



VEGETABLE IPM MESSAGE

JULY 24, 2003

VOLUME 14, NUMBER 10

CROP CONDITIONS

Sweet corn, cukes, beets, lettuce, radish, cabbage, broccoli, squash, carrots, beans, celery, and tunnel tomatoes are being harvested across the state and drawing customers to the farm stands. Field tomatoes, peppers and eggplant are just coming in. Some growers report that fruit set on these crops is uneven and in some cases much of the first cluster on tomatoes did not set at all. Much of the state has continued to have substantial rains over the past week. This has reduced the need to devote time to irrigation, but has also made weed control difficult. More sun between rains would help the crops catch up from the cool spring, but unfortunately, the cloud cover remains. The warm days and nights (averaging in the upper 60's in the CT river valley) along with the rain and cloud cover, are ideal for disease growth. The hot and humid conditions predicted for this weekend will contribute to the disease proliferation. Powdery mildew has been found in zucchini, pumpkins and squash within the last 2 weeks throughout the state.

--P Westgate with contributions from, J Golonka, E. Droescher, J. Howell

NOFA 29TH ANNUAL SUMMER CONFERENCE

Does a presentation about the Northeast Organic Dairy Producers Alliance whet your appetite or does one on moving From Hopelessness and Guilt to Peace? Would you like to know The Story of Garlic or do you need to study up on Pests and Beneficial Insects? Is it an Introduction to Permaculture that you need or is it Writing an Annual Budget for a Farming Operation? Tool Sharpening or Marketing Meat? Do you want

to learn about The War on Farmers in Colombia or Stone Wall Building? Or maybe none of these are what you're looking for? There are dozens more workshops to choose from in all of the 8 one-and-a-half-hour slots. And if none of the workshops lights your fire (highly unlikely) or if you just need to do something else, there's always great films to watch, hanging out under the exhibitors' tents, swimming at a local swimming hole, networking with other folks, and many other things to do.

This year's debate - The National Organic Program: Should We Jump Ship? - is sure to be top notch and draw lots of folks with strong opinions.

Our old-fashioned country fair needs no introduction for those who have seen it, but for those who haven't suffice it to say it's everything a fair should be. The fair has fun for all, without all of that waste and bad food. Proving that we are not just trying to cause you anxiety in choosing what workshops to attend, there'll be a difficult choice to make during the fair as well. Play games (blueberry pie-eating contest, tomato bob, egg toss, anyone?) or watch Oiligarchy, another awesome politically-charged production by the locally-based Liberty Cabbage Theatre Revival (performers of last year's A Sense of Humus). Oh, the choices, the choices.

Northeast Organic Farming Association
August 8th through the 10th, 2003
At Hampshire College, Amherst, MA

For more information, go to <http://www.nofaic.org/conference>
Contact: Dennis or Audrey Cronin at 508-799-2278 or nofareg@juno.com
or Julie Rawson & Jack Kittredge at 978-355-2853 or nofa@nofamass.org

MORE ON ACID SOIL

In the last issue of Vegetable Notes, we mentioned that a few fields of cucurbits had acid soil around the area where starter had been banded. Some other fields where fertilizer has not been banded are showing lower pH levels than the growers expected. Besides fertilizers, water also causes soils to become acid. This is because water reacts with carbon dioxide in the soil pore spaces. This results in the formation of carbonic acid, making the soil more acid. This is an important reason why most soils in the eastern half of the country tend to be acid. Farther west, it is much drier and the soils tend to have higher pH levels. It is possible that the high amounts of rain this spring caused a significant lowering of pH from what it was last fall when most of the soil samples were taken. Soil pH can drop by one-half to a full unit from fall to spring depending on fertilizer applications and rainfall. The UMass soil test lab recommends lime application even when the pH is in the mid 6's. This can prevent seriously low levels from occurring the following spring.

