



# Cranberry Station Newsletter

FEBRUARY 2000

UMASS CRANBERRY EXPERIMENT STATION

1 STATE BOG ROAD

P.O. Box 569

EAST WAREHAM, MA 02538

<http://www.umass.edu/umext/programs/agro/cranberries>

## 2000 UMASS ANNUAL CRANBERRY RESEARCH AND EXTENSION UPDATE

**Sea Crest Conference Center in North Falmouth**

**Tuesday - March 7, 2000 7:30 AM - 4:30 PM**

Cranberry Station personnel will present highlights of their 1999 research projects. The poster sessions will include UMass Dartmouth projects. \$25.00 charge includes lunch and coffee breaks. Recertification credits for the cranberry category will be offered - **4** contact hours.

### MEETING SCHEDULE

7:30	Registration and Poster Set-up (Coffee served)
8:30	<b>Cranberry Experiment Station Update</b> , Frank Caruso, Acting Station Dir.
8:45	<b>Environmental Physiology</b> , Bruce Lampinen
9:15	<b>Cranberry Disease Studies</b> , Frank Caruso
10:00	<b>Coffee and danish break</b>
10:30	Guest Speaker, Steve Boyd
11:15	<b>Late Water Update and Discussion</b> , Station Staff
NOON	<b>Deli Buffet Lunch</b>
1:00	Poster Session
2:00	<b>Entomology Update</b> , Anne Averill
2:30	<b>IPM Research</b> , Hilary Sandler
3:00	<b>Weed Research Update</b> , Tom Bewick
3:30	<b>Cranberry Nutrition</b> , Carolyn DeMoranville
4:00	Wrapup and Paper work for Credits.

**Last chance !**

**Registration  
forms on page seven.**

**Be sure to mail  
your form in  
today**

### DIRECTIONS TO SEA CREST

Take **495-25** south over the Bourne Bridge, At the rotary, get onto Route **28 South**.

Follow Route **28** thru the Otis Rotary and take the next exit, Route **151**.

Take a **left** off the exit ramp. At 1st set of lights take a **left**. Go one mile to a rotary.

Take a sharp **right** from the rotary onto Quaker Road.

Follow Quaker Road one mile and Sea Crest is on the **right**.

## MISCELLANEOUS ITEMS

During the off-season months, it is always worth contemplating the past growing season and the things that went right and the things that went wrong. If you had a bed or several beds that had more fruit rot than usual, now is the time to figure out how you can avoid it from happening in 2000. If you need some help in coming to grips with the analysis, call me and we can make our best effort to nail down what happened and why it happened. The one variable that will make the diagnosis difficult at this point is how stressed the vines were during the drought period. Unsuitable berries at harvest may not have been damaged by fruit rot infection, they may have succumbed to hot and dry conditions. Only you know what occurred in an individual bed, and you will only know this if you watched things closely on a day-to-day basis.

This past stretch of subfreezing temperatures during January has been the longest period since December 1989 (the last time we had such prolonged ideal conditions for ice sanding). Some beds went through the period unflooded with the vines exposed to wind chills in excess of -40°F. I will be very interested to see how these vines fare as the growth begins in April compared to vines in neighboring beds that had a sufficient protecting flood. If the buds in such beds are significantly damaged, these might be beds worth taking out of production for 2000.

A doctoral graduate student in my program, Nora Catlin, will be looking for beds that have had a history of upright dieback disease. She will be determining how this disease impacts yield and which fungal pathogens are important in the etiology of the disease. If you have a bed that fits the above description, we would love to hear about it. We promise we won't be tromping over every berry in the bed!

UMass Cranberry Experiment Station  
1 State Bog Road, P.O. Box 569  
East Wareham, MA 02538  
(508) 295-2212 FAX (508) 295-6387

Dr. Frank L. Caruso, Acting Director  
**FEBRUARY 2000 Issue**  
Deborah Cannon, Editor

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UMass Extension Mailing Signoff

Frank L. Caruso, Acting Director

## THOUGHTS ON DISEASE MANAGEMENT IN 2000

As you plan your programs for the upcoming 2000 growing season, you need to take several things into consideration regarding your disease management scheme. If you are going to eliminate or reduce Ridomil applications for Phytophthora root rot control, **YOU MUST MAKE CERTAIN THAT YOU HAVE GOOD DRAINAGE!** Proper drainage will help to prevent the disease from spreading even in the absence of a regular fungicide program. You are asking for big trouble if you allow for standing water to persist in the low spots, creating perfect conditions for the survival and breeding of the fungus *Phytophthora cinnamomi*. If we experience a rainy spring or numerous frost nights with frequent sprinkler applications, your drainage will be put to the ultimate test. Do the work as soon as you can, prior to frost season. Otherwise, root rot symptoms will be observed later in the growing season and harder decisions will need to be made before the disease gets worse.

