



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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CROP CONDITIONS

Farms are humming along at full speed now, with weekly greens continuing to be seeded, fall crops like brassicas and carrots going in, the first bulk harvests of garlic and onions about to come out, and summer fruiting crops starting to ripen in the field.

The rain we prayed for finally came, violently in some places. We've been getting reports of downed barns, hail, tree damage, and crops like sweet corn and potatoes being blown over. All parts of the state got at least some rain, anywhere from 1 to 3 inches. In some locations, this wasn't enough to thoroughly soak the soil, but other fields got too much too quickly, causing runoff and soil erosion. In fields with a history of *Phytophthora capsici*, saturated soil is the perfect environment for development of Phytophthora blight. It will take more precipitation to recharge groundwater and most of the state

outside of the South Coast and Cape and Islands is still either abnormally dry or in moderate drought as of Tuesday morning, according to the drought monitor. Throughout most of the state, there is some chance of more showers heading into the 4th of July weekend.

After this wet period, and if the moisture continues, foliar diseases are likely to start popping up in the field—keep an eye out for leaf spots and blights, especially in long-season crops like tomato and pepper that are likely sizing up and growing denser canopies now. There are good forecast models for tomato and onion diseases that use weather data gathered from weather stations around the state (and region) to help with spray decisions at [Cornell's NEWA page](#). Reach out to us if you would like help using any of these models to make decisions on your farm!

PEST ALERTS

Basil

Downy mildew has been confirmed on seedlings being sold at a major garden retailer in New Jersey, indicating the disease may be present in other garden centers. As we have seen in other years and with other diseases, garden centers can be extremely efficient means for spreading diseases as plants get distributed across large areas and planted out widely in home gardens, and can lead to early and severe outbreaks of basil DM. See the

article in this issue for details and control recommendations, including new resistant variety recommendations.

Beans

Mexican bean beetle adults, eggs, and recently hatched larvae have been observed this week in MA. See the article in this issue for information on life cycle and management, including use of the biocontrol wasp *Pediobius foveolatus*.



We were able to work together in the field for the first time yesterday, planting cucumbers for our cucumber downy mildew variety trial!

Photo: S. Scheufele

Hopperburn, caused by potato leafhopper feeding, is showing up now. This damage can cause yield reductions in **beans, potatoes and eggplant**, among other host crops. Leafhoppers will continue to come in from outside the field but can be controlled by continued spraying according to scouting data. To scout for adults, take a sweep net sample, or brush foliage by hand and look for adults flying away like sparks. Nymphs can be found on undersides of leaves. From 3rd –trifoliolate-leaf-stage to bud stage, treat when PLH exceed 1 nymph/leaflet or 5 adults per row foot; repeat application in 7 to 10 days, if necessary. In potatoes, treat if more than 1 adult per sweep is found, or if more than 15 nymphs are found per 50 leaves. An effective treatment for organic fields is pyrethrin mixed with azadiractin. Many effective products are labeled for conventional fields and can be found in the [bean insect section of the Guide](#), and in the [potato insect section of the Guide](#).



*Hopperburn on bean, caused by potato leafhopper feeding.
Photo: UMass Vegetable Program*

Brassicas

Cross-striped cabbageworm caterpillars are being reported in CT so may be arriving in MA soon. These differ from other brassica caterpillars in that they lay eggs in a cluster of ~35, so when all those eggs hatch, the plants can be skeletonized quickly. **Diamond-back moth** and **imported cabbageworm** caterpillars are still out there, so continue scouting weekly and use the following thresholds when deciding when to spray: treat plants between the start of heading and harvest if 20% or more of the plants are infested. The most critical time to scout and apply chemical controls is just prior to head formation. Use a 10% to 15% threshold throughout the season for kale, collards, mustard, and other leafy greens.



Cross-striped cabbageworm (above) and damage (right). Photos: T. Kuhar (above) and UMass Vegetable Program (right).



Cucurbits

Squash vine borer numbers are increasing in traps deployed around the region, and egg laying is likely happening now—this is the stage to target with chemical controls. Make 2 to 4 weekly applications if more than 5 moths per week are captured. Timing is very important. Treat base of stems thoroughly to target hatching larvae. Some selective materials used for other caterpillars in squash, such as spinosyns and *Bacillus thuringiensis aizawi*, have demonstrated efficacy in trials.

Table 1. Squash Vine Borer (SVB) trap captures June 26-July 2, 2020	
Location	SVB
Deerfield	3
North Easton	32
Westhampton	3
Leominster	3
Sharon	11

Solanaceous

Colorado potato beetle: We've received reports from growers of poor control of CPB using a variety of conventional and organic insecticides over the last few weeks. Take note if you saw poor control of this first generation and make plans now to use an insecticide from a different IRAC group to control the second generation and prevent resistance development. Continue scouting fields to keep track of when the small larvae of the second generation are present—the last instar of CPB larvae does 85% of the feeding damage so it is critical to control larvae when they are small. If you are having trouble getting good control and suspect insecticide resistance let us know so we can document the problem, email umssveg@umass.edu

Spider mites were reported this week in eggplant. These tiny mites cause leaf speckling and mottling with their feeding damage, and produce fine webbing that covers leaves. Feeding damage can cause plant stunting and loss of vigor, and, in severe infestations, loss of foliage and plant death. Infestations often begin in the greenhouse. For chemical management recommendations, consult [the Guide for a particular crop](#).

