UMass Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975

Volume 30, Number 2 February 15, 2018

In this issue:

If you're looking for new ways to market your crops this season, consider this strategy! Bolted cauliflower observed by the Veg Program's Sue Scheufele at an Oakland, California Farmers' Market last week. Photo: S. Scheufele

Crop conditions

While the shorter days and slower pace of winter are still upon us, it is starting to feel like spring is right around the corner. Days are getting longer and temperatures are on the rise, and with some rain in the forecast to add yet more moisture to already saturated fields we find ourselves entering mud season. Fields without good cover crop stands are already showing signs of erosion and will decline in soil structure as a result. Farmers have done a lot of planning and prepping for the coming season so far, and now are starting to get greenhouses ready for starting plants next month, or perhaps have already started, with grafting of their earliest tomato varieties. High tunnels are being transitioned from winter greens and preparations are being made for summer crops—now is a good time to do some soil testing and determine your fertility needs (see article this issue for recommendations). A lot of folks are also finishing upgrades to storage and packing areas around the farm, with an eye toward FSMA compliance. We've trained about 70 growers so far this year on understanding these new regulations (150 last year), and there are still two more training opportunities being offered in March before the season begins—check out the events section for details. It's an exciting time of year when all that planning comes together and things start to get rolling; pre-spring fever!

High tunnel soil management update

Many growers are preparing high tunnel soils now for main season crops such as tomato, pepper, or cucumber. In a high tunnel, these summer season crops can produce a lot more plant biomass, hopefully more yield, and they grow for longer periods than in the field, so they require more nutrients to reach their yield potential. High tunnels often receive up to 3 times the recommended field application rates of fertilizers. Nutrient runoff from high tunnel soils is not a concern but leaching could still be a source of environmental contamination if crops are unhealthy and do not produce that extra biomass. Furthermore, over-fertilization of greens can lead to levels of nitrate in harvested leaves that are above those recommended for human consumption. This accumulation of nitrate may be occurring in high tunnels where high levels of fertility remain in the soil at the end of the summer when additional fertilizers might be added for the winter crop, and nutrient uptake over the winter is slow due to low light and temperature conditions. Over time, other issues such as accumulation of salts may occur, causing yield reductions. High tunnel soil management is currently not well understood, but luckily, a dedicated team is working on the issue.

Since 2016, a team of Extension Educators and scientists in New England, led by Becky Sideman at UNH, has been working on a SARE Research and Education grant partially addressing nutrient management in high tunnel tomato production.

At the New England Vegetable and Fruit Conference this year, Bruce Hoskins from the UMaine soil lab presented an update on this project with management tips summarized below. This season, the UMass Vegetable Program and Soil Lab are working with UMaine, and 3 other New England states to track soil and tissue tests in 5 high tunnel tomato crops per state to come up with uniform high tunnel soil testing protocols and interpretations.

For a general article on high tunnel soil testing procedures and interpretation, see the May 5th, 2016 issue of Vegetable Notes link in the resources section below. If soil test results come back with optimum nutrient levels and you make fertilizer applications according to your crop needs, but you still notice abiotic disorders or plant stress symptoms, which can't be attributed to disease or insect pressure, you may want to check for compaction, which is indicated by a penetrometer reading of 300 psi or greater. If compaction is within the root zone, especially within the top 15 cm, your plants may suffer from stunted roots; compaction below the root zone can lead to saturated soils *and* poor root growth. Soil compaction can be remediated with subsoiling, broadfork, or deep rooted cover crops. See instructions for using a penetrometer to test soil compaction here: https://extension.psu.edu/diagnosing-soil-compaction-using-a-penetrometer-soil-compaction-tester

Test soil compaction with a penetrometer.
Photo, G. Higgins

Following are updates in high tunnel soil management directly from Bruce Hoskins based on research conducted over the last two years:

"We have encountered a number of challenges within these projects that are both specific to high tunnel production and the byproduct of using natural and non-chemical nutrient sources. Many of these problems were unanticipated but also informative. Each of us has also worked with many high tunnel growers on specific problems in their operations. This talk is to share some of the insights gained in this process.

