

Floral Notes *Newsletter*

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Go to the **2nd page** for the schedule of the UMass Extension greenhouse production and management program on **Thursday January 11, 2017, 9:00-3:15** at the Public House in Sturbridge, MA. **Topics:** Microbes, chemicals, and particles in irrigation water, using PGRs to manage spring greenhouse crops, root and foliar diseases of spring greenhouse crops, latest research on the impact of neonicotinoids to bees and other pollinators and how to combine biological control with conventional pesticides.

Read the articles and learn about *Allium* 'Millenium' Perennial Plant of the Year, FarmCredit's GenerationNext program for promising young Ag Leaders, Checking the quality of biological control agents, and capturing CO₂ from the atmosphere.



Greenhouse Management and Production for 2018!

Thursday January 11, 2018, 9:30 AM – 3:30 PM

Publick House, Sturbridge, MA

8:30 – 9:00 Registration and coffee/tea

9:00 – 10:00 Microbes, chemicals, and particles in irrigation water

Dr. Rosa Raudales, University of Connecticut

Water quality affects plant health and clogging. In this presentation, Rosa will discuss the parameters that affect irrigation water quality and treatment options to control microbial, chemical, and physical water quality problems.

10:00 – 10:15 Break

10:15 – 11:15 Using PGRs to manage the quality of spring greenhouse crops

Dr. Douglas Cox, University of Massachusetts

This presentation will discuss how to use PGRs to manage plant size and reduce water and fertilizer use thereby increasing the profitability of your production

11:15 – 12:15 Managing common root and foliar diseases of spring greenhouse crops

Dr. Angela Madeiras, UMass Extension

This presentation will discuss the biology, symptoms and management options of common root and foliar diseases of spring greenhouse crops.

12:15 – 1:15 Lunch on your own (various options) and networking

1:15 – 2:15 Latest research on the impact of neonicotinoids to bees & other pollinators

Dr. Richard Cowles, Connecticut Agricultural Experiment Station

In this presentation, Dr. Cowles will discuss the latest research on how pesticides affect pollinators and the impact of neonicotinoids on bees and other pollinators and options for growers.

2:15 – 3:15 How to combine biological control with conventional pesticides

Greg Bryan, North East Representative, Bioline AgroSciences

This presentation will discuss compatibility of pesticides with biological control agents and what to consider if there is need to apply a conventional pesticide including timing and application method. It will also include ideas on what to do if unable to control a pest with biological control agents and you need to apply a pesticide and the overall effects to the biocontrol program. **3 pesticide credits requested.**

2018 Perennial Plant of the Year[®] - *Allium* 'Millenium'

The Perennial Plant Association has awarded the title Perennial Plant of the Year[®] 2018 to *Allium* 'Millenium'. This herbaceous perennial, relative to the common onion, is a workhorse of the late summer garden. Bred by Mark McDonough, horticulture researcher from Massachusetts, 'Millenium' was introduced through Plant Delights Nursery in 2000 where it has proven itself year after year earning rave reviews. 'Millenium' is spelled with one "n", as registered, but is sometimes incorrectly listed with two "n"s. This cultivar is the result of a multigenerational breeding program involving *Allium nutans* and *A. lusitanicum* (formerly *Allium senescens* ssp *montanum*), selected for late flowering with masses of rose-purple blooms, uniform habit with neat shiny green foliage that remains attractive season long, and for its drought resistant constitution. The genus *Allium* contains more than 900 species in the northern hemisphere but is perhaps best known for a dozen or so species of culinary vegetables and herbs: onion, garlic, leeks, shallots, scallions, and chives. The genus is also known for a few dozen ornamentals that grow from bulbs and sport tall stems with big globe-shaped blooms in spring. Most of the genus is little known and absent from horticulture, yet possesses significant ornamental potential.