--J. Howell

NEW PUMPKIN PRODUCTION GUIDE HAS IT ALL

The *Pumpkin Production Guide*, published in June 2003, is a must-have for both new and experienced pumpkin growers, serious gardeners, and agricultural advisors. The 152-page guide covers both the basics of pumpkin production and cutting-edge research. Twelve chapters offer practical information for preparing the field, evaluating varieties, and choosing the best cultural practices; groundbreaking insight into fruit set and pollination to help growers maximize yields; descriptions for identifying and controlling weeds, insects, diseases, and wildlife pests; ways to maintain postharvest quality; and sample budgets and marketing ideas. Over 115 color photos supplement the text. The *Pumpkin Production Guide*, NRAES-123, is available from the UMass Extension Bookstore for \$39.00 plus a \$5.00 shipping and handling fee. Please make checks payable to "The University of

Massachusetts" and mail to The UMass Extension Bookstore, Draper Hall, University of Massachusetts, Amherst MA 01003. The *Pumpkin Production Guide* is also available for purchase online at the UMass Extension web site (www.umassextension.org). We accept checks and Visa or MasterCard. *Shipping and handling cost is reduced to \$1 for each guide ordered after the first.*

USING THE ZEA-LATER TO CONTROL CORN EARWORM: ORGANIC CONTROL

Now that corn earworm has been found throughout the state it is time to take control measures. Many growers who have purchased the Zea-later or are trying the method with homemade equipment have questions about the oil applications, so here are some specifics to help you out.



The Zea-later in action!

Timing: Corn should be treated with 0.5ml of corn oil and Bt once during silk when more than 2 corn earworm are found per week in a trap in your area. The ideal age to treat the corn depends on the temperature. The best time to apply oil is generally 5-6 days after silk growth starts, or 3-4 days after

the silk is fully-grown. At this time, the tips of the silks have begun to wilt and turn brown and pollination is nearly complete.

Within a field, plants grow at different rates and begin silking at different times. In a relatively even stand, silk emergence is concentrated in a 3-4 day period. To determine the best time for oil applications, note the day when 50% of the corn has begun to show silk, and count from that date.

Applications made earlier than 5 days after silk do not appear to give better control, but may result in a higher rate of "cone" tips. This occurs when oil interferes with silk pollination resulting in unfilled kernels in the last half-inch of the tip. While partially filled tips are a relatively common occurrence in sweet corn, cone tips caused by oil are more pronounced.

Oil applied later than 8 days after silk initiation can result in more feeding damage to the kernels caused by caterpillars that entered the ear prior to the oil. There is a window between 5 and 8 days after silk initiation that provides the best combination of corn earworm control and ear fill.

The timing can also be determined by husking a representative ear and examining the kernels. The ideal time to treat it is when the silk is still attached to the top 1" or less of the kernels.

Materials: We recommend using corn oil with an added Bt. Organically certified growers will need to use a dry formulation of Bt and add an emulsifier to the oil to keep the Bt suspended in the oil. We have had luck with liquid lecithin. Add 5% volume of liquid lecithin to the oil before adding the Bt mixed in water. Liquid lecithin is the consistency of molasses: we strongly recommend that you add it directly to the oil instead of measuring into a separate container first. Lecithin will mix more readily with oil than water, making cleanup difficult: be careful not to spill the lecithin.

Use the labeled rate of Bt per acre in corn. Add this to the approximately 2 gallons of oil it takes to treat 1 acre. For the

Dipel DF product that we used in our trials this translated to approximately 3 tablespoons of Bt per liter of oil for an application rate of 1/2 lb Bt per acre.

If you have any questions please contact Pam Westgate at westgate@umext.umass.edu or 413-545-3696.

-P. Westgate

POTATO AND EGGPLANT

Watch out for the last of the Colorado potato beetle larvae from the first generation. In eggplant especially, a few larvae can cause significant damage to leaves. Fortunately we have a good selection of effective, low-risk materials to choose from (Raven, Novodor, Spintor, Provado). Remember that this beetle wins all the prizes for rapid development of resistance, and that it is what you apply on your farm that will be the major cause of resistance in your population of beetles. Therefore, rotate materials!

Also watch for new Colorado potato beetle adults, which are beginning to emerge from the soil and can do a lot of feeding damage. Look for emergence holes in the soil (about ½ inch across) and adults with softer shells than usual. Beetles that emerge before August 1 will lay eggs and produce another generation of larvae. If you see adults now, it's a good idea to control them and prevent this late-season infestation. Those beetles that emerge later will feed, but then will leave the field to seek overwintering sites. Avoid using Provado in fields that were previously treated with Admire. See the New England Vegetable Management Guide for a list of the many other choices.

