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Updates: Frost, MRLs, Zones - Water Regs

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Updates:
Frost
MRLs
Zones – water regs

Carolyn DeMoranville, UMass Cranberry Station
Frost

- Mild winter
  - December record warm; Jan-Mar 5°F above average
  - Expected early break in dormancy
- Cool start to spring
  - Late March cool
  - April cool
- Eco-dormancy
  - Plants stay dormant until it gets warm
Frost tolerance team

- CCCGA
  - Anne Cote and Patti Silvia
- AD Makepeace
  - Glenn Reid (Chair of CCCGA Frost Committee)
- Cranberry Station
  - Carolyn DeMoranville and Erika Saalau Rojas
Frost Tolerance Protocol

- Examine buds of EB, H, BL, ST
- Start at Rosebrook Bog in Wareham
  - State Bog is a warm location
  - Limited amount of BL at State Bog
- State Bog buds also examined
- Part of frost warning message
- Tolerances with photos posted
  - Station website (Frost tolerance quick link)
  - Twitter (@esaalau)
Friday April 22 – Magnified photos

EB bud swell, 22°F, State Bog 4/22. Note - loose bud scales, round appearance so that base of leaves is hidden.

H bud swell stage, 22°F, State Bog 4/22. Appears not quite as advanced as Rosebrook below.


EB bud swell, 22°F, Rosebrook 4/22.

H bud swell stage, 22°F, Rosebrook 4/22.

BL bud swell stage, 25°F, Rosebrook 4/22.

Bud swell vs. Cabbage head stages

Expanded to cover leaf bases,
Increase in size from ‘white bud’

More of leaf base covered,
Rounder, scales parting
On bog photos (Erika)

04/13/16

Howes

04/19/16

Stevens

04/22/16

Ben Lear
http://ag.umass.edu/cranberry

https://twitter.com/esaalau
MRLs

- Maximum Residue Levels – Similar to ‘Tolerance’
- Important to international sales
- Driver of handler restrictions on pesticide use
- CMC and CI work on these issues

- What you need to know
  - Handler restrictions – materials and dates
## Example – Ocean Spray

### Export Process Fruit - Pesticide Restrictions

<table>
<thead>
<tr>
<th>Compound</th>
<th>Trade Name</th>
<th>Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinclorac</td>
<td>Quinstar</td>
<td>No use allowed</td>
</tr>
<tr>
<td>Carbaryl</td>
<td>Sevin</td>
<td>No use allowed after 8/1</td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>Lorsban</td>
<td>No use allowed after early scattered bloom or 6/22, whichever occurs first.</td>
</tr>
<tr>
<td>Acephate</td>
<td>Orthene</td>
<td>No use allowed after early scattered bloom or 6/22, whichever occurs first.</td>
</tr>
<tr>
<td>Simazine</td>
<td>Princep</td>
<td>No use allowed</td>
</tr>
<tr>
<td>Fluoxastrobin</td>
<td>Evito</td>
<td>No use allowed after 7/25</td>
</tr>
<tr>
<td>Novaluron</td>
<td>Rimon</td>
<td>No use allowed</td>
</tr>
<tr>
<td>Spiromesifen</td>
<td>Oberon</td>
<td>30 day preharvest interval.</td>
</tr>
<tr>
<td>Phosmet</td>
<td>Imidan</td>
<td>40 day preharvest interval.</td>
</tr>
<tr>
<td>Chlorothalonil</td>
<td>Bravo</td>
<td>No use allowed after 7/25</td>
</tr>
<tr>
<td>Chlothianidin</td>
<td>Belay</td>
<td>No use allowed after 8/1</td>
</tr>
<tr>
<td>Dinotefuran</td>
<td>Venom</td>
<td>30 day preharvest interval.</td>
</tr>
<tr>
<td>Spirotetramat</td>
<td>Movento</td>
<td>50 day preharvest interval.</td>
</tr>
</tbody>
</table>
Protecting Drinking Water – Zones and Definitions

- **Surface Water**
  - Zone A
  - Zone B
  - Zone C

- **Ground Water**
  - Zone I
  - Zone II
  - Zone III
Surface Water for Drinking – Reservoirs, Rivers
Surface Water - Zone A

- 400’ from edge of reservoir
- 200’ from edges of tributaries

- All activities should be limited, wildlife should be monitored.
- Examples – no building, no manure spreading or storage, no new roads, storage tanks, etc.

