Rainy periods in spring and summer were an obstacle that apple growers faced when trying to manage apple diseases this year. Rains interfered with late dormant pruning and sanitation efforts and prevented timely applications of preventive fungicides. Continued rainy weather and cooler than normal weather for parts of the summer likely also affected the kinds of diseases affecting apples, particularly fruit rot diseases. Based on weather patterns this spring and summer, it seems likely that black rot fruit decay and sooty blotch and flyspeck will predominate as near-harvest apple diseases. Unless the weather becomes more typically hot and humid, white rot and bitter rot may appear somewhat less frequently than normal.

Several of the fungi that cause fruit rot disease can begin their infections at bloom or shortly thereafter. The fungi may invade killed fruitlets, infect sepal, or exist in a latent phase in healthy fruit, only to begin decaying fruits them when they reach full size. Apple fruit rots can occur both in the orchard and in storage after harvest. Decayed fruit represent a significant loss to growers because much of the investment in the crop is made before the fruits show any indication of decay. Decay lesions are circular, it is especially damaging in summers when hot, humid weather predominates. Decay from the surface to the core. Under cooler conditions exceeding 80 degrees F the decay is soft, watery and a light tan color extending as a cylinder of decay appears V-shaped. Fruit infection can occur in as few as 2 to 4 hours at 80 degrees F. Under warm decay appears V-shaped. Fruit are susceptible to infection from 3 weeks after petal fall until harvest and the disease develops most favorably at temperatures of 80 to 90 degrees F. The disease is caused by the fungus Colletotrichum gloeosporioides or by C. acutatum. Peaches, nectarines, grapes, strawberries, and blueberries are also attacked by this pathogen. Dry eye rot (blossom end rot) and calyx end rot are above the infection site within the tree canopy. Late fruit infections occur through cracks in the cuticle, wounds and lenticels. Black rot fruit infections are favored by temperatures about 70 degrees F with prolonged wetness. The black rot fungus can also be one of several different fungi that may be present in fruit with moldy core. Infected fruits eventually shrivel and dry down to pycnidia-covered mummies which remain attached to the tree, serving as inoculum sources in the spring of the following year.

White rot of apple is caused by the fungus Botryosphaeria dothidea. The fungus is ubiquitous in nature, causing diseases on a wide variety of other woody hosts such as birch, chestnut, willow, mountain ash, quince, pear, sweet gum, Rhododendron, grape, roses, stone fruit, blueberry, blackberry, currant and gooseberry. As with black rot, the white rot fungus can also infect woody tissue and cause cankers. The white rot fungus does not infect apple leaf tissue. Latent infections may occur on immature fruit up to 7 weeks after petal fall. Fruit infections can occur throughout the growing season, but rot symptoms usually do not appear before soluble solids reach near 10 percent. Fruit infection can occur in as few as 2 to 4 hours at 80 degrees F. Under warm conditions exceeding 80 degrees F the decay is soft, watery and a light tan color extending as a cylinder of decay from the surface to the core. Under cooler temperatures, the decay is usually firmer and a darker tan. Most rotted fruits drop, but some may shrivel and remain attached to the tree, serving as a source of inoculum for further fruit infection.

Bitter rot is usually found by now in Kentucky orchards. It is especially damaging in summers when hot, humid weather predominates. Decay lesions are circular, slightly sunken, and under moist conditions, often covered with a creamy mass of salmon-pink spores produced by acervuli scattered in concentric rings on the decayed fruit surface. In cross section, the firm, brown decay appears V-shaped. Fruit are susceptible to infection from 3 weeks after petal fall until harvest and the disease develops most favorably at temperatures of 80 to 90 degrees F. The disease is caused by the fungus Colletotrichum gloeosporioides or by C. acutatum. Peaches, nectarines, grapes, strawberries, and blueberries are also attacked by this pathogen. Dry eye rot (blossom end rot) and calyx end rot are...
normally minor diseases in Kentucky. These diseases appear when very wet weather occurs during bloom as happened here this spring. Dry eye rot is caused by *Bolrytis cinerea*, the "gray mold" fungus. Calyx end rot is caused by *Sclerotinia sclerotiorum*. The two diseases are often confused with each other because symptoms of both begin at the calyx end of the fruit and both cause a reddish color at the site of infection. Usually, isolation of the pathogen is necessary for positive identification.