Maintain a protectant fungicide schedule to prevent Early and Late Blight. Bravo Weatherstik has long been an industry standard, and if used at the very early stage of disease development can be quite effective. The formulations of Dithane DF Rainshield and Manzate 75DF will provide growers with good control under times of less intense disease pressure. Metiram (Polyram) plus triphenyltin hydroxide (Super Tin) have a place in mid-season sprays when disease pressure from late blight and early blight are less intense, and

this combination can be alternated with other fungicides. Any outbreaks of late blight can be expected to be resistant to ridomil; therefore, growers should not depend on this for late blight control.

For organic growers, several fixed copper fungicides are available (Basicop, Champ, Kocide, etc.) and provide fair control of late blight and early blight, again if used preventatively. These and other copper products are registered for use on both potato and tomato.

Potato Leafhoppers will build up in potato and cause early crop decline if not controlled. Populations that were not controlled earlier are likely to include both adults and nymphs at this time in the season. Leaf margins turn brown and crisp, whole leaves yellow and die, and the crop stops growing.

This is not a disease, but the result of a toxin injected into the vascular system when leafhoppers are feeding. There are many options that conventional growers can use against this pest, but the choices for organic growers are limited.

Pyrethrin products have shown some efficacy. Several are on the market (e.g. Liquid Rotenone & Pyrethrin) but we are only aware of one that is approved, Pyganic Crop Protectant.

-R. Hazzard

CUCURBITS

Cucumber harvest has begun. Fruit set is progressing for winter squash and pumpkin. Time to get deer fence in place!

Powdery mildew has been observed in zucchini, yellow summer squash, winter squash and pumpkin. Scout crops for symptoms of powdery mildew, especially searching older leaves, which show symptoms first. The initial symptoms are light green to yellow blotches on the upper surfaces of the leaves. These lesions may become necrotic (brown/dead) with time. A white to gray, powdery covering develops on the upper and lower leaf surfaces. Entire leaves may die and shrivel, but remain attached to the plant. The powdery mildew spores are carried on air currents, and do not need a film of water on the leaf surface to infect. Infection is favored by temperatures in the mid 80's F (30°C), but once infection

has occurred temperatures above 85°F will hasten the development of symptoms and leaf death.

Spray programs for vine crops need to address black rot and powdery mildew as well as other fungal diseases such as Anthracnose. The following recommended spray program covers these bases while keeping risk of resistance development low:

1. Where black rot (or gummy stem blight) is of concern, apply chlorothalonil (e.g., Bravo) when the fruit reaches 4 inches or if symptoms are observed.
2. As soon as powdery mildew has been detected in the field, apply a systemic strobilurin fungicide (Quadris or Flint).
3. After 7-14 days (depending on weather), rotate to another systemic fungicide with activity against powdery mildew (Benlate, Topsin M, or Nova plus chlorothalonil)
4. If further fungicide applications are needed, rotate to Quadris or Flint.
5. Copper products should be included if bacterial diseases are present.

Fungicide resistance is a concern for black rot (gummy stem blight), downy mildew, and especially for powdery mildew. Resistance to Quadris has occurred in many locations around the globe and can develop rapidly. Do not rotate Flint with Quadris, which are both strobilurin fungicides.

Bentimidazol fungicides (Benlate and Topsin-M) should not be rotated with each other and should be used only once per season.

Good coverage of leaf undersurfaces is difficult in cucurbits. One advantage of systemic products is their ability to enter tissues and compensate to some degree for poor coverage. However, it is important to maximize coverage as much as possible. For best coverage:

- Drive slowly (2 mph or less).
- Use high sprayer pressure (80 psi).
- Use high volume (75 gpa).
- Use closely-spaced nozzles (10 inches).
- Direct sprays at an angle to canopy instead of straight down. (15 degrees)
- Check coverage with water sensitive cards.

--Rob Wick and R. Hazzard

COVER CROPS: HAIRY VETCH

Now is the time to think about cover crops for the fall, especially if you need to order the seed. One of the more common cover crop choices for Massachusetts is hairy vetch. Hairy vetch can be seeded up to mid September and will survive the winter. Growers near the coast or on the cape and islands can seed vetch up till October or even later. When left to grow long enough in the spring, hairy vetch has supplied over 100 lbs./acre of nitrogen.

