

The *MAYFLOWER* & Floral Notes

A Joint Publication
Massachusetts Flower Growers' Association
& UMass Extension

April 2013

May 15th - Plant Something Campaign

OK, fellow MFGA members....it's time to get involved! On May 15, people in cities and towns all over Massachusetts will plant something—anything—to share the fun of planting.

The Plant Something Task Force of Jason Hutchins, Tina Bemis, Bart King, Laura Abrams, Chris Kennedy, and Jim Stucchi have been hard at work developing the Plant Something campaign for this spring. Our goal is to have a public planting in every city and town in the Commonwealth. We encourage public planting coordinators to invite members of their community to participate in, or observe, the planting to create a public activity. Let's celebrate plants! Your celebration could include anything from a planting demonstration to live music to children's activities. Get creative!

Plan your activity

You can offer a planting class or demonstration at your site on May 15. As long as it's open to the public, we'll be happy to promote it as part of Plant Something.

Already involved in a public planting before or after May 15? You can still link your event to Plant Something by doing a small activity on May 15, such as breaking ground or putting a Plant Something stake in your planting. (Each coordinator will get a free Plant Something stake mailed to them.)

Download [Organizing a Public Planting in Your Town is as Easy as 1, 2, 3](#) and our [Suggested Planning Timeline](#) for some tips. Go to <http://www.plantsomethingma.org/may15/>

Put your town on the map by signing up on the Plant Something website today!

Join us!

Massachusetts Flower Growers' Association
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Golf Tournament

in partnership with
Massachusetts Nursery and Landscape
Association Foundation For Educational Excellence

Tuesday, August 6, 2013 at the Juniper Hill Golf Club
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Go to the 4th page to sign up for a sponsorship.



Association News

Massachusetts Flower Growers' Association
Growers of Quality Plants and Flowers

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New President's Welcome

My name is Jason Hutchins and I am the new President of the MFGA. Being a part of the Association is something I have always appreciated. Having grown up in the industry I have seen first-hand what MFGA is about. If you are about being in the greenhouse business as a career, you should get involved on some level, whether on the Board, on a committee, or volunteering at an MFGA event. There is so much to learn beyond what you are doing yourself or what a classroom can teach you. It's about marketing the industry, protecting it by legislation, and advancing industry as well as your own business through continued education. It's not just about the knowledge, but the relationships you make in the process are invaluable and lifelong.

Many times we ask ourselves, "why do I do this?" When a crop doesn't come in on time, it's raining on Mother's Day, when a customer brings back a hanger the obviously got watered for the first time just before they came in, or when you're cleaning two feet of snow off your Christmas trees. Well, all I can do is give you my answer. It's really so many reasons. It's about growing something people want around the home that they are so proud to have. It's about helping someone grow a vegetable garden for the first time and then hearing about how great their cucumbers turned out. It's about showing people that what we do that is exciting and fun. Most of all it's about the people in the industry. We are an industry full of hard-working, creative, honest, and all around good people. Seeing a greenhouse collapsed by the snow or a farm stand that burned down is a horrible thing. But, seeing someone with a never quit attitude build again with the help of others in the industry, well that's pretty great! In the end, we all care about each other even though we are all competitors. We all have pride in ourselves and what we do. That's why I love what I do and those who I do it with!

I am very excited about my time as President of MFGA, and I hope that in a small way we can find a way to help each and every member. If there is something you think we should work on, please feel free to share your thoughts. I can be reached at The Flower Hutch at (978)597-0062. If you haven't already, please take a few minutes please visit plantsomethingma.org Plant Something is the campaign MFGA and MNLA are working on to bring more customers into the industry. Only member support will help it work and continue to grow. Take a special look at the May 15 section, we are trying to have a public planting in every city and town in Massachusetts to create excitement for the industry and the campaign.

Have a great 2013! Jason Hutchins, President MFGA

Massachusetts Agricultural Statistics from Farm Bureau

Green Industries

In Massachusetts, Greenhouse and Nursery cash receipts totaled \$154 million and account for 32.9 percent of total agricultural cash receipts in 2010.

Massachusetts' environmental horticulture industry contributes \$2.6 billion annually to the state's economy, and employs 68,000 people.

In terms of commodity gross sales greenhouse, nursery, and sod lead all other commodities in the state and in six counties.