- Nutrient regs – setback is 100 feet from a public drinking surface water supply but exceptions are made for crops that need to be near water.
Surface Water - Zone B and Zone C

- Zone B – ½ mile from surface water body
- Zone C – Remainder of the watershed that includes the water body
Ground Water – Well Head Protection Areas

- The wellhead protection area is the surface and subsurface land area that a well draws water from.

- The wellhead protection recharge area can be smaller than, or as large as the aquifer in which it is located.

- DEP divides the wellhead protection recharge area into Zones I, II and III.
Ground Water - Zone I

- The immediate land area around a well.

- It is defined as a 400’ radius for wells >100,000 gpd and 100’ to 400’ radius for wells <100,000 gpd, depending upon the pumping rate.

- Only land uses and activities directly related to the water supply are allowed in the Zone I.

- Nutrient regs – No applications in Zone I
- Pesticide regs – No applications in Zone I
Ground Water - Zone II

- The land area that contributes water to a well. The well’s water supply is replenished when precipitation or stormwater percolates through the soil and reaches the water table.

- A Zone II delineation is required by DEP for all wells yielding >100,000 gallons of water per day (gpd). Updated yearly by the State.

- Some activities are limited in Zone II including storage of fertilizers or pesticides without proper containment. Also limits use of pesticides that could leach into the well.
Interim Wellhead Protection Area

- Temporary protection prior to approved Zone II
- Protected recharge area around a well
- \( \frac{1}{2} \) mile radius
- Eventually becomes a Zone II
Ground Water - Zone III

- The land area beyond the Zone II from which surface and groundwater drain into the Zone II.

- Zone III boundaries are determined by identifying the topographic surface water drainage divides.

- In most cases there are not limitations in this zone. Communities may limit impervious surfaces, etc.
Ground Water - Zone II limitations on pesticides

- Next slides are courtesy of Brian Wick, CCCGA
- Zone II regulation as impacts cranberry
How is Zone II determined?

- Groundwater movement model
- Area surrounding a well that supplies water during the driest 180-days with no recharge from rain
- Bounded by groundwater divides and bedrock, till, etc.
- Various shapes
- Can change over time
Are You Subject to the Regulations?

Cranberry Growing Region:
All cranberry towns contain Zone II areas within their boundaries.

Is your bog in a Zone II?
Zone II determinations can be made at:
• CCCGA Office
• UMass Cranberry Station
• USDA/NRCS Wareham Field Office
• MassDEP, MassGIS Web Site http://maps.massgis.state.ma.us/map.ol/oliver.php
Bogs With IWPA & Zone II

Red = Bog
Yellow Hatch = Zone II
Blue Circle = IWPA
Red = Bog  \hspace{1cm} \text{Yellow Hatch} = \text{Zone II}
Grower Alerts & Information

Select from the category listed below. Grant information can be found here.

- **Dam Safety**
  - Updated Jan 2009

- **DOE (Dept of Energy Ch. 61/Abatement/Farm Plates)**
  - Updated Jan 2009

- **GAP**
  - Updated May 2009

- **Irrigation Automation Systems Report**
  - Updated Jan 2009

- **Fertilizer Use Reporting**
  - Updated Mar 2010

- **RMV Inspections**
  - Updated Jan 2009

- **Water Management Area**
  - Updated Jan 2010

- **Zone II (Groundwater Protection Area)**
  - Updated Apr 2009

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**2008 Pesticide Report Forms Due**

(Posted March 2010)

2008 Pesticide Use Report forms are due to the Massachusetts Department of Agriculture's Division of Crop Inspectional Services by May 15, 2010. Failure to submit this report will result in loss of eligibility for renewal of your pesticide license. Each certified or licensed pesticide applicator is accountable for the submission of their Pesticide Use Report.

