

Managing Diseases in Hanging Baskets



Margery Daughtery
Cornell University
Long Island Hort. Res. Lab
Riverhead, New York

Growers may often feel that the spectre of contagious plant disease is hanging over their heads. This is never so true as when they are producing a crop in hanging baskets.

It's not so much that disease management is any different for a hanging basket crop, but that the plants are much less accessible for monitoring or control treatments. An out-of-sight/ out-of-mind philosophy is too often practiced with this crop. Special attention is required to produce a healthy crop above the grower's normal line of vision. This attention is important, though, because the health of hanging basket plants will affect the other plants in the greenhouse.

BACTERIAL BLIGHT OF GERANIUMS

The bacterial blight of geraniums, caused by *Xanthomonas campestris* pv. *pelargonii*, may make a surprise appearance in greenhouses where geranium crops are grown on multiple levels. It is dangerous to grow baskets of ivy geraniums (*Pelargonium peltatum*) directly above a crop of cuttings or seedlings of zonal geranium (*P. xhortorum*). If the ivy geraniums are infected with *X. pelargonii*, bacterial inoculum can drip down onto the crop below. Even a low percentage of contamination in an ivy geranium crop can lead to major losses in the bread-and-butter crop of geranium bedding plants. The solution is simple: since this disease is only able to infect plants in the Geraniaceae (*Pelargonium* and *Geranium* spp.), crops from any other plant family are a better choice to grow in baskets above geraniums. While it is true that most growers choose to grow both types of geraniums

Peter Konjoian
Konjoian's Floriculture
Education Services, Inc.
Andover, Massachusetts



in the same house because of cultural considerations, this choice does not make sense from a practical disease management perspective.

Growers need to be aware that ivy geraniums can have bacterial blight, and they should monitor bench or hanging crops for the roughly 1/8-inch diameter brown spots, yellowing, or wilting that might signal the presence of this disease. Bacterial blight may be difficult to identify on ivy geraniums, because oedema and/or *Botrytis* may mimic the look of the bacterial leaf spots. In addition, nutritional disorders or *Pythium* root rot may create yellowing foliage similar to the systemic symptoms of bacterial blight. Also, the relatively firm leaves of ivy geraniums do not wilt until the disease is quite advanced. Although basket-to-basket spread is unlikely once the containers are hung (if they are supplied with individual-tube irrigation), there is always the chance for spread insects or handling. For this reason, bacterial blight infected plant should be rogued out immediately upon detection.

The importance of starting geranium crops from clean stock supplied by reliable propagators cannot be overstated. Maintaining heirloom geranium cultivars that grandfather used to grow in the same house in which commercial cultivars are grown is a time bomb waiting to explode.

TOSPOVIRUSES

INSV (impatiens necrotic spot virus) and TSWV (tomato spotted wilt) are two thrips-borne tospoviruses that may affect your hanging basket crops. There is a special danger in this

possibility, because it is relatively easy to miss seeing virus symptoms in a crop grown above the scout's head. For a number of growers, significant INSV losses in their young impatiens have originated from hanging baskets of begonias in the same house. Infected begonias often show bright yellow leaf mottling, but this symptom may be more "diseased-looking." Begonias infected with INSV or TSWV may also be stunted or show browning along veins. Regardless virus symptoms are easily seen from below. Scouts need to make a special effort to examine hanging baskets regularly.

Part of the danger of hanging basket crops as virus sources relates to the biology of the thrips. When thrips have fed on tospovirus-infected plants during their first larval stage, they will be capable of transmitting the virus when they feed on healthy plants as adults. After thrips larvae have gone through the early stages of their life cycle on a hanging basket crop, they may drop down to the crop below to pupate. This means that they will emerge as "viruliferous" adults - ready to transmit the virus to bedding plants. Growers should keep track of both virus symptoms and western flower thrips, at the hanging basket level as well as at bench level, to avoid nasty surprises in the form of virus disease losses.