Salt buildup in high tunnel production is a well-known problem. Water is typically applied through drip irrigation only to satisfy immediate needs of the crop being grown. Transpiration of the crop plants plus surface evaporation cause a net upward wicking movement of soil water. Nutrient salts build up over time and eventually have to be flushed by uncovering to natural rainfall or by heavy irrigation. To document this salt buildup, several beds were excavated in one-inch increments and measured for total salt content. We found that, regardless of the nutrient source (chemical fertilizers, natural fertilizers, or compost), all beds showed the same pattern of salt accumulation in the top 2 inches (figure 1). The top inch typically has 10 times the salt level and the second inch has 5 times the salt level of the remainder of the bed. This huge stratification of nutrients is best addressed by remixing the beds before each planting cycle.

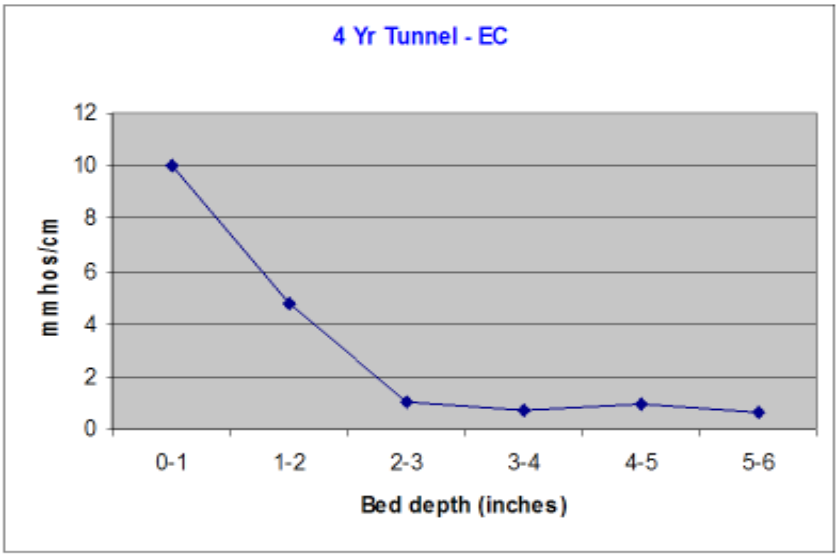

Figure 1. Salt accumulation in high tunnel soil over time

High alkalinity (hard) irrigation water is a common problem in greenhouse bench crop production. When all water is supplied by irrigation, high alkalinity water can cause soil or media pH to rise over time, causing deficiencies of iron, manganese, or zinc in some crops. This pH "creep" has become an occasional problem for some high tunnel growers as well. Surface water from ponds or streams is the preferred source for irrigation, where available, since these sources typically have very low alkalinity. High pH soil can be (slowly) acidified organically by mixing in elemental sulfur at 15 lb/1000 sq ft of bed area for each 0.5 pH unit drop.

In our preliminary research project potassium (K) was applied the first year as natural potassium sulfate, with 2 successive crops grown with no further K application. Initial application rates ranged from 100 to over 900 lb/A of K. At all locations, soil K levels were "cropped down" by plant uptake to low test levels regardless of initial treatment level. In some cases, this was an astounding amount of soil depletion in just 2 years (figure 2). Tomatoes and other solonaceous crops have a strong tendency to "luxury consume" K, whether or not it is needed for normal growth and yield. The high incidence of very low soil test K levels in tomato production high tunnels can be explained by this tendency. One of the goals of current research is to determine the minimum soil level of available K that will maintain maximum yield and quality of tomatoes.

