UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 24, Number 8 June 13, 2013

In this issue:

Crop conditions

In the past week rainfall ranged from 3 to 11 inches across the state. Saturated soils with standing water between rows and in low spots make access to many fields impossible. In well-drained fields, it was just barely possible to continue field work after the weekend's rains – harvesting, laying plastic, cultivating, sidedressing, transplanting, seeding, spraying pest controls. We will see broccoli, peas, summer squash, zucchini, greenhouse cucumber & tomato, and garlic scapes in markets this week, along with salad mix, bunching greens such as kale, Swiss chard, bok choi, lettuce, radishes, and salad turnips. Crops that grew well after overwintering in low tunnels include onions and carrots – exciting fare for spring markets. Earliest plantings of potatoes are flowering, and in the warmer areas of MA, the earliest corn that was started under plastic or row cover is beginning to silk.

Pest alerts

Pythium Root Rot is likely on cucurbits and solanaceous crops in this wet weather.

Phytophthora capsici traps have been placed in rivers and streams of the Pioneer Valley. We don't expect to trap the organism until July after the water warms up and if outbreaks occur upstream. Keep an eye out for Crown Rot on peppers and cucurbits in wet fields now. ID crown and root rots to distinguish P. capsici and Pythium -- an important difference.

Squash bug adults are moving into summer squash, zucchini and pumpkin crops. Scout for adults and eggs. Systemic and foliar insecticides used for striped cucumber beetle may also control squash bug adults.

Spring maggot flies: according to seasonal GDD (at base 4 C), cabbage and onion maggot flies are between generations, but seedcorn maggot flies are entering second flight (2nd peak = 600 GDD). Where wet soils might cause slow germination, seedcorn maggots could be a problem again.

Thrips numbers are variable but we have found them building up in some onion crops; keep scouting; spray at 1 per leaf.

Sweet corn: ECB **flight** is increasing and emerging tassels of corn started under plastic should be scouted for tiny borers (white with black head) feeding in the florets. Spray at 15% infested plants. Second Trichogramma release should be made this week. If silk is emerging, get CEW trap set up. Insect migrations are unpredictable and its good to know what's arrived on your farm. For more details on sweet corn scouting see http://extension.umass.edu/vegetable/publications/sweet-corn-ipm-guide.

Watch for **Cercospora leaf spot** on Swiss chard. Wet, cool conditions are favorable and may bring this on earlier than usual. Consider separating late chard, spinach and beets from early crops to reduce spread of disease into fall crops of this family.

Potato leafhoppers (PLH) continue to move into potato and beans.

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

Location	Total ECB	CEW
CT Valley		
South Deerfield	3	n/a
Hatfield	13	n/a
Central & Eastern MA		
Rehoboth -1	12	1
Rehoboth -2	43	n/a
Millis	5	n/a
Seekonk	14	n/a

Damage to susceptible potato varieties occurs at low populations. A sweet net gathers insects from a broad swath of the canopy; threshold for potato is 1 adult PLH per sweep. We have not seen nymphs yet.

Colorado potato beetle larvae are present – all sizes from 1st to 4th instar. Scout – don't let the 4th's get ahead of you. Eggs are still being laid. Next hot spell will see lots of new damage if not controlled. Select sprays for PLH that will also reduce CPB but don't repeat the same chemistry already used.

Do you have a current copy of the **New England Vegetable Guide**? It's available for $20 from UMass Extension Bookstore at 1-877-UMASSXT (within MA) or 413-545-2717. Order online: (http://umassextensionbookstore.com/catalog/). Includes color pest identification guide.

Want to know GDD, max and min temperatures, rainfall, relative humidity, or the late and early blight forecast for your area? Visit the **NEWA website (**http://newa.cornell.edu/**)**, search for the station page nearest you, and select weather reports or pest alerts of your choice. We can't report all this in Vegetable Notes, but the data and models are all freely available. VT, NH, RI, CT and MA all have stations linked to NEWA.

Want to **check soil nitrate** with a PSNT test after all the rain? A soil probe is a simple tool that makes sampling fast and easy. Can be obtained online; sources include Gemplers (800-382-8473) and Great Lakes IPM (989-268-5693); cost ranges from $50 to $100 for different probes.

