UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 24, Number 7 June 7, 2013

IN THIS ISSUE:

CROP CONDITIONS

Crops are growing well. Harvest includes bok choy, salad and bunching greens, lettuce, radishes, the first summer squashes and cukes. Asparagus is still coming but the peak harvest is past. Strawberries are just starting. Earliest corn is beginning to push tassels. Potatoes are being hilled. Sweet potato slips are being planted as the acreage of this crop continues to grow. Row covers are being removed from spring crops, heat-loving crops are settling in, and weeding is constant. Keep cultivation shallow to avoid bringing up more weed seeds. Heavy rains last weekend may have leached available nitrate; use pre-sidedress nitrate tests to tell you how much if any additional N is needed. Rain and wet conditions this coming weekend will increase the risks of soil disease and late blight (see article). Plant summer cover crops to fill gaps before late crops or for a summer fallow. Sudangrass or sorghum-sudangrass, buckwheat, Teff, Japanese millet, field peas, soybean, and cowpea are all good candidates. More information on cover crops can be found at New England Vegetable Guide, Managing Cover Crops Profitably or the Cornell online cover crop guide.

PEST ALERTS

Potato Leaf Hopper has been found in eastern MA; check potatoes and beans.

Keep an eye out for **Aster Leafhopper,** which was was found in this week in NYS. The adult is 3/16th inch long and pale green with six, black spots on the front of its head. This insect vectors aster yellows in carrots and lettuce.

Asparagus: Scout ferns for asparagus beetles. Disk in or remove female asparagus plants from the field after berry formation to reduce egg laying by the **Spotted and Common Asparagus Beetle.**

Eggplant Flea Beetle can cause rapid defoliation of new transplants. Thresholds are as follows: Treat newly set transplants if they have 2 flea beetles per plant, seedlings 3" to 6" tall if they have >4 beetles per plant, and plants over 6" tall if they have 8 beetles per plant.

Colorado Potato Beetle is active, with adults moving into potato and eggplant, feeding and laying eggs. See article on management.

Watch for Thrips in Onion: thrips feed in the tender, moist center of young onions, and they are wasting no time in getting established this season. Scout by parting the leaf blades and looking for tiny yellow-white nymphs and brown adults hiding between. Count the number of OT and divide by the # of leaves to get # per leaf. The threshold for spray is 1 per leaf in order to prevent a buildup of populations.

Striped Cucumber Beetles are active – see article and link to more details on perimeter trap cropping.

European Corn Borer flight has started and numbers are increasing (see Table 1). Egg laying will follow. Trichogramma ostriniae releases should begin this week. Scout emerging tassels.

Table 1. Weekly Sweet Corn Trap Captures (6/6/13)

Location	Total ECB	CEW
CT Valley		
South Deerfield	16	n/a
Hadley	8	n/a
Hatfield	11	n/a
Central & Eastern MA		
Rehoboth	10	1
Sharon	3	n/a

LATE BLIGHT: START PROTECTANT FUNGICIDES

Most areas of the state have reached the threshold for first fungicide applications to protect potato from late blight (see Table 1). This is based on onsite weather station data that forecasts the first possible initiation of spore release IF there were infected foliage present (such as overwintered, infected potato tubers that regrow in spring). After the weekend's period of wet cool weather ends, virtually all areas will exceed the threshold. We recommend that growers apply a protectant fungicide to potatoes and tomatoes within the next week.

As of this writing, the closest reports of late-blight infected field tomato or potato are in Florida; none have been reported in the Northeast. However, it is reasonable to assume, based on the recent history of the disease, that there is late blight inoculum present somewhere in New England.

The first appearance of late blight (caused by Phytophthora infestans) can be "predicted" using a model that includes relative humidity, rainfall and temperature. Weather data is converted into units called "severity values" (SV) for the purpose of predicting late blight outbreaks. Daily SV's are added together to give a seasonal total SV.

Late blight is first expected to appear within 1-2 weeks after 18 SV have accumulated since the emergence of green tissue from the source of late blight inoculum. The source of inoculum could be plants growing from infected tubers in a cull pile, volunteers growing from infected tubers that survived the winter, or infected seed tubers. Fungicide applications to protect potatoes and tomatoes should be initiated as soon as possible after 18 SV have accumulated. Most locations in MA exceed 18 SV, and also have an accumulated 7-day SV of 8 or more.