Fungicides registered for fruit rot management do not all cost the same. By and large, the chlorothalonils are more expensive. However, these fungicides are our best weapon against infection by the fruit rot fungal pathogens. If you are going to use the cheaper fungicides in a particular bed, there are several things to consider:

- (1) Does this bed have a history of higher fruit rot incidence than the usual bed?
- (2) Are the fruit in this bed grown for processing or for fresh fruit wherein the berries will be held in storage for many weeks?
- (3) Is the cultivar in the bed one of the more fruit rot susceptible cultivars (Ben Lear, Crowley, Early Black)?
- (4) Have other cultural practices (late water, sanding, vine pruning) been utilized in this bed that should help in the reduction of pathogen inoculum for infection?
- (5) Does the chemigation system in the bed have a good coefficient of uniformity or will many areas of the bed get poor coverage by the less effective fungicide?
- (6) Will the sprinklers in the bed irrigate the plants sufficiently during dry periods, or will the plants suffer from drought stress in certain areas, making them more susceptible to infection by the fruit rot pathogens?
- (7) Should a less effective fungicide be applied if there is a possibility that an expected rain event may wash off the active ingredient?
- (8) Because the EBDC fungicides (maneb, mancozeb) can reduce color development if applied multiple times, is it worth the risk?

If you have difficulty in making these decisions, call me and we can discuss the individual scenario and find the best course of action, depending on the financial considerations.

**FRANK L. CARUSO**  
**PLANT PATHOLOGY**

## SECTION 18 NEWS

Section 18 Permits have been granted by the EPA for the use of the herbicides, Stinger and Kerb, on Massachusetts cranberry bogs for the 2000 season.

All growers who wish to use either of these materials during the 2000 field season must obtain the following paperwork **PRIOR** to using either herbicide:

- 2000 product label
- DFA permit
- Grower reporting form (GRF)
- Liability waiver for Stinger use
- Information Postcard for Kerb use

The paperwork will be available (probably by March) from your local ag suppliers (DeCran, RASP, RF Morse), the DFA-Pesticide Bureau in Boston (contact Steve Antunes-Kenyon at 617-626-1784), or the Cranberry Station.

If you have Kerb or Stinger on-site that was purchased in a previous season, you may use it on your bog during the 2000 field season. However, **YOU MUST STILL OBTAIN THE PAPERWORK NOTED ABOVE** prior to using the herbicide.

It is critical that you fill out and return the Grower Reporting Form to MA-DFA for any Section 18 material by the appropriate deadline. The permitting of any future Section 18s is severely compromised by non-compliance. The Liability Waiver must be signed and returned to DowAgrosciences. The Information Postcard must be filled out and returned to Rohm and Haas. Their respective addresses will be on the forms.

### **Stinger Use in 2000**

Stinger may be applied as a postemergence broadcast foliar spray to dormant cranberry plants and foliar spray as a spot application to growing cranberry plants. The rate for Stinger is 0.5-1.0 pt/A. The lower rate (or less) will be satisfactory for young, succulent growth of sensitive weed species. Wipe treatments may be made as a 2% solution (2.5 oz/gal). Total application must not exceed 1 pint per acre per annual growing season. Stinger has a 50-day PHI. The Section 18 permit expires December 31, 2000.

Stinger is effective against weeds in the composite and legume families. Examples of these plants are asters,

narrow-leaved goldenrod, ragweed, Joe-pye weed, pitchfork, white clover and wild bean. Other sensitive plants within the treated area may also be controlled. Clover can be successfully controlled by spot applications in April, prior to bud break of the cranberry plant. All other weeds should be treated when the weeds are actively growing, but at a time when the cranberries are **NOT** actively growing. Best results (minimizing vine injury) have been seen when applications are made after fruit set, but prior to the 50-day PHI. Spray to just wet the leaves. Do not spray to run-off!! Excessive foliar application increases the chance of vine injury.

### **Kerb Use in 2000**

Kerb is to be used as a preemergence herbicide to control dodder. It can be used as a broadcast application either through the irrigation system or through a boom-type sprayer applicator. Kerb cannot be applied by air. Application should be followed by 0.1-0.2 inches of water to remove any remaining herbicide from the cranberry foliage and to incorporate the herbicide into the top surface layer of the soil (where the dodder seeds are).