Allium 'Millenium' has numerous virtues to add to the landscape setting. Growing best in full sun, each plant typically produces an upright foliage clump of grass-like, glossy deep green leaves reaching 10-15" tall in spring. In midsummer, two to three flower scapes rise above the foliage with each scape producing two or three showy two-inch spherical umbels of rose purple florets that last as long as four weeks. The flower umbels are completely round (spherical), not domed or hemispherical as they are in some *Allium* species. They dry to a light tan often holding a blush of their former rose-purple color. While other alliums can look scraggly in the heat of the summer, 'Millenium' does not let the heat bother it! Easily grown in zones 4-9 (possibly zone 3) makes it a great perennial in many areas of the country. In very hot summer climates it does appreciate afternoon shade. No serious pest problems have been reported. Leaf spot may occur in overcrowded growing conditions. Deer and rabbits leave 'Millenium' alone. *Alliums* are sometimes avoided due to their reseeding behavior. Fortunately, 'Millenium' exhibits 50% reduced seed production, raising less concern for self-sown seedlings. *Allium* 'Millenium' has a fibrous root structure forming an ornamental herbaceous clump easily propagated by division. Once in the garden, 'Millenium' can easily be lifted and divided in either spring or fall. Cut back foliage in late fall.

Hardiness: USDA Zones 3 or 4 to 9. **Light:** *Allium* 'Millenium' grows best in full sun. In very hot climates partial shade may be best. **Soil:** Grows best in well-drained soils **Uses:** *Allium* 'Millenium' is a perfect selection for full-sun gardens where its sleek structure can complement many other growth habits. Cut flowers retain a blush of their summer color. **Unique Qualities:** *Allium* 'Millenium' is a butterfly magnet. The plant is interesting through multiple seasons for both foliage and large, gorgeous blooms. Reseeding is much less a problem than in other alliums. **Maintenance:** *Allium* 'Millenium' is subject to no serious insect or disease problems. Deer and rabbits usually avoid 'Millenium'.

Pollinators will flock to *Allium* 'Millenium'! Butterflies and bees will thank you for adding 'Millenium' to your garden. Pair with shorter goldenrods (*Solidago* sp.) such as 'Little Lemon' that reaches 1 ½ feet tall. Goldenrods are late summer pollinator magnets that will offer beautiful contrasting golden yellow blooms. Another late summer re-blooming companion perennial to consider is *Oenothera fremontii*

'Shimmer' with its low-growing silvery foliage adorned daily with large yellow flowers that open late afternoon and fade to an apricot color by morning. Being tap-rooted this evening primrose is well behaved, not creeping through the garden for which rhizomatous spreading evening primroses are infamously known. *Allium* 'Millenium' looks great backed with the silver foliage of *Perovskia atriplicifolia*, Russian sage, or the native *Scutellaria incana*, downy skullcap, with its numerous spikes of blue flowers above trim green foliage. Or simply plant 'Millenium' in masses and enjoy the rose-purple display! This low-maintenance dependable perennial will not disappoint! Blooming at a time when most of the garden begins to decline in the tired excess of the season, 'Millenium' offers much-needed color. It is truly an all-season plant that offers attractive shiny foliage spring through summer and caps off the season with its crown of perfectly round rose-purple flower umbels!

Martha A. Smith, Horticulture Educator, University of Illinois Extension and Mark McDonough, Plant breeder/horticulture researcher, Massachusetts.

For more information about *Allium* 'Millenium', visit the Perennial Plant Association website.



Farm Credit East's GenerationNext Seeks Young Ag Leaders Looking to Develop Management Skills



ENFIELD, CONN. — A successful manager is required to master many aspects of the farm business. To help the next generation develop the necessary business and financial skills, Farm Credit East is hosting multiple GenerationNext seminars across the Northeast this fall into winter, and currently seeks interested young leaders to attend. Upcoming sessions will be held in Enfield, Conn., Presque Isle, Maine, Middleboro, Mass., Bedford, NH, Flemington, NJ, and three New York locations: Greenwich, Kingston and Java Center.

Farm Credit East's GenerationNext helps young leaders identify areas for personal growth and development, improve business management skills and network with other young industry leaders. It is optimal for those producers who will be the next generation operators of a farm business. Whether just entering into a management role or an experienced manager, participants will gain valuable insights from Farm Credit East farm business consultants and from their GenerationNext colleagues.

