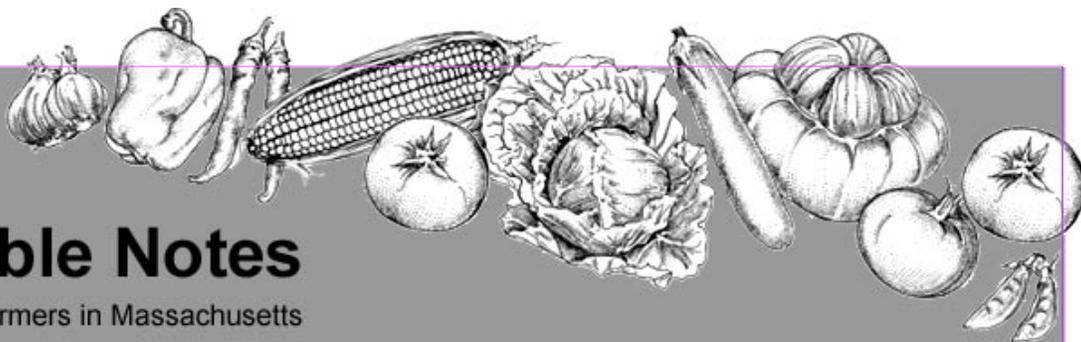




UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 16, Number 8

June 23, 2005

CROP CONDITIONS

Good growing conditions have prevailed for the past week. Weeds have grown well, too! Cultivation and side or top dressing are major activities, along with continuing to plant sweet corn and other succession crops, finish setting out transplants, and scouting for pests in sweet corn, eggplant, cucurbits, brassicas, and potato.

If you grow potatoes and have culls remaining from winter storage, it's a good idea to check your potato cull piles. Cull piles can be a good source of late blight. It can be carried over from the previous year or unsprayed potato plants will be more susceptible. Bury the pile with at least 2 feet of soil or cover with a black plastic tarp. Continue to watch for potato leafhoppers.

If you have a crop insurance policy, remember that if crop loss in a particular crop is going to be claimed, you must have the crop, its condition and the reason for lack of sales or loss of the crop documented by a visit from an assessor BEFORE you get rid of the crop. I mention this now because some growers may have excess inventory of flowers or bedding plants that they were unable to sell during May or early June, that are now unmarketable. Contact your insurance agent for details.

Mark your calendar for the UMass Vegetable and Livestock Field Day at the research farm in South Deerfield, Tuesday July 12, 5-8:30 pm. See the enclosed flyer for details!

SWEET CORN UPDATE

Corn is growing well. European corn borer moth captures are declining – the peak of the first flight seems to be over. However, the number of borers in pretassel corn is climbing. Scout any corn where tassels are beginning to poke up out of the whorl. Look for feeding damage, frass, or the small black-headed larvae. At 15% of plants infested (or more), spray. Earlier scouting and spraying is not worthwhile; the best time to control ECB is as the green tassel pokes up out of the whorl. Borers are moving out of the tassel at that time, and easily reached by pesticides. Scout again 3-4 days after spraying. At high levels of infestation or where new eggs are still hatching, it often takes two sprays 5-7 days apart to bring the population under control.

Now is a good time to test out the new biorationals (reduced risk) products for ECB: spinosad (Spintor, Entrust) or indoxycarb (Avaunt) because both are excellent materials for controlling ECB. Either one can also be used in cabbage and other brassicas and in peppers, where caterpillars are important pests.

Silking corn is at risk from ECB because ECB flight is still fairly high and new eggs are hatching. Weekly sprays for ECB are recommended on those early blocks that were started with plastic or row cover and have reached the silk stage. Get corn earworm traps up the week before you expect silk. We did capture 5 CEW moths in Franklin County; the only other trap count available for CEW registered 0 moths, in Dracut just north of Lowell.