Potato volunteers are showing up in the crops that followed the 2012 potato crop. UMass Diagnostic Lab is still looking for potato and tomato volunteers to test for late blight (see May ? issue). Call **413 545-3208**. Send us a sample, then destroy the volunteers.

LATE BLIGHT UPDATE: CONTINUE PROTECTANT FUNGICIDES

All areas of the state have exceeded the threshold for first fungicide applications to protect potato and tomato from late blight. If you have not already begun a regular protectant fungicide program, begin as soon as the current rainstorm is over. The output of the late blight forecasting model, Blitecast, can now be used to determine what fungicide spray interval is needed to protect your crop. The Blitecast model uses relative humidity (hr/day with RH>90%), rainfall and temperature to generate a daily "severity values" (SV). Recommendations for spray intervals are based on total SV per week, and that's what we will be reporting in Vegetable Notes (see Table 2). Note that for all locations, a 5-day spray interval is recommended.

Late blight has been confirmed in a tomato greenhouse in West Virginia, near the PA border. There are no other reports in the Northeast, to date.

Unless or until LB is found closer to New England, continue 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.

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

-R. Hazzard & Lisa McKeag

Table2. BLITECAST output for Late Blight Management

DATE: 6/13/2013

Location	LB Severity Values - 7 days	Rainfall - 7 days (in)	Recommended Spray Interval (days)
Pittsfield	22	4.0	5
Ashfield	11	6.2	5
S. Deerfield	n/a	3*	5
Belchertown	12	2.2*	5
Bolton	18	10.7	5
Dracut	10	4.7	5
Boston	9	4.9	5
East Bridgewater	12	7.1	5
Sharon	11	6.7	5
Seekonk	11	3.2	5

**estimated*

	Total severity values during last 7 days					
	<3	3	4	5	6	>6
Total rain/ irrigation for past 10 days	Spray Interval for late blight control (in number of days)					
>1.2 inches	10-14	10	7	5	5	5
<1.2 inches	10-14	10-14	10	7	5	5

Recognizing Tomato Blights

The cooler, wet weather we've been experiencing these past few weeks could trigger the development of fungal diseases. In tomatoes there are several common foliar blights that are all caused by fungi and can be difficult to tell apart. Early blight and Septoria blight are more common in field tomatoes, while Fulvia leaf mold and grey mold are more common in the greenhouse, especially under high humidity conditions. However, it is possible to see any of these as well as late blight, in field, high tunnel or greenhouse tomatoes.

Conditions have been favorable for late blight development, but aside from an isolated case in a W. Virginia greenhouse we haven't had any reports of the disease showing up in field crops in the Northeast. It's important to know if and when the disease shows up in our area and we have funds to cover disease diagnostics for this disease, so if you suspect that you might have late blight in your tomatoes please contact the vegetable program at 413-577-3976 or umassvegetable@umext.umass.edu, or the Disease Diagnostic Lab at 413- 545-3208.

Late Blight (*Phytophthora infestans*). Effective management of this disease is largely dependent on an accurate assessment of risk, and knowing where and when the disease is present is a key component in assessing the risk to your crops. The danger with this disease is that, under the right weather conditions, the development and spread of the pathogen can be explosive. This explosive growth is what devastated tomato and potato crops in 2009. The 2009 growing season combined highly favorable weather for the disease (cool and moist) with numerous points of inoculation. Assessing the risk for this season depends on those two things – favorable weather conditions and the presence of the pathogen. We'll provide updates on the risk forecast weekly throughout the growing season. We're also trying to assess the presence of the pathogen by scouting fields, analyzing samples that come into the disease lab, and trying to catch the leading edge of the disease development here in Massachusetts.

Late Blight on Tomato

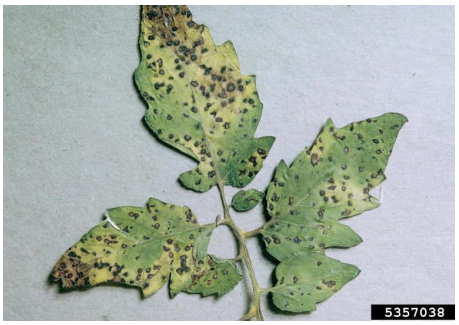
The most common symptoms on tomatoes are sunken, dark green or brown lesions on leaves and brown lesions on stems, with white fungal growth developing under moist conditions.