“A key take-away of many participants is effective communication across generations,” said Chris Laughton, Farm Credit East Director of Knowledge Exchange. “GenerationNext helps to develop a balance of respect for the accomplishments of the older generation and trust in the ability of the next generation to take over the business.”

While each session is customized for the participants attending, the program is typically offered in a three part series. The first class covers leadership and employee management. The second session focuses on understanding financial records, including budgets, inventory and investments, to develop and achieve goals. The final session's focus is based on the group's interests. Past topics have included customer service, marketing and risk management.

Each seminar includes group discussion, idea sharing and networking opportunities. In addition, participants receive a self-paced, computer-based course and a take-home portfolio with handouts and worksheets that support the topics covered by the program.

A complete listing of upcoming GenerationNext session dates and locations is available at FarmCreditEast.com/GenerationNext. It is not necessary to have an existing relationship with Farm Credit East to attend. Contact your local Farm Credit East office, or call (800) 562-2235 for more information or to sign up.

Farm Credit East extends more than \$6.3 billion in loans and has 21 local offices in its seven-state service area. In addition to loans and leases, the organization also offers a full range of agriculturally specific financial services for businesses related to farming, horticulture, forestry and commercial fishing. Farm Credit East is governed by a 17-person board of directors. For more information, go to FarmCreditEast.com.

Using Biological Controls: Checking for Quality

Dan Gilrein
Entomology Specialist
Interim Agriculture Program Associate Director
Cornell University Extension

Editor's note: This article appeared in the July 2017 issue of Agricultural News, Cornell University Cooperative Extension of Suffolk County. As a professional entomologist dedicated to Integrated Pest Management (IPM), I am glad to see increasing interest in, and use of, biological controls. Many growers are now incorporating beneficial nematodes, insects and mites into greenhouse production of ornamentals and edible crops, and other businesses are finding applications for outdoor agriculture and landscapes. There is also greater appreciation for preserving naturally present biological controls through more selective use of pesticides and other management strategies.

An important but often overlooked aspect is quality assurance by growers and other end users. At a recent event, for example, a very large agricultural operation using biocontrols extensively mentioned having no quality assurance (QA) system in place. Occasional comments made to me that the 'biocontrols didn't work' were unsupported by evidence showing the natural enemies they depended upon were in good condition and in the stated number on arrival. Biological controls, like parasitoid wasps that control whiteflies, predatory mites that feed on thrips, and nematodes that attack fungus gnat larvae, are living creatures sensitive to environmental conditions. Excessively high or low temperatures, condensation from cold packs, or delays that all may occur in shipping can have severe effects resulting in few or no biocontrols surviving. Occasional problems can also occur in production too, though suppliers have internal quality controls in place. Users can and should participate in the process by doing their own inspections and communicating findings back to suppliers to help make adjustments where needed.

Quality checks at the user end are generally rather simple - some take almost no time and the small amount of effort should be built into the pest management plan every time releases are done. With some basic equipment, anyone can do these and there are on-line guides to facilitate the process. Helpful items include fine brushes, a hand lens (10x minimum) or visor-mounted magnifier, small bottles or containers such as canning jars with screw band lids, fine mesh (like nylon stocking or organdy material), white paper or tray, dark-colored paper, a clear shallow dish, measuring spoons, and yellow sticky cards. Large-scale operations using biocontrols intensively might consider investing in a dissecting microscope, which can also be extremely helpful for

diagnosing problems like broad mite.

