

Floral Notes *Newsletter*

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Nancy Garrabrants Retires

Nancy Garrabrants recently retired after 34 years of service as floriculture teacher, Director of the Stockbridge School, and Director of UMass Extension. To many readers Nancy is best known for her love of teaching and her excellent courses in retail floral design and herbaceous perennials. She was a tireless advocate for the Stockbridge School and touched the lives of many students during her career. Nancy ended her career working with 4-H and food and nutrition extension programs. After leaving UMass she would like to take up teaching again. Nancy, best wishes!

New Smart Phone Web App by UMass Extension

Greenhouse Disease Guide Smart Phone Web App (Mobile optimized website app to be used with your browser on smart phones and other devices)

See: <http://greenhousediseaseguide.umass.edu/>

Our new Greenhouse Disease Management App for commercial growers of greenhouse crops and flowers was created by Bess Dicklow, University of Massachusetts Plant Diagnostic Lab and Tina Smith, University of Massachusetts Extension. This mobile optimized website app is a disease management reference guide that contains options for using biological control, organic and conventional pesticides. Partial support for this project provided by the New England Florist Association Floriculture Applied Research Fund. For questions or comments about this app, contact: Tina Smith, UMass Extension at (413)545-5306 or email tsmith@umext.umass.edu

Plant Nutrition and Organic Certification for Greenhouse Crops

February 26, 2015
10:00 AM - 1:30 PM
D&D Farms Inc. Stow, MA

9:30-10:00 **Registration**

10:00-11:00 **Fertilizing Container Grown Crops with Water Soluble Fertilizers**
Dr. Rosa Raudales, University of Connecticut

Rosa will review the use of water soluble fertilizers for spring crops grown in greenhouses. Most problems with greenhouse crops are a result of improper fertility. Rosa will take us to think beyond "General Purpose" to discover why every operation should design its own nutrition program. After this presentation you will know how to select fertilizers, how to identify and manage nutritional disorders, and how to use nutrients to control plant growth.

11:00-12:00 **Growing Spring Crops Using Organic Fertilizers**
Dr. Douglas Cox, UMass Extension

Doug has been testing commercially available organic fertilizers on spring floriculture greenhouse crops for several years. Now you get to benefit from his experiences and research results. Thinking beyond fish emulsion, learn about products including water-soluble and slow-release organic fertilizers that can be used to grow annuals and bedding plants and how best to use them.

12:00-12:30 **Lunch**

12:30-1:30 **Organic Certification for Greenhouse Container Crops**
Don Persons, Certification Administrator, Baystate Organic Certifier

Many growers of spring greenhouse crops are using natural enemies to manage insects and mites and biological control to manage diseases. Put this together with the use of organic growing media and fertilizers and some growers may be interested in organic certification for spring crops such as herbs or vegetable transplants. Learn about what it is needed for organic certification in this informative session.

For more information contact:

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Geoffrey Njue, Univ. of Mass, Cranberry Exp. Station (508)295-2212 ext. 47
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Bob Luczai, Massachusetts Flower Growers Assoc., bluczai@massflowergrowers.com

Registration is \$30 per person and includes lunch and handouts. Make checks payable to University of Massachusetts.

New Insecticides, Miticides & Herbicides for Greenhouse Ornamentals

Compiled by Tina Smith, UMass Extension, Greenhouse Crops and Floriculture Program

If you didn't purchase a copy of the new 2015-16 New England Greenhouse Floriculture Guide at the Northeast Greenhouse Conference then you can order one for \$40 per copy via the Northeast Greenhouse Conference website (www.negreenhouse.org) or from the UMass Extension publication office <http://extension.umass.edu/floriculture/>.

The New England Greenhouse Floriculture Guide is updated every two years by floriculture faculty and staff from the six New England State Universities, and is published by New England Floriculture, Inc. Greenhouse growers in New England and New York have long relied on the guide, for its unbiased, detailed information about insect and mite management, disease prevention and management, weed control, and plant growth regulation.

Here is a summary of some of the new products (active ingredients) for managing insects and mites in greenhouses. Information was compiled from the label and company websites.

