

Vegetable IPM Message

JUNE 15,2000

Volume 11, Number 6

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Crop Conditions

Wet, saturated, cool soils, delays in planting or cultivating, and slow crop growth are the theme throughout New England and New York State. Growers are getting done what they can, shifting fields and schedules, plowing, planting or cultivating anytime they can get in to a field to do it, and trying to remember what it was like to yearn for a good soaking rain. Crops grow in spurts whenever we have a couple of sunny days (or, even one). Emergence of winter squash and other crops is spotty and slow in heavy fields (and what looks like a "heavy soil" is different this year than last!) and this year light soils have an advantage. Some fields are being replanted or planted late. Flooding rivers after last Tuesday's deluge took out soil and crops in some locations. Lettuce and strawberry harvest is going strong. Fourth of July corn will be a rare commodity this year.

Sweet Corn

European corn borer flights are increasing and larvae were found in some pretassel corn this week. Be sure to scout corn that is now in late whorl and early pretassel, as this is the most attractive host for ECB out there at this time. **Corn earworm** was picked up in traps in Southeastern Massachusetts, which could be migratory or overwintering moths. This will be a threat to early corn only if we see silk developing while captures are still up

SWEET CORN CAPTURES June 8-15

Site	Date	ECB I (Z)	ECB II (E)	Total ECB	% ECB*	CEW
South Deerfield	6/15	9	26	35	--	--
Millis	6/12	2	46	48	0%	1

Seekonk	6/2	2	15	17	10-12%	12
Rochester	6/12	8	350	358	25%	
Hopkinton	6/12	5	10	15	0%	1
Swansea	6/13	156	11	167	10%	2

* % of plants infested with caterpillars in pretassel or late whorl stage corn.

--Ruth Hazzard, Roz Cook, Mike Yates

LEACHING RAINS

There is little doubt that most of any nitrogen that was applied at or before planting has been leached from the root zone. The pre-sidedress soil nitrate test (PSNT) can be used to confirm this, but I'm quite sure the results would be low at this time and it would be appropriate to apply some N (30-50 lb/A) to most crops. In soils with good organic matter levels, the N will likely be replaced as more mineralization (breakdown) occurs, but for now a little applied N can help things along.

Any large applications (50-100 lb/A) of broadcast N have largely been wasted and can leach into ground water. Much of the N in vetch is released soon after soil incorporation and is subject to leaching as with fertilizer N. Crops use very little N when they are small, so large applications at planting may leach before the crop can use it. Applying a small amount of starter N at planting and sidedressing the rest of the required amount later reduces N loss through leaching. Sometimes, the sidedress application is not needed because sufficient N is released from soil organic matter. Application of unnecessary sidedress N is a waste of money and time for sweet corn, and may also reduce yield of other vegetables such as squash, pumpkins, peppers and tomatoes. The PSNT can help you determine if sidedress N is needed. Samples should be taken from between the rows to avoid any concentrated bands of starter fertilizer if used. If possible, cores or slices should be 12 inches deep. The soil should be air dried and sent to: Soil Testing Lab, West Experiment Station, University of Massachusetts, 01003. If the sample can be delivered to the lab within 24 hours, they need not be dried, but should be kept out of the heat. The charge for the test is five dollars with checks made out to "University of Massachusetts". The lab will process the samples within 24 hours.

-----PSNT Level (ppm) _____ Amount of N to apply (Lb/A)

Corn----- over 25 ppm _____ None

-----15 to 25 ppm _____ 30 to 60

-----less than 15 ppm _____ 60 to 100

Other -----Over 30 _____ None
vegetables*

----- 20 to 30 _____ 30 to 40

-----10 to 20 _____ 40 to 60

-----less than 10 _____ 60 to 90

- This based on research on peppers, pumpkins and butternut squash in Massachusetts and other states in the Northeast. Based on field observations, this is expected to be appropriate for most other vegetable crops.

--*John Howell*

Black CUTWORM

We have had reports of **black cutworm** (also known as greasy cutworm) damage in peppers and other crops such as lettuce, tomato, and leeks. Host crops also include corn, melons, cole crops, beans, potato, and beets. This pest is the offspring of a moth known as Dark Swordgrass Moth, one of a large number of noctuid moths which produce cutworms. The moths are capable of migrating long distances but in this region it is very likely resident populations which are causing problems. Overwintering occurs in the larval or the pupal stage, as deep as 5 inches (12 cm) down in the soil. Overwintered larvae could feed on early spring transplants and may be the cause of damage at this time. Also, adults emerge from overwintered pupae in May or June. Females lay hundreds of eggs on grass leaves, weeds, or the soil surface. Black cutworm in particular is reported to select low spots in the field or land that has been waterlogged or flooded for egg laying. This may explain high numbers this season! (However, reference books also mention that flooding is used to drown cutworms in some countries.) Eggs hatch in 5-7 days and young larvae feed on plant foliage. Older larvae feed on stems near the soil line during the night and descend into the soil during the day. They clip stems of young seedlings and are reported to feed on the wilted plant material. Larval development takes about a month (28-34 days). There are probably 2-4 generations yearly in this region although damage is most often reported in May or June.

