



UNIVERSITY OF GEORGIA EXTENSION

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SOUTHEAST GEORGIA PECAN UPDATE

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MONEY SAVING FERTILIZER OPTIONS

By Dr. Lenny Wells, UGA Extension Pecan Specialist

The earliest predictions for the 2021 Georgia pecan crop was to be between 75 and 80 million pounds. The top and bottom of that number would most likely be determined by scab pressure. By Thanksgiving, it appeared that the 75–80 million pound estimate would fall very short, possibly below 50 million pounds. Recent reports from assessments show that 2021 is going to end up close to 75 million pounds after all. I believe this can be attributed almost completely to trees under 40 years of age, including many orchards planted in the last 10 years that are coming into production in Georgia.

We can expect older trees to produce greater swings in production following Hurricane Michael. This means 2022 will likely be an on-year and crop load management is needed to break this cycle. During production meetings, I've discussed the high cost of inputs. How can we cut costs without cutting corners? In terms of fertilizer, these are our best options:

How much nitrogen (N) to pecans need? The old rule of thumb has been 10 pounds of N for every 100 pounds of crop. This “rule” was in place before we knew much about how pecan trees use N. All studies in the past 100 years in the Southeast demonstrate that pecans do not need more than 100–125 pounds of N, and this would only be in years of a heavy crop. For 2022, we need to put out about 50–75% of our total N in April. Evaluate your crop in June to determine if you need any more N.

How much N do we get from clover in our middles? For growers managing clover in the middles, a little nitrogen in the spring is still a good idea because the N fixed by clover is not available to the trees until later in the season. A good stand of clover can account for the late season N needs of the tree.

What about chicken litter as a fertilizer source? Chicken litter is a great source of nitrogen, phosphorus, potassium and even zinc for our orchards. It does appear the demand for chicken litter is high. If you use chicken litter to meet fertility needs, it should be applied before the end of May to assure there are no contamination issues.

Do we need phosphorus (P)? You don't necessarily need a maintenance application of P if your soil P levels are above 30 lbs and leaf tissue is at or about 0.12 %. This will save about \$36.00 per acre. If soil levels are 30lbs and leaf tissue samples are below 0.12 %, you have an uptake issue which WILL NOT be corrected by *broadcasting* P. This requires a concentrated, narrow band application within the herbicide strip in the area wetted by irrigation emitters.

Do we need to apply potassium (K)? You should apply K annually on sandy soils especially when a heavy crop is expected. On more loamy–clay soils, maintenance K applications may not be as necessary. On these soils, if soil K levels are above 100 lbs and leaf tissue samples are above 1.1 % you should be fine. This will save about \$38.00 per acre. Like P, if soil K is 100 lb or above but leaf tissue is below 1.1 %, then band K.

Do we need to apply zinc (Zn)? We do not need to broadcast Zn if our soils levels are at or above 15 lbs per acre. This will save about \$24.00 per acre. If Zn levels are above 15 lbs but there are visible signs of Zn deficiency or leaf Zn is less than 50 ppm, then apply Zinc EDTA through the irrigation.

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Pecan Phylloxera

By Derrick Bowen, Tatnall County Ag Agent

Tatnall county is home to 7,000 plus acres of pecan orchards in commercial production. Our growers will face a variety of challenges this coming up year. With bud-break just around the corner, the calls concerning pecan insect pests are soon to come in. Some of the issues that may be raised are ‘warts’ seen on the leaves. These spots will be raised and have a wart-like appearance, and can have a yellowish-green tint. These symptoms let us know that pecan phylloxera are present in the orchard and actively feeding. Although there are a few different species of phylloxera, I am discussing the pecan leaf phylloxera, *Phylloxera notabilis*, as it is most commonly seen in our orchards. The pecan leaf phylloxera is a tiny aphid-like insect that feeds on the foliage of mature pecan trees. While we most commonly observe this pest on mature trees, it can also be found feeding on nurse and young trees.

These insects are incredibly small making them difficult to see with the naked eye, but the damage they cause is not so small. The feeding of this insect causes an abnormal growth on the new leaf tissue resulting in a prominent gall to appear on the leaf. These galls will appear as wart-like, and up to 10 can be found on each leaflet. Overwintering eggs will begin to hatch during the first week of April and continue until the first of May. The newly hatched stem mothers will crawl to the expanding leaves where they settle down to begin feeding. The feeding causes the rapidly growing gall tissue which will then enclose the stem mother within the gall. By mid-April the stem mother will mature and begin to lay eggs inside the gall. The gall will enlarge overtime as more phylloxera hatch inside, and by mid-May the matured phylloxera emerge. They will then crawl to another spot on the leaf to begin a new generation.

Light populations are most likely going to be of little consequence. However, each gall results in dead leaf tissue and numerous galls can cause premature leaf shedding. Phylloxera become troublesome in an orchard when left alone for many years. If the species of Phylloxera becomes “stem phylloxera,” damage can become more serious. If your orchard is continually infested with phylloxera, your trees should be sprayed right at budbreak. This timing is CRITICAL because once galls are formed, no insecticide can penetrate the leaves.