Sweet corn

Table 2. Sweetcorn pest trap captures for June 26-July 2, 2020

Location	GDD (base 50°F)	ECB NY	ECB IA	CEW	FAW	CEW Spray Interval
Western MA						
Sheffield		0	0	-	-	-
Southwick	930	1	0	4	0	5 days
Whately	951	1	2	3	-	6 days
Central MA						
Bolton	863	1	4	4	-	5 days
Leominster	865	2	0	-	-	-
Spencer	823	0	0	1	0	no spray
Eastern MA						
Ipswich	819	1	0	8	0	4 days
Concord	842	1	0	0	0	no spray
Millis	946	0	0	-	N/A	-
Sharon		0	0	6	N/A	-
Seekonk	958	1	0	3	-	6 days
Swansea		6	2	2	-	6 days
- no numbers reported for this trap N/A this site does not trap for this pest						
*GDDs are reported from the nearest weather station to the trapping site						

Table 3. Spray intervals for corn earworm based on Heliothis net trap captures

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	no spray
0.2 - 0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1 - 13	7 - 91	4 days
Over 13	Over 91	3 days

European corn borer (ECB) numbers are dropping across the region, indicating that we are past peak flight in most locations. Caterpillars are continuing to do damage, so continue scouting and treat if 15% of plants have 1 or more larvae or are showing fresh damage. In silking corn that is more than 1 week from harvest spray weekly for ECB, even if CEW trap captures do not warrant sprays.

Corn earworm (CEW) numbers are rising, with more traps going up and reporting numbers as corn begins silking across the state. Trap captures across the region are ranging from 2-9 moths/week, putting spray

schedules at 4- to 6-day intervals. Once CEW arrives in the Northeast and on your farm, CEW trap captures typically determine spray schedules. See Table 3 for CEW spray intervals.

Fall armyworm has begun being trapped in low numbers in NY but has not yet been captured in MA. Like CEW, FAW is blown northward on storms every year and usually appears in mid-July. Because of the timing of its arrival, this pest is usually controlled by sprays dictated by CEW trap counts.

Various Crops

Phytophthora blight was reported on squash and suspected in pepper this week. In peppers, Phytophthora blight causes stem cankers, wilt, and a soft rot of fruit that leaves them shriveled and hanging from the plant. In **cucurbits**, where it causes crown rot and rapid collapse of plants and fruit rot, **tomatoes**, where it causes buckeye rot of fruit, and **beans**, where it causes plant collapse and pod rot. All of these crops should be scouted after this past week's heavy rains, as the pathogen is soil-borne and germinates when soil reaches field capacity then begins to spread from there. For peppers, several bell pepper varieties are available that provide tolerance or resistance, including Aristotle, Declaration, Intruder, Paladin and Revolution. When combined with use of fungicides, disease incidence can be significantly reduced. For more information and control recommendations consult the article in the [July 25, 2019 issue of Veg Notes](#).

Scarab beetles, including Japanese beetle and asiatic garden beetles, are causing damage now on vegetable crops like basil. The larvae of these beetles primarily feed on roots of grasses and sod, while adults feed on foliage of many different fruit, vegetable, and ornamental crops. Few pesticides are labeled for control in vegetables. Hand picking can be effective on small scales, especially for Japanese beetles, which emit aggregation pheromones to attract more beetles to food sources.



Advanced Phytophthora blight on pepper. Photo: Cornell Univ.

CONTACT US:

Contact the UMass Extension Vegetable Program with your farm-related questions, any time of the year. We always do our best to respond to all inquiries.

Office phone: (413) 577-3976 *We are currently working remotely but checking these messages daily, so please leave us a message!*

Email: umassveg@umass.edu

Home Gardeners: Please contact the UMass GreenInfo Help Line with home gardening and homesteading questions, at greeninfo@umext.umass.edu.

UMass Extension Services Suspension

The following on-campus services are suspended until further notice, due to the COVID-19 pandemic: Soil & Plant Nutrient Testing, Hot Water Seed Treatment, Nematode Analysis, Weed, Insect, Turfgrass, and Invasive Plant Identification, Public access to all farm properties.

The UMass Plant Diagnostic Lab and the UMass Soil & Tissue Testing Lab are both now open: See the News section of this issue for more info.

NEW HOME-GARDENING COLUMN: GROWING YOUR OWN FOOD WITH FRANCO & BETO

With the uncertainties around COVID-19 and the economy, growing your own food is appealing as a way to help alleviate food insecurity, do something fun that is compatible with social distancing, and produce healthy and nutritious food! To become a successful gardener is not complicated; for the most part, the needed skills can be easily mastered. Join us for this series of weekly articles which provide research-based information on how to grow your own vegetables and herbs in Massachusetts.



