

# Floral Notes *Newsletter*

Volume 30, No. 1

<http://extension.umass.edu/floriculture>

July-August 2017

## *In This Issue*

*2017 MFGA Summer Trial Garden Tour & Educational Program for Greenhouse Growers & Garden Retailers* .....2

*Tina Smith Retires from UMass Extension After 38+ Years!* .....3

*UConn Native Plants and Pollinators Conference*.....4

*2017 Biological Control Workshop at UConn Take Home Tips* .....5

*Soluble Salts and Electrical Conductivity (EC)*.....7



## 2017 MFGA Summer Trial Garden Tour & Educational Program for Greenhouse Growers & Garden Retailers

Thursday August 10, 2017

8:30 AM – 3:30 PM

Join us this year for our MFGA Summer Meeting Thursday, August 10. This year we will have a Trial Garden Tour again but add an educational program at Elm Bank Reservation. We'll have a special presentation, by Ellen Wells, Editor at Large, Grower Talks Magazine, on Garden Retail Trends. Then, offer 1 pesticide credit for a program on "Integrating micro-organisms to supplement your IPM Program" by Dr. Debbie Palumbo-Sanders, Technical Specialist, BioWorks.

We will begin at Cavicchio Greenhouses, Sudbury, where Kerri Stafford, Head Grower, will walk us through their extensive Trial garden. We will travel by car around the corner and visit J.P. Bartlett to see their new Geranium introductions trials. We then will drive to Wellesley and regroup at the Massachusetts Horticultural Society's Elm Bank Reservation, 900 Washington St, where we will view the MFGA trial gardens and AAS trials with David Fiske, Trials coordinator. Then Lunch and finish the day with the 2 speakers mentioned above.

### Schedule

- 8:30 AM      **Registration Begins    Cavicchio Greenhouses 110 Codjer Lane, Sudbury, MA**  
*Complimentary Coffee and snacks provided by our host Cavicchio Greenhouses*
- 9:00- 10:00    **Kerri Stafford, Head Grower, will Review all of the 2018 Annual and Perennial Varieties** in their Trial gardens that they are evaluating for production at Cavicchio Greenhouses.
- 10:15- 10:45    **J.P. Bartlett Geranium Trials, 578 Boston Post Road (rte. 20), Robin Messer, Trials manager, will review potential New geranium introductions.**
- 11:15-12:30    **Mass. Hort Society Elm Bank Reservation, 900 Washington St Wellesley, MA. David Fiske, AAS Judge and Garden Trials Coordinator will review all of the 2018 New introductions of annuals and perennials sent to the MFGA gardens this year.**
- 12:30-1:30    **Lunch** (during which we'll talk about the PlantSomethingMA program)
- 1:30- 2:30      **Trends and ideas for Independent Garden Retailers, Ellen Wells, Editor at Large for Green Profits , Grower Talks Magazine.** Ellen will discuss some of the trends and ideas she has seen with independent retailers around the country or even Canada. How can they help you in your business? At the end, we'll have an open discussion of the spring season here in Massachusetts.
- 2:30-3:30      **Integrating micro-organisms to supplement your IPM program. 1 pesticide Credit Debbie Palumbo-Sanders, Technical Service Specialist, BioWorks**  
Biocontrol using insects, mites and nematodes are becoming the backbone of control for growers here in Massachusetts. The use of microbial & natural products add another supplement to the IPM program. Debbie will discuss the uses of microbial and natural products, the conditions to maximize their effectiveness and their compatibility with all the other parts of your IPM program to provide maximum control.

Please Preregister by August 4, 2017. \$40 per person. For information Email: Bob Luczai ([massflowergrowers@gmail.com](mailto:massflowergrowers@gmail.com)) or Geoffrey Njue, ([njue@umext.umass.edu](mailto:njue@umext.umass.edu))

## ***Tina Smith Retires from UMass Extension After 38+ Years!***



In 1978, Tina Smith began her career working as a “county agent” in Greenfield for the Franklin County Extension Service. As a county agent, she served the community through educational workshops and conferences, weekly radio programs, and newspaper columns on a wide range of horticulture topics. She worked closely with members of the agricultural community, coordinating an annual small farms conference and organizing the first master gardener program in Franklin County.