It is very important that the appropriate rhizobia species is used for hairy vetch (the rhizobia for hairy vetch will work for all vetches and peas). Without the rhizobia the vetch will not give the desired effects.

We have been recommending you mix the vetch with either winter rye or oat. There are several reasons for this:

1. Both oat and winter rye are very efficient in taking up nitrogen from the soil (remember, the vetch is getting most of its nitrogen from the atmosphere, so it does not need much from the soil). By taking up more nitrogen in the late summer and fall we are reducing the risk of contaminating surface or ground water and the nitrogen is recycled so that it can be used by next years cash crop.
2. The oat and rye can produce tremendous amounts of valuable organic matter if allowed to grow long enough.
3. Both of these cover crops will give better erosion control than vetch alone since they emerge and establish themselves more quickly than vetch. This is especially important when vetch is seeded after September 1.

We have been recommending 40 lbs./acre of oat or rye with 30-40 lbs./acre of hairy vetch. If you are using a grain drill then you can use seeding rates as low as 30 lbs./acre of vetch. If you are spinning the cover crop on and lightly disking it in then a rate of 35 - 40 lbs./acre is suggested.

Many growers prefer the use of oat rather than rye because of the tremendous growth of rye that occurs in the spring. This can be desirable if you are looking for increased organic matter in your soils, however some growers find the amount of biomass created by these two cover crops too much to

handle. In addition, we have found that we get much more growth of the vetch in the spring when seeded with oat than when seeded with rye. The rye will compete with the vetch in the spring.

Feel free to contact me if you have questions about these or other cover crops.

-Frank Mangan

TOMCAST UPDATE

TOM-CAST DSV's for Summer 2003						
Month	Day	DSV/Day	Accumulated DSV	Avg. Wet Temp F	Wet hrs/day	
July	9	1	56	67	7	
	10	2	58	63	18	
	11	3	61	63	24	
	12	0	61	65	3	
	13	1	62	64	14	
	14	1	63	59	13	
	15	1	64	62	13	
	16	2	66	65	11	
	New Data Set					
	July	17	***	***	***	***
		18	1	67	65	8
		19	1	68	60	14
		20	0	68		0
		21	2	70	68	11
		22	3	73	71	16
	*** No data for July 17 due to an equipment error.					

Within the last week, wetness periods have lasted the better part of most days here in South Deerfield. With the exception of a dry Sunday on the 20th, it's been pretty wet, and temperatures are climbing steadily into the optimum range for germination, growth and spore formation of bacterial diseases in tomato. This is another week of slow but steady accumulation, taking 12 days from July 10th to the 22nd to accumulate 15 DSV's. (Please note that due to some technical errors, one day of data was lost on the 17th.)

-Nicholas Connor

SWEET CORN

Sweet corn harvest is now in full swing for most parts of the Northeast this week, including Vermont and New Hampshire. Quality is excellent. The lull between the two European corn borer generations continues with flight counts at rock bottom and infestation levels in pretassel corn in decline. There are some spots around the state with ECB counts above 7 per week which would suggest the need for a continuing weekly spray on silk, but in most areas flights are low enough that no sprays are needed. Growers in NH and VT don't have to control corn earworm either as there was no reported flight this past week. Corn earworm is now in western MA as well as the Southeast. Corn earworm control measures are recommended

Trap Captures of European Corn Borer, Corn Earworm and Fall Army Worm in Sweet Corn							
		Iowa	NY				
Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	FAW	% PT
Walpole, NH	7/23/03	0	1	1	0	0	6%
Plainfield, NH	7/22/03	7	0	7	0	0	11%
Westminster, VT	7/23/03	3	1	4	0	0	14%
South Deerfield	7/23/03	0	0	0			
Sunderland	7/22/03	0	1	1	6		
Hatfield	7/24/03	9	0	9	1		24%
Hadley	7/22/03	4	5	9	9		
Feeding Hills	7/22/03	0	0	0	0	0	3%
Lancaster	7/24/03	0	2	2	4	0	8%
Still River	7/24/03	0	0	0	19		
Concord	7/21/03	1	0	1	3	0	12%
Leicester/Spencer	7/23/03	0	0	0	1	0	9%
Northbridge	7/23/03	0	1	1	6	0	6%
Rehoboth	7/21/03	1	0	1	6.5		
Sharon	7/23/03	0	0	0	19	25	
Sheffield, MA	7/23/03	3	5	8			
Tyngsboro	6/30/03	0	0	0	4	0	4%

