1. Cucurbit Downy Mildew Appears in TN

Cucurbit downy mildew has become more severe in the eastern United States the last couple of years. It was found last Friday for the first time this year in Tennessee. Two cases, both north of Nashville, were estimated to have been present for about two weeks. One was a light case in pumpkins in Robertson County; the other was a severe case in pumpkins and gourds in Sumner County.

What to do: Cucurbit crop growers in north-central Tennessee should make adjustments in their spray program, now. There may well be much more downy mildew in the state, and all cucurbit growers should be on the lookout for it. It is not a very noticeable disease until it becomes severe. On pumpkin and squash leaves, look for tiny, yellow leafspots that turn necrotic.

Hopefully, everyone is on a program that includes a basic fungicide such as chlorothalonil applied every 7 to 10 days, for general disease control. In areas in which downy mildew has been found, add a more specialized fungicide, such as Tanos or Previcur Flex to the chlorothalonil. You will also need to add a powdery mildew material, such as Nova, Procure, or sulfur. All fungicides other than chlorothalonil or maneb need to be alternated, to avoid resistance problems. (SB)

2. Pumpkin Fruit Rots

Pumpkins, gourds, and winter squash are an important commodity for apple growers. Some apple
orchardists grow pumpkins and sell them at their stands to complement their apple sales. Others purchase pumpkins for resale at their stands. In either case, post-harvest rots can be a problem. Rotten pumpkins don't sell, and you don't want them to rot in Mrs. Customer's house, either.

Most efforts to control post-harvest rots of pumpkins, gourds, and winter squash should have already taken place. Most of the rots that appear in storage actually began in the field, during the production of the fruit. However, there are some steps you can take to lessen the development of rots after harvest.

**Pre-harvest control measures.** Rots develop when disease-causing organisms, mostly fungi, enter the fruit surface. The best defense against this invasion is fruit rind tissue with strong cell walls. To obtain such "tough" fruit, the plant must be kept healthy during the growing season. Healthy leaves provide carbohydrates to the fruit, which strengthens the cell walls. Provide adequate calcium, avoid excessive nitrogen, and irrigate during dry periods. Follow a recommended spray program to control diseases and insects. Controlling foliar diseases helps maintain healthy leaves and reduces the populations of organisms that can infect the fruit. Crop rotation is important in reducing the populations of fruit-rotting organisms such as anthracnose and bacterial spot. Two years in a non-cucurbit crop should be allowed between pumpkin crops.

**Post-harvest control measures.** Damaged pumpkin skin allows easier entrance of the fruit-rotting pathogens. Handle fruit carefully to avoid injuries. It is helpful to wash the fruit after harvest and allow to dry. Some growers dip or spray the pumpkins in a 10 percent bleach solution. This practice can reduce infections in storage, but will not stop the development of infections that occurred in the field. Holding the pumpkins at 80-85 degrees F and 80-85% relative humidity for 7 to 10 days allows scratched areas to cure. After the curing period, the temperature and humidity must be lowered to the levels recommended for storage (50-55 degrees F and 50-70% relative humidity), to reduce the disease potential.

Store pumpkins in a dry, shaded area, out of contact with the soil (straw or hay works well). Avoid piling pumpkins, as this practice decreases air circulation around them. Check stored fruits regularly for rots, and discard affected ones. Storage life of pumpkins is typically two to three months. (SB)

### 3. Strawberry Plant Condition

There has been one preliminary report of anthracnose made by the Plant Diagnostic Clinic at N.C. State on some Chandler and Camarosa plants from a plug producer and distributor in Virginia. If you see any suspicious symptoms on your plants, send a good sample to me at the Plant and Pest Diagnostic Center. Anthracnose will appear as buds turning black and dying. The necrosis may advance up the leaf petioles, causing the leaves to collapse due to the weakness at the base of the petiole. There may also be individual black lesions. (SB)
4. Sanitation practices in Fall 2006 and/or Spring 2007 may reduce apple scab inoculum for the 2007 growing season.

By Alan Biggs, Plant Pathologist, West Virginia University.

It is possible to reduce the amount of overwintering apple scab in your orchard using two practical and inexpensive methods: spraying trees with a urea fertilizer solution at leaf-fall or spraying fallen leaves on the ground, and shredding fallen leaves with a flail mower.

Here’s how it’s done:

Urea application: A 5% solution of urea (46-0-0) in water may be applied to apple trees as leaves begin to fall in the autumn (42 lb. urea in 100 gal. water). This should be done as late as possible to prevent the urea from being translocated into the tree. However, it should be early enough to have most of the leaves still on the tree. Note that trees sprayed with urea may defoliate more quickly than unsprayed trees. Urea may also be sprayed on the leaves on the ground, after all the leaves have dropped. The ground spray can also be done in the spring.

