



*Sherrie Smith*

*Rick Cartwright*

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

## Oak

Oak leaf blister caused by *Taphrina caerulescens* is a common fungal disease of oak. The spores are carried to buds in the spring by wind and rain where they remain until infecting the new leaves the following spring. After infection, small concave or convex spots appear. These pale green roughened spots thicken and become noticeable brown blisters by summer. Infected trees will often suffer premature leaf drop. Although this disease does not normally kill the tree, it reduces plant health and vigor as the tree replaces the lost leaves. Control consists of cleaning up all fallen leaves and twigs to reduce inoculum; keeping the tree watered and fed to reduce stress; and applying fungicides in severe cases. Fungicides should be applied in the fall after leaves are shed, and in the spring at bud swell, reapplying every 7-10 days until the new leaves harden. Chlorothalonil is listed for oak leaf blister.



Oak leaf blister

Sherrie Smith University of Arkansas Cooperative Extension

## Bean

Virus diseases in beans can be devastating. Bean yellow mosaic virus (BYMV) is an aphid transmitted virus. It is of world wide distribution, occurring wherever beans and other legumes are grown. Cultivars, plant age, strains of the virus, vectors, and environmental conditions determine the severity of the disease. Foliar symptoms consist of contrasting dark and yellowish green areas, usually with bright yellow spots. Rugosity, malformation, and stunting may also occur. Necrotic spots, veinal and apical necrosis, wilting, and premature death can afflict some cultivars. Although insecticides to control aphids is an option, the use of resistant cultivars is the most economical and efficient method of control. There is no treatment or cure for plants that already have virus. Pull them up and destroy them.



Bean yellow mosaic virus on pole beans

Sherrie Smith University of Arkansas cooperative Extension

## Pears

Pears are subject to many rust diseases, most of them requiring a *Juniperus* species as an alternate host. Quince rust caused by *Gymnosporangium clavipes* infects the fruit of apples, and both fruit and leaves of quince, hawthorn, and pear. Fruit infection causes a large dark green lesion at the calyx end, causing puckering and distortion of the fruit. Young fruit may become mummified and fall prematurely. Leaves may have yellow-orange lesions on the upper surface, similar



*Sherrie Smith*

*Rick Cartwright*

to those made by cedar apple rust. In the fall aeciospores infect the twigs of juniper species, giving rise to spindle-shaped or cylindrical galls. The galls are 2-60cm long. Telial horns emerge from the galls the following spring during wet weather, producing teliospores. The germinating teliospores produce basidiospores that infect newly emerging pear leaves in the spring. Orchard sprays applied at the proper intervals in the spring give good protection. All fallen leaves, twigs, and fruit should be cleaned up and deposited. Galls on nearby junipers may be pruned out and destroyed where practical.



Quince rust on pear

Sherrie Smith University of Arkansas Cooperative Extension

## Peppers

Bacterial soft rot caused by *Erwinia cartovora* can be a serious disease of pepper. The pathogen has a wide host range that includes tomato, potato, and many other vegetables. In pepper, several small dark lesions develop where the bacterium enters a wound in the stem or fruit. The fruit fills with a soft watery slimy mass that is held together by the outer skin of the pepper fruit. When the skin ruptures, the fruit collapses and dries into a shriveled wrinkled object. Rotation with crops such as bean, corn is an important tool in managing this disease. Overhead irrigation and excessive applications of nitrogen should be avoided. Proper spacing of plants helps ensure good air circulation which is helpful. No chemical controls are recommended.

Alfalfa mosaic virus (AMV) is generally considered a minor pest of pepper. It is found most often on pepper crops that have been planted near clover, alfalfa, and other legumes. It is initially seed transmitted, and then spread to uninfected plants by aphids. Foliage typically has a distinct bright yellow to white mosaic that can cause large areas of interveinal tissue to be bleached in appearance. Veinal necrosis and chlorotic line patterns are another symptom. It is important to plant clean disease free seed and seedlings. Aphid control is difficult as it takes only a minute of feeding to transmit the virus. Virus is not curable. Plants with symptoms should be pulled up and destroyed to prevent spread of the virus to healthy plants.



