The 17-Year Cicadas Can Damage Your Trees  
Young Trees, Especially Fruit Trees, Most Susceptible

By now you’ve heard the cicadas are coming. In fact, they are practically here. Entomologists predict the periodical cicada that are on a 17-year reproduction cycle will start emerging from the soil in mass within the next several days, and some early emergence has been documented in parts of Tennessee. What you may not have heard is that those young fruit trees you planted this year, or maybe in the last few years, are in danger if you have a large cicada population in your area.

After all the noisy mating, the female periodical cicada will select woody shoots on trees and cut slits in the bark in which she will lay her eggs. The cicada prefers woody growth from the previous year that has relatively thin, smooth and soft bark and which is about the same diameter as a pencil. “Even a single female cicada may cause a lot of injury,” says David Lockwood, a University of Tennessee Extension specialist who works with fruit and nut tree growers. “However, the high cicada populations that are expected to appear can magnify damage expectations immensely.” Lockwood says injury from cicadas on mature trees, vines or bushes may result in death or breakage of shoot tips, which, while not pleasing to look at, may cause relatively little actual damage. However, the potential impact on young plants is much greater. “Entire branches that would grow into permanent scaffold limbs for fruit and bear a large portion of future crops may be severely injured by the damage to their bark, thus affecting their productive potential throughout the tree’s life. Preventing damage from occurring on young trees is much preferred over coping with damage after it has occurred.”

Frank Hale, UT Extension entomologist, adds that some insecticides can be used to protect plants, but physical exclusion of cicadas is more effective. “Covering the canopy of young plants with netting having a mesh size of a quarter inch or less and tying it around the trunk under the lowest limbs will provide a physical barrier to cicada egg laying,” he recommends. Note that the gauge for most bird netting is too large to prevent cicadas from entering the netting. Hale recommends mosquito netting, nylon tulle fabric or light-weight spun fabric such as tobacco shade cloth or floating row covers. The coverings can be safely removed when the male cicadas have stopped their loud calling and all the cicadas have died off — about six weeks after they emerge.
But wait! Netting alone is not enough to prevent damage to young trees. Lockwood says that unless a frame is used to suspend the netting so that it does not touch the plant canopy, some young limbs may be damaged where the net lays directly on small branches. “These areas should be pruned off once nets are removed as this could cause problems for the trees as they grow,” he says. “These branches should be removed during fall and winter dormant pruning and new shoots encouraged to grow and take their place. Even if just the terminal portion of a new scaffold limb is damaged, removing the entire branch and encouraging the growth of a new replacement shoot is preferable to heading a branch back to just below the damaged area as this could cause problems in developing a good scaffold limb.”

Lockwood adds that owners should remove and destroy damaged tips from branches within four to six weeks following egg laying. This will prevent nymphs hatched from eggs on the infested tree from entering the soil and feeding on tree roots.

Both experts say that over time the slits made by the egg-laying cicadas can serve as openings to a number of diseases and pests that can damage the tree or fruit. Secondary issues that may develop include woolly apple aphids on apple trees and lesser peach tree borers on stone fruit trees.

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The Spotted Lanternfly

The Tennessee Department of Agriculture is asking folks to be aware of the spotted lanternfly (Lycorma delicatula). The invasive planthopper, native to China, likely arrived in North America hidden on goods imported from Asia. According to the USDA: “Juvenile spotted lanternflies, known as nymphs, and adults prefer to feed on the invasive tree of heaven (Ailanthus altissima) but also feed on a wide range of crops and plants, including grapes, apples, hops, walnuts, and hardwood trees. The insects suck sap from stems and branches which can weaken and damage the plant. This feeding also leaves behind a sticky, sugary residue called honeydew that attracts other insects and promotes the growth of sooty mold, which can further damage the plant.”

Learn more at:
https://extension.psu.edu/spotted-lanternfly

Information sent to me is attached at the end of this newsletter

Apiary Regulations

Attached is a handout containing some of the main points from Tennessee’s Apiary Law. There is also a direct link to the state apiary webpage so regulations can be viewed in more detail.