Two applications are permitted. Use 1-2 lb/A product but do not exceed 2 lb/A total product per season as a result of a single or split application. Application should be made after the winter flood has been withdrawn and prior to dodder emergence.

### **Grower Reporting Forms for the Use of Stinger from 1999**

The deadline for the GRF for Stinger 1999 is **APRIL 1, 2000**. If you purchased Stinger in 1999 or obtained paperwork to use Stinger in 1999, you must return a GRP to Steve Antunes-Kenyon **WHETHER YOU USED THE HERBICIDE IN 1999 OR NOT**. If you used Stinger, fill the form out indicating amount used and acreage treated. If you did not use the herbicide, please fill out your name and address, etc. and indicate that you "did not use in 1999". If you have further questions, please call Steve at (617) 626-1784 or me at ext. 21.

**HILARY SANDLER  
IPM SPECIALIST**

## **USING LATE WATER TO REDUCE MANAGEMENT COSTS**

For further information regarding Late Water – attend the meeting at Sea Crest on March 7<sup>th</sup>. See the announcement on page 1 of this newsletter. Also refer to the Chart Book.

Late Water (LW), a 30-day spring re-flood of a bog, is a practice both historic and modern. Prior to the advent of sprinklers for frost protection, LW was primarily used for frost protection. At that time, the flood was held late into the spring to avoid having to repeatedly reflood for frost protection. In addition to frost protection, the flood was known to reduce the incidence of fruit rot disease and cranberry fruitworm (CFW), benefits documented by Henry Franklin. With the advent of sprinklers and the availability of insecticides and fungicides, LW use declined.

By the early 90s, LW was only used by a few fresh fruit growers for its associated benefits in promoting keeping quality. Further, the LW practice had evolved into a 30-day flood applied prior to the break of dormancy (pre-green-up stage, buds still tight and red), and held for only 30 days. Because of the modern and historic claims that the flood was beneficial in pest control, the research group at the Cranberry Station began to study LW as part of a low-input approach to cranberry growing. At the time, the main emphasis was on the reduction of pesticide inputs. Now, we can use that information as the basis for reducing financial inputs.

**In our studies, we were able to demonstrate several beneficial aspects of the use of LW:**

1. Late water controls or suppresses insects and mites including cranberry fruitworm, early season cutworms and southern red mite.
2. Late water reduces the incidence of fruit rot disease. Fungicide use for fruit rot control can be reduced or eliminated in the year of late water with no adverse effect on fruit quality. In fact, LW bogs had lower incidence of fruit rot at harvest and after storage than applications. The number of fungicide applications and fungicide rates can also be reduced or eliminated in the year following late water.

3. Late water reduces pressure from spreading perennial weeds particularly dewberries.

4. Late water stimulates cranberry plant growth (upright length). Fertilizer nitrogen applications could be reduced from 20-70% on LW bogs. However, no more than 40% reduction is recommended - larger reductions may be associated with decreased crop the following year.

It is apparent that all of these findings are associated with reduced inputs and therefore, lower costs. **However, there are some factors that could lead to unique costs associated with LW.**

1. The flood must be applied to a depth of at least 1 foot and maintained at that level.
2. Temperature and clarity of the flood should be monitored periodically. If temperatures are consistently greater than 65°F, the flood may have to be removed prematurely. If algae begin to grow in the flood, the application of an algaecide may be required.
3. Following the removal of the flood, the bog MUST be protected for any temperatures lower than 30°F. This may lead to more frost nights for the LW bog after the flood compared to near-by bogs. However, all frost nights during the flood were saved.
4. Crop may be reduced by 5-10% but usually is not. However, if conditions for LW are unfavorable (plants stressed and carbohydrate reserves are low prior to LW), large crop reductions may occur. Possible negative factors include lower than average sunlight the previous summer and fall, heavy crop the previous season, and oxygen deficiency conditions during the winter flood. See the management notes below for advice on when to use LW.

The following is a financial comparison of LW to standard practices from our low input research. A cranberry grower participant in the study supplied cost comparison data for LW vs. standard bog pair. The comparison on a per acre basis is shown below. This is fairly typical of all bogs in the study in terms of materials use and differential in frost protection.

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<b>Item</b>	<b>Cost</b>	
	<u>LW</u>	<u>Standard</u>
Pesticide applications	\$474.36	\$699.38
Fertilizer applications	316.34	384.68
Labor for flood	83.52	
Pumping for flood	23.30	
Frost protection	53.92	179.16
<b>Total costs</b>	<b>\$951.44</b>	<b>\$1263.22</b>
Net savings	\$311.78	

Based on these figures, cost differentials on the LW bog were large enough to offset a 15 bbl/A loss of yield at \$20/bbl. Of course, if there is a crop reduction, savings would be negated.

