Bug-Wise

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Office: 1-662-325-2085

Pecan Phylloxera: What's causing these knotty growths on the twigs of my pecan tree and what can I do about it? The short answer is that the growths are galls caused by a small aphid-like insect called the pecan phylloxera and, if the tree has already leafed out, there is nothing you can do about it for the rest of this year. By the time these galls appear in April, the damage is done for the year and it is too late to treat. It is possible to successfully treat for phylloxera, but the time window for treatment occurs earlier in the season and is very narrow, lasting only a couple of weeks or less.

The scientific name of these insects, *Phylloxera devastatrix*, gives a hint as to just how severely they can damage pecan trees. On heavily infested trees most of the new terminal tissue can be affected, resulting in the formation of unsightly galls, rather than leaves and new growth. Severely infested trees are unsightly and unproductive. Fortunately, phylloxera populations are cyclic and they do not occur at outbreak levels every year. Trees that are severely damaged will usually recover in subsequent years.

Phylloxera overwinter as eggs on the bark of the tree and egg hatch coincides closely with bud break. As the nymphs, which are all females, feed on the developing stem and leaf tissue, they stimulate the formation of gall tissue, which quickly encloses them to form the galls. These first generation females mature inside the galls and then lay eggs that hatch into a second generation. These are also all females and continue developing inside the hollow galls. There may be many dozens of these second generation phylloxera within a single gall. When the galls split open in late May the mature second generation phylloxera exit the gall and lay eggs on the leaves. The resulting third generation, which consists of both males and females, does not cause galls. Mated females of this generation seek a protected site in a bark crevice and die with the fertilized egg still inside their bodies. These eggs overwinter and hatch the following spring to begin the cycle anew.

Timing is critical for phylloxera control! Successful control depends on applying insecticides before galls have formed around the phylloxera—while she is still exposed. This means spraying as soon as you see the first new leaf growth emerging from the buds (inner scale split stage) and before new growth is ½ to ¾ inch long. This is usually around the first week of April for much of the state, but this varies with year and location, and plant development stage is the critical indicator to use for spray timing. Sprays applied after there is more than 1 inch of new leaf growth will not be very effective.

Of course the real challenge in treating pecan trees is that they are tall and the new growth that needs to be treated is high above the ground. Commercial pecan growers use large air-blast sprayers to apply insecticides such as: chlorpyriphos (Lorsban), imidacloprid (Provado or Admire Pro), or thiamethoxam (Centric). Air-blast sprayers apply 100 to 200 gallons of spray per acre and can effectively cover trees that are 35 feet tall or more. Urban and rural homeowners who only have a few pecan trees face a much greater challenge in getting their trees treated.

So what can you tell a homeowner who has a problem with pecan phylloxera? First, you can prevent them from wasting time and money on an ineffective treatment. There is no point in spraying after the galls have formed. If the galls have already formed, insecticide sprays will not undo the damage.

Second, you can assure them that severely damaged trees will recover in subsequent years. Sometimes a homeowner's initial reaction to a serious phylloxera infestation is to think, "If this is going to happen every year, then I may as well cut the tree down." Fortunately, phylloxera populations are cyclic and trees that are severely damaged one year will usually recover in subsequent years and then go many years without suffering a serious

infestation. But this does not always happen the very next year, and trees that had phylloxera infestations one year may experience heavy infestions for another year or more before the infestation breaks. When possible, it is a good idea to treat trees that suffered heavy phylloxera infestations last year—but only if the treatments can be applied safely and at the proper time.

Third, you can tell them what they can do to prevent the damage from occurring again—apply an effective insecticide between the time the leaf buds break and before there is about ¾ inch of new growth, and don't be late with this treatment. Only trees that were infested the previous year, or trees located next to previously infested trees, need be treated. If the tree was heavily infested the previous year, apply a second treatment approximately 10 days later.

Carbaryl (Sevin XLR Plus, or other formulations of carbaryl), is one of the most readily available phylloxera treatments to use in homeowner type situations. Products containing imidacloprid are somewhat better, but homeowners may have to consider ordering one of the generic formulations in order to be able to purchase imidacloprid in smaller quantities. There are many generic formulations of imidacloprid on the market and some of these are sold in 1 pint or 1 quart bottles and are labeled for use on pecans. Before buying a product for phylloxera control, be sure the label gives specific instructions for use on pecans. {Use rate for Sevin XLR Plus (44.1% carbaryl) = 2 to 5 quarts per acre; Admire Pro (42.8% imidacloprid) = 1.2 to 2.4 fl oz per acre; Macho 2.0 FL (21.4% imidacloprid) = 2.8 to 5.6 fl oz per acre.}

Finding the insecticide is relatively easy. Finding a licensed commercial applicator who will come and treat the trees at the right time is the hard part. It is a good idea to start making arrangements to have trees sprayed well ahead of the very narrow time window when treatments need to be applied, which is around the first week of April, depending on location. But it is important to time the treatment based on plant development—bud break to ¾ inches of new growth—rather than calendar date.

Finally, if someone is planning to plant pecan trees in or around their lawn, you can help them choose varieties that are less prone to disease and insect problems. Too often local nurseries stock varieties that perform well in commercial orchards where they are sprayed regularly to control diseases and insects, varieties like Schley, Stuart, Desirable, and Success, but such varieties do not always perform well in low maintenance situations. Varieties better suited for use in low maintenance situations include: Candy, Elliot, Gafford, Melrose, Jenkins, and Syrup Mill along with several others. Generally, these varieties have smaller nuts than the commercial varieties, but they usually perform much better in unmanaged situations. Resistance to pecan scab is an especially important trait to consider when choosing varieties for low maintenance situations. Getting local nurseries to stock or order varieties that do well under low maintenance would be a big help to homeowners interested in planting pecans. Pecan trees live a long time, and it is worth going to some effort to get a variety that is suited for the situation where it will be planted.

Maurice Blake Layton

Digitally signed by Maurice Blake Layton
DN: cn=Maurice Blake Layton, o=Mississippi State University Extension Service, ou=Entomology, email=blayton@ext.msstate.edu, c=US
Date: 2016.03.28 15:48:31 -05'00'

Blake Layton, Extension Entomology Specialist

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