Table 2. Blitecast Late Blight Model: Total Severity Values Across MA Date: June 6, 2013

Location	Cumulative SV*
Pittsfield	44
Ashfield	5
S. Deerfield	12
Belchertown	2
Bolton	43
Dracut	31
Boston	22
East Bridgewater	42
Sharon	23
Seekonk	39

*Assumes first emergence of potato crops occurred May 7.

Access data & Blitecaset output- from weather stations in MA, NY, VT: **http://newa.cornell.edu/index.php?page=degree-days**

Begin a spray program using protectant fungicides such as chlorothalonil or mancozeb. Organic fields should be protected with a copper-based fungicide. Reserve products with special efficacy against late blight until late blight has been reported in the region, if or when that occurs. The best control occurs when protectant fungicides are applied before LB spores are present and moving around through the region.

There are clear risks associated with a 'wait and see' approach; if you take this approach, be sure to scout your fields regularly, keep track of where late blight has been found and start sprays as soon as it's in MA – or better, in New England. The risks of this approach are that, when late blight is first found, your field is the one; or that it is found nearby, and then is too late for protective sprays to be effective.

For more information on late blight and early blight forecasting systems, and about forecast data for your area, please visit the Network for Weather and Environment Applications (NEWA) at http://newa.cornell.edu/.

--R. Hazzard, Lisa McKeag, Rob Wick

VEGETABLE EXTENSION TEAM WELCOMES NEW STAFF

We are happy to welcome several new staff members to the Extension Vegetable Program this summer! We have an energetic and capable team working on our many field project this season. You will see their work reflected in this newsletter, in grower meetings, research trials, and on farm visits throughout the state.

Katie Campbell-Nelson has assumed a position as Extension Educator in Vegetable Cropping Systems and IPM. She comes to UMass Vegetable Extension with a Master's degree in Plant and Soil Science from the Univ. of Massachusetts, experience with Turf and Crops/Dairy/Livestock Extension, and a background in farming, agricultural non-profit work, research, and teaching. She grew up in a subsistence agricultural community in eastern Indonesia and has worked part-time

for farms in the Pioneer Valley since 2005. She has also worked on the Northeast Organic Farming Association summer conference committee, and with beginning women farmers as a mentor for the Holistic Management International Whole Farm Planning course. Her research experience is diverse, from studying ammonia volatility in cow manure to fungicide resistance in turf pathogens. Katie teaches two courses for the Stockbridge School of Agriculture: Sustainable Agriculture and Tropical Agriculture. She is looking forward to meeting and working with farmers all over the state. She is also a dedicated backyard farmer.

Susan Scheufele is working on several projects including IPM, late blight, deep zone tillage, and Phytophthora capsici. She grew up in Worcester, MA and moved to Amherst, MA in 2002 to attend Hampshire College, where she studied geology and forest ecology and did research on plant and soil chemistry. In 2009 she worked at Riverland Farm, a vegetable farm in Sunderland, MA and was struck by the myriad pest and diseases challenges that farmers face and decided to pursue a career in cooperative extension. She has just finished her Master's degree in plant pathology at Cornell University, where she studied sustainable disease management in vegetable systems. Sue is very excited to be part of the UMass Veg Team and working directly with MA growers to solve pest problems and do pertinent agricultural research.

Lisa McKeag has been doing a lot of work helping to edit the 2014 edition of the New England Vegetable Mangaement Guide and is also working on various projects including IPM, winter vegetable crops, and biological control. She left her native Worcester, MA to study Biology at the University of California, Santa Cruz. She worked for several years doing preclinical medical research in the field of Immunology at Columbia University and the University of Iowa. It was living in Iowa where she discovered her inner Willa Cather and decided to get out of the lab and into the dirt and began working with an organic vegetable grower. In 2007, she chose to pursue farming full-time and moved back east to apprentice at Brookfield Farm in Amherst, where she was introduced to the rich history and still-thriving community of agriculture in Massachusetts. In 2011, she was Assistant Manager of Old Friends Farm, an organic flower and vegetable farm, and has also since that time been working at Andrew's Greenhouse in South Amherst, a third generation family farm and garden plant nursery. Lisa is excited to wed her backgrounds in research and farming in working with UMass Vegetable Extension, and farmers throughout Massachusetts.