Grandevo PTO

Active Ingredient: *Chromobacterium substugae strain PRAA4-1* (Microbial insecticide)
OMRI listed (can be used in organic production).

Signal word: Caution

Re-entry interval: 4 hours

Grandevo PTO is labeled for ornamentals and edible crops.

Labeled pests: Aphids, mites, numerous Lepidoptera species, thrips, mealybugs and whiteflies.
See the label for a more detailed listing.

Grandevo works primarily as a stomach poison, so it must be ingested by insects and mites to be effective. It does not have systemic activity; therefore, it must be on the feeding surfaces to be effective. Like other stomach poisons, excellent plant coverage is necessary, so use plenty of water and pressure to get complete coverage. Grandevo is more effective on newly hatched larvae and nymph stages of insects and arthropods, so regular scouting and early applications are necessary for good control.

Rycar

Active Ingredient: Pyriproxyfen

Signal word: Caution

Re-entry interval: 12 hours

Mode of Action: Unknown

Labeled pests: Whiteflies, aphids, leafhoppers, chili thrips and mealybugs on limited ornamentals.

Rycar works through contact, by ingestion and is translaminar. It stops insects from feeding fast and death occurs in a few days. The Sipro website reports Rycar is also very gentle on both beneficial insects and pollinators.

XXpire

Active Ingredients: spinetoram and sulfoxaflor

Re-entry interval: 12 hours

Signal word: Caution

REI: 12 hours

XXpire is labeled for ornamentals in greenhouses, nurseries and landscapes.

Labeled pests: Aphids, caterpillars, mealybug, scale, thrips, whiteflies and mite suppression

Spinetoram is a contact and stomach poison and sulfoxaflor works by contact, systemic and translaminar activity. Spinetoram is derived by chemically modifying naturally occurring spinosyns J and L, and is a Mode of Action, Group 5 insecticide, like spinosad. Isoclast (sulfoxaflor) belongs to a new class of insecticides – sulfoximes, Mode of Action 4C.

XXpire is highly toxic to bees exposed through contact during spraying and while spray droplets are still wet. Toxicity is reduced when spray droplets are dry. This product is toxic to bees exposed to treated foliage for up to 3 hours following application. Do not apply this pesticide to blooming, pollen-shedding, or nectar producing.

Sultan Miticide

Active Ingredient: cyflumetofen

Signal word: Caution

Re-entry interval: 12 hours

Mode of Action: Group 25 (new group)

Sultan has rapid contact activity, not translaminar movement and up to 28 days control for all life stages (eggs, nymphs, adults) of two-spotted mites.

BASF reports low toxicity to beneficial insects, including predatory mites and pollinators.

Ecotec

Active Ingredients: Rosemary oil and Peppermint oil

OMRI listed (can be used in organic production)

Signal word: Caution

For use on any plants grown in greenhouses, shadehouses, interiorscapes and nurseries.

Labeled pests: Aphids, beetles, caterpillars (early stages), fungus gnats, shore flies, leafminers, mealybugs, soft scales (crawler stage), thrips and whiteflies.

Ecotec is a broad spectrum, contact insecticide/miticide. Thorough coverage is needed.

Mainspring

Mainspring is not listed in the greenhouse floriculture guide (was not registered at the time of editing) and not yet registered in Massachusetts (as of October 1st) however, it is expected to be registered soon.

Active Ingredient: Cyantraniliprole

Signal word: None, least toxic category

Re-entry interval: 4 hours

Mode of Action: Group 28

Mainspring is labeled for foliar and systemic insect control on ornamental plants in greenhouses, trees and shrubs and interior plantscapes.

Labeled pests: Aphids, caterpillars, thrips and whiteflies. Depending on the pest, it can be used as a spray or drench.