Leaf shredding: Mulch leaves with a flail mower in the fall. Mowing in the spring before budbreak will also be helpful. The amount of leaf litter that you can shred up will depend on the type of mower, as well as the tree canopy and spacing. If you can get at the leaves in the weed-free strip under the trees, it will work better than just mowing between the rows. (Another option is to flail-mow and then apply urea as a ground spray to the "in row" area that could not be reached by the flail mower.)

Here’s how it works:

Urea inhibits the development of apple scab fruiting bodies on the fallen leaves. The high nitrogen content also helps the leaves to decompose much faster than normal. Leaves sprayed within a week of leaf fall have been shown to produce few or no apple scab spores in the spring. If the urea-sprayed leaves hang on the tree longer than a week, too much nitrogen will be translocated out of the leaves, and scab suppression will not work as well. A follow-up spray of leaf litter on the ground would help to improve control of the fungus. Leaf shredding also hastens the decomposition of the leaves.

Here’s how well it works:

R.T. Burchill, (East Malling Research Station, England) published a paper in 1968 describing experiments with urea. Burchill found that when apple plants were sprayed in autumn with 5% urea, followed by a second pre-budbreak application of 2% urea to leaf litter, ascospore production in the spring was significantly suppressed. Spraying in the fall was effective when leaf abscission occurred within a week of treatment. However, a single autumn application still allowed some ascospore production. In 2 orchard trials conducted by Burchill, urea treatments resulted in a reduction in the
number of scab lesions on blossom spur leaves by 46 and 59%.

Bill MacHardy (University of New Hampshire) has done some recent work on evaluation of sanitation practices. In a 1994 article, he reported on effectiveness of spring and autumn leaf shredding in orchards using a flail mower, as well as effectiveness of urea application in both spring and fall:

- Autumn leaf shredding with a flail mower reduced leaf litter density an average of 55% and reduced severity of primary scab on leaves by an average of 62%. Ascospore dose was reduced by 55%.
- Spring leaf shredding reduced ascospore dose by 89% and foliar scab by 80%.
- Spring urea treatment reduced ascospore dose by 74% and foliar scab by 80%.
- In small plot studies, pre-leaf-fall urea, spring urea, autumn leaf-shredding, spring leaf-shredding, and a combined autumn and spring leaf-shredding treatment reduced ascospore productivity by 97, 82, 50, 65 and 83%, respectively.

How does this fit into a disease management program?

Sanitation measures will help to reduce the amount of initial inoculum. This will make scab easier to control, but fungicide sprays will still be necessary during primary scab season.

An orchard that had a severe scab problem this year will benefit from reduced disease pressure, making it more likely to obtain effective control with fungicides during primary scab season. And remember - good control during primary scab season means you won't need to continue spraying for the rest of the summer. Another benefit is that lowering the disease pressure will make it less likely that the fungus will develop resistance to fungicides.

5. Stony Pit (Dimpling) of Pear

Ever seen a pear with a severe case of dimples? Could be stony pit. This is a virus disease characterized by deep indentations and deformity of the fruit. The tissue at the base of the indentation (pit) is sclerotized (hard) and brown in color. The sclerotization makes the fruit difficult to peel. Pits in pear fruit produced by other causes (insects, cork spot, boron deficiency) are much more superficial and are not associated with the production of sclerenchyma cells.

Stony pit is transmitted by vegetative propagation. There is no documented evidence of insect transmission. The severity of symptoms varies from year to year and even from fruit to fruit on the same tree. The varieties Bosc, Comice, and Seckel have more severe symptoms than other varieties. (SB)
The *Fruit Pest News* URL is: [http://web.utk.edu/~extepp/fpn/fpn.htm](http://web.utk.edu/~extepp/fpn/fpn.htm)

Contacts:

Steve Bost, Professor and Extension Plant Pathologist  
[scbost@utk.edu](mailto:scbost@utk.edu)

Frank Hale, Professor and Extension Entomologist  
[fahale@utk.edu](mailto:fahale@utk.edu)

Both authors available at:
615-832-6802  
fax 615-781-2568  
Plant and Pest Diagnostic Center  
5201 Marchant Drive  
Nashville, TN 37211

Copyright 2006 The University of Tennessee. All rights reserved. This document may be reproduced and distributed for nonprofit educational purposes provided that credit is given to University of Tennessee Extension.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.