Number of Farms by County

Massachusetts has 7691 farms across the Commonwealth with average size of 67 acres using a total 517,879 acres of land! Massachusetts farms grossed just over \$489 million in sales, with \$63,687 being the average per farm. Crop sales totaling \$364,481,000 (74 percent) and livestock sales totaling \$125,338,000 (26 percent).

Direct Sales and Massachusetts

Massachusetts is 1st in New England for direct sales of farm products to consumers. At \$42M, MA farmers were responsible for 40% of New England's total direct sales.

Massachusetts ranks 2nd nationally in value of average direct market sales at \$25,356 per farm.

Massachusetts is 9th nationally in total value of direct sales, following states such as California, New York, Pennsylvania, Michigan, Ohio, and Washington

Worcester County ranks fourth among fill counties in the US for the value of direct sales of agricultural products to consumers, at nearly \$5 million, or 25% of the state's total.

Massachusetts has over 247 farmers markets, up from approximately 85 in 1990, and more than any other New England state.

Did you know that...

Massachusetts ranks 3rd in the US for farmland value at \$11,600 per acre.

Massachusetts is the 8th most forested state and 62% of MA is forested.

The average farm operator has been on the same farm for 21 years and is 56.3 years old.

Female farm operators account for 29% of the farm operators in Massachusetts. The number of women farmers in Massachusetts was double the national average of 14 percent in 2007.

Agritourism income totaled \$5.3M, up from \$665,000 in 2002.

Massachusetts increased the number of organic farms from 129 in 2002 to 295 in 2007, and organic sales were up from \$7.8M in 2002 to \$17.5M in 2007.

Family Farms

Of the 7,691 farms across Massachusetts, 6,884 of them are considered family owned farms; an amazing 89.5 percent!

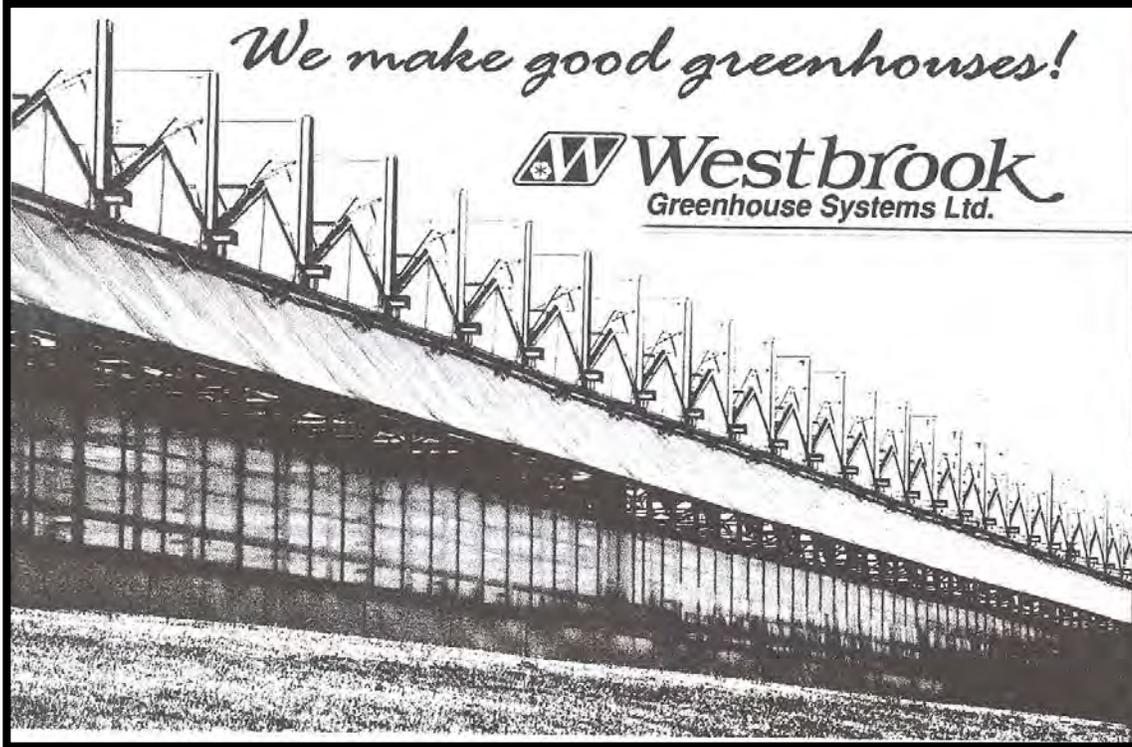
Over 95% of Massachusetts Farms fit the category of "small farms" according to the USDA definition of sales below \$250,000.