Classic symptoms are large (at least nickel-sized) olive-green to brown spots on leaves with slightly fuzzy white fungal growth on the underside when conditions have been humid (early morning or after rain). Sometimes the lesion border is slightly yellow or has a water-soaked appearance. Leaf lesions begin as tiny, irregularly shaped brown spots and quickly grow larger – spots that are consistently small are most likely septoria leaf spot (see below). Brown to blackish lesions develop on upper stems and leaf petioles. These stem lesions are a fairly distinctive sign of late blight and should definitely raise a red flag. Firm, brown spots develop on tomato fruit.

Late Blight, bottom leaf

If the lesion has a yellow border and is occurring on the bottom of the plant, it is likely due to infection of either early blight or Septoria leaf spot.

Septoria leaf spot (*Septoria lycopersici*). Septoria leaf spot is one of the most destructive diseases of tomato foliage and it occurs worldwide wherever tomatoes are grown. This disease can destroy most of a plant's foliage resulting in sunscald, failure of fruit to mature properly, and low yields. Once infections begin, they can spread rapidly from lower to upper tomato canopy.



Septoria on Tomato

Symptoms consist of circular tan to grey lesions with a dark brown margin that appear on lower leaves first, after the first fruit set. If conditions are favorable, lesions can enlarge rapidly, form pycnidia (fruiting bodies that look like black specks) and turn infected leaves yellow then brown. With a 10X hand lens, these black specks can be seen in the center of the lesions. The fruiting bodies, smaller lesion size, and associated yellowing of heavily infected foliage help to distinguish this disease from late blight.

Fruit infection is rare, but lesions occur on foliage, stems, petioles, and the calyx. The pathogen overwinters on infected tomato debris or infected solanaceous weed hosts, and can also survive on stakes and other equipment. Seed infection is possible, but rare. Once introduced, Septoria is spread by splashing water, insects, workers, and equipment.

Early blight (*Alternaria solani*). Early blight occurs on the foliage, stem, and fruit of tomato and also occurs worldwide. It first appears as small brown to black lesions on older foliage. The tissue surrounding the initial lesion may become yellow, and when lesions are numerous entire leaves may become chlorotic. As the lesions enlarge, they often develop concentric rings giving them a 'bull's eye' or 'target-spot' appearance. As the disease progresses, plants can become defoliated, reducing both fruit quantity and quality. Fruit can become infected either in the green or ripe stage through the stem attachment. Fruit lesions can become quite large, involve the whole fruit, and have characteristic concentric rings. Infected fruit often drop and losses of 30-50% of immature fruit may occur. On potato, foliar symptoms are quite similar though complete defoliation rarely results. The concentric rings in the lesions are fairly diagnostic for this disease, and help to distinguish it from either late blight or Septoria.

Alternaria on Tomato

Fulvia, upper leaf

Fulvia, bottom leaf

Botritis grey mold on Tomato

Management of Septoria leaf spot & early blight. Some varieties of tomato with early blight resistance or tolerance are available, however most tomato cultivars are susceptible to Septoria leaf spot. Adequate nitrogen fertility throughout the season can help delay disease development; lower leaves become more susceptible as the nitrogen demand increases with fruit load and older leaves decline in nitrogen. Protectant fungicide sprays at regular intervals (depending on weather conditions and disease pressure) will delay onset of the disease. Many of the systemic & contact fungicides that are labeled for the control of late blight will also provide control of early blight and Septoria leaf spot. See the New England Vegetable Management Guide for details and current recommendations.

Both pathogens survive between crops on infected plant debris, soil, and other solanaceous host weeds and can be carried on tomato seed. Early blight can be transmitted in infected potato tubers. Rotate out of tomato crops for at least two years, control susceptible weeds, and incorporate debris after harvest. Reduce the length of time that tomato foliage is wet by using trickle irrigation, wider plant spacing, and staking. Keep workers and equipment out of wet fields where possible.

Leaf Mold (*Fulvia fulva*). This disease occurs in both soil and hydoponic production and is most important in poorly ventilated plastic greenhouses. It can occur in the field but is most common in greenhouses. Symptoms look somewhat like late blight. The high temperatures in the greenhouse make late blight less likely, but growers on hyper-alert for late blight have been concerned. Infections begin on older leaves with yellow areas visible on the upper leaf surface. Corresponding to these, on the underside, are areas of olive-green to grayish-purple fuzzy growth where the fungus is making spores. Leaves turn yellow, then brown.