Location	Date	ECB ZI	ECB EII	Total ECB
Hadley	6/22	16	35	51
N. Hadley	6/22	41	8	49
Hatfield	6/22	6	14	20
Deerfield	6/22	16	28	44
S. Deerfield	6/22	10	1	11
Pittsfield	6/22	0	0	0
Dighton	6/22	5	3	8
Dracut	6/22	8	30	38
Still River	6/22	6	9	15
Westminster, VT	6/22	7	2	9

DOWNY MILDEW IS MOVING NORTHWARD: BE ALERT FOR SYMPTOMS

Downy mildew of cucurbits typically has been a minor problem in New England because it usually arrives very late in the season if at all. Last year it hit the mid-Atlantic states, New York and New England early enough to cause serious crop loss. This year, it has once again made its way northward earlier than usual. This is a much more destructive disease than powdery mildew. It was confirmed in 10 acres of pickling and slicing cucumber (cvs. Jackson Supreme and Speedway) on June 13, 2005 in Cumberland County, New Jersey. These were cucumber transplants that originated in Florida. No downy mildew was found

on other nearby cucurbits (yellow squash, zucchini and watermelon) which were also purchased as transplants from Florida. Virtually all cucumber plants in the field are infected and symptoms are currently confined to the older leaves. This field is fairly isolated from other cucumber plantings. No downy mildew was detected in three nearby cucumber fields.



Downy mildew lesions on the underside of a squash leaf- note angular shape and dark purplish color

Downy mildew overwinters in warmer climates. It produces spores that can be carried north on storms and wind currents. Thunderstorms from the south deposit those spores on our vine crops, and if conditions are right for disease, it can cause significant damage and loss. Thus, the threat to crops in our area depends on several factors. One is where the disease has currently been found. Second is how likely it is that spores will move into the area, which depends on movement of wind currents. Then it depends on whether local conditions that favor deposition and survival of the spores. Rainfall deposits spores, hence rain increases risk. Sunlight kills the spores, so it reduces risk. Cloudy conditions favor the disease. All of this is explained on the website listed below.

The North American Plant Disease Forecast Center, based at the North Carolina State University, provides twice weekly updates on where downy mildew has been reported and what its expected trajectory is. Tobacco growers are familiar with this website, which also tracks blue mold and soybean rust. The latest forecast was issued on June 21 and can be viewed at <http://www.ces.ncsu.edu/depts/pp/cucurbit/> and clicking on "Current Forecasts" then on "Cumberland County, NJ" at the bottom of the page. No new occurrences have been reported since June 13.

There is a lot of good information about downy mildew and other cucurbit diseases on this website, including a

2005 fungicide efficacy table for all cucurbit diseases, at <http://ipm.ncsu.edu/agchem/chptr6/615.pdf>

We certainly hope that weather conditions will not favor the disease and it will not move it further northward. However, it is very possible that downy mildew will come into New England early again this year. We need growers to be on the lookout for it. Scout your fields regularly. Leaf symptoms can be used to diagnose downy mildew in the field in most cases. On cucurbits other than watermelon, small yellowish areas occur on the upper leaf surface. Later, a more brilliant yellow coloration occurs with the internal part of the lesion turning brown.

Usually the spots will be angular as they are somewhat restricted by the small leaf veins. When the leaves are wet, a downy white-gray-light blue fungus growth can be seen on the underside of individual spots (lesions). On watermelons, yellow leaf spots may be angular or non-angular, and they will later turn brown to black in color. Often on watermelons, an exaggerated upward leaf curling will occur.

If you suspect downy mildew, call the diagnostic lab (Rob Wick and Bess Dicklow, 413-545-1045 or 577-1827) and send a sample. It is easy to confuse it with powdery mildew or other diseases. Proper identification is key to selecting the right fungicides to get control and alerting other growers in the region.

Protectant fungicides such as chlorothalonil will give protection against several diseases including *Plectosporium*, black rot, powdery mildew and downy mildew -- without risk of resistance development that is a problem with systemics. However, systemic fungicides can play an important role if or when downy mildew arrives. See the following article by Meg Mcgrath and also Vegetable Notes, June 2 issue, article on *Plectosporium* for suggested spray schedules that consider the many diseases that can hit cucurbit crops.

--R Hazzard, with thanks to the following sources: Robert Wick, UMass Amherst Plant Pathologist; John Mishanec, Cornell Coop. Extension Service; Gerald Holmes, Extension Plant Pathologist, NC State U

UPDATE ON MANAGING DOWNY MILDEW IN CUCURBITS

Downy mildew is a potentially devastating disease that fortunately occurs sporadically in the northeastern US, and usually appears late enough in the growing season that yield is not impacted. In 2004, however, this disease appeared in NY and elsewhere in the northeast much earlier than usual causing extensive defoliation. By late June, growers in NC were 'going through the worst epidemic of downy mildew on cucumber that anybody can remember

seeing' and the disease had already appeared in NJ. Downy mildew was first noticed on Long Island about 4 days after a rainstorm on 31 July that was the remnant of the first hurricane of the season. Some pumpkin fields were severely affected, especially where fungicides had not been applied beforehand. Subsequently downy mildew developed throughout upstate NY, becoming more widespread than in the previous 25 years. Impact varied with time of disease onset and fungicides used.