Soft rot of pepper

Sherrie Smith University of Arkansas Cooperative Extension



*Sherrie Smith*  
*Rick Cartwright*



Alfalfa mosaic virus

Sherrie Smith University of Arkansas Cooperative Extension

## Watermelon

### Identifying and Managing Manganese Toxicity in Watermelon by Kim Hurst

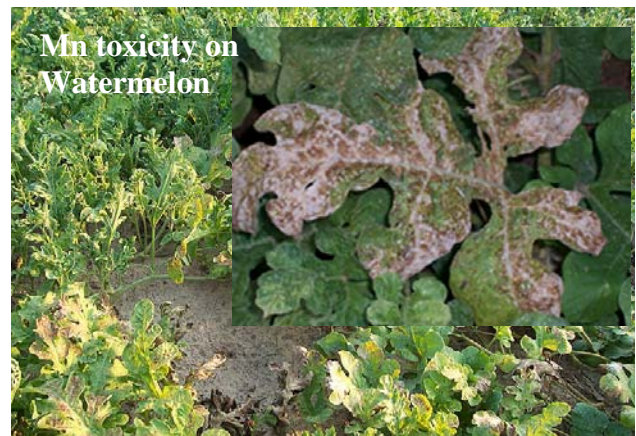
As one Southwest Arkansas watermelon farmer recently discovered, too much of a good thing isn't always a good thing. Manganese is an essential micronutrient for all crops, but when it is taken up in excess, it may be detrimental or even lethal to plants. When the soil pH is below 5.5, manganese becomes more readily available for uptake. When high levels of manganese accumulate in plant tissue, manganese toxicity occurs.

Symptoms of manganese toxicity in watermelon vary according to the stage of the crop. Seedling watermelons exhibit yellowish crinkled leaves and stunted growth. Older plants may show brown spots on older leaves, progressing to total leaf necrosis and desiccation. The loss of leaves hinders photosynthesis and compromises fruit set, fruit size, and quality.

Different plant species and, even varieties within a species have degrees of tolerance for manganese. Watermelon is considered moderately sensitive to manganese. However, the cultural practices used for producing watermelons may contribute to manganese toxicity. Watermelons planted flat, rather than on beds, may be more susceptible to manganese toxicity, even in soils with a pH of greater than 5.5, because the flat

ground allows soil to stay saturated longer during periods of wetness. During these periods of extended wetness, more manganese is taken up. At the other end of the spectrum are watermelons being grown in drought conditions that encourage deep root penetration into the more acid subsoil layers that are common in Arkansas. The acidic subsoil layers provide a continuous supply of excess manganese.

Unfortunately, there is no proven method for combating manganese toxicity in watermelon within the growing season. The best solution is soil testing prior to planting the crop, and a fall application of lime, if necessary, to bring the pH to near 6.0. Using a raised-bed production system or providing adequate drainage to reduce extended periods of soil saturation will also discourage excess manganese uptake. Making soil testing a yearly custom is the best safeguard against any nutrient toxicity or deficiency and should be a priority for every farmer.



Mn toxicity on Watermelon

JD Barham University of Arkansas Cooperative Extension

## Turf

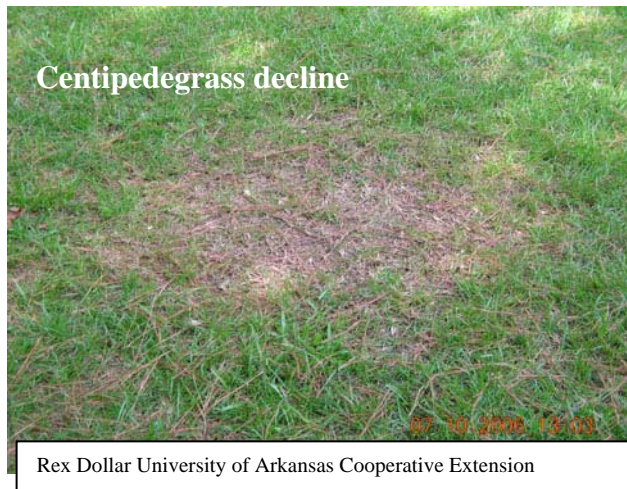
Centipedegrass is a favorite turf choice in the Southeastern United States where it is well adapted to sandy acid soils. It thrives in moderately acid soils of 5.0-6.0. Above 7.0 iron deficiency becomes a problem. It is less salt and cold tolerant than Bermuda and Zoysia. It does best in a sunny location, but tolerates shade better than other warm season grasses. Centipede decline is the problem where grass gradually