MANAGING STRIPED CUCUMER BEETLE IN VINE CROPS

Striped cucumber beetle is our most serious early-season pest in vine crops. These beetles spend the winter in plant debris in field edges and with the onset of warm days and emergence of cucurbit crops they move rapidly into the field. Densities can be very high, especially in non-rotated fields or close to last year's cucurbit crops. Adult feeding on cotyledons and young leaves can cause stand reduction, delayed plant growth, and reduced yield. The striped cucumber beetle also vectors Erwinia tracheiphila, the causal agent of bacterial wilt, and this can be more damaging than direct feeding injury. Crop rotation, transplants, and floating row cover are cultural controls that help reduce the impact of cucumber beetles. Many growers use row covers on cucurbits for both growth benefit and insect protection, and remove when flowering begins. Perimeter trap cropping with a preferred cucurbit crop (usually a C. maxima such as blue Hubbard or buttercup) can give excellent control with a dramatic reduction in pesticide use. For more details on perimeter trap cropping see articles on PTC at http://extension.umass.edu/vegetable/insects/cucumber-beetle-striped

Avoid early season infection with wilt. Cucurbit plants at the cotyledon and first 1-2 leaf stage are more susceptible to infection with bacterial wilt than older plants, and disease transmission is lower after about the 4-leaf stage. Using row covers at this most vulnerable stage can be very effective.

Thresholds and foliar controls. Beetle numbers should be kept low, especially before the 5-leaf stage. Scout frequently (at

least twice per week before emergence, and for two weeks after crop emergence) and treat after beetles colonize the field. The threshold depends on the crop. To prevent bacterial wilt in highly susceptible crops such as cucumber, muskmelons, summer squash, and zucchini, we recommend that beetles should not be allowed to exceed one beetle for every 2 plants. Less wilt-susceptible crops (butternut, most pumpkins) will tolerate 1 or two beetles per plant without yield losses. Spray within 24 hours after the threshold is reached.

Conventional foliar insecticides. Synthetic pyrethroids, carbamates such as Sevin will provide control of cucumber beetles but should be avoided after bloom. Note that Thionex may no longer be used on summer squash or zucchini. There are a number of broad spectrum insecticides which can be used for foliar control (including Brigade 2EC, Pounce 25WP, Asana, and Sevin). See NE Vegetable Management Guide for more details.

Organic insecticides. Insectides that are allowed in organic production (ie, listed by OMRI, the Organic Materials Review Institure, www.omri.org) include kaolin clay (Surround WP), pyrethrin (Pyganic Crop Spray 5.0 EC), and spinosad (Entrust). In 2009 UMass spray trials comparing these three products at the UMass Research Farm, kaolin was the most effective in reducing beetle numbers and feeding damage. There was a trend toward Surround WP being more effective when Pyganic or Entrust was mixed with it, but never significantly better than Surround alone. Surround should be applied before beetles arrive because it acts as a repellent and protectant not a contact poison. With direct-seeded crops, apply as soon as seedlings emerge if beetles are active. Transplants can be sprayed or dipped before setting out in the field.

Systemic controls. Two systemic neo-nicotinoid products, imidacloprid (Admire Pro) and thiamethoxam (Platinum) are registered for use in cucurbits. These are systemic insecticides that may be used as an in-furrow, banded, drench, or drip irrigation application to the seed/seedling root zone during or after planting/transplanting operations. Commercially-applied seed treatments are also available as to seed. Foliar neonicotinoids Actara (thiamethoxam) and acetameprid (Assail 30SG) are also labeled for cucurbits but should not be applied close to or after bloom.

Using systemics on transplants: The best time to treat is about 1 day prior to planting in the field. We have observed effective results at rates of 0.01 ml Admire Pro per plant. See label for application rates. Caution should be used because phytoxicity can occur at high rates. Note: there are 29.6 milliliters (ml) in one fluid oz.

Drip application: A drip system can be used for systemic applications to either direct seeded or transplanted crops. Know your system well enough to know how long it will take to inject a given amount of concentrated solution (e.g., one bucketful) and to soak the area between emitters. Apply early enough to allow the plant roots and leaves to take up the material before beetles arrive. The system should be primed with water first, and the insecticide injected slowly for even distribution. Make sure to use enough water to soak the area between emitters. More emitters provide more even distribution of the product. Calculate the total amount of material needed based on the rates per 100 or 1000 ft of row and the number of row feet of line that will be treated. Place the total amount in the bucket with enough water for 20-30 minutes of injection. Charge the system with water first to get the soil wet. Turn on the Venturi or other injector, to inject slowly for even distribution (20 or 30 minutes). Then flush lines with clear water and to move product out and down. Avoid multiple applications through drip, as the accumulation of detectable neonicotinoids in pollen and nectar is greater with multiple applications and with later applications closer to bloom (see below).