This column is written by Frank Mangan, Extension Professor of Vegetable Crops at the UMass Stockbridge School of Agriculture, and his Ph.D. student, Heriberto Godoy Hernandez. It will be available in both English and Spanish. Some of the content has been adapted from the [New England Vegetable Management Guide](#), a collaborative effort by members of the Extension Vegetable Programs of the New England states. Additional expertise on specific topics is provided by UMass Extension Specialists.

Each issue will cover a Vegetable or Herb of the Week, as well as an additional topic. **The most recent entry** features the brassica family as the Vegetable of the Week.

[Click here to go to Growing Your Own Food with Franco & Beto](#)

UMASS WINTER SPINACH VARIETY TRIALS: REPORT FROM WINTER 2019-2020

The UMass Extension Vegetable Program has been evaluating spinach varieties with resistance to an emerging pathogen, spinach downy mildew, under winter growing conditions with the goal of finding varieties that work well for New England winter markets. Over the winter of 2019-20, we compared 32 spinach varieties with broad resistance to spinach downy mildew performance in an unheated high tunnel at the UMass Crop Research & Education Farm in South Deerfield, MA. Importantly, downy mildew did not develop in the trial—there were relatively few reports over the winter of 2019-20—so we only have data on growth characteristics like germination, vigor, and regrowth to report this year.

For general information on spinach downy mildew, see our 2018-19



Spinach downy mildew symptoms on the top and underside of the leaf. Photos: G. Higgins

Winter Spinach Variety Trial Report, in the [May 9, 2019 issue of Veg Notes](#).

We have compiled photos of each variety trialed in 2019-20. For each variety, there is a whole-plot picture showing germination 2 weeks after seeding, followed by photos taken before each harvest, showing growth habit, leaf shape and color, and regrowth quality. [Click here for photos of each of the varieties trialed in 2019-20.](#)

Conclusions from 2 years of spinach variety trials:

- **Plan for downy mildew by using the latest, widest resistance.** Spinach downy mildew appears sporadically on farms throughout New England and we’re not yet sure if the pathogen is overwintering in the soil, moving from field to high tunnel to field, or being re-introduced every year from another source. We do know that when it does show up on a farm, it can be devastating, leading to total crop loss. We’ve seen strains 12, 14, and 15 in the Northeast in past years, and we also regularly see novel strains that don’t match any of the numbered strains. The best resistance to novel strains is afforded by using varieties with resistance to strains 1-17.
- **Use PSNTs to time sidedressing.** In this trial, we found that soil nitrate levels dropped below the recommended minimum of 20 ppm once daylight started to lengthen significantly beyond 10 hours of daylight and the plants started to grow more quickly again. At that point (below 20 ppm), it is recommended to sidedress with 20-30 lb/A nitrogen.
- **Spinach is very sensitive to soil moisture levels and compaction.** Take the time to prepare uniform beds and set up irrigation that will provide uniform amounts of water across beds. Plants in wetter beds may germinate more quickly but if they remain in wet soil for too long while the plants aren’t growing much through the darkest part of winter, they won’t do well.
- **Keep soil pH above 6.** Spinach is very sensitive to soil pH, and doesn’t grow well if it drops below 6. It’s ideal range is 6.5-6.8.
- **Germination and damping off are big issues for high tunnel spinach,** especially in tunnels that have been in production for more than a few years. We received a SARE Research & Education grant this past spring to fund our spinach production research, and we’re excited to dive into some novel approaches for managing those 2 issues, as well as continuing our variety trials. Stay tuned for more research reports and (virtual?) field days, and get in touch with us at umassveg@umass.edu if you grow winter spinach and are interested in getting involved!
- **Let us know if you have spinach downy mildew!** We are tracking which strains are popping up in the Northeast, and every sample is useful, even if it’s not causing a huge economic loss on your farm. Send us an email, or call us at (413) 577-3976 and we’ll get your downy mildew race identified, free of charge.