Preserving Massachusetts Land

Farmers and Forest land owners participate in conservation programs that prevent soil erosion, preserve and restore wetlands, clean the air and water, and enhance wildlife habitat.

As of 2010, 800 farms and a total land area of over 66,000 acres have been preserved by the APR program in Massachusetts. USDA reports that Massachusetts agriculture expanded by 27 percent from 2002 to 2007, both in crop and livestock sales and in the total number of farms.

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Make checks payable and mail to: Massachusetts Flower Growers' Association, 8 Gould Road, Bedford, MA 01730. Please return by July 26, 2013.

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Floral Notes *Newsletter*

Volume 25, No. 5

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

March-April 2013

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UMass Extension Tips for Garden Retailers

UMass Extension has over 25 short, easy to read growing fact sheets for retailers to print and distribute to customers. Many topics are available to help beginning and experienced home gardeners prepare for the upcoming growing season. To select and download “Tips” click on “Resources for Garden Retailers” on our website <http://extension.umass.edu/floriculture>

MFGA/MNLA Summer Meeting July 25th

Tower Hill Botanical Gardens, Boylston, MA

Managing Two-spotted Spider Mites

Watch for two-spotted spider mites on Mandevilla, Cordyline, ipomoea, New Guinea impatiens and other crops. Spider mites may come in on incoming plants or have over-wintered in your greenhouse. Look for dull stippled foliage on plants particularly in warm, dry locations in your greenhouses such as near steam pipes, furnaces, heaters or overhead hangers. Use a 10 to 20x hand lens and look on the underside of mature leaves, especially along the midvein for eggs, immature stages and adults. Note that young nymphs do not have the dark two spots.

Contact or translaminar miticides can be used to manage two-spotted mites. Translaminar means that the material penetrates leaf tissues and forms a reservoir of active ingredient within the leaf which provides extended residual activity. Miticides with translaminar activity include abamectin (Avid, Abamectin SPC, Flora-Mek, Lucid, Quali-Pro and others), etoxazole (TetraSan), chlorfenapyr (Pylon), and spiromesifen (Judo). After treatment, mark several plants and use a 10 to 20X hand lens to look for live and dead mites and eggs. Most miticides are not effective against the egg stage, so repeat applications may be needed in 5-7 days. Thorough coverage is important for materials with contact activity. Contacts such as bifentazate (Floramite), SuffOil-X (other horticultural oils), insecticidal soaps and neem oil (Triact 70) are also being used. Consult label for information on plant safety. Go back and check plants within a few days to see how effective the treatment worked. You will hopefully see dead and dying mites, but you may also see eggs. Continue to monitor and repeat treatments as needed.

Biological Control

A fast acting predatory mite that is commercially available is *Phytoseiulus persimilis*. This predatory mite only feeds upon spider mites, and will disperse or starve with no prey. The adult *P. persimilis* is bright red in color, pear shaped, long-legged and slightly larger and more active than spider mites.

P. persimilis is best released when mite populations are first noticed, in localized hot spots of mite activity. Relative humidity should be greater than 75% and temperatures above 68F for some hours of the day. (At low relative humidity, less than 60%, eggs shrivel and do not hatch.). According to Raymond Cloyd, University of Kansas, *P. persimilis* is suitable for short-term crops such as bedding plants at release rates of 1-4 mites per ft² per week. Two to three applications, one week apart may be required. Spider mite colonies should be reduced in two to three weeks. To scout, shake plants over white paper and observe mites. Pest control materials that have been shown to be compatible with *P. persimilis* include spinosad (Conserve), pymetrozine (Endeavor), and clofentezine (Ovation). Spiromesifen (Judo) and chlorfenapyr (Pylon) may be harmful.

The spider mite predator *Neoseiulus californicus* is slower acting than *P. persimilis*, but can survive longer in the absence of prey. It is useful for keeping low spider mite populations under control. In certain situations where high temperature or relative humidity variations can occur, *N. californicus* may be an option. *N. californicus* is active at temperatures between 46°F to 95°F, 40-80% relative humidity. At low pest densities, it declines less than *P. persimilis*, for *N. californicus* can survive on other mites, thrips, molds and nectar. *N. californicus* can also be introduced preventively and is compatible with *P. persimilis*. *N. californicus* is compatible with bifentazate (Floramite), chlorfenapyr (Pylon), spiromesifen (Judo), and spinosad (Conserve).

