

## Bedding Plant Diseases

by Alan Windham, Professor of Plant Pathology

With irrigation, drought is no deterrent to diseases of bedding plants. Impatiens, zinnia, marigold, vinca, petunia, coleus and begonia all have problems from time to time.

Last year, **downy mildew on coleus** was big news. It appeared for the first time in Tennessee and thirteen other states on some very nice coleus cultivars. Symptoms included blotchy, dull colored leaves and stunting. This year, it's still big news in the Carolina's. I found downy mildew on coleus in an irrigated landscape bed in Greenville, SC while at the SE Greenhouse Conference in late June. The fungus was growing just fine on the underside of leaves, even though temps were in the low 90's. It's probably here in Tennessee although I haven't seen any yet. There are fungicides labeled for downy mildew, but it moves so fast that often the damage is done before a diagnosis is in hand.

**Bacterial leaf spot** caused by *Xanthomonas* is appearing on zinnia. Brown, angular spots (sometimes with yellow halos) may be found in large numbers on zinnia leaves. Even the new cultivars are not immune. The bacterium that causes this leaf spot may be found on seed, which is where the disease originates. Keeping foliage dry via drip irrigation may help slow spread. We really are dependent on growers, who should disinfect seed prior to planting to control this disease.

**Fungal leaf spot diseases** caused by fungi such as *Alternaria* may cause severe leaf drop on some bedding plants, particularly impatiens and marigold. Lesions often have a purple margin with a gray to tan center. Fungicides can be used to manage this disease, but only if treatment is applied early in the disease cycle.

**Web blight** caused by *Rhizoctonia* is more common than you would think. It shows up in mid-to-late summer when the canopy of individual plants has grown together forming one canopy. With little air movement and high humidity within the canopy of the foliage,



**Figure 1.** Downy mildew damaging coleus in a landscape bed.



**Figure 2.** Swizzle zinnia with bacterial leaf spot.



**Figure 3.** Alternaria leaf spot on impatiens.

conditions are perfect for *Rhizoctonia* to do its thing, which is webbing and blighting the foliage in the interior of infected plants. Web blight may not kill plants outright, but will detract from the beauty of bedding plants at their peak. This can be prevented by applying foliar sprays of fungicides when the canopy closes on landscape beds.

**Phytophthora crown rot** of petunia is capable of wiping out a bed of petunia within a few weeks. Plants are infected at the stem and rapidly wilt and die. The interesting thing about this disease is that the root system on a freshly killed plant will look perfectly healthy. The fungus doesn't affect the root system. The fungus *P. nicotiana* is long lived in the soil and will attack and kill susceptible plants next season. Fungicides have not been very effective in preventing this disease, so crop rotation to marigold, zinnia or another resistant bedding plant is your best option. A similar disease is a foliar blight of vinca caused by *Phytophthora*. In this case the fungus is splashed from soil or infested media onto the foliage of vinca which collapses under the infection.

Whatever the problem, have it properly diagnosed and management strategies can be implemented to minimize the problem next year and possibly this season.

**Nematodes**, worm-like animals, are generally not a problem on bedding plants but we do see root knot nematode damage occasionally. Plants are generally stunted and yellow; leaf drop may be a problem. However, the key symptom for diagnosis is galled roots where the female nematodes have set up house and are feeding within the root system. In my opinion, most of this problem comes from the source of the bedding plants, generally through soil contaminated with nematodes being introduced into the production system via poor sanitation practices. There is not a practical treatment for this problem. Inspect the roots of plants prior to purchase.

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**Figure 4.** Web blight (*Rhizoctonia*) killing leaves in the interior of the plants canopy.



**Figure 5.** Foliar phytophthora blight on vinca. This fungus is capable of wiping out a bed of vinca or petunia.



**Figure 6.** Galled roots of impatiens infected with root knot nematodes.