Fruit infected with either of the pathogens have a tendency to drop prematurely. If harvested, fruit infected with dry eye rot will develop gray mold in storage. The diseases are typically minor and do not spread to other fruit in summer once symptoms appear. Therefore, by the time these diseases appear it is too late to do anything about them.

Sooty blotch and flyspeck are important apple summer diseases but don’t cause fruit rot. Sooty blotch symptoms appeared last month on apple fruits that have not been treated with fungicide. Sooty blotch and flyspeck, caused by a complex of different fungi, grow superficially on apple fruit surfaces, lowering their quality and market value. We know from previous research that there is a correlation between accumulated leaf wetness hours and appearance of symptoms of sooty blotch and flyspeck diseases. Beginning at 10 days after petal fall, the number of hours of leaf wetness from dew or rain each day are added together. When the total approaches 200 hours, we typically see sooty blotch symptoms appearing on fruits of untreated trees. In many Kentucky locations, that total was reached in early June, thus this disease complex has been present on fruits for a long time this summer.

**VEGETABLES**

**FALL CUCURBIT CROP DISEASE ADVISORY**
by William Nesmith

This has been a very disease-conducive season for cucurbit crops, especially leaf and fruit diseases. Consequently, about every disease of the foliage and fruit of cucurbits known to operate in our region is active, many at much higher levels than normal. I urge growers to use either preventive spray schedules, if they cannot or will not scout frequently, or to scout twice weekly and time sprays with the first evidence of disease rather than trying to chase diseases outbreaks in a rescue approach.

Do not confuse the consequences of poor fungicide timing/scheduling with a lack of capability of the materials to control the disease. Growers who did not start sprays on time may be seeing more disease than they expected. This does not mean that the fungicide is not working or the pathogen has developed resistance. For example, with the rainy weather experienced this season, fungicides can only slow down gummy stem blight; no fungicide can stop this disease once it gets started on watermelon during rainy weather. By the way, growers that were using a good preventive spray schedule have been able to control it, but most that were chasing it lost.

Growers should be scouting frequently or have in place controls against the following: bacterial leaf and fruit diseases, anthracnose, downy mildew, powdery mildew, gummy stem blight/blackrot, Phytophthora capsii (root rot, stem rot, foliage blights, and fruit rots), Microdochium blight (caused by *Plectosporium tabacinum*), and scab. Aggressive fungicide spray programs (well timed, good coverage, appropriate fungicide mixtures/rotations) will be more important than normal. Use a spray program that puts fungicides in place throughout the canopy. The most effective applications are those put on just ahead of long infections periods (wet periods) so those sprays that go on just ahead of wetting events, but with enough time for the spray to dry will have the greatest impact. Remember, most of the target pathogens infect while it is wet and the materials available to kill the pathogens must be in place prior to infection. Surface protectants will not be adequate against powdery mildew as they also absorb the moisture needed during germination directly from the atmosphere rather than the leaf surface, thus either systemic or volatile materials are needed to control powdery mildews.

Growers have a wide range of fungicides available. The Strobilurin Class of chemicals (Amistar, Cabrio, Flint, Pristine, and Quadris) are extremely valuable in cucurbit disease management, but be very careful to use them without over-using them. Appreciate and follow the rotational and application restrictions on their labels. They will not control all the diseases! The most important protectant-type fungicides available are chlorothalonil, mancozeb and maneb. Fixed cotters are mainly bactericides, but they also add some benefit in controlling foliar phases of Phytophthora and downy mildews. Cotters are needed this year to protect newly forming fruit against the bacterial infections, infections which occur while the fruit are small but do not appear until near harvest, plus Phytophthora will be a bigger threat than normal. Acrobat 50W and fungicides containing mefenoxam will be needed to control the foliar and fruit phases of Phytophthora blight. These materials will also be needed in the rotation to control downy mildews.

In addition to the strobilurins, more specific powdery mildewcides are needed; these include, Nova, Procure, and Sulfur for powdery mildew on cucurbits. Topsin M is not as effective as any of the newer systemic fungicides but it is still valuable as a resistance management tool. Topsin plus mancozeb is still recommended for anthracnose on cucurbits. Some strains of gummy stem blight are resistant to Topsin and this fungus has also been developing resistance to the strobilurins - such as Quadris, etc.