The disease can spread rapidly as spores disperse throughout a greenhouse on air currents, water, insects, and workers.

Management: Start with certified disease free seed. Improve air circulation by adequate row/plant spacing and removal of lower leaves. Avoid the formation of water droplets on leaves by watering in the morning. Reduce relative humidity by a combination of heating and venting, especially at night. Avoid excessive nitrogen fertilization. Remove diseased leaves, place in plastic bag, and destroy. At the end of the crop cycle, remove all plant residue and destroy and disinfest the entire greenhouse.

Many fungicides are registered and effective against these diseases. For organic growers, copper hydroxide products are probably the best option for protectant fungicides. Please see the New England Vegetable Management Guide (www.nevegetable.org) for current management recommendations.

Botrytis grey mold, ghost spot (*Botrytis cinerea*). Botrytis leaf spot, stem canker, blight, fruit rot, and ghost spot is caused by Botrytis cinera. Ghost spot results in pale white halo's or ring spots on the green tomato fruit. On ripe fruit, the ringspots may be yellow. Ghost spots develop when the fungus initiates infection, but disease progress is stopped by adverse environmental conditions. This spotting may adversely affect market quality. A change to favorable conditions allows Ghost Spot to proceed to fruit rot.

This pathogen is very important on greenhouse tomatoes or hydroponic systems. This pathogen is ubiquitous in the environment, has an extremely wide host range, and prefers to attack senescent and/or injured tissue. Botrytis can be controlled by management of environmental conditions, sound cultural practices, and fungicide applications. Control weeds and remove plant debris. Space plants to allow good air circulation, reduce humidity within the canopy, and minimize leaf wetness. Improve horizontal air flow with fans. Reduce humidity by a combination of heating and venting in the evening, particularly when warm days are followed by cool nights. Water in the morning if practical. Please see the New England Vegetable Management Guide (www.nevegetable.org) for current management recommendations. Always alternate fungicide applications between materials with different modes of action to prevent resistance development.

- Bess Dicklow, Andy Cavanagh, Ruth Hazzard. Information on ghost spot from UMass Floriculture

POTATO FLEA BEETLE ON EGGPLANT, TOMATO AND POTATO

From the perspective of a farmer surveying the crops, different types of flea beetles do not look much different – they all are small and black, they all hop away when you approach the plant, and they all make small round holes in the leaves. When eggplant, tomato and potatoes are hit hard by flea beetles, the damage is usually caused by the potato flea beetle, Epitrix cucumeris. Another species, the eggplant flea beetle, looks very similar but is found in more southern areas. Overwintered adults are busy feeding now on young plants. Both tomatoes and potatoes are often growing fast enough to outpace the damage, butif their growth is delayed, flea beetle can slow their progress even further. Eggplant seedlings are slow to get established and can be quickly turned into a fine lace– with little chance of recovery. For protection of eggplant or tomato with row cover, place the cover, with hoops, immediately after transplanting and seal the edges well. For transplants that are not covered -- scout twice weekly, and if damage is increasing, take action before it is too late. Damage is probably the best measure of these flea beetle populations, since they are difficult to count.

Chunky and hairy. In contrast to crucifer flea beetle, the potato flea beetle is shorter and broader (more 'chunky'), has a more pitted and hairy body surface, and is less shiny, though both are all black. They also have a distinctly different diet, as crucifer flea beetle feeds only on Brassica crops and weeds.

One generation, but two peaks, per year. The life cycle is very similar to that of crucifer flea beetle: adult beetles spend the winter protected under leaf litter in field edges near the crop where they were feeding in late summer, and search out new food plants in the spring. Eggs are laid in the soil, larvae feed on roots, and after a pupal stage in the soil, a new generation of adult beetles will emerge. These 'summer adults' feed and then move to a protected spot for the winter. Thus there two major flushes of adults – one in late May and early June, and the second from mid July to mid August.

Potato flea beetle on eggplant.

