Cornell University
Cooperative Extension

May 2008 Greenhouse Ornamentals – Tales from the Field

Neil Mattson, Ph.D.
State Extension Specialist, Floriculture
phone: (607) 255-0621
email: nsm47@cornell.edu

Department of Horticulture
134A Plant Science Building
Cornell University
Ithaca, New York

After spending the past month visiting many greenhouse facilities across New York State, I wanted to share some of the most common insect, disease, and abiotic disorders that were noted. While this bulletin features sickly plants, rest assured that nearly all crops were coming along nicely and no devastating losses were noted. Now let's hope for some good weather to get folks out to buy our plants! ~Neil

Many thanks to Rose Baglia, Mark Bridgen, Nora Catlin, Margery Daughtrey, Chris Logue, Walt Nelson, Teresa Rusinek, and Sharon Webber for hosting me on recent greenhouse visits.

Abiotic Disorders (Nutrition, Growth Regulators, etc.)

Growth Regulators Preventing Stem Elongation on Sweet Potato Vine

Symptoms:

- clustered nodes, rosette-type growth
- minimal stem elongation between the nodes of newly elongated leaves

Cause:

- excessive chemical growth regulator application at the liner stage to keep plants compact

Control:

- one to several weeks may be required for the plant to overcome the growth regulator application
- gibberellic acid (GibGro 4LS or ProGibb T&O) foliar spray to promote stem elongation – see product label, trials with concentration are required

Iron (Micronutrient) Deficiency

Symptoms:

- yellowing between the veins on young leaves

Cause:

- lack of iron required by new plant tissue
- caused by lack of iron in the fertilizer/container media; or (more frequently) a high root-zone pH which makes the iron insoluble and unable to be taken up by roots

Control:

- check media pH, maintain between 5.5-6.0 for petunia and other iron-inefficient crops by using acid injection or switching to a more acidic fertilizer
- apply an iron-chelate drench/foliar spray (caution: foliage must be washed after application to avoid phytotoxicity to leaves)

Note: This is the most frequent nutrient disorder that I have observed this spring. Other crops which are inefficient at taking up iron and so require a lower pH (5.5 to 6.0) include: Bacopa, Calibrachoa, Nemesia, and Scaevola. Long-term management of this problem often involves testing alkalinity of the water supply (as this affects container medium pH), and implementing a fertilizer program or acid injection program to correct pH.

Foliar Iron Phytotoxicity

Symptoms:

- brown spotting on leaves following a drench/foliar application of iron-chelate

Cause:

- phytotoxicity damage from an iron-chelate or iron-sulfate product

Control:

- the iron product was applied to correct an iron deficiency; always wash foliage with clear water immediately following a drench/foliar application
- management of container medium pH and iron applied in the liquid feed will eliminate the need for corrective iron-chelate applications

Additional Guidelines for iron application can be found in a bulletin by Fisher and Argo: http://extension.unh.edu/agric/AGGHFL/**pH**articl.pdf

Edema on Ivy Geranium

Symptoms:

- brown corky blisters on the underside of leaves

Cause:

- water imbalance within the plant – roots absorb water faster than it evaporates from leaf cells, causing rupturing of the cells
- promoted by excess watering of plants; cloudy, humid conditions

Control:

- select a well-drained growing medium
- avoid over watering susceptible plants during cloudy weather
- reduce greenhouse humidity levels

In the last few years we have seen edema symptoms on ivies and zonals associated with two-spotted spider mite, so check for mites if a nutritional/environmental cause isn't suspected

Cycocel Phytotoxicity on Begonia

Symptoms:

- large yellow spots on the leaves

Cause:

- The damage occurred following Cycocel application at 750 ppm
- Note the damage where product had pooled up on the leaves

Control:

- Use caution when applying growth regulators
- Adjust concentration to environmental conditions
- Conduct trials when new product/plant material is involved

Interestingly, Tuberous Begonias were unaffected by this particular application.