What insecticide is best for control? Imidacloprid is recommended for controlling phylloxera due to its systemic activity. One might ask if we can apply imidacloprid through irrigation as we do with black pecan aphid. This was tested back in 2015 by Andrew Sawyer, then Thomas County Ag Agent and Dr. Will Hudson, Pecan Entomologist. Imidacloprid was drenched around infested pecan trees in December, January, February and March with NO DIFFERENCE in control for phylloxera. Though imidacloprid is effective on pecan phylloxera, these large trees are not able to transfer the insecticide to the buds before budbreak. **This is why our best option is a foliar spray of imidacloprid at budbreak.** This timing is difficult as pecan

varieties budbreak at different times.



Figure 1. Galls on mature pecan leaves from pecan leaf phylloxera. Once galls form, insecticide cannot control the insects.



Figure 2. Pecan leaf phylloxera viewed by dissecting microscope inside a leaf gall.

With this being said, leaf phylloxera is typically of minor economical importance in our orchards in most situations. Another species known as the pecan stem phylloxera can be a more severe and damaging pest, but unlike the pecan leaf phylloxera, it is not commonly observed.



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Pre-emergent Weed Control

By Shane Curry, Appling County Ag Agent

I don't usually brag about going to expensive places, but I just left the gas station, fertilizer dealer, and chemical dealer store. Yes, it's true. Prices on all inputs are soaring. However, it is important for pecan growers to remember when spraying herbicide strips, **you are NOT spraying 100% of the orchard floor**. Therefore, while you may have 200 acres of land with trees, only a small percentage of the land will actually be sprayed. **The per treated acre of the herbicide price remains the same.** Taking a look at prices from a Google search, this is what I find:

Alion—\$450 qt
Prowl H2O—\$60 qt
Chateau—\$103 lb
Princep—\$30 gal

Diuron—\$35 gal
Pindar—\$200 gal ('21 price)
RoundUp—\$64 gal
Rely—\$101 gal

As mentioned above, the herbicide rates are per acre. However, we are not spraying every acre of land. So how can you plan your purchase? Let's start with an examples using a 10 ft wide herbicide strip (20 ft total) on both sides of the tree:

20 Foot Total Herbicide Strip (10ft on both sides)		
Spacing	Square Feet	Total land sprayed
30 X 30	29,037	66%
40 X 40	21,777	49%
60 X 60	14,518	33%

Your herbicide strips maybe 12 feet or 14 feet. Between the different spacings and size of herbicide strips, your strip will generally account for about 1/3 of the total orchard. Let's now take a look at the price of each herbicide per acre with the calculations above:

HERBICIDE (Rate per acre)	40 X 40	60 X 60
Alion—5oz	\$35.15	\$23.43
*Alion—3.5 oz	\$24.6	\$16.40
Chateau—4 oz	\$12.87	\$8.58
Diuron—1.5 qts	\$6.56	\$4.37
Pindar—3 pts	\$37.49	\$24.99
Princep—2 qts	\$7.49	\$4.99
Prowl H2O—4 qt	\$29.99	\$19.99
Liberty—32 oz	\$12.62	\$8.41
Round Up—32 oz	\$7.99	\$5.33

The arrows show the lowest cost pre-emergent herbicides using 2022 prices from our 2021 herbicide trial here in Appling County. Keep in mind that some of these herbicides are for established orchards only. Pindar must to be applied before budbreak on trees at least 9 months old. Diuron should only be used in orchards at least 3 years old. DO NOT use Diuron on sand, loamy sand, gravelly soils, or on exposed subsoils or on soils with less than 0.5% organic matter.

When making pre-emergent herbicide choices, remember that all herbicides do not provide the same length of control. Alion has proven to have a very long residual in our soils. It and Chateau are more forgiving when without timely rain for activation than other pre-emergent herbicides. The herbicide may initially cost a grower \$5 per acre, but if 2 or 3 additional Roundup applications are needed, that chemical cost is an additional \$15 to \$24 per acre.

**UGA recommends using Alion at a rate of 5oz the first year of its application, and then 3.5 oz the next season in orchards established 3 years or longer.*

Observations of Aphids, Mites and Insect damage in Hedged vs. Non-Hedged Trees

By Dr. Angel Acebes, U.S. Department of Agriculture and Kate Phillips, Graduate Research

There are many benefits to hedging pecan trees in Georgia, as Dr. Wells' research presents. To further answer the question of insects, sampling between hedged and non-hedged orchards in Marshallville, GA was conducted over that past three years to determine difference in insect activity. It was the same 30-year-old hedged and thinned 'Sumner' pecan trees where other hedging work is done. Insects were surveyed using leaf samples in the upper and lower portion of the canopies of hedged and non-hedged in June, July and August each season. Pecan nuts were sampled for insect damage monthly and at harvest. Insect pests sampled in the orchard included yellow and black pecan aphids and pecan leaf scorch mites (PLSM).