Amblyseius andersonii is another generalist predatory mite that feeds upon mites (two-spotted, broad and cyclamen) and may survive on thrips and fungal spores in the absence of mites. It also can be released in the presence of low populations of spider mites. If hot spots develop, *P. persimilis* can also be used with this species. *A. andersonii* can be applied to both greenhouse and outdoor crops and is active at temperatures between 42°F and 104°F.

The predatory midge, *Feltiella acarisuga*, larvae feed on all stages of spider mites. Adults can fly so are helpful in locating spider mites on mite susceptible plants in hanging baskets. This midge prefers temperatures between 68° and 80°F and 80% relative humidity. *F. acarisuga* is also more effective than *P. persimilis* on greenhouse tomatoes.

Posted March 29, 2013. Floriculture Greenhouse Update website. Tina Smith, University of Massachusetts and Leanne Pundt, University of Connecticut

Polygonatum odoratum ‘Variegatum’

2013 Perennial Plant of the Year™

Perennial Plant Association, www.perennialplant.org *Polygonatum odoratum* ‘Variegatum’ grows 18-24” tall and will spread by rhizomes to form colonies. The oval shaped leaves are carried on upright, arching and unbranched stems. The variegated leaves are a light green with white tips and margins. Leaves turn an attractive yellow in the autumn. Pairs of small, bell-shaped white flowers with green tips are borne on short pedicels from the leaf axils underneath the arching stems. The flowers are present in late spring and are sweetly fragrant. Bluish-black berries are sometimes present in the autumn. Variegated Solomon’s seal is a classic beauty for the shady woodland garden or the part-shade to full shade border. It is a great companion plant to other shade lovers including Hostas, ferns and Astilbes. The sweetly fragrant flowers will enhance that walk along a pathway on a spring morning. Flower arrangers will find the variegated foliage to be an attribute for spring floral arrangements. And finally, this all season perennial offers yellow fall foliage color.



Light – Variegated Solomon’s seal performs well in part to full shade conditions.

Soil – Variegated Solomon’s seal prefers moist, well-drained soil.

Uses – This perennial offers vivid highlights in shaded areas of borders, woodland gardens or naturalized areas. The variegated foliage is attractive in flower arrangements.

Unique Qualities – *Polygonatum odoratum* ‘Variegatum’ has arching stems, which carry pairs of small, bell-shaped white flowers in mid to late spring. Variegated ovate leaves are soft green with white tips and margins. Fall leaf color is yellow.

Maintenance – There are no serious insect or disease problems with variegated Solomon’s seal. Plants may be divided in the spring or fall. The white rhizomes should be planted just below the soil surface. *Polygonatum odoratum* ‘Variegatum’ is a very easy perennial to grow and will enhance any shade area.

Hardiness – USDA Zones 3 to 8.

Impatiens Downy Mildew Isn't the Only Downy Mildew You Need To Worry About!

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Impatiens downy mildew isn't the only downy mildew you need to worry about! There are other downy mildews to be concerned about and to watch for in your greenhouse. Quick reviews of two other downy mildews to know, coleus downy mildew and basil downy mildew, are presented below.

Coleus Downy Mildew

Coleus downy mildew is caused by a species of *Peronospora* and was first reported in the United States in 2005. This downy mildew disease causes irregular-shaped discolored or necrotic areas on coleus foliage, which are often (but not always) angular in appearance. Leaves can also curl, twist, and drop. The gray-brown fuzz of the pathogen's sporulation will be found on the undersides of leaves showing symptoms. Careful inspection, a well-lighted area, and a hand lens might be necessary to see the sporulation. The sporulation tends to be easiest to see on the non-variegated dark-leaved cultivars and more difficult to see on others.

Both seed and vegetative cultivars of coleus are susceptible as well as agastache. The good news is that there is variation in the susceptibility of coleus cultivars – some are very susceptible and can defoliate while others are less affected. Michigan State and Cornell Universities have conducted experiments testing coleus cultivars for downy mildew susceptibility and numerous cultivars were found that are less susceptible. Cultivars with low susceptibility include: Beauty, Beckwith's Gem, Black Ducksfoot, Dark Chocolate, Etna, Fairway Lemon, Fairway Orange, Fairway Red Velvet, Fairway Rose, Fairway Salmon Rose, Fairway Yellow, Florida Sun Lava, Florida Sun Rose, Freckles, Fright Night, Giant Palisandra, Glory of Luxemborg, Gold Edge, Harlequin, Kiwi Fern, Midway Curly Magenta, Night & Glow, Pegasus, Pineapple Beauty, Russet, Rustic Orange, Saturn, Smoldering, Solar Furnace, Tapestry, Trailing Garnet Rose, Versa Lime, and Wild Streak.