Potassium Deficiency of Petunia

Symptoms:

- Yellowing/browning of edges on older leaves; symptoms progress inward on the leaf

Cause:

- Potassium deficiency
- Based on a media test – high soluble salts were ruled out, in fact, general low fertility was noted with the potassium deficienc symptoms being expressed first

Control:
Increase the concentration and/or the frequency of fertilizer application

Wilting Hanging Baskets

Symptoms:

- death and curling of young leaves and growing tips

Cause:

- parts of plants had dried beyond the permanent wilting point
- as warm sunny days hit last near the end of April many hanging baskets were not getting enough water
- (I like to call this dihydrogen-monoxide deficiency)

Control:

- remember to adjust watering according to current conditions
- hanging baskets often suffer first as they are out of sight, are in full-sun, and contain large plants that consume water rapidly

Insect/Arthropod Pests

Spider Mites on New Guinea Impatiens

Symptoms:

- stippled or mottled foliage, reduced plant vigor
- magnification on the underside of the leaf revealed that these were two spotted spider mites (irregular dark blotch on each side of the mid body, see inset photo).

Cultural Control:

- remove weeds
- inspect incoming plant material, scout greenhouse regularly

Chemical Control:

- several materials are registered; see Cornell Guidelines Table 8.1 (link below)

Thrips Damage on Melampodium

Symptoms:

- scattered speckling (brown spots) where feeding damage occurred
- inspection with a hand-lens revealed adult thrips (narrow body, 1-2 mm length)
- damage often includes distorted leaves and flowers, scarred areas leaves or petals
- Western flower thrips may transmit topsoviruses

Cultural Control:

- remove all plant material from greenhouse during winter (including weeds)
- inspect new plant material, scout greenhouse regularly
- use sticky cards to monitor for thrips
- remove flowers and older infested plants where possible/practical

Chemical Control:

- several materials are registered; see Cornell Guidelines Table 8.1 (link below)

Other insects found include: aphids, which were proliferating rapidly under the recent warm conditions; and mealybugs which had overwintered in a greenhouse with foliage/house plants

Pythium Root Rot on Rosemary

Symptoms:

- dark brown to black roots that are soft disintegrate easily
- outer portion of roots easily sloughs away from the inner core (see inset photo)

Cultural Control:

- cool, wet, poorly drained soils favor development of some *Pythium* species
- use a well-drained potting medium, avoid excess soluble salts

Chemical Control:

- several materials are registered for *Pythium* on ornamentals, see Cornell Guidelines Table 6.1; see notes regarding sensitivity to specific products

Powdery Mildew on Pineapple Sage

Symptoms:

- powdery white fungal growth on the surfaces of leaves and stems

Cultural Control:

- remove infected plants or diseased tissue
- avoid high humidity and overcrowding plants, provide adequate air movement

Chemical Control:

- several materials are registered; see Cornell Guidelines Table 6.1 for registered materials (link below)

Powdery mildew has also been recently noted on African Violets, Dahliettas, Gerbera and Verbena

***Botrytis* on Elephant's Ear**

Symptoms:

- large, irregularly outlined brown leaf spots
- fuzzy grayish spores (faintly visible near tip of the arrow)

Cultural Control:

- avoid high humidity and wet surfaces: water early in the day, use proper heating and ventilation
- remove old blossoms, dead leaves, and other plant debris on or under benches

Chemical Control:

- several materials are registered; see Cornell Guidelines, Table 6.1

Botrytis was also recently noted on New Guinea Impatiens and Tuberous Begonia

RESOURCES

The 2008 *Cornell Guide for the Integrated Management of Greenhouse Floral Crops* is available at: http://ipmguidelines.org/greenhouse

A Database of current NYS registered pesticide materials and labels is available at: http://pmep.cce.cornell.edu/pims/current

UPCOMING PROGRAMS

IPM In-Depth
Monday July 21, 2008
Location: Cornell University, Ithaca, NY
This afternoon program features 3-hands on topics: insect identification, disease identification, and container media testing. Warning! Participants will get their hands dirty!
More information at: http://www.greenhouse.cornell.edu

Cornell Floriculture Field Day
Tuesday, July 22, 2008
Location: Cornell University, Ithaca, NY
Morning program features Rick Schoellhorn on *Growing and Enjoying New Annuals*; afternoon features trials of more than 1,000 annuals and perennials plus the Fifth Annual Kathy Pufahl Container Design competition. More information at: http://www.greenhouse.cornell.edu