



Greenhouse TPM/IPM Bi-Weekly Report
University of Maryland Cooperative Extension
Central Maryland Research and Education Center

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Oriental Lily

During a visit to an herbaceous perennial nursery we noticed leaf spotting occurring on Oriental lilies. Karen Rane confirmed the fungal pathogen as *Botrytis elliptica*. The leaf spotting was on two cultivars. The lilies were growing in an outside production area and the plants were very close together so air circulation in the plant block was not great. A third sample was submitted to our office this week with the same leaf spotting on the foliage. Over the weekend I visited some of the big box stores selling lilies and saw similar symptoms on lily foliage. The foliage that is showing the symptoms will not get any better so if you are seeing the symptoms before you ship you might as well cull out these plants. Many growers placed the lilies outdoors for space in this last couple of weeks and the wet weather has made conditions ideal for this disease. In most greenhouse operations growers are using overhead irrigation which will just contribute to the problem.

Control: Several fungicides are labeled for botrytis including Mancozeb and Daconil 2787.



Lily showing progression of leaf spotting upward on the plant from splashing of irrigation water applied to the substrate



Close-up of leaf spot on lily foliage caused by *Botrytis elliptica*

Botrytis on Greenhouse Crops

The Botrytis incidence has dropped in most greenhouses over the last week. A couple of factors kicked in – the cloud cover blew out, humidity levels decreased and plant sales went up so growers moved plants out of crowded greenhouses. Botrytis did move into stems of several plants causing the plants (including Greek and Italian basil) to collapse. Geranium plants were hit the hardest with botrytis, industry wide, and many growers had to severely clean and prune back plants and let them grow out of the damage. **The photo shows Botrytis on a geranium flower in the greenhouse in early May.**



Downy Mildew Blossoms This Week

John Speaker found downy mildew on several perennial species this week including *Salvia*, *Agastache*, *Rudbeckia*, Knockout roses, and *Geum*. Downy mildew can be difficult to detect because it does not always produce a lot of spores. Look for angular lesions bounded by leaf veins and sporulation on the undersides of the leaves. The recent weather is perfect for downy mildew.

Control: Effective fungicides for protecting plants from infection include Stature DM, mancozeb, Aliette, Vital (potassium phosphate), and Alude.



Tobacco Streak Virus on Verbena

John Speaker found Tobacco Streak Virus (TSV) on verbena this week. This virus is transmitted by thrips and the virus can be found in the pollen of flowers. It causes curled and twisted foliage. Thrips feeding on the pollen and wind can carry the virus to additional plants.

Control: If you have infested plants destroy them and bring the thrips under control in the greenhouse.



Leafminers in Gerbera Daisy

We are seeing leafminer damage on gerbera daisy this week in Maryland. Leafminers that damage these plants are in the family Agromyzidae.

Control: Avid, Marathon (imidacloprid), or TriStar should provide control.

Aphids

We are getting increasing reports of aphid activity on greenhouse plants and on herbaceous perennials. Check plants closely for aphids. At one operation, we found two different species on salvia in two different greenhouse ranges last week. Aphids were also found on lily this week.



Melon aphid along stem of blue salvia



Potato aphid on growing tip of blue salvia



Melon aphid



Potato aphid

Columbine Leafminer

The columbine leafminer, *Phytomyza aquilegiovora*, adults are active and are puncturing foliage of columbine this week. The adult lays the eggs between the leaf surfaces and the larvae will cause mining of the foliage.

Control: Avid, Marathon (imidacloprid), or TriStar should provide control.

Chrysanthemum and Poinsettia Cuttings Arriving

It is hard to believe that we have moved into chrysanthemum and poinsettia season. Make sure you inspect new plant material coming into the greenhouse to make sure that it is clean of disease and insect problems before you transplant the material into your greenhouse.

Spider Mites

Spider mite activity is increasing this week. We are getting reports of spider mites on lantana, verbena, dahlia, sunflower and sweet potato vine. Several growers who have mixed baskets and have verbena and tricolor sweet potato vine are finding that spider mites build up rapidly on the these plants, and then spread to the other plants in the basket. When you stick a hanging basket up in the rafters of your greenhouse where it is hot you can expect that spider mites will thrive. Several growers are putting in neonectionoids (Marathon, Flagship, Safari, TriStar) to control aphids in the baskets. This works well on the aphids but if spider mites are present it tends to encourage the build-up of the spider mite population.



Control: The problem with spider mite control in hanging baskets is that they are located in the canopy of your greenhouse and if you spray from the ground it is difficult to get the coverage needed, especially when applying to baskets that are 12 – 16 ft up in the canopy. Apply systemic miticides such as Judo would probably give you the best contact with the spider mites. If you are using contact materials such as Floramite, Akari, Mesurool or horticultural oils then you need to direct the spray into the canopy and lift the undersides of the foliage. If you have a stair set I would suggest moving them so the spray can apply to the foliage from the top and really penetrate the foliage.

Leaf Spot on Zinnia

We found zinnias with leaf spots at a greenhouse last week. Bacterial and fungal leaf spots can be found on zinnia. Karen Rane examined the plants and identified it as the fungal leaf spot, *Alternaria zinniae*. Leaf spots are reddish brown and have a grayish to whitish center.



Control: Avoid overhead watering to reduce the spread of this disease from the splashing of water. Fungicides include mancozeb and chlorothalonil.

Upcoming Programs

Energy Tour for the Commercial Green Industry, June 23, 2009

Location: Sites in Howard and Frederick Counties

Contact: Suzanne Klick, 301-596-9413

Cut Flower Farm Tour, July 27, 2009

Location: Farmhouse Flowers and Plants (Brookeville) and Plantmasters (Laytonsville)

Contact: Suzanne Klick, 301-596-9413

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