Only leaves are affected. Spots are angular being delineated by leaf veins. Often several spots occur together in a coalesced group. Initially spots are pale green, then yellow before the tissue dies. Affected tissue in pumpkin can be more orange than yellow. On the leaf underside spots appear water-soaked at first. Extensive defoliation can occur when conditions are favorable. Leaf petioles often remain green and upright after the leaf blade has died and drooped. In contrast with powdery mildew, spores of the downy mildew fungus are darker (purplish gray) and develop only on the underside of leaves. Spores are not always present and symptoms can vary greatly, thus diagnosis can be challenging. Photographs are posted at <http://vegetablemndonline.ppath.cornell.edu>.

The downy mildew fungus exists as pathotypes varying in ability to infect the various cucurbit types. Some can infect all types while others are able to infect cucumber and cantaloupe but not watermelon, squash or pumpkin.

Manage downy mildew by planting resistant varieties, monitoring disease occurrence and weather forecasts, and applying broad-spectrum protective fungicides before detection and systemic narrow-spectrum fungicides when downy mildew occurs early in crop production. Most cucumber varieties and a few melons have resistance to downy mildew. There are several cucumber varieties with high levels of resistance to downy mildew and a few melons with lower levels of resistance. Resistant cantaloupes include Allstar, an Eastern type that is also resistant to Fusarium wilt and powdery mildew. Choose planting sites with good air movement and without shading. Avoid overhead irrigation in early morning when leaves are wet from dew or late in the day when leaves will not have an opportunity to dry before dew forms. Maintain ample but not excessive nitrogen fertility.

Broad-spectrum contact protectant fungicides (Bravo, Maneb, Dithane, copper) provide some downy mildew control. Researchers in NC regularly conducting fungicide efficacy trials for downy mildew rated chlorothalonil (4 rating) better than mancozeb and maneb (3) and also copper (1).

Systemic fungicides are recommended beginning when downy mildew is forecast to occur in the area or symptoms

have just started to develop. Apply every 5-7 days depending on disease severity. Fungicide resistance is a concern with this pathogen; therefore, alternate among systemic fungicides in different chemical classes and tank-mix with protectant fungicides when the systemic is not formulated with a protectant. Fortunately several systemic fungicides are now available.

Curzate is labeled for use at 3.2 oz/A on a 10-14 day schedule for a maximum of 9 applications. It has a 12 hr REI and 3 day PHI. Since this product reportedly has good curative activity (about 3 day kickback), it is a good product to use first after downy mildew is detected. However, it has poor residual activity (only 1-2 days), thus it is critical to tank-mix it with a protectant fungicide and to follow-up with another systemic fungicide when disease pressure is high. Curzate should be used as soon as possible after rain if not applied before (2 hr rainfastness). Cost of product per application is \$8.50/A.

Previcur Flex is labeled for use at 1.2 pts/A on a 10-14 day schedule for a maximum of 6 pts. PHI is 2 days. REI is 12 hours. Tank-mix with protectant fungicide. Cost of product per application is \$13/A. It is rated as highly effective in NC State trials.

Gavel is effective for downy mildew as well as Phytophthora blight. Gavel contains mancozeb and zoxamide, a new active ingredient that specifically targets fungi causing these diseases. Gavel can be used on cucumber, melon, summer squash, and watermelon but not on pumpkin and winter squash because it contains mancozeb. Gavel is labeled for use at 1.5–2.0 lb/A, which will cost about \$8.10–\$10.80/A, every 7 to 10 days or when conditions are favorable for disease for a maximum of 8 applications.

A new group is phosphorus acid fungicides (Phostrol, ProPhyt, and Fosphite) are more effective than Aliette. They have a 12 hr REI and can be applied to all cucurbits at 2.5-5 pt/A, which will cost about \$8.28-\$16.56/A, on a 7-14 day interval up to 6-7 times/crop. Phosphite ion, the active ingredient for these fungicides, affects fungal pathogens directly and promotes the plant's defense system. Should be used with other fungicides (systemics or broad-spectrum).

Fungicides with mefenoxam (Ridomil Gold Bravo, Ridomil Gold Copper) are highly effective but most at-risk for resistance. Ridomil Gold Bravo applied at 2 lb/A will cost \$34/A. PHI is 5 days. REI is 48 hours.