**2009 Pesticide Use Report** (PDF: 215KB)

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Zone II Information
(updated April 2009)
The MA Department of Agricultural Resources must be notified of any applications of a product on the Groundwater Protection List within 10 days of the end of each month. This form should include all applications made during that month. You do not need to include chemicals that are not on Groundwater Protection List. You may use one form to report multiple applications that occurred in the same month.

Notification Form: PDF Form (15 KB) MDAR Web Site: Electronic Notification Form

The CCCGA Zone II maps can be viewed by county and town. Links to the Groundwater Protection Regulations grower advisory and pesticide notification forms can be found here as well. Learn more....

If you don't have a PDF reader installed on your computer, you can download free software at the Adobe web site.

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Are You Subject to the Regulations?

Step 1: Determine if your cranberry bog is in a Zone II area

Step 2: Check the cranberry pesticides on the groundwater protection list

**EXCEPTIONS** Chloronil, Initiate
- Chlorothalonil – Bravo, Echo, Equus

**NO EXCEPTIONS (SORT OF)**
- Methoxyfenozide – Intrepid
- Thiamethoxam – Actara
- Dinotefuran – Scorpion
You cannot use Chlorothalonil products in a Zone II area unless you can document that you have tried alternatives in the past, at this same location and they failed.

(delivery slip showing greater than 3% rot at delivery without using chlorothalonil OR have a diagnosed case of Upright Dieback and other alternatives will not work)
ACTARA

This compound **CANNOT** be used in Zone II areas.

There are available alternatives.

(Avaunt in spring, Belay in summer)

Belay does not appear to be restricted until 8/1 by handlers, at which time you would already have sprayed for weevil.
METHOXYFENOXIDE

INTREPID

This compound **CANNOT** be used in Zone II areas.

There are available alternatives (Confirm, Delegate, Altacor).

Note: There are **SPECIAL** cases where use may be allowed for black-headed fireworm infestations during bloom – you **MUST** contact the Cranberry Station before proceeding.
Requirements for Producing Bogs

Step 1: Determine if your bog is in a Zone II area
Step 2: Check the cranberry pesticides on the groundwater protection list

Step 3: Requirements for existing producing bogs

- >50% foliar coverage
- No viable alternatives for the pesticide
- IPM plan from MDAR approved sources
  - 2016 UMass Cranberry Chart Book
  - UMASS Extension IPM fact sheets
- IPM program specific to GP regs
- Support letter from UMass Extension and/or relevant section from Chart Book
- Documentation that past alternatives failed
MDAR Notification!

If you use any of the compounds on the Groundwater Protection List in a Zone II area, you are required to...

- Notify MDAR within 10 days of the end of the month for each application

Groundwater Protection Notification Form

- Forms are available online at the CCCGA website, the UMass Cranberry Station website, and on the MDAR website.
Groundwater Protection Regulations (Zone II)

If you are in a zone II, you are restricted by the state in your use of some pesticide compounds that have leaching potential. The compounds used in cranberry that are restricted in zone II's are chlorothalonil (Bravo), dinotefuran (Scorpion), methoxyfenozide (Intrepid), and thiamethoxam (Actara). If you get permission from the UMass Cranberry Station to use one of these in a zone II, then you must notify the MA Department of Agricultural within 10 days of the end of each month. This form should include all applications made during that month. You do not need to include chemicals that are not on Groundwater Protection List. You may use one form to report multiple applications that occurred in the same month.

Section in Chart Book about Zone II
MDAR Notification Form (fill in online)
Groundwater Protection Notification Form (from Cape Cod Cranberry Growers Association)
Groundwater Protection Program Notification Form

You must notify the Department of Agricultural Resources Pesticide Bureau when you apply a pesticide product which is listed on the groundwater protection list. Notifications must be made to the Department within ten days of the end of the calendar month of use. Please submit one form per site. Thank you for your assistance!

Fields marked with an * are required.

Name*
First Name
Last Name

PESTICIDE LICENSE NUMBER*

DAYTIME PHONE*
(include area code)

E-MAIL ADDRESS*

Address*
City
State
ZIP Code

LOCATION AND DATE(S) OF PESTICIDE APPLICATION*
Any questions?