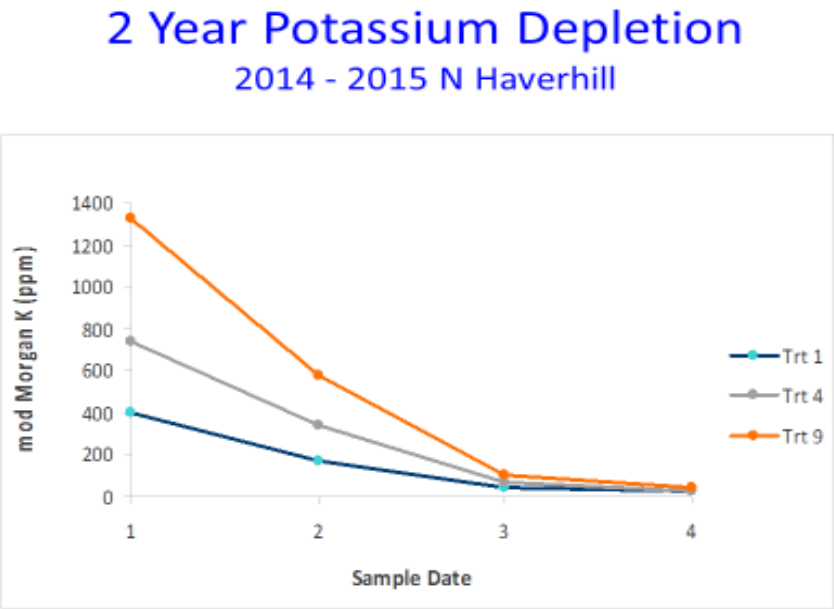

Figure 2. Potassium depletion over two years at one location

We are attempting to find critical K test levels corresponding to maximum yield and quality, using 2 common types of soil testing methods: a field soil test (modified Morgan) and a soil water test (saturated media extract or SME). The field soil test measures the total quantity of available K in the soil. The soil water test measures the short-term availability of K in soil water (often called "intensity"). The proportion of the total quantity available in the soil water at any given time (the "buffering capacity") is determined by clay and organic matter content of the soil. The 3 locations in the initial study had a range of soil textures: silt loam (higher clay), sandy loam (moderate clay), and loamy sand (low clay). On average, the 2 tests documented relative K intensities of 10 % in the silt loam, 20 % in the sandy loam, and 33 % in the loamy sand. The higher proportion of immediately available K in coarse textured sandy soils leads to faster plant uptake and depletion of the total available K reserves, compared to lower short-term availability in the heavier textured soil. Faster K depletion in sandier soils can be compensated for by applying one or two K applications through the drip later in the season, rather than front-loading all K before planting.

In both preliminary and ongoing research, total and marketable yield as well as incidence and severity of yellow shoulder (YS) were measured as a response to applied K. To document plant uptake, either leaf sap K or full leaf K content were also measured. These samples were used to establish relationships between soil test K (STK) and foliar K, STK and Yield, STK and YS, foliar K and Yield, foliar K and YS. These relationships were investigated for each of 3 locations using both first and last harvest soil and foliar data each year.

Significant relationships were found at some locations at some sampling dates (figure 3), but not consistently. In fact, inconsistent relationships seem to be characteristic of all 3 locations for all years. One key observation was the wide range of STK at