Non-target effects: Bees are very susceptible to neonicotinoids. There has been considerable research recently on this subject, to determine how this class of chemistry may be contributing to decline in bees. Bees can be exposed through multiple routes including weeds growing in treated fields, dust released from planting equipment when using treated seed, direct treatments or residue on the crop especially during flowering periods, and when systemics applied through seed, furrow, transplant or drip move into nectar and pollen that is ingested or carried by bees. For cucurbits, treatments for striped cucumber beetle can be made well before flowering but could carry into pollen or nectar. Several studies focusing on cucurbits have found detectable levels of neonicotinoids and their metabolites, within the range that causes sub-lethal effects, in pollen and nectar after applications or imidacloprid or thiamethoxam made at label rates. Higher levels were found after foliar applied treatements and chemigated insecticides applied through drip irrigation during flowering. Lower levels were detected in treatment regimes that involved a single application at planting via seed treatment, drench applied to transplants trays, or transplant water treatment. Sub-

lethal effects are a concern because bees may have other avenues of exposure to nicotinoids (eg landscape plants, other crops), and because a sublethal dose can cause higher susceptibility to diseases, parasites or other stresses.

Evidence indicates that lower rates applied earlier in growth and avoiding contamination of soil or dust will help reduce risk if neonicotinoids are used. Avoid higher rates, multiple applications, and drip applications near bloom. Carbamates such as Sevin and synthetic pyrethroids, used at the seedling stage,will likely degrade by the time of flowering. Avoid using them during bloom.

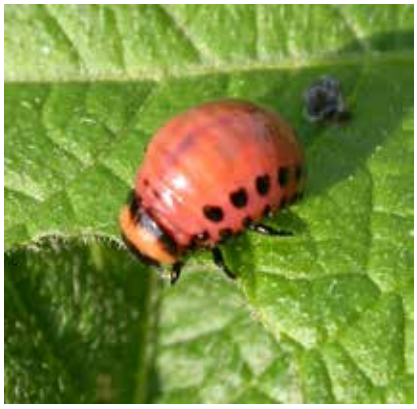
Resistance from overuse. Another down side of systemic products might be that they are 'too easy'. That's not necessarily a bad thing for growers who are always too busy! However if these are overused on a routine basis, these products may well be lost to resistance in a fairly short time.

For a truly IPM approach, use crop rotation, perimeter trap cropping, and field scouting followed by foliar sprays with other classes of insecticides to reduce the likelihood of nicotinoid resistance and and bee toxicity. Given the high losses of hives over the past several years – which seems to be from multiple causes, only one of which is the pesticides used on crops that bees visit – taking precautions to protect both native and domestic bees is an especially important concern. The New England Vegetable Management Guide gives rating for bee toxicity of insecticides in Table 20 (pg 59).

-Ruth Hazzard & Andrew Cavanagh, University of Massachusetts, updated for 2013.

MANAGING COLORADO POTATO BEETLE

Scout now! Colorado potato beetle (CPB) adults are actively moving into potato fields and laying eggs. Hatch can be expected soon. Walk your fields and look for CPB adults and eggs. The bright yellow eggs are laid in clumps with about 30-35 eggs each, generally on the undersides of leaves. Sample plants across the field including field edges. Count egg masses and adults on each plant to get an average. Eggs hatch in 7-10 days depending on temperature. Check twice a week to note when the first eggs are hatching, as well as when 3rd-instars (about ¾ grown) appear.



CPB 4th-instar larva, which causes 85% of the larval feeding damage. Apply controls **before** *larvae reach this stage.*

Larvae go through four molts before they become adults. In the first stage, the larvae are about the same size as the eggs (see photo) and in the second stage they are about an eighth of an inch long. As the larvae get bigger, they do more feeding. The fourth, or largest, stage grows more plump and hump-backed, and does 85% of the feeding damage (see photo). Spray timing should target the younger instars, to prevent an explosion of large, hungry 4th instar larvae. Many products target larvae and work best on smaller larvae.