One of the simplest checks is for parasitoid wasps like *Encarsia* or *Eretmocerus*. Place an opened blister pack, hanger card or loose media with the biocontrol in the bottom of a small jar. Suspend a small piece of yellow sticky card, which will trap the emerging wasps, from the top and cover the jar with fine screening that the wasps can't get through. The jar should be placed in a room-temperature area out of direct sun for 2 weeks. Count the wasps trapped on the card and compare with expected number. Several packs or cards from each shipment should be checked. For nematodes like *Steinernema feltiae*, swirl a tiny (pinhead) bit of the nematode 'paste' into a shallow clear dish or in a plastic bag with 1 tsp. room-temperature water. Place against a dark surface or paper and after several minutes examine with a hand lens or microscope. Live nematodes will appear S- or J- shaped and move slowly; dead nematodes are nearly straight and do not move. Expect to see a small proportion that are dead, but if all or most appear to be wait another few minutes and check again.

Users should keep good records of each shipment, noting any issues when received (too hot or cold, too wet, bad odor, physical damage to packaging, etc.), storage conditions, or packages have to be held for any length of time before use. Record any identifying batch or run numbers, arrival and test dates, number of samples checked, species, test results, and other observations that may be helpful.

Quality inspections can and should be more detailed for some biocontrols, but the majority of these are still fairly simple and quickly done. In some cases assessments can continue after release for performance, such as monitoring for black parasitized greenhouse whitefly pupae where *Encarsia* are used or for aphid 'mummies' where *Aphidius* wasps are released. Work closely with suppliers to address any issues that may arise. Depending on the biocontrol species, use of banker plants and pollen or other food supplements can help support them on site after release. There are some excellent resources on-line to help with QA checks of biocontrols. The *Grower Guide: Quality Assurance of Biocontrol Products*, by Dr. Rose Buitenhuis, Biological Control Research Scientist at the Vineland Centre, has brief discussions for each biocontrol and illustrations (http://vinelandresearch.com/sites/default/files/grower_guide_pdf_final.pdf). Rincon-Vitova Insectaries "How to Check the Quality of Biological Control Agents", and excerpts from Applied Bio-nomics Biological Technical Manual is at <http://www.rinconvitova.com/check.htm>. Other suppliers and consultants can provide suggestions too. As we rely more upon biocontrols as a fundamental part of our pest management programs, users should add simple quality inspections.

Capturing CO₂ from the Atmosphere - New Swiss Technology

Douglas Cox
Stockbridge School of Agriculture
University of Massachusetts
Amherst

During summer past, I came across reports, on NBC Nightly News and in The Week news magazine, of an innovative prototype system for removing carbon dioxide (CO₂) from the atmosphere from a firm in Switzerland called Climeworks AG. Obviously, the system is touted as a potential way of reducing the concentration of one of the major greenhouse gases in the atmosphere responsible for global warming. However, the prototype system was connected to a very large greenhouse vegetable operation to demonstrate a practical use. CO₂ fertilization in this way resulted in about a 20% increase in the yield of tomatoes and other vegetables. The picture from the firm's website (www.climeworks.com) gives an idea of what the system looks like; notice the large greenhouse in the distance.



The system consists of a tall bank of fans which draw ambient air in, and through reusable chemical filters which capture the CO₂. Filters saturated with CO₂ release it for storage when exposed to waste heat from a nearby trash incinerator operation. The CO₂ collected by the system is pure and free of pollutants making it useful for beverage-making, manufacture of synthetic fuels, and other industrial uses.

Perhaps one day this system could be scaled, adapted, and priced for everyday greenhouse use, though I doubt the developer has this in mind, but who knows! I can see this system, as a cleaner substitute for fossil fuel CO₂ generators and it would be useful for greenhouses having a biomass heating system. Visit the Climeworks AG website to check out small prototype units presumably for study and demonstration that might be compatible with small and medium-sized greenhouses.

In the wider world it's not often that you run into reports of innovations potentially applicable for commercial greenhouses. Most new stuff for greenhouses is written up in trade journals or presented at industry meetings and shows. So what I found was kind of different. Also, the September 2017 issue of National Geographic had a great article "A Tiny Country Feeds the World" about the worldwide impact of the Dutch greenhouse and controlled-environment industry and its supporting Wageningen University & Research (WUR). Most of us know about the impact of the Dutch on U.S. and Canadian greenhouse industries, but it's still a good read.