Host plants and damage. Potato flea beetle has been reported to feed on cucurbit crops as well as bean, lettuce, radish, turnip and sunflower. It feeds on solanaceous weeds (jimsonweed, ground cherry, black nightshade) as well as redroot pigweed and lambsquarters. Leaves that are heavily fed may be riddled with holes. Growth may be stunted, delayed, or plants may succumb altogether. Potatoes, once well established, can withstand considerable feeding damage. Eggplants are more vulnerable even at later stages, especially when summer adults emerge. Insecticide controls. Several materials can be used as a foliar spray. The two main groups are synthetic pyrethoids and necotinoids. Some

neonicotinoids can be used as a soil-applied systemic, which will also control CPB. See the New England Vegetable Management Guide for specific products. To avoid development of resistance, do not use nicotinoids for both soil and foliar applications, and rotate chemistries after one or two sprays.

In organically managed crops, spinosad (Entrust), pyrethrin (Pyganic) and kaolin (Surround WP) are options that are OMRI listed. Kaolin protects seedlings by acting as a feeding deterrent. Spinosad has a longer residual (that is, the residue remains active for several days) compared to pyrethrin,which kills insects that are directly contacted directly but degrades very rapidly. We have observed effective control from applications of a mixture of kaolin and spinosad.

- R. Hazzard, A Cavanagh

MEXICAN BEAN BEETLE BIOLOGICAL CONTROL

If Mexican bean beetles have historically been a problem on your farm, you will very likely see them again this year. They may be pests on snap beans, lima beans, and, more recently, soybeans. While they are not a pest on every farm, some farms report significant damage from these pests and have to take action to prevent crop loss. Populations often build up when beans are grown close to the farm stand year after year, to be available for PYO customers or CSA members. Using biological control can reduce the need for insecticides.

Mexican Bean Beetle; all life stages

Mexican bean beetle (*Epilachna varivestis*, MBB) adults are coppery brown with black spots. They look very much like large ladybeetles and in fact are closely related – but unlike lady beetles they feed on leaves, not other insects. Shortly after adults arrive in a bean field, they lay yellow-orange egg masses on the underside of bean leaves. These hatch into bright yellow, spiny, oval larvae, which feed, molt several times as they grow, and pupate on the underside of leaves. Feeding damage from adults and larvae can reduce yield and injure pods if numbers are high. There are 2-3 generations per season, usually increasing in numbers with each generation.

Pediobius foveolatus is a commercially available biological control agent for MBB control and has a good track record in the mid-Atlantic states and among New England growers who have tried it. (Pediobius is pronounced "pee-dee-OH-bee-us"). It is mass-reared and sold by the New Jersey Dept of Agriculture and is also available from other beneficial insect suppliers. This small (1-3 mm), non-stinging parasitic wasp lays its eggs in MBB larvae. Wasp larvae feed inside the MBB larva, kill it, and pupate inside it, forming a brownish case or 'mummy'. About twenty five adult wasps emerge from one mummy. Adult wasps will emerge from mummies within 2-3 days of receipt. The parasitoids are shipped to farms as mummies or as adults.

Pediobius is suited to our succession-planted snap bean crops. The first bean planting serves as a 'nurse crop' to establish the population of Pediobius that will be hard at work in successive plantings all summer. Control continues and in fact gets better as the season progresses and successive generations of the wasp emerge and search out new bean beetle larvae. Planning 2-3 releases at 7-10 day intervals will help ensure good timing and coverage on several plantings. After a release in the first planting, it is advisable to leave that planting intact for a while, until the new generation of wasps has emerged from their mummies.

PediobiousMummified Larvae

As with any biological control, make releases as soon as the pest is present, not after it has built up to damaging numbers. The New Jersey Dept of Agriculture Beneficial Insect Rearing Laboratory recommends two releases, two weeks in a row, coinciding with the beginning of Mexican bean beetle egg hatch. Wasps will lay their eggs in larvae of any size, but it is best to target the newly-hatched young MBB larvae. This will give control before damage has been done. Thus, timing is important. Watch for eggs and time the shipment for the first hatch of eggs into larvae. If in doubt about the timing of the hatch, release as soon as you see the eggs – if you wait for the larvae you may be playing catch-up. The release rate should be at least 2000 adult wasps per field for less than an acre, or

3,000 per acre for fields of one acre or more. Mummies are frequently shipped in screen bags. Simply secure to the underside of a bean plant. IPM Laboratories recommends 160 mummies/A, split between 2 releases for light infestations; 640 mummies/A, split between 2 releases for heavy infestations; and for the home garden, a minimum of 10 - 15 mummies.