In 1987 Tina took over the regional specialist position for floriculture and nursery for western MA located in the Hampden County Extension Office in West Springfield. The position eventually relocated to UMass Amherst campus and took on statewide responsibilities with programs reaching throughout

New England. Tina worked with UMass colleagues Paul Lopes and Douglas Cox to develop water quality and energy conservation programs for greenhouses. She and Paul Lopes were instrumental in developing the first greenhouse integrated pest management program in Massachusetts, working closely with flower growers and UMass entomologist Roy Van Driesche. The program efforts were in the forefront of biological control research and implementing IPM practices in the greenhouse production of ornamental plants. Tina also worked closely with Bob Luczai in Extension and, later with the Massachusetts Flower Growers’ Association planning, organizing and implementing programs for greenhouse growers in MA. She also taught a course on greenhouse integrated pest management for UMass’s Stockbridge School of Agriculture for several years.

Most recently Tina has collaborated with Leanne Pundt, UConn Extension to continue outreach activities on biological control practices such as conducting educational conferences, co-authoring publications and providing pest messages through their website, “New England Greenhouse Update”. Tina also recently collaborated with colleagues Geoffrey Njue and Douglas Cox to provide outreach activities on Doug’s research on fertilizers for organic greenhouse production.

“Over the course of my career I have been so fortunate to have had so many wonderful opportunities and got to know so many people.”

Tina and her husband Paul Putnam have been married for 36 years and have a son Jeff who works in NY. In retirement, Tina plans to spend more time with her husband, doing more gardening, helping her elderly parents and maybe continuing to work a little part-time.

# ***UConn Native Plants and Pollinators Conference***

**Thursday, October 19, 2017**

UConn Student Union Ballroom (Room 330)  
2100 Hillside Road, Storrs, CT 06269

- 8:00 - 8:45 a.m.**      **Registration and Coffee**
- 8:45 - 9:00 a.m.**      **Welcome and Introductions**  
Vickie Wallace, Extension Educator, UConn Extension and Dr. Michael O'Neill, Associate Dean and Associate Director, UConn Extension
- 9:00 - 10:00 a.m.**      **Lifestyles of Pollinators**  
David Wagner, Professor, Department of Ecology and Evolutionary Biology, University of Connecticut Learn about the ecology and behavior of insect pollinators and their conservation.
- 10:00 - 11:00 a.m.**      **Native Perennials for Bees, Butterflies, and Birds**  
Emily DeBolt, Fiddlehead Creek Nursery, Fort Ann, NY Discussion of herbaceous perennials to support pollinators, including top-performing cultivars, and examples from design/build projects.
- 11:00 – 11:15 a.m.**      **Break**
- 11:15 - 12:15**      **Selecting Native Shrubs for Season-long Pollinator Support**  
Jessica Lubell, Associate Professor, Department of Plant Science and Landscape Architecture, University of Connecticut Landscape uses of native shrubs, both popular and under-used, will be covered in sequence of bloom to create season lasting pollinator support.
- 12:15 - 1:00 p.m.**      **Lunch**
- 1:00 - 2:00 p.m.**      **Research Update: Examining Pollinator Attraction of Shrub Nativars**  
Jacob Ricker, Graduate Student, Department of Plant Science and Landscape Architecture, University of Connecticut Report from the first data collection season of our UConn study to evaluate pollinator support of several native shrub species and their cultivars.
- 2:00 – 3:00 p.m.**      **Native Trees for Pollinators**  
Andrew Brand, Broken Arrow Nursery, Hamden, CT Native trees with ornamental characteristics that also function to support pollinators through flowers and foliage.
- Early Registration \$50.00, by Friday, September 8, 2017**  
**\$60.00 after September 8, 2017**  
**Students \$25.00 with valid school ID**  
Registration fee includes parking, morning refreshments, and lunch.

**Questions about registration? Contact: Donna Ellis, [donna.ellis@uconn.edu](mailto:donna.ellis@uconn.edu) or call her at 860-486-6448.**

## ***2017 Biological Control Workshop at UConn Take Home Tips***

Here are a few take home tips from the Biological Controls Workshop held on June 22, 2017 courtesy of the Integrated Pest Management Program of UConn Extension. Featured speakers at the workshop were Suzanne Wainwright-Evans, Buglady Consulting, Doug Barrow from Biobest, Debbie Palumbo–Sanders from Bioworks and Shelley Durocher from UConn.