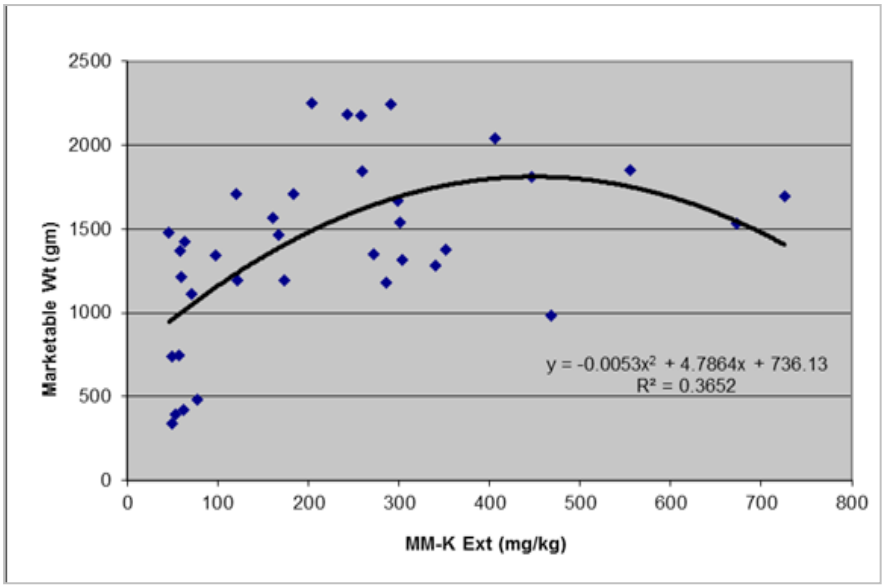

Figure 3. Marketable weight vs. soil K in a tomato high tunnel at one location

each treatment level, especially at high treatment levels. This indicated incomplete release of K from the potassium sulfate applications. The source used was a relatively coarse granulation (up to ¼ inch). Unreacted granules of potassium sulfate were found in archived soil samples that were not apparent during initial drying, sieving, and homogenizing. This was observed even in end of season soil samples that were taken one or even two years after application. This is one explanation of the high degree of variability in STK levels and inconsistent relationships with Yield, YS, and foliar K. K fertilizer applications were not supplying intended/assumed amounts of K to the crop. In some cases, we were measuring K in the soil test that had not actually been released for plant uptake.

A fundamental problem with high tunnel production is the hot dry environment and incomplete wetting of beds. This slows or prevents the release of nutrients, as opposed to open field production where soil is thoroughly wet to field capacity several times during the season. Even though both common natural K sources (potassium sulfate and Sul-Po-Mag) dissolve in water quite readily, the presence of undissolved granules at the end of one or even two years points out the severity of the problem. This is also a potential problem with natural nitrogen sources, which require sufficient soil moisture for full mineralization and release of nitrogen in plant-available form. Our recommendation is to maintain 3 – 4 lines of drip in a typical 30-inch bed to minimize dry soil zones and incomplete nutrient release in soil between drip lines. This is especially important in sandy soils which do not readily conduct water laterally, due to rapid infiltration rates."

Resources:

Campbell-Nelson, K. and Grubinger, V. Vegetable Notes Vol 28:5 "Soil Testing in Tunnels": https://ag.umass.edu/sites/ag.umass.edu/files/newsletters/may_5_2016_vegetable_notes.pdf University of Massachusetts: 5.5.2016

Hoskins, B. NEVFC, 2017 Conference Proceedings. "High Tunnel Soil Management Update." https://unh.app.box.com/s/pxyj71rrt3862pggduvpak10ha09g606 and presentation by the same title: https://unh.app.box.com/s/puvini-2uv1sp6jn5hytnpmfvpzvs8pxv

Sideman, B. SARE Research and Education Grant Project Report. 2016. "Improving nutrient and pest management in high tunnel tomato production." https://projects.sare.org/sare_project/lne15-343/

--by Bruce Hoskins, 2017 NEVFC conference proceedings with introduction by Katie Campbell-Nelson.

CONTROLLING WEEDS IN SMALL-SEEDED CROPS USING CULTIVATION

Cultivation may be used to improve weed management in small-seeded crops. It is typically most effective on small weeds in dry, loose soil. Aggressive cultivators used between crop rows can be very effective. However, it remains a challenge to use cultivation to control weeds in the crop row without damaging the crop. In-row cultivation tools rely on a size difference between the weeds and the crop – meaning they are designed to cause just enough soil disturbance to kill small weeds while allowing the larger crop plants to survive. A new generation of cultivators allow for several different tools to target the in-row zone at once. Such "stacking" of tools has been used to greatly increase the percent weed control in corn (Gallandt et al. 2017), but few studies have been conducted in small-seeded crops. Therefore in 2017, in-row cultivation tools used singly and in stacked combinations were evaluated in carrot crops in Michigan. Carrots were managed with a pre-emergence flame weeding, a hand weeding at around 40 days after planting, and one or two between-row cultivations. An in-row cultivation was conducted on 1" tall weeds at around 25 days after planting using the tools listed in Table 1. Weeds and crop plants were counted before and after cultivation to determine effectiveness. Overall, the "stacked" tool combinations killed a greater percentage of the weeds, but also killed a greater percentage of the crop. While the finger weeders killed the lowest percentage of the crop, the disc hillers had the highest ratio of weeds killed to crop plants killed. Considering the crop loss, yield was somewhat minimally affected, pos-