2019-20 Methods

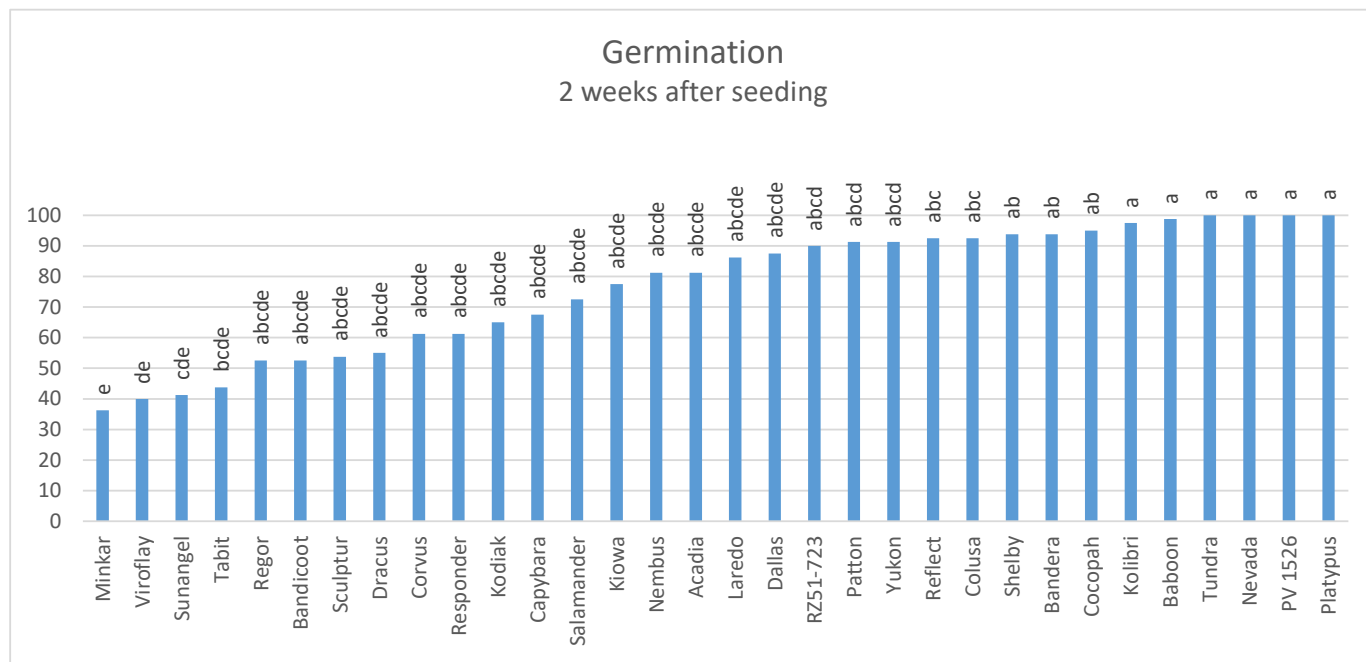
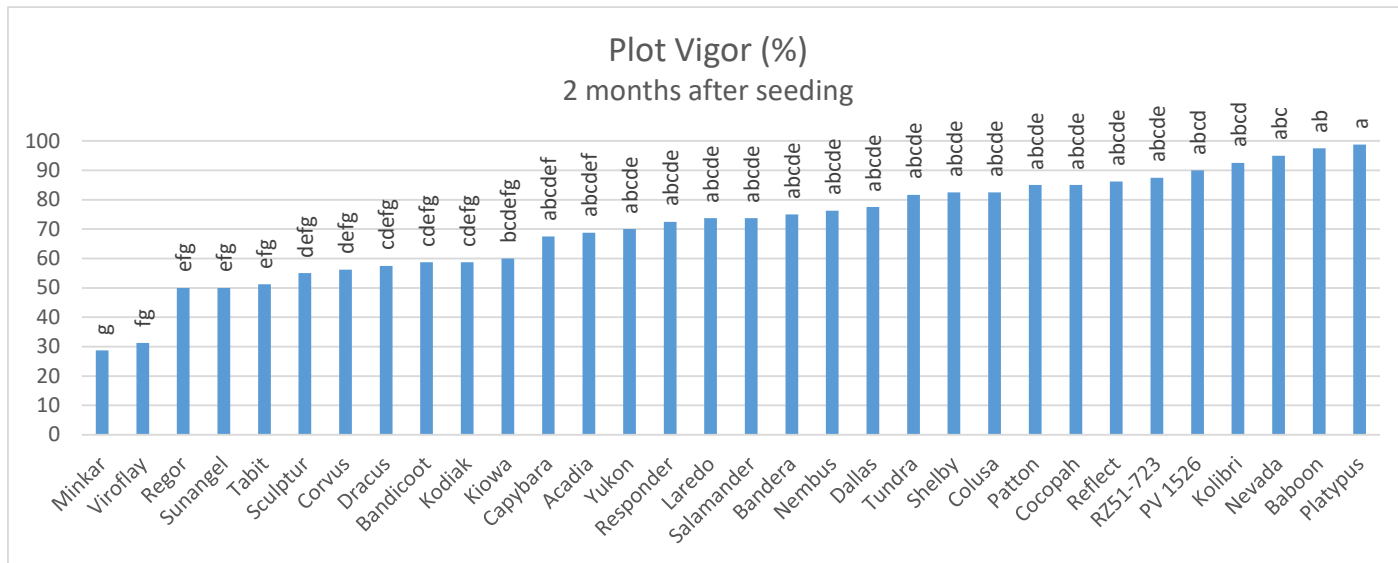
The tunnel was amended based on soil test results—20 lb N/A (Allganic 15-0-2), 20 lb P/A (bone char), and 150 lbs lime were incorporated into the soil.