As demand for biological controls is increasing, it is a good idea to talk to other growers and ask lots of questions from your suppliers.

Here are some **general guidelines** to check for quality control when you receive your natural enemies:

- Open the package and look for condensation or a fermentation smell.
- Check temperature with an infrared gun available from Amazon.
- Look for movement.
- Keep good records including the species name, packaging type and size, date received, company batch number, date tested, supplier.
- Keep records of rate used, where released and on what crops.

If there is an issue, contact your supplier immediately, so they can help you resolve the problem so you can have a successful program.

### **Applying nematodes**

After taking the nematodes from your dedicated refrigerator, allow the nematodes to warm a little at room temperature (1 to 2 hours) to "wake them up" before mixing them in the tank solution. Avoid drastic changes in temperature from 40° F to 70° F that will stress them. If you are applying nematodes in the summer months, be careful of warm temperatures! Avoid applying when soil temperatures are above 80°F! Optimum media temperatures are between 60-70°F (Use a soil thermometer to monitor temperatures).

Shelly Durocher uses a battery operated portable aerator that you can get from a bait store or online to keep the nematodes agitated and oxygenated as she moves from greenhouse to greenhouse.

### **Checking sachets for use against thrips**

Make sure that the exit hole is not pinched or blocked. Place in a similar environment for a quality check.

Proper placement of sachets is important. It is best to place the mite sachets within the plant canopy, where they will be shaded from the sun so relative humidity is the highest. Do not place on the outside of the pot, where they will not have enough humidity. More mites will emerge and they will last longer (6 weeks compared to 1 to 2 weeks) when sachets are protected from sunlight than when they are exposed to direct sunlight. Do a loose application first, until the plant canopy is large enough to shade the sachets. Using Nutrimite as a supplemental food source is especially helpful when the more expensive *A. swirskii* is used on gerbera daisies.

## Using *P. persimilis* against spider mites

Many predatory mites are available in tubes. Suzanne recommended storing tube bottles on their side, for a more even distribution of the predatory mites. This is because many of the predatory mites, especially *P. persimilis*, tends to move toward the top of the bottle. *P. persimilis* is also shipped without any supplemental food source, (this specialist only feeds on two-spotted spider mites), so it is important to obtain *P. persimilis* as quickly as possible, i.e. from companies that produce persimilis on the west coast (for the field strawberry producers) and can ship it to you in 24 hours. If persimilis is moving too quickly, it may be starving! Ask your supplier, how many persimilis should be in a tablespoon, because the companies mix them differently.

## Utilizing dips of biopesticides

Clean and disinfect the dipping tank and equipment before use. Prepare only as much dip suspension that can be used in one day. Test small batches of plants for potential phytotoxicity before use. Change the dip solution periodically and use in small batches to prevent the potential build-up of plant pathogens to infectious levels.

## Resources

Grower Guide: Quality Assurance of Biocontrol Products Compiled by Rose Buitenhuis, PhD, Research Scientist, Biological Control, Vineland Research and Innovation Centre, 2014  
[http://www.vinelandresearch.com/sites/default/files/grower\\_guide\\_pdf\\_final.pdf](http://www.vinelandresearch.com/sites/default/files/grower_guide_pdf_final.pdf)

Biological Control Agents - use with Bioworks Products:  
<http://www.bioworksinc.com/products/shared/BiologicalControlAgents.pdf>

Utilizing Dips: Clean up Incoming Plant Material by Utilizing Dips  
<http://www.bioworksinc.com/products/shared/Utilizing-Dips.pdf>

Success with Cutting Dips How to Video (from Vineland Research and Innovation Centre, June 2017) <https://www.greenhousecanada.com/inputs/biocontrols/success-with-cutting-dips-31968>

Take your Poinsettia Cuttings for a Dip  
[http://vinelandresearch.com/sites/default/files/growertalks\\_take\\_your\\_poinsettia\\_cuttings\\_for\\_a\\_dip.pdf](http://vinelandresearch.com/sites/default/files/growertalks_take_your_poinsettia_cuttings_for_a_dip.pdf) **Editor's note:** Mineral oil or Suff Oil X is not labeled as a dip in the US!