Disc hilling demonstrated potential to bury 1" tall weeds in young carrots but further adjustments may be needed to reduce crop damage. Photo credit: Sam Hitchcock Tilton

sibly due to increased size of carrots in plots where density was reduced. The effectiveness of the in-row tools varied greatly with conditions, which suggests that further work is needed to determine the optimal adjustment for different soils, crops, and weeds. The torsion weeders appeared to be the most sensitive to variable conditions while the finger weeders seemed to be the least affected.

Table 1. Averaged results of the three in-row cultivation trials in carrots. Note that the in-row cultivation treatments were implemented in addition to pre-emergence flaming, between-row cultivation(s), and a late-season hand weeding.

In-row cultivation tool	Weeds killed (%)	Crop plants killed (%)	Yield (1,000 lb/ac)
harrow	20	17	26
finger	39	16	25
torsion	46	33	22
disc hillers	57	20	28
finger / disc hillers	79	38	22
finger / harrow	48	32	19
torsion / finger / harrow	55	31	23
none	-30*	0	26

*When no tool was used, 30% more weeds had emerged in the time between counts.

References

Gallandt ER, Brainard DC & Brown B (2017) Developments in physical weed control. In: *Integrated Weed Management for Sustainable Agriculture,* (ed RL Zimdahl) 261-283. Burleigh Dodds Science Publishing. Sawston, UK.

Acknowledgements

This work was supported by the USDA National Institute of Food and Agriculture, Organic Agriculture Research and Extension Initiative Competitive Grant, "Farmer designed systems to reduce tillage in organic vegetables." Accession Number 1004267; A. Rangarajan, Project Director.

--by Bryan Brown, NYS IPM Program, Cornell University; Daniel Brainard, Michigan State University; and Sam Hitchcock Tilton, Michigan State University

IPM FOR CLUBROOT OF BRASSICA CROPS

Clubroot is a soil-borne disease caused by the protozoan *Plasmodiophora brassicae*. Infection results in the formation of galls on the host roots. The deformation of the root system results in reduced uptake of water and nutrients. Plants become stunted and may wilt, particularly during the heat of the day. Severely infected plants collapse and die.

Clubroot galls on roots of a broccoli plant.

P. brassicae is a prolific organism. If it were a sphere, the period at the end of this sentence could hold about 200,000 resting spores. After germinating, the resting spore produces a zoospore which infects a root hair. In about a week, a plasmodium develops in the root hair which will produce about 5,000 secondary zoospores which can reinfect the root, or swim though soil moisture to other roots. In cool, wet soils, the organism can spread quickly. The disease is active in moist soil at temperatures of 50-86°F, with an optimum of approximately 68-77°F.

Clubroot is a difficult disease to control, and no single treatment will provide adequate management. An integrated pest management program is the most effective way to decrease the incidence and severity of clubroot in brassica crops. Important elements of an IPM program for clubroot are outlined below.

1. A four-year crop rotation is recommended as a precaution for all brassica crops, and if clubroot is actually detected in the soil, increase the time period to 7 years. Avoid all crops in the family *Brassicaceae*. In gardens and small farms, perhaps some arrangement could be made where brassicas are grown in another area in exchange for produce grown in the contaminated soil. The problem with continuing to grow brassicas in contaminated soil is that the pathogen population grows quickly. A clubroot gall can contain a billion resting spores which can survive in the soil for 10 or

more years.