After larvae complete their growth, they drop to the ground and burrow into the ground to pupate. About ten days later the next generation of adults emerges – ready to feed. If they emerge before August 1, they will lay more eggs. After August 1, they feed and head to overwintering sites. Good control in June prevents problems with CPB in August.

THRESHOLDS

Potato. A treatment should be considered for adults when you find 25 beetles per 50 plants or defoliation has reached the 10% level. The spray threshold for small larvae is 4 per plant; for large larvae, 1.5 per plant (or per stalk in midseason), based on a count of 50 plants or stalks. Potatoes can tolerate 20% defoliation without reduction in yield.

Eggplants. Controls are needed on eggplants when there are 2 small or 1 large larvae per plant (if plants are less than six inches) and 4 small larvae or 2 large per plant (if plants are more than six inches). Damage to eggplant seedlings from adult feeding is often severe enough to warrant control of the adults.

Watch temperatures. As with most other insects and plants, there is a direct relationship between higher temperatures (in the range between about 55 and 90 degrees F) and faster rate of development -- including egg-laying, egg hatch, larval growth, and feeding rates. A period of cold, rainy weather slows everything down and may let eggs pile up. We can expect a surge of shiny yellow eggs, and young larvae to appear with the next hot spell.

CULTURAL CONTROLS

Crop Rotation. The single most important tactic for CPB management is to rotate potatoes or eggplant to a field that is at least 200 yards from the previous year's fields. Barriers such as roads, rivers, woodlands, and fields with other crops are helpful. Rotated fields tend to be colonized 1-4 weeks later in the season. Also, the total population of adult beetles is lower, producing fewer larvae to control.

Straw mulch. It has been well documented that when potato or eggplants are mulched with straw, fewer Colorado potato beetle adults will settle on the plants and fewer eggs will be laid. This can be accomplished on larger plantings by strip planting in a rye mulch, followed by mowing and pushing the rye straw over the plants after they emerge. For smaller plots, straw may be carried in. Mulch provides similar benefits to hilling, by conserving moisture and covering tubers.

BIOLOGICAL CONTROL. There are numerous predators and parasitoids that attack CPB adults (a tachinid fly) as well as eggs and larvae (12-spotted ladybeetle, spined soldier bug, ground beetles such as *Lebia grandis*.). These can significantly reduce CPB populations as well as keeping aphids in check. If sprays are needed, use selective products to conserve these beneficials as they offer a lot of free labor to help your crop. I've also noticed that in a small plot, a few workers can provide pretty effective 'biological control' by hand crushing adults and eggs. Not practical by the acre, but helpful in a smaller patch!

CHEMICAL CONTROLS. A general game plan is to control adults only if damage is severe; otherwise target hatching larvae and make the first application when you see the first third-instar (3/4 grown) larvae. Two applications may be needed to control larvae.

Adulticides that are relatively selective include neonicotinoids, Radiant, Entrust & Coragen. Once eggs hatch and larvae are present, the list is longer: use Avaunt + PBO, Agri-mek (or other abamectin), Coragen, Radiant, Rimon, or Entrust or a foliar neonicotinoid. The following foliar neonicotinoids are labeled for both adults and larvae, but should not be used if an at-planting neonicotinoid was applied: Actara, Assail, Leverage, Provado (imidacloprid), or Venom. These materials should provide control as long as beetles are not resistant to this class of chemistry.

Covering potato leafhopper and CPB control. Foliar options that may cover both pests include pyrethroids and neonicotinoids in conventional fields. Pyganic is the most effective choice for PLH in organic fields; ensure good coverage.

Resistance management must be part of every potato grower's plan. Wherever possible, growers should rotate classes of insecticides and avoid using the same chemistry more than once per year or even better, once every other year. Do not use the same chemical class on successive generations in the same year. Do not use the same chemistry for both soil and foilar treatments. Note that in the New England Vegetable Management Guide, as well as on pesticide labels, each insecticide has a Group Number, which identifies chemistries with the same mode of action. Avoid using insecticides from the same group.

For conventionally managed fields, there are enough different products to do a two-year rotation that will effectively control CPB while effectively delaying resistance to any one product. Keeping them effective by careful insecticide rotation is a worthwhile investment. Don't be afraid to try something new in your chemical rotation! See also New England Vegetable Management guide in hardcopy or online at www.nevegetable.org.

