WHY DO LEAVES CHANGE COLOR?
Leaves are green in the spring and summer because they are making lots of chlorophyll. Chlorophyll is important because it helps plants make energy from sunlight via photosynthesis. The summer sunlight triggers the leaves to keep making more chlorophyll, however, trees are very sensitive to their Environmental. As summer fades into fall, the days get shorter and there is less sunlight, which signals the leaf to prepare for winter and to stop making chlorophyll. The green color begins to fade and the reds, oranges, and yellows become visible.

PURPLE SPOT, *Lembosina quercina* (formally *Morenoella quercina*), is a leaf spot pathogen of oaks. It has recently made its presence known on nursery trees throughout Warren, Cannon, Franklin and DeKalb counties. It is widely present throughout the southeastern area of the United States but generally not a concern unless it occurs over several seasons of growth.

Purple spot is found specifically on the red oaks *Quercus borealis* var. *maxima*, *Q. velutina*, *Q. rubra*, *Q. coccinea*, *Q. marilandica*, and *Q. phellos* but can also infect white oaks, with the exception of *Q. alba* and *Q. stellata*. The disease causes a decrease in the photosynthetic activity of seedlings and young trees, lowering their vitality and ability to photosynthesize properly.

Purple spot is a superficial parasite and in its early development depends on nutrients absorbed through the host cuticle. Purple spot is most apparent on the leaves of young trees. Small, blackened areas appear in early summer and somewhat resembling injury caused by sucking insects. Mycelium is present on the upper leaf surface but is not necessarily visible to the naked eye. In September, the spots increase in size to a centimeter or more in diameter. Circular and purplish-black on the upper surface, they appear as irregular, brownish areas on the lower. They may become confluent and cover most of the leaf surface. Affected leaves do not fall prematurely, but photosynthesis is impaired.

As most aesthetic leaf spot pathogens, severe infection can reduce the vitality of seedlings. The condition is not of appreciable importance on older trees, however, nursery growers might consider fungicide sprays in the spring as the late season spots may reduce the aesthetic value of your trees when buyers are on sight.

TSU NURSERY RESEARCH CENTER YouTube!
Understanding that most growers are not able to participate in virtual programming at specific times or days, the TSU NRC has created a YouTube page. There are several programs from the recent TN Grower Talk series available to view, including TDA shipping compliance updates, Japanese maple scale and flatheaded appletree borer discussions and imported fire ant control. The goal of the channel is to allow those who are interested to take a peek at their leisure. Each program includes discussion from participants and speakers. The TSU NRC YouTube channel is available to view at [https://www.youtube.com/channel/UCtaeH5dlwGI0TjTgwG-c_Gnw/](https://www.youtube.com/channel/UCtaeH5dlwGI0TjTgwG-c_Gnw/).
PERIODICAL CICADA IN 2021!

The periodical cicada, *Magicicada septendecim*, is expected to hit Tennessee in 2021. It has the longest period of development of any insect in North America and is of specific concern for nursery growers.

13-year periodical cicada Brood XIX will emerge in 2024, but significant numbers appear to be emerging this year, 4 years early.

We don’t often see periodical cicadas in the nursery, but when we do they can cause major damage due to high population. This cicada is unique in that their generations are synchronized so they emerge at the same time. Adults will emerge over the course of two weeks in April or May, dependent on soil temperature. Adults are focused on mating. About one week after mating, mated females make slits in tree branches and lay up to 600 eggs each. Egg laying generally occurs on the underside of small diameter branches. Eggs hatch shortly after and nymphs fall to the ground where they burrow into the soil. Nursery fields that are plowed will eliminated nymphs, however, cicadas could be hatching from bare ground within container nurseries. Damage from egg laying is where the real concern for growers. Damaged trees may exhibit flagging and branches with heavy egg-laying damage may break.

Protective insecticidal bark sprays can be implemented to protect young scaffolds of developing nursery stock. It has been found that imidacloprid reduces egg-laying in landscape trees and could be of use for those implementing the treatment on nursery trees. Stay tuned to magicicada.org.

IT’S ALMOST DORMANT OIL TIME! Although our temperatures have been unseasonably high for November, late winter and early spring, when the temperatures are barely above freezing, is the best time to apply the preventative for scale and mites. Dormant oil sprays are used before the buds begin to swell and suffocate insects and their eggs nesting in branches. Using dormant oil doesn’t completely eliminate the problem with these pests, but it is the best way to cut off most of the population.

Dormant oil is an oil based product, typically petroleum but can also be vegetable oil based. This oil has had surfactants mixed in to enable it to be mixed with water. Once the oil solution is sprayed on all the branches of a tree or bush, it penetrates into the surface of the insect’s hard outer shell, and suffocates it by not allowing any oxygen to get through.

To determine when to use dormant oil, look to your own weather. The date changes every year, but the conditions must be the same. Spray early enough so that the buds on the trees haven’t yet begun to swell. Wait until the daily temps are at least 40⁰ and below 70⁰, and will stay that way for at least 24 hours. Be sure to choose a 24-hour period when no rain or high winds are predicted. Rates will be determined by product used.