2. Acidic soils favor the disease. Raise the pH to 7.0-7.2. Apply hydrated lime 6 weeks before planting. An excellent reference is available at https://catalog.extension.oregonstate.edu/em9057

3. Raise transplants in a soilless medium so that they are free of disease.

4. Grow tolerant cultivars. These include the cauliflower cultivars 'Clapton' and 'Clarify', broccoli 'Emerald Jewel', and cabbage "Copenhagen'. For more information, see http://vegetablemdonline.ppath.cornell.edu/. Understand that these cultivars are not completely resistant to clubroot. There are at least 8 different races of the pathogen and resistant cultivars will not be resistant to all the races.

A broccoli field infected with clubroot.

5. Pentachloronitrobenzene (PCNB; Blocker 4F), fluazinam (Omega 500F), and cyazofamid (Ranman) are labeled for clubroot management and should provide partial control.

6. The clubroot organism is primarily banded in the zone of soil where the galls decay. Removing that band of soil will remove most, but not all, of the resting spores. Keep in mind that this band of soil is your most fertile layer.

7. Wet, cool soils favor the disease. Choose fields with good drainage for brassica crops, or grow them in raised beds.

8. The pathogen can be spread by movement of infested soil to uninfested fields. Clean equipment fastidiously after using it in contaminated soil and before using it in non-contaminated soil.

9. Carefully remove infected plants from the soil so that no root tissues remain. Infected plant material should be buried at least 12" deep, or removed from the site entirely.

10. Control cruciferous weeds, which are also susceptible to clubroot infection.

11. Bait crops have been used to force resting spores to germinate. Research trials have shown a variety of results from excellent to poor. Broadcast an inexpensive, susceptible brassica seed over the area. Allow growth for 4 weeks and then turn under the crop. The idea is to turn it under before resting spores develop.

--by Angela Madeiras and Robert Wick, UMass

News

We're Hiring! Seeking Weed IPM Technician

UMass is seeking an individual to assist with Weed IPM activities for fruit and vegetable crops in western, central and eastern MA. This is a seasonal full-time position. Undergraduate experience in Plant Science or related discipline is required. Individuals with a B.S. or M.S. degree in Plant Science or related discipline with weed science work experience are preferred. The Weed IPM Technician will interview growers to assess weed management needs and conduct in-field surveys to determine frequency and intensity of problematic weeds. The Technician will construct IPM plans with farmers and establish field trials on farms or at one of the UMass research farms. The Technician will also perform outreach by conducting occasional workshops, field walks or twilight meetings to promote IPM for weed management, responding to grower inquiries, and contributing to newsletters and providing web site updates. Weekly or biweekly scouting of identified farms is expected. The Technician will work closely with the UMass Fruit and Vegetable Teams. Funds are available

to support up to 37.5 hr/week; anticipated seasonal range is May-September with extensions possible. It is anticipated that the position will operate from Amherst, MA. Review of applications will start February 15 and continue until a suitable candidate is hired. Interested candidates should send a c.v. and a short letter of interest to:

Hilary Sandler, Project Leader
UMass Cranberry Station
PO Box 569
East Wareham, MA 02538
508.295.2212 x21
hsandler@umass.edu

A link to the position description can also be found on the UMass Stockbridge School job site: https://stockbridge.cns.umass.edu/career-opportunity/umass-extension-weed-ipm-technician

APPLICATION PERIOD OPEN FOR MDAR GRANT PROGRAMS

The Massachusetts Department of Agricultural Resources (MDAR) is accepting applications from Massachusetts farmers who wish to participate in these Department farm improvement programs in Fiscal Year 2019. Program information and applications are available on the Department website: www.mass.gov/guides/agricultural-grants-and-financial-assistance-programs or if you would like an application mailed to you, call the program contact listed below. The due date for all applications is **April 10, 2018**.

