heat: The drought took its toll, even if you had enough water for irrigation. Irrigation can replace enough water in the upper layers of the soil to keep the plants alive and even preserve the fruit, but fruit size is effected by lack of water and general plant stress. When it doesn't rain for extended periods of time in the summer, the plants are exposed to many more sunny days than they can tolerate well. Cranberries are adapted to temperate climates. They are so-called C3 plants, poorly adapted to high

Cranberry Experiment Station, I.E. Demoranville, Director U-Mass, Glen Charlie Road, P.O. Box 569 East Wareham, MA 02538 (508) 295-2213 FAX (508) 295-6387 November 1995-Issue

Martha M. Averill, Editor

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UMass Extension Mailing Signoff Anne L. Averill, Small Fruit Specialist

temperatures and light intensities. Their internal chemistry cannot handle such conditions and much of the carbohydrate accumulated in photosynthesis is in turn *lost* in a process known as photorespiration. Plants respire in light and darkness, think of it as analogous to us breathing. In high heat and light conditions, C3 plants like cranberries also photorespire, (think of it as hyperventilating) burning up the products of photosynthesis and making them unavailable for fruit sizing. Irrigating can lower temperatures some but the high light intensity is still there (no clouds) stimulating photorespiration. The end result was less carbohydrate in the plants. As this is the raw material that is used to make fruit, it is not surprising that fruit size was small. On top of heat and light stress, soil moisture in the lower layers has not yet fully recovered (we are still behind on rain), although the harvest flood should have soaked in and helped. Inadequate soil moisture affects soil chemistry and the availability of fertilizer elements. This is a contributing factor in the yellow-vine syndrome seen this summer. In this condition, the cranberries take up K and/or Ca more than Mg, leading to cation imbalance and the classic yellowed margins on the leaves. Adding large doses of K, as is common in fall fertilizer is a mistake for these bogs as it may make the situation worse. By spring, the new growth should come out green. If it doesn't, corrective measures can be considered, including a soil test. Avoid the use of KCal in the spring on these bogs, SulPoMag or MgSO₄ is preferred. Bogs with continued history of yellow vine should not receive fertilizers with high K ratios. You may wish to avoid 5-15-30, 3-13-26, and 10-20-20 on these bogs. Yellowed areas of the leaf will not photosynthesize, cutting down on overall carbohydrate production and limiting the raw materials for fruit production.

What could we have done?

- 1. Some of the chilling loss in the warm spell during the winter could have been prevented if bogs were kept under water during that time.
- 2. Bogs should have been protected from the early April cold spell based on the knowledge that the winter had been mild. In normal years, such protection would not be needed.
- 3. Fertilizer applications in the spring should be timed based on temperature (soil temperature above 50° F) as well as the development of the plant. Plants that are not growing will not take up fertilizer to any extent. Slow release materials may be applied somewhat earlier.
- 4. We probably did all that we could regarding the drought short of performing rain dances!
- 5. Fertilizers with high K should not be used on bogs with yellow-vine.

What should we do now? We know that stressed plants (drought, maybe yellow-vine) are more sensitive to further stress. Our actions this winter and next spring should be based on caring for plants that have been severely stressed.

- 1. Fall fertilizer use should be limited. One of the reasons to use fall fertilizer is to help recover from a large crop. Unfortunately, there isn't much of that this year. As the soil rehydrates, some the fertilizer applied during the summer may become available. If this happens, fall fertilizer in addition could lead to plants that are too tender going into the winter. Remember that K is good for winter stress *but* is bad if you have had yellow-vine. Human nature inclines us to want to 'do something' after the crop problems but fall fertilizer application is probably not the answer and may actually aggravate the problem.
- 2. Do not take any chances with getting the winter flood on. Stressed plants are more sensitive to cold stress - buds could be damaged in an early cold snap. Watch for rapid temperature drops or extended periods with cold, wind, and frozen soil (winter-kill conditions).
- 3. If you plan to sand your bogs, chose the least stressful methods: late fall or winter barge sanding or ice sanding. Sanding in the spring is not recommended too much additional stress.
- 4. Herbicides, especially casoron, should be limited as much as possible as they add to the plant stress.
- 5. Late water should be used with care. Choose bogs that showed the least stress in 1995 and inspect the bog carefully after the winter flood prior to making a final decision. If the bog shows winter stress (leaf drop, odd coloration), late water should be postponed for another year on that piece. The exception bogs that are stressed due to mites (especially if the infestation remains) or are heavily infested by bramble will benefit from the use of late water even after a drought year. Barge sanding in late water should probably be avoided in 1996.

Finally, there is little point in second-guessing yourself and others regarding the 1995 season. Learn what you can from the events of 1995 and go on from there. And remember, no matter how knowledgeable we become, we still do not have the power to control nature.