The QoI (aka strobilurin) fungicide Cabrio, now registered in NY, is more effective than the QoI Amistar. Cost of product per application ranges from \$19.13 to \$25.50 for Cabrio at 12–16 oz/A and \$11.64 to \$29.11 for Amistar at 2-5 oz/A.

Generally, although symptoms were severe in early August

when downy mildew was first observed on Long Island in 2004, growers were able to avoid excessive loss of leaves by applying these fungicides that have systemic activity for this pathogen. This was clearly demonstrated in a field where there were edge areas that the spray boom did not reach. Powdery mildew was more severe than downy mildew in early September. Although the canopy looked adequate in September, apparently in some fields there had been enough loss of foliage to downy mildew that the older portions of vines had died resulting in rotten handles on fruit.

Please Note: The specific directions on fungicide labels must be adhered to -- they supersede these recommendations, if there is a conflict. Any reference to commercial products, trade or brand names is for information only; no endorsement is intended.

*--Margaret Tuttle McGrath
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TRANSPLANT LOSSES IN MELONS AND OTHER CUCURBITS

Editor's note: the following comes from Eric Sideman in Maine, but I have heard similar descriptions of transplant problems in Massachusetts cucurbits as well:

I have received many calls this week about dead, wilted or discolored melons and other cucurbits. It is an abiotic problem, i.e., not caused by a disease causing pathogen.

Once again we can point at the horrible weather that we had most of the spring. Two problems arose for transplanted melons. First, they were put out late and often too large for the containers they were in. It was still cold and wet and the soil was soaked. The roots did not grow, in fact they probably began to rot or at least lose ground. Then all of a sudden we had some warm days with a hot, summer-like sun and the plants could not get the water they needed and wilted and may have died.

Second, cucurbits are warm weather crops. They grow best when the temperature is between 65 and 80 degrees. They begin to get hurt when the temperature falls below 50. The past week we had a few nights in the low 40s and the plants have really suffered. Leaves have become vary pale or bronzed between the veins and the edges have become brown.

Will the plants that are not dead make a come back? Some may, some won't. I do not have a good answer.

--Eric Sideman, MOFGA, Pest Report- June 22, 2005

WHITEFLY BIOCONTROL ON POINSETTIAS - INFORMATION SESSION

**Tuesday, July 19, 2005
at Mahoney's Growing Division,
Woburn, MA
10:00 AM - 12:00 PM**

Poinsettia growers are invited to join us for an information session on using biological control to manage whitefly at Mahoney's Growing Division, Woburn, MA. Our featured speaker will be Suzanne Lyon, Entomologist, University of Massachusetts-Amherst. Suzanne will talk about how parasitic wasps can be used on poinsettia crops this fall, costs for using parasitic wasps and purchasing and handling parasitic wasps. Suzanne has 8 years experience conducting whitefly biocontrol research on poinsettias and has successfully used biocontrol on poinsettia crops in commercial greenhouses. Karen McNaughton, IPM Scout and Aji Gnanaratnum, Head Grower at Mahoney's will also share their experiences. Four years ago, Aji began using parasitic wasps to manage whiteflies on poinsettias as a participant in the UMass research project. Last year Aji transitioned poinsettia production greenhouses to biological control. Two contact hours have been approved for pesticide recertification. For more information see <http://www.umass.edu/umext/floriculture/> and click upcoming events.

Registration will be accepted by phone, email or mail. To register contact:

--**Tina Smith**, University of Massachusetts, 413-545-5306, tsmith@umext.umass.edu

--**Paul Lopes**, University of Massachusetts, 508-295-2212 ext.24, lopes@umext.umass.edu

--**Leanne Pundt**, University of Connecticut, 802-626-6240, leanne.pundt@uconn.edu

This program is sponsored by a Northeast SARE grant to the University of Massachusetts and University of Connecticut Extension Floriculture Programs as part of the Sustainable Greenhouse Health Maintenance Program.

Vegetable Notes, Ruth Hazzard, editor and Ben Hunsdorfer, Assistant Editor. Vegetable Notes is published weekly from May to September and at intervals during the off-season, and includes contributions from the faculty and staff of the UMass Extension Vegetable Program, other universities and USDA agencies, growers, and private IPM consultants. Authors of articles are noted; author and photographer is R. Hazzard if none is cited.

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