Spinach was seeded by hand between October 7 and 10. Plots were organized in randomized complete blocks and were 2 feet long with 5 rows of spinach, with rows 2 inches apart. Plots were 8 inches apart within the bed, and beds were

Table 1. Downy mildew resistance. Varieties carry intermediate resistance to the races listed in parentheses	
Variety	DM Resistance
Corvus	1-17
Dracus	1-17
Nimbus	1-17
Regor	1-17
Sculptur	1-17
Tabit	1-17
Patton	unknown
Reflect	1-11, 13, 15, 16
Responder	1-12, 14-16
Acadia	1-13, 15
Shelby	1-13, 15
Tundra	1-13, 15, 16
Yukon	1-12, (13), 14-16
Colusa	1-17
Kiowa	1-17
Nevada	1-17
PV 1449/ Cocopah	1-17
PV 1514/Laredo	1-17
PV 1526	1-17
PV1512/Bandera	1-17
PV1513/Dallas	1-17
Minkar	1-17
RZ51-723	1-17
Baboon	1-7, (8), 9, (10), 11-17
Bandicoot	1-16, (17)
Capybara	1-7, (8), 9, (10), 11-17
Kodiak	1-17
Platypus	1-15, 17
Salamander	1-9, (10), 11-17
Sunangel	1-9, (10), 11-17
Viroflay	none
Kolibri	1-9, (10, 11), 12-15

4 feet wide. Spinach was seeded at a rate of 3,000,000 seeds/A (550 seeds/plot)—a rate commonly used by large-scale spinach growers in California and Arizona. Seeds were sown at a ½ inch depth. For the duration of the trial, circulating fans remained on, exhaust fans remained off, and roll-up sides were programmed to open at 50°F and close at 40°F. The tunnel was irrigated with overhead sprinklers as needed, based on soil moisture sensor readings, and hand-weeded as needed. Soil nitrate was monitored over the course of the growing season by taking PSNTs—sidedressing is recommended when soil nitrate is below 20ppm. The crop was fertigated on February 28 via overhead irrigation with 30 lb/A (calcium nitrate 15.5-0-0). In retrospect, this fertilizer should have gone down earlier in February, when the Persephone period (less than 10 hours of daylight) ended.

Plot germination was rated 12 days after seeding, and then plot vigor was rated weekly, taking into account stand, plant size, and, after initial harvest, regrowth quality. Each variety was harvested as it sized up, resulting in 6 harvest dates, the earliest being December 4. The latest harvest would have been on March 11, but we were not able to access the tunnel due to the COVID-19 pandemic, so we are not able to report total yield from this trial.



There were few significant differences in germination, vigor, and harvest weight between the varieties in this trial. In each of the measures studied, many varieties performed similarly well, and without any downy mildew data, it is difficult to

say that one variety clearly stood above the rest. There was lots of variation in performance between each rep of the trial, primarily due to soil moisture levels and compaction. Wetter plots germinated more quickly but grew unevenly, with the centers of the wetter plots becoming stunted and yellow as the season progressed. Drier plots germinated more slowly but had less stunting once they had germinated, to a point; the driest edges of the driest plots remained small throughout the entire season.

Germination: Four varieties—Tabit, Sunangel, Viroflay, and Minkar—had the worst overall germination rates, which translated into low overall plot vigor and low 1st harvest weight. Viroflay was included as a negative control for downy mildew infection, as it doesn't have resistance to any races of spinach downy mildew, and it was not developed for speed or growth at low light and temperatures, so it's not surprising that it performed poorly. Two varieties, Shelby and Tundra, were treated with thiram and metylaxyl, the standard fungicide treatments in the industry, but did not have significantly higher germination rates or lower rates of damping off than other varieties in the trial.

Growth speed is one of the most important factors for choosing spinach varieties for winter production: what varieties will grow quickly enough to produce a harvest by late-November/early-December and then re-grow quickly enough in cold temperatures with low light. In this trial, assuming we had been able to complete the final harvest, most varieties would have been harvested twice, with some varieties harvested 3 times and a few only harvested once. Number of harvests for each variety is listed below.

Baboon and Bandicoot, which were all harvested 3 times, regrew very quickly after harvest and developed similar, distinctive looks after their 2nd harvest—light-green color, deltoid leaf shape, and long stems. Nevada, also harvested 3 times, developed a similar appearance after its second harvest, though it was not similar to Baboon or Bandicoot initially.

Cocopah and PV1526 also developed to be distinctively dense, with slightly elongate, shiny leaves, after their second harvests.

Acadia and Tundra grew the slowest of all the varieties. Despite germinating well and producing dense, high-yielding plants, neither variety was large enough to harvest until February 18, more than 4 months after seeding. These varieties may be good options for September seeding but did not grow fast enough to be suitable for early-October seeding.

Regrowth quality varied between varieties but also between cuttings of the same variety. Many varieties, listed below,

Table 2. Number of harvests.

3 Harvests	2 Harvests	1 Harvest
Baboon	Bandera	Acadia
Bandicoot	Capybara	Tundra
Colusa	Cocopah	
Dallas	Dracus	
Laredo	Kodiak	
Nevada	Minkar	
Platypus	Nimbus	
Salamander	PV1526	
Yukon	Reflect	
Corvus (2-3 harvests)	Regor	
Patton (2-3 harvests)	Responder	
	RZ51-723	
	Sculptur	
	Shelby	
	Sunangel	
	Tabit	
	Viroflay	
	Kiowa (1-2 harvests)	

Table 3. Regrowth quality.