#### A review of LW management practices:

##### 1. When to use LW:

- Use LW no more often than every 2-3 years. Avoid its use if the bog is severely out of grade, if water supply is of poor quality, or if the cranberry plants are stressed. If your bog has Phytophthora, consult Frank Caruso prior to using LW.
- If sunshine hours in the previous summer were high, LW is recommended. If the winter has been average in temperature, LW is recommended (too warm - insufficient dormancy, too cold - winter stress). For 2000, avoid LW if your bog experienced significant drought stress last summer or if you believe that the bog was subject to prolonged oxygen deficiency or winter kill conditions this winter. Apply the flood mid-April (see the Chart Book for timing).
- Evaluate cost of maintaining flood – if frequent pumping will be necessary, cost savings will be less.
- The LW flood should be removed early if water temperature is consistently above 65°F, or if algal growth in the flood is severe.
- It is good practice to install sprinklers prior to the flood. If algaecide is required, it can be applied through the system. After flood removal, you will be prepared for frost protection.

##### 2. IPM monitoring for LW bugs:

Even though early season cutworm populations are generally lower on LW bogs, scout for these insects after the flood. Infestations may arise due to egg laying just following flood removal - if female moths are in the area, they will be attracted to the moist conditions. Pheromone traps for Sparganothis fruitworm and cranberry girdler should be used on LW bogs as you would on an EW bog - LW does not control these pests and if they are present in damaging numbers, treatments are timed based on trap catches.

##### 3. CFW management on LW bogs:

Because fruitworm populations are typically strongly suppressed by LW, sprays should only be scheduled based on presence of eggs in sampled fruit. For early season assessment of CFW on LW bogs, fruit should be sampled for the presence of eggs beginning at approximately 50% out-of-bloom (OOB). Alternatively, one spray may be applied at 50% OOB followed by scouting (cuts down on labor). Remember that bloom is compressed and synchronized on LW bogs so monitor for 50% OOB at closer intervals than for other bogs. It is also important to note that CFW is mobile and the moths often enter the bog from surrounding upland, so do not assume that you will eliminate all CFW problems with the use of LW.

##### 4. Mite management on LW bogs:

LW controls mites for at least one year. Use no other mite control.

##### 5. Disease management on LW bogs:

Fungicide applications should be reduced in the year of LW and may be eliminated if rot pressure is generally low and keeping quality forecast is not poor. In the following year, applications and rates should again be reduced. However, in the second year after LW, fungicide requirement increases somewhat. Reducing fruit rot fungicides on LW bogs does not seem to increase the incidence of upright dieback disease.

##### 6. Weed management on LW bogs:

LW reduces dewberry population but does not eliminate them. Weakened dewberries may be more susceptible to Roundup applications. During our project we studied dewberry populations on LW and EW bogs. We found that LW increased the natural mortality of dewberry plants from 30% (winter flood alone) to 50%. In

addition, surviving dewberries on LW bogs produced fewer runners than those on EW bogs (1.4 vs. 2). Based on this information we calculated the effect of using LW every three years compared to not using LW. After 10 years, each dewberry plant on the non-LW bog would produce 29 plants while on the bog that received LW every 3 years, each dewberry plant would only produce 2 plants. However, this is still an increase in weed pressure over time, indicating the need to integrate the use of LW with other management approaches for dewberry.

We began preliminary evaluations of treating surviving dewberries on LW bogs with Roundup delivered on clippers or by hand-wiping (this requires staking of the trailing dewberry runners to avoid damage to the cranberry plants). In the year of treatment, the clip treatment was more effective (37% reduction in dewberry runners) compared to wiping (6% reduction). Assuming the long-term effectiveness of clip treatments, the cost would be much less than for the wipe treatments. We found that a worker could clip-treat 100-150 runners per hour compared to staking and wiping only 32-35 runners in the same time period.

LW is less effective in controlling other weeds and does not control or suppress dodder. Low rates of casoron applied post-flood for dodder control do not harm cranberry plants. Do not apply any herbicides prior to the flood.

## **7. Nitrogen fertilizer management on LW bogs:**

Spring N application should be eliminated if a standard 4 week LW flood is used. Mid season applications may be reduced, but overall N reduction should not exceed 40% or the following season crop may be affected. Rates of 10-20 lb N/A in the year of LW, 20-30 lb N/A the following year are appropriate for Early Black and Howes.