Integrating Pediobius with controls for potato leafhopper will be needed in many bean crops, and could have harmful effects especially on adult wasps. Avoid sprays shortly before or after releases; apply to a succession planting 5 days before release. Most fungicides will not be harmful. Like beans, Pediobius wasps are killed by frost so annual releases are necessary.

If you would like assistance in using these biocontrols in your bean crops please call Lisa McKeag or Susan Scheufele at the UMass Extension Vegetable Program at 413-577-3976 or email at umassvegetable@umext.umass.edu.

Plan ahead by contacting a supplier to inform them of your expected release dates and acreage. Contact information for New Jersey source: Tom Dorsey, 609-530-4192; address; NJDA, Phillip Alampi Insect Lab, State Police Drive, W. Trenton, NJ 08628. http://nj.gov/agriculture/divisions/pi/prog/beneficialinsect.html. You'll also get advice on how to use the wasps from this office. Pediobius is also available from the following suppliers: Green Spot Ltd., NH., www.greenmethods.com 603-942-8925; IPM Laboratories, NY 315-497-2063; ARBICO, 800 -827-2847 (AZ), http://www.arbico.com/; Network (TN), 615-370-4301, http://www.biconet.com/.

- S. Scheufele, A.Brown, R. Hazzard

YELLOW NUTSEDGE CONTROL

Yellow Nutsedge

Nutsedge Nutlet

Nutsedge Seedhead

Yellow nutsedge (*Cyperus esculentus*) is a perennial sedge (not grass) that emerges in early May from a small tuber or 'nutlet'. The plants will begin to form new tubers in July and August, so it is important to manage before this occurs. In June, growers may find nutsedge penetrating through black polyethylene plastic with their very sharp leaves. Check problem fields every 2-3 weeks for new nutsedge sprouts and keep them from reaching maturity to avoid tuber production. In general, between-row cultivation will not control adult nutsedge well, but only move the plants down the row with the cultivator and spread it in the field. However, in fallow fields, regular tillage of young plants during the season can manage this weed well for future crops.

There are postemergence herbicide options that are available to manage it. Sandea (or Profine) (halosulfuron) is registered on a variety of vegetable crops. It is in the sulfonylurea class of herbicides and is effective at very low rates, so it is important that application equipment be well calibrated. Sandea can be applied pre-emergence or post-emergence in several crops. The crops that Sandea can be used on include asparagus, sweet corn, tomatoes, beans, cucumbers, pumpkins and some melon types. For pumpkins, applications can be made to direct seeded crops after seeding but before 'cracking'. Post-emergence applications should not be made until the crop has two to five leaves. A non-ionic surfactant, but not a crop oil, should be added for optimal control. Although Sandea will control or suppress yellow nutsedge and a number of broadleaf weeds, common lambsquarters will not be controlled with post-emergence applications. Weeds should be in the 1-3 inch stage when treated. Weeds that are larger than this will not be well controlled. Slight stunting and yellowing of the crop has been observed within a few days of postemergence applications. Usually the crop recovers quickly with little effect on yield. Check the label for replanting restrictions before planting other crops.

Basagran (bentazon) offers an alternative selective postemergence control option in sweet corn, beans and peas. Basagran will also control many broadleaf weeds but it will not control grasses. Experience with Basagran suggests that application in high relative humidity (>80%) and high temperature (>80°) will afford optimal control.

Often, a repeat application of either herbicide is necessary if yellow nutsedge is dense.

Dual Magnum (metolachlor) is an alternative for preemergence control of yellow nutsedge. Dual Magnum offers good control of nutsedge before it emerges and no issues with carryover to a crop which follows. Dual has a section 3 label or 24c label for use in beans, cabbage, sweet corn, potato, tomato, asparagus, transplanted bell pepper, carrots, garden beets, dry bulb and green onions, spinach, Swiss chard, pumpkins, broccoli, melons, cucumber, garlic, and leafy brassica greens. Consult the New England Management Guide for information on rates and specifics on how to obtain the 24c label if necessary.