Consistently Clean Regrowth	Regrowth Showing Cut Leaves
Bandera	Baboon
Capybara	Bandicoot
Cocopah	Dallas
Dracus	Kodiak
Kiowa	Laredo
Kolibri	Regor
Minkar	
Nimbus	
PV1526	
Reflect	
Responder	
RZ51-723	
Sculptur	
Shelby	
Sunangel	
Tabit	
Tundra	

produced high-quality regrowth, with few or no cut leaves visible. Other varieties showed cut leaves in their regrowth, and still others had high-quality regrowth after the 1st harvest but lower quality regrowth, showing cut leaves after the 2nd harvest. It's unclear whether this variation was due to the growth habit of the plants, which changed as day length increased in the spring, or differences in harvest cut heights.

This work was conducted in cooperation with Dr. Jim Correll, University of Arkansas Division of Agriculture.

--Written by Genevieve Higgins, UMass Extension Vegetable Program

MEXICAN BEAN BEETLE MANAGEMENT

Start scouting for bean beetle adults and egg masses, if you haven't already, if you plan to use the biological control agent *Pediobius* for control this year. Mexican bean beetles 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 insects and have to take action to prevent crop loss. Populations often build up when beans are grown in the same location every year—often close to the farm stand for PYO customers or CSA members. Using a combination of cultural and biological controls can reduce the need for insecticides in these sensitive areas.

Mexican bean beetle (MBB) adults are coppery brown with black spots. They look very much like large ladybeetles and in fact are closely related—but unlike ladybeetles, which feed on other insects, MBB adults feed on leaves. Adults spend the winter in hedgerows and usually move into fields in June. Shortly after adults arrive in a bean field, they lay yellow-orange egg masses on the underside of leaves in clusters of 40 to 50. 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. This week, at the start of July, adults, eggs, and young larvae have been observed in fields in Massachusetts. There are 2-3 generations per season, usually increasing in numbers with each generation. Populations are usually less abundant on early plantings and may not build to damaging levels until August.

Cultural Control

- Promptly destroy crop residues after harvest to reduce overwintering populations.
- Maintain wide, clean headlands and brushless wood edges.
- Avoid sequential plantings in close proximity.
- Row covers can be used to exclude beetles until harvest, or for as long as it is practical.
- Reflective metallic and white plastic mulches have been shown to significantly reduce beetle densities and feeding damage relative to black plastic or bare ground.

Biological Control. *Pediobius foveolatus* is a commercially available biological control agent for MBB and has a good track record in the mid-Atlantic states and among New England growers who have



*Mexican bean beetle damage.
Photo: UMass Vegetable Program*



*Clockwise from top left: Mexican bean beetle adult (UMass Vegetable Program), egg mass (J. Baker, North Carolina State Univ., Bugwood.net), larva (UMass Veg Program), and mummies (larvae that have been parasitized by the *Pediobius* wasp (UMass Veg Program)).*

tried it. *Pediobius* (pronounced “pee-dee-OH-bee-us”) is mass-reared and sold by the New Jersey Department of Agriculture and is also available from other beneficial insect suppliers (see contact information below). 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 called a ‘mummy’. About 25 adult wasps emerge from one mummy. The parasitoids are shipped to farms as mummies or as adults. Adult wasps will emerge from mummies within 2-3 days of receipt.

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.

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 2,000 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. Like beans, *Pediobius* wasps are killed by frost so annual releases are necessary.

Plan ahead by contacting a supplier to inform them of your acreage and expected release dates (based on what you’re seeing when scouting).

Contact information for New Jersey State Dept of Agriculture: Wayne Hudson, 609-203-9782, wayne.hudson@ag.state.nj.us, [Philip Alampi Beneficial Insect Rearing Lab](#). You’ll also get advice on how to use the wasps from this office.

***Pediobius* is also available from the following suppliers:**

- [Beneficial Insectary Inc.](#), 800-477-3715
- [IPM Laboratories](#), NY, 315-497-2063. Contact to check availability
- [ARBICO Organics](#), 800 -827-2847. Order online; orders ship on Wednesdays ONLY, minimum 7 day processing.

Chemical control. Treatment with an insecticide may be warranted to prevent economic losses. A suggested treatment threshold is >20% defoliation during pre-bloom or 10% during pod formation. Several conventional and organic insecticides are labeled for use against MBB, including several products that also effectively control potato leafhopper, which we are also seeing now in potato fields. Be sure to get coverage of lower leaf surfaces. Kaolin clay (Surround) may be used on seedlings and young plants to deter feeding and egg laying. For more information on chemical control options, see the [New England Vegetable Management Guide](#) and the [Cornell Resource Guide for Organic Insect and Disease Management](#).

Controls for potato leafhopper may also be needed in many bean crops, and could have harmful effects on *Pediobius*, especially on adult wasps. If releasing *Pediobius*, avoid sprays shortly before or after releases; apply treatments to a succession planting 5 days before release.

--Written by the UMass Vegetable Program

MANAGING DOWNY MILDEW OF BASIL

The first reports of basil downy mildew have been starting to come in from the mid-Atlantic region, where plants found at garden centers were infected with the disease. As we have seen in other years and with other diseases, garden centers can be extremely efficient means for spreading diseases as plants get distributed across large areas and planted out widely

in home gardens, so it may be an early year for basil DM. A new basil DM monitoring site has been setup and you can check the map of occurrences here: <https://basil.ag-pestmonitor.org/map/>. Preventively applied fungicides can provide control of this disease with regular, timely applications, and resistant varieties are now available and have been providing an extra ~2 weeks of basil harvest compared to standard varieties.