More information can be found at http://msue.anr.msu.edu/news/coleus_downy_mildew, and the complete list of the cultivars tested can be found at <http://msue.anr.msu.edu/uploads/files/6-20%20Coleus%20Table%20MARY.pdf>. Also, stay tuned: additional trials on the susceptibility of various cultivars of coleus are planned for this summer at the Long Island Horticultural Research & Extension Center.

Cultural management practices to help manage this disease include providing conditions of good air movement, limiting leaf wetness, and keeping humidity low. Products labeled for downy mildew management on ornamentals include: Adorn (flupicolide), cyazofamid (Segway), dimethomorph (Stature), stobilurin-containing materials (Heritage, Insignia, Compass, FenStop, Pageant), mefenoxam (SubdueMAXX), phosphites (e.g., Aliette, Alude, Flanker, Fosphite, KPhite, Rampart, Vital), mancozeb materials (e.g., Protect, Dithane), polyoxin D zinc salt (Affirm, Veranda O), *Streptomyces lydicus* (Actinovate SP), and copper materials. As always,

make sure to follow all label recommendations and restrictions. State or local restrictions may apply; some of these materials are not registered for use on coleus for downy mildew in all states.

Basil Downy Mildew

Basil downy mildew was first reported in the United States in 2007 and is caused by a different species of *Peronospora* than the *Peronospora* causing downy mildew on coleus. Watch your basil for leaves showing subtle chlorosis or yellowing between leaf veins; sometimes these symptoms of downy mildew are mistaken for a nitrogen deficiency. If these symptoms are seen, check the leaf undersides for the diagnostic dusty dark gray sporulation.

Basil species and cultivars vary in their susceptibility to basil downy mildew. Unfortunately, many of the commonly used culinary sweet basil (*Ocimum basilicum*) cultivars are most susceptible. Exotic and ornamental basil are less susceptible. Research trials conducted at Rutgers have shown that the worst downy mildew symptoms were seen on *O. basilicum* ‘Aroma 2’, ‘Genovese’, ‘Martina’, ‘Italian Large Leaf’, ‘Magical Michael’, ‘Nufar’, ‘Opal Purple Variegated’, ‘Poppy Joe’s’, ‘Queenette’ and ‘Superbo’. Fewer symptoms were found on *O. basilicum* ‘Red Leaf’, *O. basilicum* ‘Red Rubin’, lemon and lime basil (‘Lemon’, ‘Lemon Mrs. Burns’, ‘Sweet Dani Lemon Basil’, and ‘Lime’). No symptoms were found on leaves of ‘Spice’, ‘Blue Spice’, and ‘Blue Spice Fil’. A trial conducted on Long Island showed that ‘Cinnamon’, ‘Queenette’, and ‘Red Rubin’ were less severely affected than ‘Superbo’.

A basil downy mildew monitoring program was started in 2009. Visit <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html> for more information or to report an occurrence or to see where basil downy mildew is present. You can also help researchers by sending samples of basil downy mildew, see the website for more information.

Starting with clean plant material is critical to prevent this disease. Basil downy mildew can be spread via infected plants and can also be seed borne, so every effort should be made to use clean seed and clean plant material.

Spores can be spread from infected plants on air currents and by splashing water. Providing conditions of good air movement and reduced humidity will help avoid new infections. When the downy mildew pathogen is present and the environmental factors are favorable for disease (conditions creating long periods of leaf wetness—high humidity, wet weather), fungicides should be used to protect plants from infection. Some products that are labeled for management of downy mildew on herbs and are not prohibited from greenhouse use include: Actinovate AG (*Streptomyces lydicus*), Armicarb O and Milstop (potassium bicarbonate), Double Nickel 55 (*Bacillus amyloliquifaciens*), Ranman (cyazofamid), Regalia (extract of *Reynoutria sachalinensis*), Trilogy and Triact 70 (neem oil), and OxiDate (hydrogen dioxide) and several phosphite fungicides (including Fungi-Phite, Fosphite, ProPhyt, K-Phite, and Rampart). Actinovate AG, Armicarb O, Double Nickel 55, MilStop, Regalia, Trilogy, Triact 70, and OxiDate are OMRI-listed.