Monitoring. Scout newly transplanted crops or susceptible direct-seeded crops to assess presence and severity of cutworms before the damage is severe. If you find clipped transplants, you can usually find the larva in the soil near the plant. Full grown larvae are pale gray to black to slightly purplish in color, about 1 3/4 inches (35-45 mm) long with dark-colored lines along the back. They have a dark, greasy appearance and curl into a c-shape when disturbed. Adult moths can be monitored with bucket traps (the Unitrap or Multiplier trap, baited with lure for *Agrotis ipsilon*, with a vaporstrip to kill moths) placed in fields or weedy areas near the field. This would indicate high levels of moth activity, help predict egg laying, and warn of future problems. I don't know if this could be used to

reduce or trap out adult populations in small plantings. Trap sources: Great lakes IPM (800-235-0285) or Gemplers (800-382-8473).

Cultural Management. Weedy land harbors the most cutworms, as the adult moths seem to prefer dense plant cover for egg laying. Crop residues may also attract higher populations. Therefore, crops that follow weedy crops, sod, alfalfa, or no-till crops are more likely to be damaged by cutworms. Plant early transplants into fields that had low weed pressure the previous year, or where crop residue was tilled under in the fall. Plow fields in spring and keep weed free for at least two weeks before planting to starve young larvae and reduce egg-laying. Avoid planting susceptible crops close to sod, alfalfa or fallow areas. Summer plowing disturbs eggs and larvae and raises them to the soil surface where they are more vulnerable to predation and desiccation.

Biological management. Several predators and parasites have been identified, however none have been commercialized for release against these pests. At Iowa State University, a new virus has been isolated from black cutworm which is highly active and has potential as an alternative to chemical control. Work is ongoing to evaluate this unique strain of baculovirus and the most effective way to use it in the field.

Chemical Management. Directed applications (banded or directed to soil surface) of insecticides (diazinon, carbaryl, or synthetic pyrethroids) will control cutworms. For best results apply in the evening just prior to active feeding. *Check New England Vegetable Management Guide* for specific materials and follow label instructions for the target crop. This is a tough pest for organic growers as no products are available and garden strategies such as collars are impractical on a commercial scale. Insecticidal baits (bran mixed with a toxin such as Bt scattered over the soil) or sprays (ie, *Bt aizawi* or *kurstaki* directed at plant stems) have been proposed and I would be interested to hear of any tests of this strategy. I would also be interested in any other strategies that have worked for organic growers.

-R Hazzard

Crucifers

Continue to scout for **caterpillars** -- all three species are reported to be present. **Flea beetles** are still active in greens and new seedings.

CUCURBITS

Striped cucumber beetle invaded newly emerged fields this week, especially during periods of warmer sunnier weather. Scout fields twice weekly to assess infestations. Damage can occur rapidly following emergence or transplanting. Check *New England Vegetable Management Guide* for products or refer to May 18 and May 25 newsletters for suggestions on Admire or Surround which are newly labeled for use in this crop. Either product could be applied to transplants prior to setting out -- Admire as a soil drench,

Surround as a foliar. Surround requires re-application after rains.

DISEASE DIAGNOSTICS UPDATE

It was a slow week here at the UMass Plant Disease Diagnostics Laboratory. One sample that caught our attention was infected with **Plasmodiophora**, a fungal pathogen causing **club root in crucifers**. The host was Gailon, an Asian vegetable, which exhibited the classic club root symptoms - swollen nodule-like roots and nodule-like roots along with stunted and wilted plants. Unfortunately, Plasmodiophora is a long-term soil inhabitant (four to eight years). Cold temperatures and wet soil seems to encourage infection. The good news is that the pathogen only infects crucifers, and is usually confined to certain parts of a field, such as low-lying or wet areas. Growers must take care not to spread the fungus to other parts of the field through tillage or cultivation equipment. If you suspect club root in your crops, carefully remove infected plants, replant with a non-cruciferous crop, and send a sample in to the Diagnostic lab for confirmation.

Be on the lookout for **damping-off diseases** (usually caused by Pythium, Phytophthora, or Rhizoctonia) in greenhouse transplants or newly planted material. We would also like to remind all potato growers to monitor their fields regularly for **late blight** (caused by Phytophthora infestans). Initial symptoms include dark, irregular, purplish lesions on foliage, followed by a downy whitish fungal growth on the lesion under conditions of high humidity. Phytophthora spreads fast, so quick action is critical to manage this disease. If you suspect late blight or any other disease in your fields, send samples (preferably by overnight mail) to the Plant Disease Diagnostic Lab, Rm 109, Fernald Hall, University of Massachusetts, Amherst, 01003. Call for directions if you want to drop samples off -- its not hard to find! There is a \$25 fee per sample which can be prepaid (checks to University of Mass.) or billed after the sample is evaluated.