Boosting Predatory Mites with Nutrimite  
<http://www.biobestgroup.com/en/biobest/products/supporting-products-4465/supportingproducts-4485/nutrimite%E2%84%A2-4841/>

## Disclaimer

The information in this document is for educational purposes only. The recommendations contained are based on the best available knowledge at the time of publication. Any reference to commercial products, trade or brand names is for information only, and no endorsement or approval is intended. UConn Extension does not guarantee or warrant the standard of any product referenced or imply approval of the product to the exclusion of others which also may be available. The University of Connecticut, UConn Extension, College of Agriculture, Health and Natural Resources is an equal opportunity program provider and employer.

## *Soluble Salts and Electrical Conductivity (EC)*

Whether plants are grown in soil (ground beds), such as high tunnels or grown in soilless media in containers, it is important to regularly test electrical conductivity (EC) to monitor soluble salts and adjust fertility programs. For example, to avoid soluble salt buildup in high tunnels, it is advised to incorporate high tunnel soils thoroughly and flush with irrigation water after removing summer crops. If tunnels will remain unplanted over the winter, consider planting a cover crop or removing the plastic to allow rainfall to leach soluble salts.

Soluble salts are dissolved inorganic solutes. Common soluble salts in growing media are calcium, magnesium, sodium, chloride, sulfate and bicarbonate. Smaller quantities of potassium, ammonium, nitrate and carbonate are also found. Sources of soluble salts in soils and soilless media include commercial fertilizers, animal manures (usually high tunnels), soil organic matter, composts, runoff from areas where salt or ice-melt products have been used and irrigation water that is high in dissolved salts. Soluble salts above the normal range for a prolonged period may cause root injury, leaf chlorosis, marginal burn and sometimes wilting.

The common method to quantify the concentration of soluble salts in growing media is to measure the electrical conductivity (EC) of either the soil solution or a soil-water extract. Electrical conductivity is the ability of a solution to conduct an electrical current. As soluble salts increase the media, the solution becomes a better conductor of electricity and the EC increases.

Soil or media samples themselves are not actually analyzed during a soil test, but rather plant-available nutrients are pulled out or "extracted" from the sample using an "extracting solution".

There are three commonly used methods of extracting soluble salts based on the use of water as an extracting solution. They are: Saturated media extract (SME), 1:2 dilution method, and Leachate PourThru.

The amount of water used to extract plant-available nutrients and other details of the tests can give large differences in the results of the tests. This is illustrated by a comparison of soluble salt values in the tables. Note that the 1:2 method results in the lowest levels. Results of SME and leachate pourthru are closer, but some differences exist. Always use the interpretative data that match the test you made otherwise you could make an incorrect interpretation of the results. For example, a result of 2.6 for soilless media would be "extreme" (too high) for the 1:2 method, "normal" for SME, and "low" for leachate pourthru. What a difference in how you would think about your results!

There is also a difference in the data depending if the media is a soilless media or contains 20% or more soil.

Saturated media extract (SME). SME is currently "the" method of testing soilless greenhouse media and it is almost universally done by commercial and university labs, including the UMass Soil and Plant Tissue Testing Lab. In this test a paste is made using soil and water and then the liquid portion (the extract) is separated from the solid portion for pH, soluble salt, and nutrient analysis. Special

skills and laboratory equipment are required to perform this test. This method is a more representative measurement of total soluble salts in the solution.

**1:2 dilution method.** This method has been used for many years and has good interpretative data to back it up. In this test an air-dried sample of soil and water are mixed together in the volume ratio of 1 part soil to 2 parts water (e.g., using a measuring cup, 1 fl. oz. of soil + 2 fl. oz. of water). The liquid extract is then separated from the solids using laboratory grade filter paper or a common coffee filter. The extract is then ready for analysis. This is a very easy test to master and quite suitable for on-site greenhouse testing of pH and soluble salt using the so-called pH and EC "pens" available from greenhouse suppliers. The 1:2 method is a very good choice for occasional pH and soluble salts testing by growers on-site.