**LAWN & TURF**

**GRAY LEAF SPOT IS ACTIVE**
by Paul Vincelli

Gray leaf spot, caused by the fungus *Pyricularia oryzae* (=*Pyricularia grisea*), was found in Louisville two weeks ago. The observation was made by Jay Charne, superintendent at a golf club in Louisville, using his compound microscope; our Diagnostic Lab confirmed the find.

This first report is several weeks earlier than I had expected given the below-normal temperatures that have generally prevailed since late June. Based on this observation, I would suggest that turf managers in the region begin scouting areas for the disease where it has
historically shown up first on their golf course and athletic fields.

As experienced turf managers know, this is a highly destructive disease of perennial ryegrass under epidemic conditions. Although other hosts are known to be affected by *P. oryzae*, perennial ryegrass is the only host of significance in Kentucky. Thus, although I can justify the preventive use of fungicides on perennial ryegrass under high disease pressure, previous experience indicates that other grasses shouldn’t need fungicide protection from gray leaf spot under Kentucky conditions.

I don’t yet know whether we are looking at an “epidemic year” or not, but it pays to watch swards of perennial ryegrass very carefully this year, especially if the disease has been found there in the past. Information on efficacy of fungicides for gray leaf spot control can be found at http://www.ca.uky.edu/agcollege/plantpathology/PPAEExt/PPFShtml/ppfsort3.pdf.

**SHADE TREES & ORNAMENTALS**

**BIG CATERPILLARS MOVING ON**

by Lee Townsend

Why is this large caterpillar crawling slowly but purposefully across the ground? Where did it come from? Where is it going? Can it hurt someone?

Ornate caterpillars of several species of large moths have finished feeding on tree leaves and are moving to protected sites where they will spend the winter in custom-spun silken bags. These “wandering stage” caterpillars will crawl until their physiology allows them to stop, spin, pupate, and remain hidden through the winter. We didn’t notice them while they were feeding for several weeks in the trees but we can’t miss them as they crawl across the yard. The coloring, spines, and spiked ornaments on their bodies can be intimidating enough to keep them from becoming bird food but most are not harmful. However, there are some stinging caterpillars, so it is best to let them go on their merry way if you have doubts.

Quick guide to a few common species

- **Cecropia caterpillar** - light blue-green body - pairs of yellow knobs down back.

- **Polyphemus caterpillar** - light green body with short, narrow white vertical bar on each segment.

- **Promethea caterpillar** - pale green body with pairs of red knobs on two segments behind head and yellow peg at end of body.

- **Luna moth caterpillar** - green-body with yellow stripe along the body and distinct fine setae (hairs).

Some people like to keep these caterpillars and let them spin cocoons in order to see the spectacular moths emerge. The pupal stage requires several weeks of cold temperatures before the moth will emerge so it must be kept in an unheated, outdoor area over the winter. Diseases and parasitoids (flies and wasps) may be an issue that confounds these attempts.

For more information see - http://www.uky.edu/Agriculture/Entomology/entfacts/misc/ef008.htm

**DIAGNOSTIC LAB HIGHLIGHTS**

by Julie Beale and Paul Bachi

Recent samples in the Diagnostic lab have included northern corn leaf blight on field corn; sudden death syndrome and Rhizoctonia root rot on soybean; black shank, blue mold, frogeye leaf spot, manganese toxicity, frenching, tobacco streak virus, alfalfa mosaic virus and weather fleck on tobacco.

On fruits and vegetables, we have diagnosed anthracnose on grape; brown rot on peach; fire blight on apple; virus complex on sweet corn; ashy stem blight (*Macrophomina*) on pea; gummy stem blight on watermelon; anthracnose on muskmelon and cucumber; bacterial spot, blossom end rot and early blight on tomato, and Microdochium blight (caused by *Plectosporium*) on zucchini.

On ornamentals and turf, we have seen Rhizoctonia root rot on rudbeckia; bacterial scorch, Actinopelte and Leptothyrium leaf spots on oak; black root rot on holly; Phomopsis canker on sassafrass; and brown patch on fescue and bluegrass.

**INSECT TRAP COUNTS**

UKREC, Princeton, KY – July 30-August 6, 2004

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To view previous trap counts for Fulton County, Kentucky go to - http://ces.ca.uky.edu/fulton/anr/ and click on “Insect Trap Counts”.


NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.