--Jeff Lerner and Brian Lipka

POTATO

Colorado potato beetle: the long period of mostly cool weather in the first half of June allows a buildup of eggs and may result in rapid hatch of large numbers of larvae if we finally get some warm weather. **Potato leafhopper** is reported in New York State which means it has moved northward into the northeast, so begin to scout fields for adults using sweep nets or simply shaking foliage or examining undersides of leaves. Protectant fungicides are recommended to protect against **late blight** (see above for symptoms).

Two new products for sweet Corn Weed Management

Prowl. Prowl 3.3 EC has just received a federal registration for use on sweet corn. While Prowl has been used on field corn for many years, use on sweet corn is new and growers should proceed cautiously. Prowl has some definite advantage. It is very effective on annual grasses; however, its most valuable contribution to sweet corn weed management is control of common lamb's quarters and pigweeds, including triazine resistant biotypes.

Because Prowl is moderately persistent, good residual control can be expected. Combinations, or sequential applications with other herbicides labelled on sweet corn are necessary for complete weed control. Prowl is only moderately effective on velvetleaf and smartweeds and does not control ragweed or mustards. Tank-mixing with atrazine, or a sequential application following preemergence atrazine, should be a good fit for most. Prowl only works preemergence on weeds, so most will want to spray as soon as the corn is out of the ground. Later applications might fit following cultivation, or following an application of Basagran which was used to control earlier germinating triazine lamb's quarters and pigweed.

Why proceed cautiously? Prowl can cause very serious crop damage. Damage may be very visible (ie severely stunted plants with little or no roots) or may only be manifested by a delay in maturity. Label instructions for using Prowl on sweet corn have been written to minimize likelihood of crop damage. Prowl can be applied from very early postemergence (ie spike leaf stage) until the corn is 20 to 24 inches tall or has 8 visible collars, whichever occurs first. Do not apply Prowl preplant incorporated or prior to crop emergence! Do not apply with liquid fertilizer as the carrier. Other 'rules of thumb' that are important in minimizing sweet corn injury with all soil applied, grass control herbicides include; plant seed deep (at least 1.5 inches) into a well prepared and firm seedbed, plant into moisture instead of attempting to irrigate the crop up, and make sure that the furrow is completely closed.

Permit. Permit was registered for use on sweet corn late in 1999 and is one of the very best materials available for yellow nutsedge. Applied postemergence to the crop and to weeds, Permit has been used on field corn for a couple of seasons. Tolerance has generally been very good, but there have been a few instances of damage, especially when application occurred during very hot weather. Sweet corn variety response has not been determined and any crop injury arising from the use of Permit on sweet corn is the responsibility of the user. Do not use Permit on the variety Jubilee. Do not use on sweet corn treated with soil applied organo- phosphate insecticides and do not apply any organo-phosphate insecticides within 7 days before or 3 days after Permit.

As with Prowl, combinations with other registered herbicides are needed to obtain complete weed control. Permit does not control lamb's quarters but should be effective on triazine resistant pigweed and ragweed.

-- *D.J. Doohan, Weed Extension Specialist, Ohio State University, Wooster*

***partners with Nature* legacy: IPM Use, Public Awareness and IPM guidelines**

It appears that there has been some confusion about the status of the UMass IPM programs. For the record, the Vegetable and Small Fruit IPM programs are alive and well. This year, the Vegetable IPM program is concentrating on cucurbits, crucifers, Asian crops, and sweet corn, with on-farm scouting and research projects taking place around the state. The Small Fruit program continues to work with IPM in grape, blueberry, strawberry, raspberry and other berry crops and the Small Fruit IPM newsletter

is still published weekly.

The IPM Certification program, *Partners with Nature*, has been discontinued. As many of you know, the Department of Food and Agriculture played a critical role in the *Partners* program. However, since only about 50 farmers participated in *Partners* in any given year, DFA felt that their resources were better spent on other marketing and education activities that benefited larger numbers of growers.

We think that the *Partners with Nature* program had a pretty good run. In seven years (1993 to 1999), the program promoted greater understanding and adoption of IPM on 109 participating farms, promoted local agriculture, educated the public about IPM and agriculture, and improved public relations between farmers and the public.

One product of the IPM Certification project that is still useful and still available is the recently updated and republished *Integrated Pest Management Guidelines*. These guidelines provide lists of best management practices for 13 vegetable and small fruit crops. Growers can use these as a reference to evaluate and improve their own IPM practices, regardless of whether there is a certification program in place. These were provided by New England Vegetable and Berry Growers Association to all their Massachusetts members. Hard copy editions of the guidelines (UMass Ext. Publication IP-IPMA) are available for \$6 from the UMass Extension Bookstore (telephone: 413-545-2717, email: books@umext.umass.edu) or through the extension bookstore website at: <http://www.umass.edu/umext/bookstore/ipm.html>

The Guidelines can also be viewed directly on the web at:
http://www.umass.edu/umext/programs/agro/ipm/ipm_guidelines/.

--Craig Hollingsworth, R. Hazzard

Vegetable IPM Message, Ruth Hazzard, Editor. The Vegetable IPM Message 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.

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