*Basil downy mildew causes yellowing between leaf veins, visible from the top of the leaf (left) and fuzzy gray sporulation on the undersides of leaves (right).
Photos: University of Florida (left) and A. Madeiras (right)*

Disease Spread. Basil downy mildew is caused by the oomycete, *Peronospora belbahrii*. It is an obligate parasite, meaning that it cannot survive outside of a living host. It does not produce overwintering oospores, but survives from year to year on living plants where basil production occurs year round, such as in Florida. From these sites the pathogen spreads via wind-dispersed sporangia that can travel great distances due to their dark pigmentation, which protects them from UV radiation. There is also evidence that the disease can be spread by contaminated seed, though we do not yet understand how this occurs and how important contaminated seed is as a source of primary inoculum.

Symptoms. Early symptoms can easily be mistaken for a nutritional deficiency. Infected leaves develop diffuse, but vein-delimited yellowing on the top of the leaf and a characteristic fuzzy, dark gray growth on the underside of the leaves, which may be mistaken for soil splashed onto the leaf under-surface, however, close inspection with a hand lens will show the sporangia. More photographs of the signs and symptoms are available at: <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html>

Management Recommendations:

Purchase seed or transplants from reliable sources. We know that the pathogen may come in with seed, though the frequency and importance of seed as a source of primary inoculum are not well understood, and testing of seed is difficult. Therefore, our recommendation is to buy seed from a trusted source. Talk to your seed supplier about how the seed was produced, if it has been tested, and also if the variety exhibits any resistance to the pathogen.

Grow your own transplants and keep a careful eye on them. Basil DM has repeatedly been traced back to transplants grown out of state so buying in transplants should be avoided. If you do buy transplants, inspect them carefully before purchasing and if you find any signs of disease report it to the store manager or call your local Extension service. Inspect plants regularly by looking on the undersides of leaves for sporulation (**see Fig. 1**).

Plan to plant and harvest early. The pathogen tends to arrive in MA around mid-July, though in some years it can be earlier. Keep track of where the disease is being found via pest alerts in Veg Notes and via the basil downy mildew monitoring program here: <https://basil.agpestmonitor.org/map/>.

Plant Resistant Varieties. Several new varieties with strong resistance (though not complete immunity) have been developed in the last 10 years by the public breeding program at Rutgers University and 4 are now available commercially (listed below). Growers have reported these varieties hold up an extra 2 weeks compared to standard varieties. Use resistant varieties for later plantings.

- **Obsession DMR:** An excellent sweet basil for field or potted plant production; will also make an excellent edible landscape plant; more compact, slower initial growth than Devotion DMR and Thunderstruck DMR, but for overall season is high yielding, lends itself to multiple cuts, and has a high leaf-to-stem ratio – good for small bunches or small size clam shells – dark green, thick, glossy leaves, flowers form very late; and highly resistant to Fusarium wilt.
- **Devotion DMR:** An excellent Genovese-type sweet basil for field production for fresh markets; establishes in the field or pots quicker than Rutgers Obsession DMR, with uniform, upright growth, dark, green color with flat to cup-shaped leaves. The Rutgers Devotion DMR is a beautiful plant.
- **Thunderstruck DMR:** An excellent sweet basil with high yields needed for processing- and fresh-market pro-

duction; quick establishment and fast, upright growth with medium-sized, ruffled leaves with a bright green color.

- **Passion DMR:** An excellent sweet basil for potted plant and field production. Exhibits vigorous growth with high leaf-to-stem ratio; larger, slightly cupped leaf and similar aesthetics to Rutgers Devotion DMR.

Reduce leaf wetness and humidity. Heat and vent greenhouses after cool nights, use fans, and water early in the day in the greenhouse. In the field, plant in well-drained sites, in rows parallel to prevailing wind direction, increase plant spacing, and control weeds.

Once detected, if the disease is not widespread remove infected plants or seedling trays and begin chemical control, or try to harvest and sell plants immediately, before symptoms worsen.

Chemical Control. Excellent control of downy mildew can be achieved with conventional fungicides applied weekly on a preventive schedule, but control is greatly reduced when applications are started after disease detection. If the symptoms are widespread and severe, destroy the crop immediately to stop spread of the disease to other plantings on your farm.

Pay close attention to labels. Basil is a minor crop and is not always found on pesticide labels, and there are differences in registrations for use in field versus greenhouse production. Some products have supplemental labels for use on basil.

Research trials have shown that the phosphite fungicides (eg. K-Phite, Prophyt, Fungi-phite) are among the most effective chemical controls. Other effective materials include mandipropamid (eg. Revus), cyazofamid (eg. Ranman), and azoxystrobin (eg. Quadris). All of these except Quadris can be used in both field and greenhouse in MA—Quadris is labeled for field use only.

OMRI-approved products are not known to be effective in controlling this disease.