Mainspring has translaminar and systemic activity. Through translaminar and locally systemic movement, it penetrates the plant cuticle to form a reservoir of the active ingredient when applied as a foliar treatment. In drench applications, the active ingredient is taken up by the roots through systemic movement within the xylem and moves throughout the plant. Mainspring selectively activates the ryanodine receptor in insect muscles, resulting in paralysis and rapid inhibition of feeding and other key physiological functions. As a result, insects stop feeding and become irreversibly paralyzed shortly after ingestion. Plant damage is minimal since feeding quickly stops after pests ingest the treated plant material. Pest death can occur within two to seven days, depending on the target pest.

Mainspring is toxic to bees exposed to direct treatment on blooming crops or weeds. Literature from Syngenta states that Mainspring is not disruptive to biological control practices and does not adversely affect natural predator and parasitoid populations.

New Pre-emergence Herbicide for Greenhouses

Some growers will be please to know that there is now a pre-emergence herbicide available for greenhouses. Indaziflam (Marengo®) is labeled for use on greenhouse floors in **empty greenhouses**. You must wait 24 hours before introducing plant material into the empty greenhouse after applying this material.

Properly Inflate Your Double-Poly Greenhouse to Save Energy and Improve Light Transmission

Geoffrey Njue, Extension Educator, UMass Extension, East Wareham

Double Polyethylene (Poly) coverings reduce heating costs by about 50% compared to single poly coverings. However if the double-poly coverings are not well inflated with air the benefits of having two poly layers becomes non-existent. Making sure that your double-poly greenhouse is properly inflated is critical to maximizing the insulation value of the covering. Properly inflated double-poly also improves light transmission and increases the life span of your poly covering.

Before the start of the season check your poly houses for holes and tears on the poly covering. Repair all small tears and small holes with poly tape before they become too big. Check the inflation blowers and fans to make sure that they are working properly. Clean the inflation fans if necessary.

The space between the two layers of plastic should be filled with outside air. This creates a “dead air space” that provides good insulation and prevents heat loss from the house. It is important to use outside air because it is colder and less humid. Air inside the greenhouse is warm and moist and if used to inflate the double poly, condensation can occur in between layers and reduce light transmission. It is important to maintain uniformity between the poly layers from one end of the house to the other. Follow the recommendations of the manufacture of the inflation blower or fan to ensure uniform air space and pressure between the poly layers from one end of the house to the other. Well inflated double-poly greenhouse is taut and smooth increasing its strength.

Getting Started Using Biological Control in Greenhouses - Selecting a Supplier of Biological Control Agents

Tina Smith, UMass Extension Greenhouse Crops and Floriculture Program

Many growers in Massachusetts are successfully using natural enemies (beneficial insects, mites, nematodes and other organisms) as an alternative to pesticides to manage pests in greenhouses. To use natural enemies, a good scouting program is critical. It is also important to phase out the use of pest control materials that may be harmful to beneficials. For more information on the compatibility of pest control materials with natural enemies refer to on-line databases, such as Koppert, Inc., (www.koppert.com) or Biobest (www.biobest.be). Check under “Side Effects.”

Beneficial predators and parasitoids should be released early in the crop before pests build to outbreak levels. Beneficials should not be released onto plants previously treated with pesticides because the residue will be toxic to them. If you are new to using biological control and want to use them in your greenhouse for the spring crop season, then plan now! Read up on using biologicals from the list of fact sheets (some with videos) on our website:

<http://extension.umass.edu/floriculture/fact-sheets/pest-management>

Contact suppliers/distributors of biological control agents early, before the spring growing season. Most companies offer assistance to get you started and will help with rates of release. Other considerations include having someone available when shipments arrive and checking shipments for viability (remember they are living organisms).

Here is a partial list of suppliers or distributors of natural enemies used by greenhouse growers in Massachusetts:

IPM Laboratories, Inc., Lock NY, www.ipmlabs.com

Contact: ipminfo@ipmlabs.com 315-497-2063

Syngenta Bioline, CA, www.syngentabioline.com

Contact: info@syngentabioline.com 805-986-8265 or 978-851-4346 (Griffin Greenhouse Supply)

Koppert Inc. MI, www.koppert.com

Contact: info@koppertonline.com, 800-928-8827

Biobest Biological Systems. www.biobest.be

Contact: info@biobest.ca or info@biobest-usa.com 519-322-2178, or 855-224-6237.