CAROLYN DEMORANVILLE

Cranberry Newsletter 3

LATE WATER 1995

We at the Cranberry Station have been studying Late Water (LW) for the past several years. Anne Averill's entomology group has shown that LW suppresses Southern Red Mite and Cranberry Fruitworm. Frank Caruso has been finding ways to adjust fungicide schedules to take advantage of the suppression of fruit rot disease by LW. Mary Jane Else has been studying the effects of LW on brambles and has found up to 50% reduction of bramble populations following LW.

I have been documenting effects of LW on cranberry plant growth, fertilizer requirements, and yield. From 1990 to 1994, we found no reduction in yield on LW bogs in our studies. The 1995 data are still being compiled. However, we have heard reports that some LW bogs did not yield well in 1995. Of course, we have also heard some bad reports about Early Water bogs. In addition to the yield information, we are also collecting information on costs and returns to allow us to develop an economic comparison between management with or without LW.

Last year in the newsletter we conducted a LW survey. I would like to share some of those responses with you and request that you take the time to complete and return the short follow-up survey in this issue. We will be devoting an entire newsletter issue to LW later this winter so that you will have the most current information available to you as you decide how to incorporate LW into your bog management in the 1996 season.

1994 LATE WATER SURVEY RESPONSES

We received 140 responses to the survey, representing approximately 9,000 acres of owned or managed bogs. About 1,500 of those acres have been held LW sometime in the last 15 years. A selection of the other survey responses follow.

Have you used LW in the last 15 yea	rs?	46 said yes, 94 said no	(43% yes)	
If you said yes, do you use LW on a :	schedule?	10 said yes, 36 said no	(22% yes)	
How often for a given bog?	those on a re	gular schedule said every 3-4	years	
How often on any bog?	25% at least	1 in 4 years, the rest less ofte	n	

We also asked why growers used LW. The most common answers (most popular first) were: weed control, insect control, improved fruit quality (less fruit rot), growth stimulation, and cold/frost protection.

Growers thought that they would increase their use of LW if:

- they could get better weed and/or insect control, pesticide availability was limited,
- they were convinced that yield would not suffer, they received more money for LW fruit,
- they could manage the bogs after LW with fewer pesticide inputs,
- they had better water supplies or were better able to hold a flood or could isolate single bogs to flood or bogs were in better grade,
- and if there was more information (research) regarding:costs and returns, possible yield impact, weather interactions with LW (what makes a good LW year?), and just generally better knowledge.

Some suggestions that we received for research directions for the LW project:

1. Survey and collect grower testimonials for LW use. 2. How does the cost compare to EW, savings from reduced pesticide use? 3. How do the new varieties respond? 4. How does holding LW 2 consecutive years effect the bogs? 5. Interaction with sanding, barge sanding. 6. Yield, LW, weather interactions? 7. Fertilizer management with LW. 8. Can we control insects and mites with shorter floods (less than 4 weeks)? 9. How do we get the best weed control with the use of LW?

Many of these questions are under investigation at the Cranberry Station. We will be sharing the results and our plans to further address these issues with you during the coming newsletters and at our March meeting at the Taunton Holiday Inn (see the announcement in this issue).

CAROLYN DEMORANVILLE

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Agricultural Conference for Educators March 23, 1996 - Memorial School in Natick

The Northeast Organic Farming Association of MA (NOFA/Mass) and the MA Audubon Society/Drumlin Farm (MAS/Drumlin Farm are holding the 3rd annual Agriculture Conference for Educators: entitled PEAS - Providing Education through Agriculture for Students, to be held at the Memorial School in Natick, MA on March 23, 1996.

The conference site is located adjacent to the Natick Community Organic Farm, which will provide an ideal setting for activities and demonstrations. The schedule includes 24 workshops, plus demonstrations and exhibits, which will present information on how to integrate informal, hands-on, farm-based education into the basics of classroom teaching.

A simple lunch emphasizing organic, local foods will be provided for conference participants. Preregistration fees for the conference are \$35 for NOFA or MA Audubon members; \$45 for non-members. A late fee of \$5 will be charged after March 15th. For registrations forms or more information please contact Amy Wales at NOFA (413) 625-9720 or Stacy Miller at MAS (617) 259-9500.

BT SURVEY - DEADLINE EXTENDED

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It's not too late to return your survey on Bt products. This survey (on pink paper) was mailed out in October with a due date of November 3, 1995. The deadline has been extended until the end of the year. It is important that we receive as much feedback from the grower community as possible so that the survey will accurately reflect what's going on. Please take a few minutes to fill out the questions and requested information. Just drop it in the mail; the postage is paid!! If you haven't receive a survey or lost yours, please call me at the station, and I'll be happy to mail one out to you.

HILARY SANDLER

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