**Leachate PourThru.** Leachate PourThru is a method that would be limited for plants grown in containers. One of the major advantages to leachate pourthru is that there is no media sampling or preparation. Unlike SME and 1:2 methods, plants do not have to be sacrificed or disturbed for testing because the extract is the leachate collected from the container during routine irrigation. The leachate can be analyzed on-site using the pH and EC pens or it can be sent to a commercial laboratory for a complete nutrient analysis.

Leachate pourthru is best used for continuous monitoring and graphical tracking of pH and soluble salts. To make this method work best an irrigation and leachate protocol must be established and carefully followed when sampling takes place. Leachate pourthru is not a good choice for casual checks (use 1:2 method for this). Some growers like to "whip out" the old pH or EC pen now and then and check the drainage from some pots. Unfortunately, with casual use like this, the "numbers" are often quite variable, inconclusive, and probably unreliable.

EC Interpretation Values (mS/cm) for Saturated Media Extract (SME) and 1:2 for **Soilless Media**

Indication	SME	1:2	Pourthru
Very low	0-0.75	0.25	0-1.0
Low	0.76-2.0	0.3-0.75	1.0-2.6
Normal	2.0-3.5	0.76-1.25	2.6-4.6
High	3.5-5.0	1.26-1.75	4.6-6.5
Very High	5.0-6.0	1.76-2.25	6.6-7.8
Extreme	>6.0	>2.3	>7.8

Source: North Carolina State University. 2000.

<https://content.ces.ncsu.edu/monitoring-and-managing-ph-and-ec-using-the-pourthru-extraction-method>

EC Interpretation Values (mS/cm) for Saturated Media Extract (SME) and 1:2 for Soil

Indication	SME	1:2
Non-saline	0.1-2.0	<0.4
Very slightly saline		0.4-0.80
Moderately saline	2.1-4.0	0.81-1.20
Saline		1.21-1.60
Strongly saline	4.1-8.0	1.61-3.20
Very strongly saline	8.1-16.0	>3.2

Source: Gartley K.L. Recommended Methods for Measuring Soluble Salts in Soils. Recommended Soil Testing Procedures for the Northeastern United States. Chapter 10. 5/2011.



Commonly used EC values are: 1.0 mmhos/cm = 1.0 dS/m = 1.0 mS/cm

### **UMass Extension Vegetable Team Project**

The UMass Extension Vegetable Team collected and analyzed salt content of soils at 3 depths from 5 high tunnels that had been fertilized in the spring and still had a summer crop growing in them. They found that over the summer, the EC measurement in the top 0-2" was above 1.3 mS/cm (using the 1:2 method) which is considered too high for successful seed germination and seedling growth, resulting in yellowed leaves and poor rooting. This preliminary data highlights the importance of conducting EC tests between crops, leaching and incorporating high tunnel soils between crops. The team will continue monitoring these tunnels through the winter to see if salts continue to accumulate in the top 0-2" while winter crops grow.

### **References**

The Northeast Coordinating Committee for Soil Testing. 2011. Recommended Soil Testing Procedures for the Northeastern United States, Northeastern Regional Publication No. 493, 3rd Edition, Agricultural Experiment Stations of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and West Virginia.

<http://extension.udel.edu/lawngarden/soil-health-composting/recommended-soil-testing-procedures-for-the-northeastern-united-states/>

North Carolina State University. 2000. Monitoring and Managing pH and EC Using the PourThru Extraction Method. <https://content.ces.ncsu.edu/monitoring-and-managing-ph-and-ec-using-the-pourthru-extraction-method>

### ***UMass Greenhouse Crops and Floriculture Extension Program***

Douglas Cox Floral Notes Editor [dcox@umass.edu](mailto:dcox@umass.edu)  
Geoffery Njue Extension Specialist [gnjue@umext.umass.edu](mailto:gnjue@umext.umass.edu)

Six monthly issues of *Floral Notes* by email are published yearly.  
Subscription (2 years) is \$5. Contact Doug Cox for more information.

*Use of trade names in this publication does not imply endorsement of products named or criticism of those not mentioned. The user bears sole responsibility for correct and legal product use.*