- Reprinted from A. Senesac, Cornell's Long Island Research Lab with additions from A. R. Bonanno and K. Campbell-Nelson, UMass Extension

-Photos from UMass Extension Weed Herbarium, http://extension.umass.edu/landscape/weed-herbarium

EARLY SUMMER COVER CROPS

Summer can be a good season to improve fields with a cover crop. If the soil is wearing out, a soil-building crop can be very beneficial. Also, when you harvest short season vegetables, you may have bare fields before garlic, wheat or fall cover crops can be planted. Bare soil is subject to pounding rains, erosion and weeds going to seed. Fill that open niche by planting a soil-improving, short-cycle cover crop. For planting in late June or early July, two good choices are sudangrass, sorghum-sudangrass or buckwheat. These crops grow rapidly in the summer warmth.

Making the choice: Buckwheat or Sudangrass?

What does your soil need? Sudangrass is often chosen for improving soil organic matter and reducing subsurface hardness because it produces a strong and deep root system. The roots, when incorporated before frost, also produce a biofumigant good for reducing root-knot nematode pressure and potentially other soil borne pathogens. It needs about 40 lbs/acre of nitrogen and the plant crowns take time to decompose. Sudangrass requires a high seeding rate for effective weed suppression.

If short-term weed suppression is the main goal, buckwheat is preferable. As a broadleaf plant, it covers the ground earlier than sudangrass, especially in early June and out-competes weeds. A good stand of buckwheat improves soil tilth in the top-soil, and produces more biomass than any other cover crop in the short time it grows, but doesn't do well if the plow layer is compacted. If the field is low in nitrogen and phosphorous, buckwheat will do well without additional fertilizer.

When will the cover crop be planted? As a cover crop, buckwheat is in the ground for 40-50 days. It can be sown as early as May 20. Sudangrass needs 60-70 days to be effective, and is most effective when planted in mid-June. Both crops should be mowed 40 days after planting. For buckwheat this is essential to prevent it from going to seed. For sudangrass, which grows rapidly, this is necessary to manage the large amount of plant material. Flail mowing spreads the residue more evenly. Mow sudangrass no shorter than 8" and top and root growth will resume. Mow it again in September and immediately incorporate for biofumigation. Plan to plant a large seeded crop next spring, or use a transplanter that can handle trash well. If the crop to follow the cover crop needs a fine seedbed, it will be easier to produce after buckwheat. Buckwheat decomposes quickly after incorporation. Sudangrass crowns take some time to break down, so the following crop needs to be one that can be sown in a somewhat lumpy field.

Sorghum sudangrass being mowed at eight inches to foster regrowth. UMass Research Farm, South Deerfield, MA

What production risks are you willing to take? The main production risks associated with buckwheat are a failed stand and letting it go to seed. The failed stand usually follows a heavy rain around the time of emergence. It will be obvious two weeks after planting. If the seedlings are not doing well then, till them in and plant again. To avoid buckwheat going to seed, mow the crop before there are filled green seeds on the plant.

This takes about 40 days from a July planting or 50 days from a June planting.

The main production risk associated with sudangrass is that the crop gets too big to mow or to incorporate after frost has killed it. This crop grows very fast, so keep an eye on it. Mow the first time when it reaches 3 feet and the second time while the flail mower can still chop it well. If sudangrass gets too big to control, it will be killed by frost and make a nice winter mulch. However, the biofumigant effect will be lost.

Variety Considerations

Buckwheat seed is available from some local farm seed retailers and the variety does not matter. On the other hand, sorghum and sorghum-sudangrass varieties suitable for cover crops must be selected carefully. Grain types are inappropriate and some new forage varieties (described as sweet or with brown midrib) are low in dhurrin, which is the biofumigant in sudangrass. Piper sudangrass is readily available and has a similar composition to Trudan 8, the classic sudangrass for biofumigation. Sorghum-sudangrass hybrids are more vigorous and will produce more biomass than sudangrass, but the seed is also more expensive.

Additional Information

Cover Crop Guide for Vegetable Growers: http://www.covercrop.net.

Cover Crop Mixtures and Planting Dates: http://www.hort.cornell.edu/extension/organic/ocs/reports/Cover%20Crops%20Planting%20and%20Termination.pdf

Managing Cover Crops Profitably: http://www.sare.org/publications/covercrops.htm

-C. MacNeil, CVP, T. Bjorkman and B. Caldwell, Cornell Vedge Edge Weekly, June 27, 2012 Vol 8, Iss14
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