GENERAL DISEASE CONTROL

Hanging basket crops are at a disadvantage because spray or drench application is generally more difficult due to awkwardness of access. For this reason, it is important to rogue out diseased plants from baskets **before** they are hung up. Also, any necessary sprays, drenches, or granules should be applied just before hoisting them aloft, so coverage or dosage can be carefully controlled. The only aspect of pesticide treatment that might be considered easier after baskets are hanging is

that the undersides of leaves are easier to target because foliar spray is directed up instead of down. Even so, because baskets can become quite large, they must be sprayed from more than one direction to achieve thorough coverage.

It is particularly important to have only healthy crops hanging above bench crops to avoid vertical spread of root-rotting fungi. Similarly, try to avoid growing basket crops which will drop petals onto the plants below; *Botrytis* attack is facilitated under these circumstances. Plan ahead to avoid potential problems in hanging baskets.

NEW CROPS, NEW DISEASES

The commercial greenhouse industry is currently experiencing an explosion in new crops. The list of species and cultivars of plants that are filling profitable niches for growers is expanding with each season. Many of these species are suitable for hanging baskets, either in stand-alone baskets or in mixed baskets. Some of these plants have their origins in distant reaches of the globe, and it is likely that new pest problems will surface as the crops become established. Recall that tospoviruses were not the major concern that they are now when New Guinea impatiens were first becoming popular.

It is not known which diseases will surface as problems on any of these new crops, but it is quite clear that good disease management skills will form the cornerstone of any grower's control strategy. Integrating all aspects of production including culture, sanitation, environment, and pesticides will allow growers to manage new and existing diseases effectively.

SUGGESTIONS FOR HEALTHY HANGING BASKET CROPS

1. Treat for root rots at transplant to baskets; use no more N than needed; use a mix with good drainage.
2. Experiment with biocontrols added to the mix, with the goal of persistent root rot control.
3. Scrutinize hanging baskets for symptoms while they are still at bench level - don't elevate sick plants!
4. Make preventive fungicide drenches/ sprays just before hanging the baskets.
5. Keep saucers off the bottoms of hanging baskets, to discourage *Pythium* root rot.
6. Put sticky cards and indicator plants at hanging basket level to monitor for tospoviruses and their vectors.
7. Scout hanging baskets for symptoms of disease so you can respond to problems while they are still small.
8. Keep air moving in the greenhouse (horizontal air flow fans, etc.) to avoid stagnant, humid pockets.

KEY DISEASES TO ANTICIPATE IN POPULAR HANGING BASKET CROPS

Fuchsia	Rust, <i>Phytophthora</i> Stem/ Root Rot, <i>Thielaviopsis</i> Root Rot
Ivy Geranium	Oedema (physiological disorder), <i>Pythium</i> Root Rot, Bacterial Blight (<i>Xanthomonas campestris</i> pv. <i>pelargonii</i>)
New Guinea and Impatiens	<i>Pythium irregulare</i> (infects the root crown and causes black streaks wilting), <i>Rhizoctonia</i> stem canker, tospoviruses (INSV & TSWV), Powdery Mildew.
Impatiens	<i>Rhizoctonia</i> damping off or stem canker, <i>Alternaria</i> leaf spot, Bacterial leaf spot (<i>Pseudomonas</i>), tospoviruses (INSV & TSWV)
Begonias Mildew,	Bacterial Blight (<i>Xanthomonas campestris</i> pv. <i>begoniae</i>), Powdery tospoviruses (INSV & TSWV)
Poinsettias	<i>Pythium</i> root rot, <i>Rhizoctonia</i> cutting rot or stem canker, <i>Botrytis</i> stem canker or bract blight, <i>Phytophthora</i> stem rot, Powdery Mildew.
Miscellaneous Annuals & Perennials	TSWV & INSV (tospoviruses)

Reprinted from *OFA Bulletin*, February 1998

If You Have WEB Access
Visit our Purdue Floriculture Extension web site at
<http://flowers.hort.purdue.edu>