Every five rows within the orchard alternate between hedging and non-hedged trees since 2013. In 2021, every other row of the non-hedged trees were removed while the east side of the trees in the hedged block were pruned during the winter. Ten compound leaf samples were taken from each treatment in the upper (~9 m) and lower portion (~2 m) of the canopies on June 1, July 7 and August 27. Before harvest, nuts were surveyed for damage on June 3 and July 7. Data were analyzed using Two-Way Analysis of Variance.

For black pecan aphids, no black pecan aphids were found in June and July. In August, no difference between hedging and thinning treatments were found, but more black pecan aphids were found in the upper canopies of trees. For the yellow aphid complex, there were no interactions and no significant differences between canopy location and treatment in July and August. In June, however, the **highest numbers of yellow aphids were found on the lower canopy of thinned trees.** For pecan leaf scorch mite, none were found on leaf samples in June and July. In August, the lower canopy had more PLSM than the upper canopy on both treatments. There were no interactions of PLSM between hedged and non-hedged trees.

Prior to harvest, nut samples were taken from each treatment and assessed for damage from pecan nut casebearer, hickory Shuckworm and any insect-related damage. There were not enough nut samples with insect-related injury to warrant analysis for PNC damage. No evidence of shuckworm damage was present in either month.

At harvest, of the 312 nuts collected, only 7 had shuckworm damage (2.2%) and no injury from other insect pests was observed.

Yellow Aphids

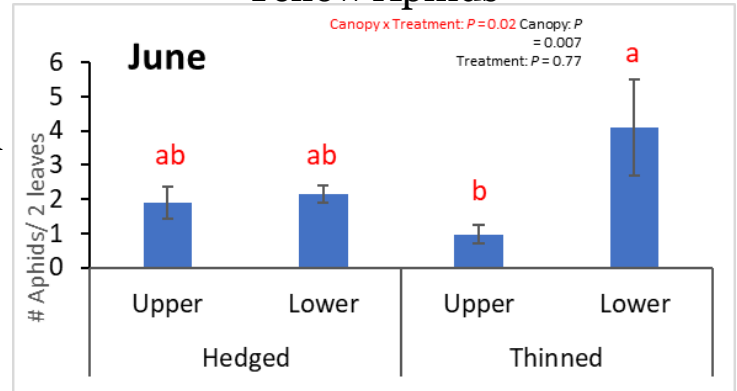


Figure 1. There were no interactions and no significant differences between canopy location and treatment in July and August. In June, there was an interaction between canopy location and treatment with the highest numbers found on the lower canopy of thinned trees.

Black Pecan Aphids

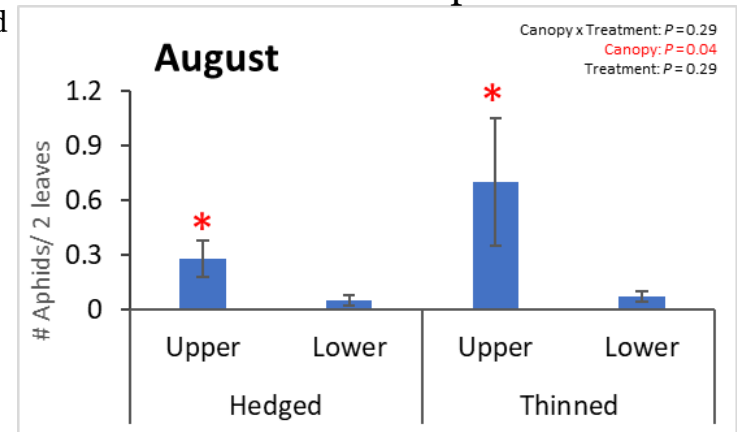


Figure 2. No black pecan aphids were found in June and July. In August, no difference between hedging and thinning treatments were found, but more black pecan aphids were found in the upper canopies of trees.

Pecan Leaf Scorch Mites

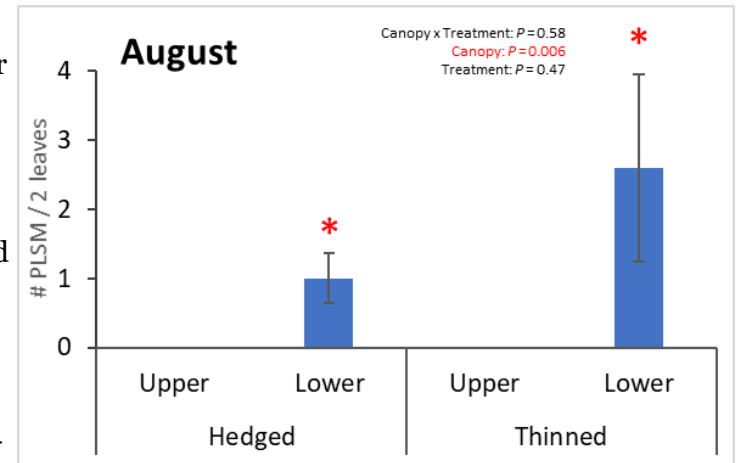


Figure 3. No pecan leaf scorch mites were found on leaf samples in June and July. In August, the lower canopy had more PLSM than the upper canopy on both treatments.