Beneficial Insectary, CA, www.insectary.com, www.greenmethods.com

Contact: info@insectary.com, 1-800-447-3715

Applied Bionomics, BC Canada, www.appliedbio-nomics.com

Contact: brianabl@telus.net, 250-656-2123

Preventing Rodent Damage in the Greenhouse

Geoffrey Njue
Extension Educator
UMass Extension
East Wareham

Rodents can cause a lot of damage in the greenhouse. They can feed on germinating seed and young plants as they emerge from the soil. Rodents also feed on roots, bulbs, shoots and leaves of many plants in the greenhouse. They can also chew holes on plastic pots and create tunnels through the growing media. For those growing fresh produce in the greenhouse such as salad greens, micro-greens, tomatoes etc., rodents can create food safety concerns because of possible contamination. FDA food safety regulations require growers to take effective measures to exclude rodents from finding entry into the greenhouse.

It is important to determine the species of the rodent causing problems in your greenhouse. The most common rodent pests in the greenhouse in Massachusetts are the white-footed mouse and the meadow vole. Chipmunks may also sometimes find their way into the greenhouse.

White-footed mouse. The white-footed mouse has white feet, white underside and brownish upper surface. They also have relatively large eyes and ears. They are nocturnal and omnivorous but their diet consists largely of seeds, nuts and berries. White-footed mice are excellent climbers and often forage in trees. In the greenhouse they cause damage by feeding on germinating seeds.

Meadow voles. Meadow voles are about 5½ to 7½ inches long (including tail length). The fur has variable color ranging from grey to yellow-brown with black tipped hairs and a bicolored tail. They are usually found in grassy areas. They are active at all hours but are most active early morning and late afternoon. They are generalist herbivores and largely subsist on vegetation including shoots, roots and grass. They mainly damage plants above the soil. In the greenhouse they cause damage by feeding on shoots of young plants.

Chipmunks. Chipmunks are small underground squirrels with five black stripes and two light stripes along the back. The belly is white and the tail is flattened. They undergo hibernation during the winter in burrows and emerge in the spring and are active during the day. Sometimes they emerge from their burrows and forage above ground on warm winter days. They feed mostly on seeds, nuts and fruit. They are sometimes common visitors in the greenhouse in the spring where they feed on germinating seeds.

Rodent-proofing. The first step to control rodents in the greenhouse is exclusion or rodent proofing your greenhouse. Some of the rodents such as mice can get in through an opening as small as ¼ inch. Use fine mesh screen around the perimeter of the greenhouse at least 6 inches deep and bend outward at a 90° angle.

Sanitation. Sanitation will also do a great deal to control rodents. Clean up the natural vegetation close around the greenhouse. Remove debris such as plant matter, trash, and piles of

waste lumber or abandoned appliances. Do not stack firewood near the greenhouse. These provide good harborage for rodents. Do not store bird seed, pet food, or seeds in the greenhouse. Keep trash cans in the greenhouse covered (keep the lids on).

Traps and baits. If rodents are already in the greenhouse trapping can be effective if the populations are low. Traps are effective non-toxic methods of rodent control. The most common traps include the snap traps and the glue board traps. Traps should be set with a good understanding of the behavior of the rodents. Rodents are creatures of habit and prefer to follow the same runways they usually use. Identify the runways and place the traps there. Use baits for on the traps to attract the rodents: peanut butter or uncooked oatmeal for mice or a piece of an apple for voles (Cortland apple works best). Wear gloves when placing the trap so that the rodents would not smell human scent.

If trapping fail to reduce the population one can use toxic baits (rodenticides) which are more effective in controlling the rodent population. The Rodenticide baits include Zinc phosphide and anticoagulant baits.

For more information on controlling rodents in the greenhouse access the UMass Extension factsheet on preventing rodent damage to overwintering perennials at:

<http://extension.umass.edu/floriculture/fact-sheets/preventing-rodent-damage-overwintering-perennials>

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