For more information on basil downy mildew, visit:

<<http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html>>

UMass Extension Plant Diagnostic Lab

With the spring growing season upon us, growers are reminded that a diagnostic lab and soil test lab are available through UMass Extension to help prevent and solve problems. Test growing media early and often to maintain proper pH and fertility. Use a diagnostic lab for early, accurate diagnosis of plant diseases. Catching problems early will prevent the misuse of pesticides, save you money and reduce crop loss.

The University of Massachusetts Amherst provides reliable and prompt diagnosis of plant problems. The lab also assesses ticks for Lyme disease and other tick-borne diseases as a service to the public. Each diagnosis includes a written report. For instructions and greenhouse submission forms go to <http://extension.umass.edu/floriculture/services/plant-problem-diagnostics> or call Bess Dicklow at (413) 545-3209. Here is a summary of all of our diagnostic services:

Diagnostic Fees

Floriculture, fruit, vegetable, woody plant, or greenhouse crop diseases. \$50

Turfgrass ID, Landscape and turf weed ID . \$25

Landscape and turf insect ID. \$25

Tick assessment - Lyme Disease. \$40

Tick assessment - Anaplasmosis and Babesiosis. \$100

Nematode assay all other crops except turf. \$50

Turf disease analysis and turf nematode assay . \$75

Plant Disease Submission forms: www.umass.edu/agland/diagnostics

Send plant samples with a check made payable to: University of Massachusetts

Address packages to:

UMass Extension Plant Diagnostic Lab

101 University Dr. - Ste A7

Amherst, MA 01002-4385

Guidelines for Taking Samples to Send to Diagnostic Lab

Submit as much of the plant as possible.

The accuracy of a disease diagnosis can only be as good as the sample provided. To provide a good sample, be sure that the sample contains the right part of the plant. Symptoms may appear in parts of the plant that are not infected with the pathogen. For this reason, if possible, submit as much of the plant as possible. Ideally, this would be an intact plant.

Send several plants with a range of symptoms.

Secondly, the samples must be fresh and in good condition. Dead plants tell no tales. Due to secondary infections in extremely decayed plants, it is difficult to determine which organism may have created the problem in the first place. If possible, send in several plants with a range of symptoms from moderate to severe.

Keep leaves dry and free of soil.

Wet samples with soil on the leaves promote the growth of secondary pathogens and create problems that did not exist when the sample was originally collected. Do not ever add water to your sample.

Hand deliver or ship overnight.

Rapid delivery may be critical for an accurate diagnosis. Samples that take a long time to get to the diagnostic lab have a greater chance of decaying or drying up making diagnosis difficult. You may want to hand deliver the sample to the lab. If you are too far away from the lab, then ship the sample overnight. The diagnostic laboratory is closed over the weekend and you may not want to ship the sample on Friday or during a holiday. Call Bess at the UMass diagnostic lab prior to shipping to make arrangements for receiving the package.

How to select samples from plants with the following symptoms:**Leaf spots and Blights**

Select leaves which show a range of symptom development. Place leaves between paper towels or sheets of paper to keep leaves dry. Place the package in a plastic bag, and then into the envelope for mailing. Never wrap leaves in wet paper towels.

Stem Cankers

When a canker occurs on a large plant, cut a section of the stem with the symptoms, wrap in newspaper and place in a plastic bag for mailing. If the plants are small (1 foot or less), shake the soil from the roots, wrap in newspaper and put into a plastic bag for mailing.

Wilt, Crown rot or Root rot

If the plants are 1 foot tall or less, include the entire plant. Include the root system with the plant, leaving the growing media on the roots. Place the root ball into a plastic bag and tie off at the crown to keep the media off the foliage. If the plants are large, send a portion of the plant that includes the infected tissue. For wilt diseases, include the lower stem tissue and roots.

Poor growth, Defoliation, Scorch

These symptoms are usually caused by nutritional or environmental factors. They may also be the result of root rot or vascular disease. Collect a specimen as for wilt (see above); be sure to also submit a soil sample to a soil test laboratory.