For organically managed fields, there is one very effective product, spinosad (Entrust), while other options (azadirachtin, pyrethrin, and *Beauvaria bassiana*) are less effective. *Bt tenebrionis* is no longer available. Many growers are worried about resistance development, but have few other options. Azadirachtin (Neemix, Aza-Direct) is an insect growth regulator for immature stages of insects including CPB, and has shown efficacy against CPB in some trials so it is worth a try if timed to correspond with a flush of young larvae. This is likely to be the best option for bringing much-needed alternate chemistry into organic systems. Use high rates. To get the most mileage out of the fewest applications of Entrust, time the first spray for when the earliest larvae are reaching the third instar, or about half to 2/3 grown (see photo). This timing will catch the largest possible number of larvae while preventing significant feeding damage, and will also kill adults. Entrust could also be used as a follow up to azadirachtin. Do not try to kill every beetle in the field.

- R Hazzard; (sources include: D Ferro (UMass), J. Mishanec (NYS), J Boucher (CT), J. Whalen (DE), T. Kuhar (VA), G. Ghidhu (NJ), NE Vegetable Management Guide, Ohio Veg. Production Guide)

WATCH FOR POTATO LEAF HOPPER IN POTATO, EGGPLANT, BEANS

Potato leafhopper (PLH) overwinters in the southern US and moves north annually. The date of arrival changes from year to year, but ranges from the end of May to the third week of June. Earlier this week we found PLH in snap beans in eastern MA – a sign that they may have arrived throughout the region and growers should be scouting beans and potatoes. Early arrival of leafhoppers means more severe damage to crops if they are not controlled.

Damage. Adults are about 1/4 inch long, light yellow-green, and fly up from foliage when it is disturbed or shaken. Nymphs are light green, wedge-shaped and very fast-moving and will be found later in the season on the underside of leaves. Damage can be severe on early-season varieties of potato and red potatoes, as well as in green beans, which are more susceptible when they are young than at later stages, and eggplant. Field crops such as alfalfa, clover, soybean, sunflower and tobacco are also hosts.

Adults and nymphs feed by inserting a needle-like beak into the plant and sucking out sap. They also inject a toxin into the plant, which causes yellowing, browning, and curling of leaves. In potato, leaf margins turn brown and brittle first, followed by death of entire leaves, a condition known as 'hopperburn.' In eggplant, leaf margins and tips turn yellow and curl up. In beans, browning occurs across the leaf. Feeding can reduce yield before damage is visible.

Thresholds. The number of PLH that can cause significant crop damage is low. It is important to protect plants when leafhoppers first arrive, before nymphs build up. It is difficult to count adults since they fly quickly when foliage is shaken or disturbed. Sweep nets can be used to detect adults – treat if more than 1 adult is found per sweep. If you see several when you shake the foliage, you are certainly in that range. Once nymphs develop, they can be monitored by visually inspecting lower leaf surfaces on lower leaves. Treat if more than 15 nymphs are found per 50 leaves. In eggplant, the threshold is 1.5 leafhoppers per leaf. In potato and eggplant, some materials registered for Colorado potato beetle adults will also control leafhopper, including neonicotinoid foliar sprays such as Provado (do not use if systemic neonicotinoids were applied). These and several other carbamate, synthetic pyrethroid, and organophosphate products are also registered for leafhopper in potato, eggplant and snap beans. Refer to the New England Vegetable Management Guide for registered products.

On organic farms, pyrethrin (PyGanic EC5.0) has been shown to be the most effective product for reducing leafhopper numbers and damage. Good coverage is important. The residual period is short and the material degrades in UV. Spraying late in the day or in the evening is likely to give control than spraying early in the morning. Don't wait for numbers to build up. Row cover can be used to delay PLH infestation in snap beans until flowering, when plants are less susceptible to damage.

Although bees do not forage extensively in beans or potatoes, if the crops or weeds within the crop field are flowering, bees may be active in the field and selection of products with lower toxicity to bees is advised. See Table 20 in the Vegetable Guide for bee toxicity ratings. While the classes of insecticides listed above tend to have high toxicity to bees, there are variations within classes; for example, neonics are considered very toxic in general, but Assail (acetameprid) is much less so. For conservation of both native pollinators and honeybees, keep crops clean of flowering weeds, and spray only when there will not be drift outside the crop. Encourage some flowering plants in fallow areas to provide resources for all pollinators.