UT Publications

D 141 Bermudagrass Lawn Care Calendar - Authored by Tom Samples and Jim Brosnan, Department of Plant Sciences; Frank Hale and Alan Windham, Department of Entomology and Plant Pathology; and Robert Florence, Soil, Plant and Pest Center

SP 341 Periodical Cicadas - Authored by Frank A. Hale, originally developed by Harry Williams and Jaime Yanes Jr., Department of Entomology and Plant Pathology

D 143 Okra For The Tennessee Vegetable Garden - Authored by Natalie Bumgarner, Department of Plant Sciences
Disease-resistant Basil: New Varieties Bring Hope in the Fight Against Downy Mildew
Submitted by Holly Jones, horticulturist, UT Gardens, Knoxville

Have you noticed your sweet basil (Ocimum basilicum) plants suffering from diseased leaves and stems in recent years? If so, the chances are good that basil downy mildew (Peronospora belbahrii) is the culprit. This fungus-like pathogen has been plaguing farmers and home gardeners since it was identified in the U.S. in 2007. Thankfully, scientists, farmers, and home gardeners now have science-based tools and advice we can put to use to save our basil.

One of the most exciting developments has been the recent release of downy mildew resistant (DMR) varieties. At least six new varieties from multiple independent breeding programs have become commercially available in the past few years. So far, they are all pretty promising. From Rutgers University we have ‘Devotion’, ‘Obsession’, ‘Passion’ and ‘Thunderstruck’. Notice a theme here? They are all named in honor of the Italian tradition associating basil with love. Other varieties are also available. The retail supplier Johnny’s Selected Seeds is marketing Prospera® from an Israeli breeder, and the Proven Winners brand has trademarked Amazel Basil® from the University of Florida.

While choosing a resistant cultivar is a key part of a pest management strategy, it is not a silver bullet. Resistance does not guarantee complete immunity; so, it is best to cover all the angles when trying to prevent this disease. This means starting with disease-free seeds or plants from a reputable source, providing optimum growing conditions, and learning to recognize disease symptoms so you can remove infected plants as soon as possible.

Cultural controls (i.e., providing an ideal environment) are important because they help keep the plants healthy as well as discourage the establishment of pests and diseases. Basil is a warm-season annual that grows best in full sun with fertile soil that is moist but well-drained. If possible, water at the soil level rather than overhead. Keeping the leaves as dry as possible and providing good air circulation will create a less hospitable place for downy mildew to flourish. Chemical controls such as organic and conventional fungicides can be effective if applied regularly. For up-to-date fungicide recommendations and more detailed information on the disease refer to the Cornell University publication Basil Downy Mildew (cornell.edu).

The main symptoms to watch for are yellowing leaves beginning toward the bottom of the plant; fuzzy gray spores on the undersides of the leaves; angular black spots and disfiguration on the leaves; and leaf drop. If you see these characteristic signs developing, you should harvest the entire plant. The healthy leaves are still safe to eat and removing the plant will prevent the disease from spreading to other basil plants.

Though the DMR-resistant varieties may develop the disease eventually, they generally stay healthy longer than traditional varieties, which means the grower can harvest basil for a longer period.

If you are open to a broader flavor palette, you can also opt to grow some of the less common basil varieties like ‘Sweet Dani Lemon’, ‘African Blue Holy’, ‘Spicy Globe’, and ‘Purple Ruffle’. These varieties, as well as a handful of other licorice- and lemon-flavored types, showed good resistance to downy mildew during a 2018 basil trial at UT Gardens, Jackson. At the UT Gardens Kitchen Garden in Knoxville, we have grown Amazel Basil® as well as ‘Devotion’ and ‘Obsession’ with decent results. Amazel Basil® showed no signs of downy mildew in 2019 but did develop symptoms towards the end of the season in 2020. All three of these varieties will be on display for the 2021 growing season. The UT Gardens sites in Jackson and Crossville have successfully grown Amazel Basil® with no signs of the disease.
Gardening Tips
June Gardening

June, the most popular month for weddings, is also all about being outdoors and enjoying nature. June’s a great month to enjoy the bounty of blooms in the garden.