Farm Viability Enhancement Program (FVEP) - This popular business planning and technical assistance program provides management advice and grants from $25,000 up to $100,000 to implement farm growth and sustainability strategies. Farm operators receive grant awards for signing a 5 or 10 year Agricultural Covenant, and receive technical assistance and a business plan. Typical uses of funds from the Farm Viability Program include constructing new farm buildings or repairing existing structures, modernizing field equipment, purchasing delivery vehicles and tractors, and adding or improving retail marketing structures or food processing facilities. Contact Craig Richov at 617-626-1725 or Craig.Richov@state.ma.us.

APR Improvement Program (AIP) – for APR farms - helps sustain active commercial farming on land that has already been protected through the Agricultural Preservation Restriction (APR) Program. AIP provides business planning assistance to farmers selected to participate in the program and grants from $25,000 up to $100,000 may be available on a reimbursement basis to improve farm productivity and profitability of participating APR farms. AIP funds are used primarily for capital improvements to farm infrastructure, such as new or improved barns, farm stands, livestock housing, or processing facilities; or land management for agricultural use, such as reseeding hay fields, pasture improvements, fencing, or establishing perennial crops. Contact Melissa Adams at 413-548-1904 or Melissa.L.Adams@state.ma.us.

Matching Enterprise Grants for Agriculture (MEGA**)** - for beginning farmers- helps with business expansion on beginning farms. MEGA provides business planning assistance and grant funds of up to $10,000 on a one to one matching cash reimbursement basis. It is the objective of the MEGA Program to assist beginning farmers in their first through fifth year of business who aspire to develop their farms into commercially viable operations. Funds may be used for equipment, infrastructure or other capital improvements identified through the business planning process. Contact Melissa Adams at 413-548-1904 or Melissa.L.Adams@state.ma.us.

Stewardship Assistance and Restoration on APRs Program (SARA) - helps resolve stewardship issues caused by a prior owner to restore active commercial farming on land that has already been protected through the Department's Agricultural Preservation Restriction (APR) Program. Funds for selected participants may be used for materials and contracted labor or equipment rental costs to clear or reclaim inactive fields that are out of production at no fault of the current owner. Examples of eligible projects include clearing vegetation, pulling rocks or stumps, cutting back grown in field edges, or reseeding or applying soil or crop amendments to inactive cropland or pastureland in order to bring it back into production. Grant funds of up to $25,000 are available on a cost reimbursement basis with a 15% match of total project costs required by the farm participant. Contact Melissa Adams at 413-548-1904, Melissa.L.Adams@state.ma.us.

Crop Insurance Deadline – March 15th

The past two growing seasons have seen hail, drought, and freeze across Massachusetts. If you're concerned with extreme weather events and the impact they can have of your farm you should consider purchasing some level of coverage on your major crops. The 2014 farm bill provided a variety of risk management tools growers can use to protect their income and/or crops. The deadline to purchase revenue coverage or coverage for annual crops is March 15th.

- Whole Farm Revenue Protection (WFRP) provides growers with farm revenue protection from crop or market losses. WFRP replaced the Adjusted Gross Revenue polices that have been available in previous years. WFRP is sold by crop insurance agent. Check with your crop insurance agent.
- Individual Crop policies: growers can purchase federal crop insurance on potatoes, fresh market sweet corn, tobacco, corn (grain/silage). These policies protect growers from natural disaster losses. Check with your crop insurance agent.
- Non-Insured Crop Disaster Assistance (NAP) is available on all annual crops not covered by crop insurance. Farmers can now purchase coverage up to 65% of their yield and 100% of the established price. NAP is sold by the USDA Farm Service Agency (FSA).

Beginning, historically underserved, and limited resource famers receive special consideration which include waiver of NAP administrative fees, 50% reduction in NAP premiums and up to an additional 10% premiums subsidy and waiver of policy fees on their crop insurance policies.

UMass Extension works in partnership with the USDA Risk Management Agency (RMA) to educate Massachusetts producers about Federal Crop Insurance and Risk Management Programs. For more information, please visit www.rma.usda.gov or contact UMass Risk Management Specialists Paul Russell at pmrussell@umext.umass.edu or Tom Smiarowski at tsmiarowski@umext.umass.edu.