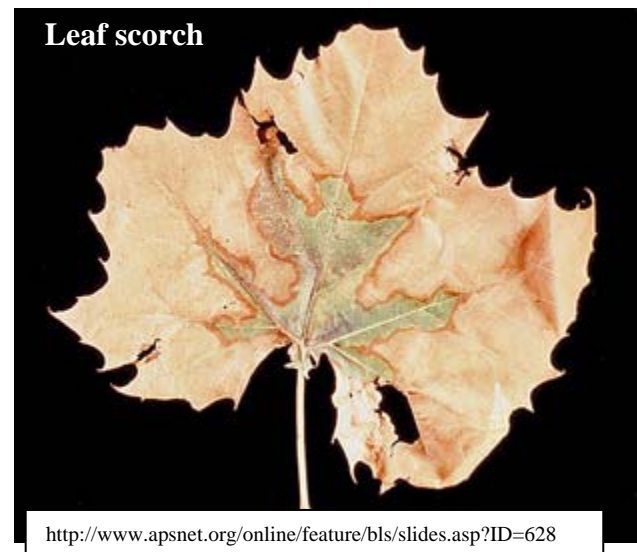
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*Rick Cartwright*

deteriorates and is replaced by weeds or other invasive grasses. It will green up in the early spring, but gradually turns off color and dies. These areas start out as small as a foot in diameter, but can rapidly increase to 3-6 ft in diameter. Individual areas may coalesce with other spots to produce large irregular patterns. Examination reveals little root development. Many of the runners and stolons will have no attachment to the soil. Microscopic examinations usually reveal no sign of pathogens. Cultural control is the most effective means of preventing this condition. Mowing heights of 1 inch at weekly intervals lessen the problem. Improper fertilization can be part of the problem. Application rates of nitrogen at 2 pounds or more per 1000 sq. ft. increase episodes and severity of Centipedegrass decline. Ideal fertilization is 0.5 pounds of nitrogen per 1000 sq. ft. in April, June, August and October. The grass should be watered well during drought conditions.



replace water loss to the leaf as fast as it occurs under hot windy conditions. In extreme cases the entire leaf will die. If this happens to too many of the leaves it is possible to lose the tree. Although this problem can occur even when the homeowner is watering properly, failure to water adequately spells certain death. Scorch becomes less severe in subsequent years as the root system becomes larger and established. Maples are vulnerable to scorch, particularly Japanese maples planted in full sun. They do best with afternoon shade. This is true of dogwoods as well. They are an understory tree in nature and do best with afternoon shade. Physiological leaf scorch should not be confused with bacterial leaf scorch which looks similar. With bacterial scorch, bacteria may be observed streaming from leaf tissue when viewed under a microscope.



## Drought

Samples are coming into the clinic with obvious signs of drought stress. The heat index has been 105°F this week. Newly planted trees are particularly vulnerable. These plants do not yet have a developed root system. When temperatures are high they are prone to a condition known as scorch. This is a physiological issue where the margins of the leaves will start to brown along the edges, gradually working towards the middle of the leaf. This is an effort by the tree to conserve water lost through evaporation. Newly planted trees cannot

Lawns that are turning uniformly brown across the entire yard are begging for water, not fertilizer or fungicides. Watering early in the day both conserves water and permits the turf to dry, thus discouraging pathogens.

**UofA** UNIVERSITY OF ARKANSAS  
DIVISION OF AGRICULTURE  
Cooperative Extension Service



*Department of Plant Pathology*  
**PLANT HEALTH**  
**CLINIC NEWS**



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