Jason Reeves, a research horticulturist for the University of Tennessee Gardens in Jackson, says there’s several things Tennesseans can do in June to benefit their gardens. One is to add annual plants to their beds.

“Just because it’s almost summer doesn’t mean it is too late to plant annuals. I often don’t get my annuals at home into the ground until mid to late June. Plants such as sunflowers, zinnias, Mexican sunflowers, cosmos, marigolds, basil, and dill can still be direct-seeded while purchased plants can be transplanted into the garden.”

Reeves says gardeners should also think about mulch. “During the hot summer months, mulch can be especially useful for conserving water. Consider mulching your vegetable garden as well as your ornamentals. The mulch not only helps conserve moisture, but it prevents the splashing of water, reducing the spread of disease. It also adds organic matter to the soil and prevents many weeds.

Reeves has a few tips to share:

• Trim back catmint (Nepeta) after its first flush of flowers to promote new growth and a second flush of blooms.
• Harvest herbs early in the morning when the essential oil content is at its peak. The best time to harvest most herbs is just before flowering. This time is when the leaves contain the maximum essential oils.
• Daylilies are in peak bloom in June. It is a good time to buy new daylily selections for your garden to ensure you get the color you desire. Visit a daylily farm for the best selections, and plant them in full sun for the best flower production.
• Once daffodil foliage has turned yellow, you can mow or cut it down. If you remove it while it is still green, you decrease the amount of energy available for the bulb to store, decreasing flower size next year.
• To keep squash, cucumber, and bean plants abundantly producing, harvest them frequently.
• Store leftover vegetable and flower seeds in a cool, dry location to save them for planting next year.
• Water your plants in the morning, if possible, to conserve water and reduce evaporation. Infrequent, deep watering is better than frequent, shallow watering, since deep watering promotes deep root growth. For best results, deep-water trees and shrubs once or twice a week and flowers two to three times a week. Most plants need 1 inch of rainfall per week. Pay attention to how much falls from the sky and water accordingly. If you have an automatic irrigation system, consider installing a rain sensor that adjusts for rainfall.
• Scout for any issues with pests or diseases at least weekly. Continue cover sprays for fruit trees. If conditions support disease infection or if you see signs of disease, a protective spray program may be needed for vegetables.
• Tip pruning of caneberries as well as early picking of small fruits.
• Be on the lookout for maturity in the first corn and bean plantings.
• Manage soil after cool-season crops are removed. Those areas may be a location for a summer cover crop such as buckwheat to prevent weed growth and add organic matter.
• If a warm-season crop is planted immediately after cool-season crops are removed, make sure to follow a crop rotation.
• Apply fertilizer to blueberries and other small fruit.
• Some of the latest warm-season crops to be planted are often watermelons and pumpkins as well as sweet potatoes.
• Make sure your irrigation system is functioning well and manage weeds.
Simple Steps to Healthy Tomatoes

Getting Started

Now that the threat of frost has passed, it’s time to think about planting tomatoes in your garden.

While botanically it is a fruit, tomatoes (*Solanum lycopersicum*) are the most popular garden vegetable grown. With a little tender loving care and planning growing tomatoes can be a very rewarding endeavor.

Growing tomatoes successfully begins long before the plant is in the ground. The first step is site selection. Choose a site with good natural drainage and full sunlight. A site with medium-textured, well-drained soil with a good level of organic matter and supply of nutrients (see W 346-A “The Tennessee Vegetable Garden: Site Selection and Soil Testing,” for more information on garden site selection), is best. If you do not have a site with good soil consider using raised beds (W 346-E “The Tennessee Vegetable Garden: Building and Using Raised Beds”) or containers.

Once a site is selected a soil test is in order. The soil pH and adequate fertilization can be adjusted accordingly based on the test results (W 346-C “The Tennessee Vegetable Garden: Managing Plant Nutrition” for more information on soil sampling and testing). Tomato gardens should have at least a 6.1 soil pH with an optimum target range of 6.5 to 6.8. Keeping the soil pH at the optimum level will allow the plant to take up available nutrients, and minimize disease problems. Soil test information is available at the Extension office.