–Susan B. Scheufele, Robert L. Wick and M. Bess Dicklow UMass Extension

IMPORTANT REMINDERS FOR FEDERAL CROP INSURANCE POLICYHOLDERS & NON-INSURED CROP DISASTER ASSISTANCE (NAP) PARTICIPANTS

Acreage Reporting: The deadline for filing acreage reports for Spring-seeded crops for both Federal Crop Insurance and NAP is **Wednesday, July 15, 2020**. If you have questions, contact your Federal Crop Insurance agent or your local FSA Office.

Loss Reporting: 2020 has presented farmers with challenging weather conditions and producers covered by a Federal Crop Insurance policy are reminded to monitor their crops for insurable damage throughout the growing season. If you notice damage, contact your crop insurance agent within 72 hours of discovery, 15 days before harvesting begins and within 15 days after harvesting is completed on the insurance unit. Three other important reminders:

- Check with your Federal Crop Insurance agent to review any prevented planting options.
- Direct marketed crops must have a yield appraisal before harvest, if a loss is anticipated.
- **Do not destroy** any crop evidence needed to support your claim without clear direction in writing from the insurance adjuster.

Producers having NAP coverage have similar loss reporting requirements and should contact their local FSA Office to report losses and review any prevented planting options.

Remember, if ever in doubt about filing a notice of loss, **always contact your agent or FSA!**

Losses on Crops Not Insured under Federal Crop Insurance nor Covered under NAP or Physical Losses: Even if you suffer losses on noninsured crops or crops not covered by NAP or physical losses such as building, equipment, etc., you should still notify your local FSA Office about the loss(es). FSA is responsible for monitoring crop conditions for disaster designation purposes and also may have other programs that could provide assistance.

--Written by Tom Smiariwski, UMass Extension Risk Management and Crop Insurance Education Program

NEWS

UMASS DIAGNOSTIC LAB AND SOIL TESTING LAB RE-OPENING INFORMATION

The UMass Plant Diagnostic Laboratory has reopened for plant disease, insect pest and invasive plant/weed samples. At this time, we can only accept mail-in samples, walk-in samples cannot be accepted. Please refer to our website for instructions on sample submission and to access the submission form: <https://ag.umass.edu/services/plant-diagnostics-laboratory>. Mail delivery services and staffing have been altered due to the pandemic, so please allow for some additional time for samples to arrive at the lab and undergo the diagnostic process. We look forward to resuming activities and diagnosing your plant problems!

The UMass Soil & Plant Nutrient Testing Lab reopened on June 23, 2020, in order to analyze samples that were in process when the lab closed on March 16 and those that arrived after that date. Orders will be processed in the order they were received. Please be aware that **we will not be accepting new samples for analysis** until the backlog of orders is significantly reduced. **Please do not send soil or plant samples for nutrient analysis until we are able to accept new orders.** For updates and information about available services, please visit: <https://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory>.

EVENTS

UNH WEBINAR: DISEASE MANAGEMENT FOR GIANT PUMPKIN GROWERS

When: Tuesday, July 7, 2020, 6-8pm

Registration: <https://extension.unh.edu/events/disease-management-webinar-giant-pumpkin-growers>

University of New Hampshire Extension is hosting a webinar on disease management for giant pumpkin growers. Dr. Margaret T. McGrath (Associate Professor, Cornell University, Department of Plant, Pathology) will join for a zoom webinar to discuss cucurbit yellow vine decline (CYVD) affecting pumpkin. This webinar will cover how to identify and manage this disease within your IPM system.

Dr. Anna Wallingford (UNH) will discuss the biology and management of squash bug, which vectors the pathogen responsible for the disease.

While this webinar was designed with giant pumpkin growers in mind, this webinar is open to all and may be of interest to any grower of pumpkins, squashes, and gourds. (2 PACs pending, must attend the live event to earn credit).

Other upcoming UNH Extension online programs:

- **Wed, July 15, 12-1pm. [North Country Lunch and Learn, Tarping: What the Heck is That!](#)** The third installment of this series will focus on using tarps to reduce tillage and control weeds on small-scale farms. Open to everybody, Great for people who are new to the concept of tarping.
- **Wed, July 15. 6:30-8:30pm. [Low-Risk Pesticides Webinar #1: Insecticide Modes of Action.](#)** In two zoom workshops, we will cover best practices for making the most of low-risk insecticides in small farm operations. Free to attend - 2 NHDAM&F - DPC Pesticide Applicators Credits pending, must attend the live Zoom event to earn credit. Learn more and register at the link above.
- **Wed, July 22. 6:30-8:30pm. [Low-Risk Pesticides Webinar #2: Sprayers & Foggers for Small Scale Operations.](#)** In two zoom workshops, we will cover best practices for making the most of low-risk insecticides in small farm operations. Free to attend. Register at the link above. Free to attend - 2 NHDAM&F - DPC Pesticide Applicators Credits pending, must attend the live Zoom event to earn credit. Learn more and register at the link above.

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Vegetable Notes. Genevieve Higgins, Lisa McKeag, Susan Scheufele, co-editors.

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