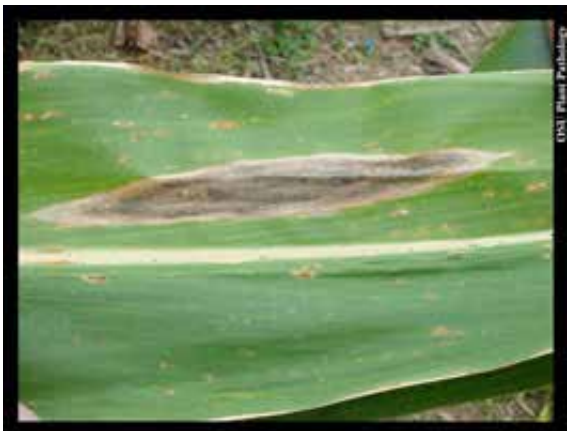
--R. Hazzard

EFFECTIVELY MANAGING NORTHERN CORN LEAF BLIGHT IN 2013

Sweet corn growers in the Northeastern USA, now need to include managing northern corn leaf blight (NCLB) in their production program. NCLB occurred for the first time at a notable level in 2012 in Connecticut and on Long Island. Growers were caught by surprise. Marketability of ears was affected when symptoms developed on husks because it gave them an old appearance, and the quality of the ear was affected. NCLB is expected to occur in 2013 on Long Island because this disease was common in 2012 and the fungal pathogen can survive over winter in infested crop debris. Additionally it produces spores easily dispersed by wind.

NCLB is not a new disease of corn (it was first reported in NY in 1878), but it has not been observed on Long Island for at

least 20 years. It had been reported before 2012 as increasing in importance on field corn in the northeast and on sweet corn in New England. Increase in disease occurrence likely reflects change in the pathogen such that it is no longer suppressed by resistance genes in field corn varieties. Race 0 is thought to still dominant, but Race 1 has been detected; it overcomes the main major resistance gene, Ht1. Greater disease development in field corn results in more inoculum to affect sweet corn. Another factor may be storms that have been occurring during August with patterns that facilitate pathogen movement and disease development. NCLB and southern corn leaf blight are also known as Helminthosporium leaf blight, which is important to know because the latter name is used on some fungicide labels.



Northern corn leaf blight

Favorable conditions for the pathogen are moderate temperatures (64 - 81 F) and leaf wetness from rain, dew or fog for at least 6 hours. Conditions during August 2012 evidently were very favorable as that is when symptoms of NCLB were observed commonly in sweet corn plantings on Long Island.

Leaf spots are moderately large and long (1 to 5 inches), elliptical, and grayish green becoming tan with age. Their shape resembles a cigar or boat. Images are posted at: **http://www.longislandhort.cornell.edu/vegpath/photos/NCLB_corn.html**. Older leaves tend to be affected first. Similar to rust, this disease can impact ear quality when it develops on husks. Left unmanaged, NCLB can develop rapidly causing a crop to become completely blighted and appearing as if affected by frost.

Cultural management practices include incorporating debris after harvest and rotating crop land. The benefits to soil health of reduced tillage in many cases will outweigh the benefits of reducing initial inoculum by plowing in debris. Growing a resistant or less susceptible variety is an effective practice. ex08767143 is resistant. Obsession was less severely affected by NCLB than Beyond and ACR7196 in a variety evaluation conducted in FL. Providence appears to be among the more severely affected varieties based on observations from commercial crops on Long Island in 2012. Susceptibility to the two NCLB pathogen races is a component of large variety evaluations conducted each year in IL. This information is available at http://sweetcorn.illinois.edu/report-index.html

To determine when to apply fungicides for NCLB, each week inspect crops thoroughly for symptoms, focusing on older leaves, and check for updates on occurrence of NCLB in the Long Island Fruit & Vegetable Update. The potential for NCLB to develop will increase with successive crops. Applying a protectant fungicide (e.g. Bravo or Dithane) might be worthwhile when NCLB has been reported in your area but symptoms are not found in a planting. Using a spray boom with drop nozzles will increase spray coverage on leaves low in the canopy, which is important because NCLB begins to develop there.

Resources: **Long Island Fruit and Vegetable Update (http://ccesuffolk.org/subscribe-to-our-agriculture-publications/)**

- Adapted from article by Margaret Tuttle McGrath, Department of Plant Pathology, Cornell University

Vegetable Notes. Ruth Hazzard, Katie Campbell Nelson, Lisa McKeag, Susan Scheufele, co-editors. 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.