**CAROLYN DEMORANVILLE  
CRANBERRY PLANT NUTRITION SPECIALIST**

## **STATION TIDBITS**

- Any one who registered for the Cranberry Production Training (held at the Sheraton Inn in Plymouth) but was unable to attend, may stop by the Station in East Wareham and pick up the hand out that was available that day.
- Please check out our New Web Site:  
<http://www.umass.edu/umext/programs/agro/cranberries>
- Pesticide exam package now available on the web: <http://www.massdfa.org/pesticide/htm>
- Cranberry Insects of the Northeast, by Anne Averill and Martha Sylvia is available at the Cranberry Station for \$28.00.

## **WORKER PROTECTION TRAININGS Cranberry Station Library Starting in March 2-4 PM**

Worker Protection Trainings for cranberry workers in the Handler category will be offered in the spring: March 29, April 26, May 31, and June 28. Anyone working on the bog must be trained unless they are a family member or already have a pesticide license. There will be a \$5.00 charge that includes training book and EPA verification card.

## **NEW CRANBERRY PESTICIDE EXAM MANUAL AND NEW QUESTIONS FOR THE EXAM STARTING JANUARY 2000**

If you are getting a pesticide license for use on cranberry, you will have new updated materials to use starting January 2000. Anyone taking the pesticide exam for private certification on cranberry should order the new manual from the Bulletin Distribution Center at UMass (information available in the License Information Packet or call 1-413-545-2717). The Station Staff has submitted the new manual that will replace the one from 1982. New questions have also been submitted to Boston that go along with the new manual. Both manual and questions were reviewed by a number of industry people. If you need the License Information Packet or more information, call or stop by the station and talk with Marty (ext. 20) or Deb (ext. 10) at the station.

**Registration Form for:  
UMass Annual Cranberry  
Research and Extension Update  
Tuesday, March 7, 2000 7:30-4:00 PM  
SeaCrest Conference Center, North Falmouth**

Please use this form to register.

COMPANY \_\_\_\_\_

CONTACT \_\_\_\_\_

PHONE \_\_\_\_\_

NAMES OF ATTENDEES \_\_\_\_\_

Please return completed form with payment by **February 25, 2000**. Include check made out to **UMASS (\$25 per person)**.

Return to: Cranberry Experiment Station  
P.O. Box 569  
East Wareham, MA 02538

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Attach additional sheets as necessary.

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**Registration Form for  
Beginners Cranberry School  
Tuesday, April 25, 2000 5-9 PM  
Cranberry Station Library**

Please register for the meeting using this form.

COMPANY \_\_\_\_\_

CONTACT \_\_\_\_\_

PHONE \_\_\_\_\_

NAMES OF ATTENDEES \_\_\_\_\_

Return complete form with payment by **April 10th, 2000**, include check made out to **UMASS, \$5 per person**.

Return to: Cranberry Experiment Station  
P.O. Box 569  
East Wareham, MA 02538

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Attach additional sheets as necessary.

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## CRANBERRY STATION NEWSLETTER RENEWAL

**YOU MUST RETURN THIS FORM TO STAY ON MAILING LIST!!**

**FREE TO ALL MA GROWERS, CRANBERRY RESEARCHERS, AND IPM CONSULTANTS NATIONWIDE**

The Cranberry Station Newsletter is provided **free to all MA growers, cranberry researchers and IPM consultants nationwide**. **Subscription fee of \$15** (for a single one-year subscription) is required for **out-of-state growers and industry personnel**. **All persons** wishing to receive this newsletter (whether paying or not) must complete and return this renewal form to maintain a subscription. Include a check (made out to UMass) with the renewal form if you are out-of-state or are industry personnel. Also you can sign up on our web sit: <http://www.umass.edu/umext/programs/agro/cranberries>.

**Everyone must respond to this notice or your  
name will be taken off of our mailing list for 2000!**

NAME \_\_\_\_\_

Change of address? (Y or N) \_\_\_\_\_

COMPANY \_\_\_\_\_

Please check one:

Owner \_\_\_\_\_

ADDRESS \_\_\_\_\_

Employee \_\_\_\_\_

TOWN \_\_\_\_\_

Researcher \_\_\_\_\_

ZIP \_\_\_\_\_

Consultant \_\_\_\_\_

PHONE \_\_\_\_\_

Industry \_\_\_\_\_

Selling agent? \_\_\_\_\_

Private sector \_\_\_\_\_

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