2013-2014 NEW ENGLAND GREENHOUSE FLORICULTURE GUIDE

A comprehensive guide for commercial production of greenhouse ornamentals with information on current pest management and growth regulators. Recommendations include IPM and biological control information for greenhouse crops. This manual is a compilation of input from the members of the New England State University Extension Systems of Massachusetts, Maine, New Hampshire, Vermont, Connecticut and Rhode Island and Raymond Cloyd, Kansas State University

Ordering Information \$40 includes shipping

Call the UMass Extension Bookstore at 413-545-2717 or print an order form to mail at:

<http://extension.umass.edu/floriculture/pest-management/new-england-pest-management-guide> send to:
UMass Extension Bookstore, 101 University Dr. - Ste A4, Amherst, MA 01002-2385. Make checks payable to UMass.

Botrytis (Gray Mold)

Extended periods of cloudy weather can result in Botrytis Blight on closely spaced, tender spring annuals and herbs. Growers are all too familiar with the fuzzy grayish-brown spores (Gray Mold) that are easily spread on air currents and by water splash. Sometimes, less obvious symptoms show as tan colored cankers on stems that can cause entire branches of plants to wilt, such as Fuchsia hanging baskets, while the rest of the plant appears healthy. If left alone, more branches wilt one by one. Fuzzy spores will eventually form on stems deep inside the canopy.

Botrytis blight is best managed by combining **environmental** and **cultural controls** with **chemical controls**.

Environmental controls. If you see active fungal sporulation, begin by first reducing the humidity in the greenhouse. Heat and vent in the evening (3x) and early in the morning to exhaust the moist, humid air and replace it with cooler, drier air.

Cultural controls. Promptly removing severely infected plants, such as tender herbs, helps to reduce the disease pressure. Place severely infected plants that are covered with the grayish spores, in a plastic bag before removing from the greenhouse. This will help reduce potential spread of the easily airborne spores. Keep garbage cans covered so spores are not released into the greenhouse via air currents. Water early in the day, so foliage can dry rapidly. As plants are sold, provide more space to your existing crops to reduce humidity levels within your crops.

When Botrytis blight develops on herbs, cultural and environmental management is especially crucial because many of the fungicides labeled for ornamentals are not labeled for herbs.

Chemical Controls. Apply preventative fungicides before cutting back plants so the fungal spores are not released onto open wounds as workers handle plants. On ornamental crops, a number of fungicides are labeled for use against Botrytis Blight. The following are some of the fungicides listed under Botrytis management in The New England Recommendation Guide:

Azoxystrobin (Heritage), *Bacillus subtilis* (Cease), chlorothalonil (Daconil and others), copper salts (Camelot), copper sulfate pentahydrate (Phyton 27), fenhexamid (Decree), fludioxonil (Medallion), iprodione (Chipco and others), mancozeb (Protect), trifloxystrobin (Compass), polyoxin D zinc salt (Veranda O), pyraclostrobin and boscalid (Pageant) and triflumizole (Terraguard). Combination products are also available containing some of these active ingredients.

Growers often rely on fenhexamid (Decree) which is a non-systemic fungicide with both protective and curative activity, chlorothalonil (Daconil) or iprodione (Chipco). Rotate among mode of action groups to delay the buildup of resistant strains. There are reports of widespread resistance to the benzimidazole fungicides (Cleary's 3336) as well as resistance to iprodione.

Leanne Pundt, University of Connecticut and Tina Smith, University of Massachusetts (Revised March 2013)

UMass Greenhouse Crops and Floriculture Extension Program

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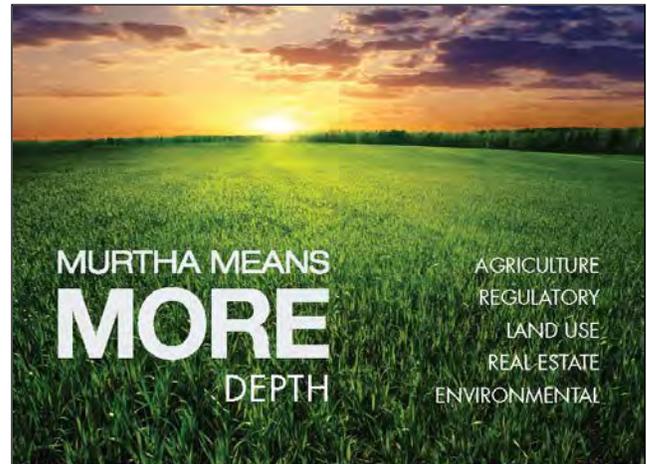
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