Next, select the varieties you plan to grow. Selecting resistant cultivars will minimize disease problems. “The Tennessee Vegetable Garden: Growing Tomatoes” publication number W 346-H, is a great resource for selection cultivars. The All America Selections winners are also a great resource (all-americaselections.org/winners/index.cfm). As is the “UT Vegetable Trial Report” found at https://www.uthort.com/category/trial-info/. Heirloom varieties may be less resistant to diseases but with a little effort can be grown with success.

Tomato type is also important. Tomatoes can be determinate or indeterminate. Determinate tomatoes will “top themselves” by forming a flower at the growing point. So, they are typically shorter and can be easier to manage in the garden. The fruit is set over a shorter period. Determinate plants may be best for more concentrated yield for canning while indeterminate plants may produce over a longer period for fresh eating.

Indeterminate varieties continue to grow and produce both new leaves and new flowers from their primary growing point. Unless damaged by insects, disease, or stress, indeterminate tomatoes will produce until killed by low temperatures in the fall. They will require taller stakes and more intensive management, so consider the time available to invest in plant support, training, disease and pest control, and picking throughout the season.

Avoid purchasing varieties touted simply as “disease-resistant” the diseases should be specified, in the catalog or on the label. Choose disease-free transplants from a reliable source or you can start your own (“Growing Vegetables From Seed” SP 291-B).

Planting date can also be important. A date after the last possible frost (typically mid-April in the Valley and late April on the Plateau) UT recommends April 10 – June 10 for transplants see (Growing Vegetables in Home Gardens PB901 for dates or check out the Tennessee Vegetable Calendar at https://extension.tennessee.edu/publications/Documents/W436.pdf) April 20 to May 5 depending on elevation is recommended for this area.

Getting your tomatoes off to a good start is the first step in growing great tomatoes.

Caring for your tomatoes

Now that we have discussed selecting and planting tomatoes, let’s look at caring of your tomatoes.

Water. Tomatoes need water, requiring 1 to 1.5 inches per week. Keeping the root zone moist enough to prevent wilting is a good practice. But we have periods of dry weather when we do not get enough rain to supply the needed water, so we need to supply the water. A rain gauge is handy to have, then you will know how much additional water you will need to add. But don’t rely solely on the rain gauge, watch your plants and even dig a
small hole in the garden to see if it is moist or wet down in the soil. When applying irrigation, apply about 0.5 to 0.75 of an inch of water twice a week, this will reduce runoff and provide consistent moisture levels in the soil. When watering avoid wetting the leaves, as this can cause diseases. Several irrigation systems can be used in a garden, drip irrigation systems are the most efficient and best for the plants. If sprinkler irrigation is the only option, apply at a time when leaves will dry before nightfall to lower the risk of leaf disease.

Mulching around the plants can be a great way to conserve soil moisture, control weeds, and protect the plant from soil-borne diseases. Straw, leaves, grass clippings, or compost can be applied in a 3 to 6 inches thick layer after planting, but with organic mulches, you need to make sure the soil has warmed sufficiently, as the mulch will insulate the soil.

Supporting your plants will help. There are several methods from staking the tomatoes to cages. Make sure that the system you use is strong enough to support the plant and that the materials used will last the full season.

You will need additional fertilizer during the growing season. This is typically called ‘sidedressing’ since the application of fertilizer is in a small furrow 2-4 inches to the side of the plant. Timing is important. This is often done after the first cluster of fruit has set and young tomatoes are the size of a golf ball or slightly smaller. Young tomatoes that are supplied with too much nitrogen will produce vegetative growth with abundant stem and leaf growth, slowing or reducing fruit set and yield. Sidedressings can be repeated once a month while the plant is bearing. The most common nutrients applied in a sidedressing are nitrogen and potassium. It is important to know what your soil can supply, by soil testing, and know what your plant needs, and what you have applied previously.

With a little planning, work, and tender loving care you can grow healthy tomatoes. For more information and details see: “The Tennessee Vegetable Garden: Growing Tomatoes” which can be found at https://extension.tennessee.edu/publications/documents/w346-h.pdf.