Events

2018 Eastern New York Fruit and Vegetable Conference

When: Tuesday, February 20nd - Wednesday, February 21st

Where: The Desmond Conference Center, 660 Albany Shaker Rd, Albany, NY 12211

This two day conference combines all of ENYCHP's traditional fruit and vegetable meetings into one large event in the Capital Region. Sessions will include two full days of tree fruit programing, one day of vegetable programing, a half day of berry and half day of agricultural business management. Hot Lunch and admission to the trade show are included with the registration fee.

The UMass Vegetable Program's **Sue Scheufele** is presenting on the second day of the conference in the Vegetables session on **Growing Fall Cucumbers: Efficacy and Economics of Downy Mildew Resistant Varieties**

"The APR Program: Looking Forward" -- Listening Sessions 2018

When: Wednesday, February 28, 5:30 - 7:00 PM

Where: Middleborough Public Library, 102 North Main St., Middleborough

When: Wednesday, March 7, 5:30 - 8:00 PM

Where: MassDEP Office, 8 New Bond St, Worcester between Reed Machinery and Abby Kelly High School

(FACILITATED SESSION)

When: March

Where: North Shore

This third date for an APR listening session to be held in the North Shore is being added -- details coming soon

As the Agricultural Preservation Restriction (APR) Program celebrates its 40th year, the Massachusetts Department of Agricultural Resources is hosting a series of listening sessions to hear from the public about their ideas for protecting

farmland for the future in Massachusetts. Titled "The APR Program- Looking Forward", these sessions are intended to be opportunities for you to recommend ideas and policy considerations for the APR program to meet the evolving needs of farming in Massachusetts and to address the challenges that can result from placing agricultural land under a restriction for posterity.

Produce Safety Alliance Grower Training Series

Wondering where to begin with food safety? Start here! The PSA Grower Training is currently the only FDA-recognized produce safety training to help growers implement Good Agricultural Practices (GAPs) and understand their responsibilities under new Federal regulations. Whether you have a farm that is fully covered by the law or a small, exempt farm and you're just looking for information, this training is for you.

The PSA Grower Training Course satisfies the FSMA Produce Safety Rule requirement outlined in § 112.22(c) that requires 'At least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration.' The training is also required for participation in Massachusetts' Commonwealth Quality Program.

Cost is $40 for each program and includes the required PSA Grower Manual ($50 value), a Certificate of Course attendance from AFDO ($35 value), and lunch and refreshments

There are 2 locations still available for this training:

When: Tuesday, March 13, 2018 - 9:00am to 5:00pm

Where: Lenox Town Hall auditorium, 6 Walker Street, Lenox, MA 01240

REGISTER HERE: https://www.regonline.com/builder/site/?eventid=2152815

When: Tuesday, March 20, 2018 - 9:00am to 5:00pm

Where: UMass Cranberry Station Library, 1 State Bog Road, (For GPS, enter: Intersection of Spectacle Pond Road and Glen Charlie Road), Wareham, MA 02538

REGISTER HERE: https://www.regonline.com/builder/site/?eventid=2148029

Our Farms, Our Future Conference

When: Tuesday, April 5 to Thursday, April 5, 2017

Where: Hyatt Regency, 315 Chestnut Street, St. Louis, MI 63102

This national event will bring together our diverse agricultural community including farmers and ranchers, agribusiness stakeholders, students, researchers, scientists, agency representatives and nonprofit leaders. Every decade SARE hosts a conference to look at the progress of sustainability in agriculture and to understand our trajectory for the future.

Please join us for a stimulating set of sessions on the future of sustainable agriculture in the United States.

Special Rates for Farmers if you register by the Earlybird Deadline of February 22nd, 2018! Click here to Register.

THANK YOU TO OUR SPONSORS

FARM CREDIT EAST

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

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