*Note: Counts in **bold** represent an average count from two or more traps.*

for silking corn throughout the state. See article above for discussion of organic control using the Zea-later. For conventional sprays a 4-5 day spray interval is recommended, depending upon your location (see charts). The southeast also reported Fall armyworm

captures. A great resource for an 'early warning system' on migratory flights, and a regular update on trap counts is the Pest Watch site (<http://www.pestwatch.psu.edu/sweetcorn/tool/tool.html>).

Note: Spray intervals can be lengthened by one day if daily maximum temperatures were below 80° F for the previous 2-3 days.

-R. Hazzard

CORN EARWORM THRESHOLDS		
Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	No spray
0.2 - 0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1.0 - 13.0	7 - 91	4 days
Over 13	Over 91	3 days

Vegetable Notes, Ruth Hazzard, Editor. Nicholas Connor, Assistant Editor. Vegetable Notes is published weekly from May to September and includes contributions from the UMass Extension Vegetable Program faculty and staff, growers, and private IPM consultants. Authors of articles are noted; author is R. Hazzard if none is cited.

We would like to thank the following businesses for their sponsorship of *Vegetable Notes*:

- Crop Production Services**, 25 Elm St., South Deerfield, MA 01373. Phone 413-665-8775. Contact: Mike Barlow. "Profit from our experience."
- Empire Packaging Co.**, 311 North Plank Rd., Newburgh, NY 12550. Phone 800-562-5520. Contact: Dave Enos. "Retail & Wholesale Packaging for the Farm & Orchard."
- Family Farm Life and Casualty Insurance Co.**, 88C Main St., Northboro, MA 01532. Phone 508-393-9327. Contact: Dick Simonian. "Call for the agent nearest you."
- Harris Seeds**, 355 Paul Rd., P.O. Box 24966, Rochester, NY 14624-0966 Phone 585-295-3600. Contact: Karen McGuire. "A grower-friendly company."
- Superior Scale Company**, 154 Grove St., Chicopee, MA 01020. Phone 800-719-9040. Contact: Jerry Gamache. "The farmer's friend."

Where trade names or commercial products are used, no company or product endorsement is implied or intended. Always read the label before using any pesticide. The label is the legal document for product use. Disregard any information in this newsletter if it is in conflict with the label.

TWILIGHT MEETING at 4TOWN FARM

Wednesday, August 6, 2003

Join us for an exciting twilight meeting at **4Town Farm** hosted by the Clegg family on **Wednesday, August 6th**. The farm is located in **Seekonk, Mass.**, which is about an hour from metro Boston or Worcester. There is plenty to see and experience at this 200-acre vegetable and small fruit farm.

Mini trade show: We have invited several commercial agricultural suppliers to set up displays from 5:00 – 5:45. This will include Charles Harris Irrigation Systems and DeCran Agricultural Supplies, Inc.

Food: Light refreshments will be available starting at 5:00, compliments of 4Town Farm.

Farm Tour: starts promptly at 5:45. Topics include:

1. Tour of farmstand
2. Pick-your-own flower operation
3. Mechanical carrot harvester
4. Stale seedbed technique for weed management on greens
5. Different application methods for Admire
6. Mesclun production in greenhouse
7. Mums, sunflower and gladiola production
8. No-till system for pumpkins using hairy vetch and oats
9. Overview of irrigation system for 200 acres
10. Mechanical bean picker
11. New Morton Building
12. Mechanical corn harvester

Directions: Take 195 to Rte. 6. Take Rte. 6 east from Seekonk exit and west from Swansea exit to Warren Ave. (you will see a Cumberland Farms on the corner). Proceed ½ mile down Warren Ave. to George St. 4Town Farm is on the right.

Contact Frank Mangan (978 422-6374) or 4Town Farm (508 336-5587) for more information.