



# OKLAHOMA PECAN GROWERS ASSOCIATION

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Michael Smith, Editor

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## President's Corner

By Bob Knight

The last few years have been difficult for the pecan growers in Oklahoma. However, good things are happening as well.

**FIRST:** Suitable Varieties. For years Oklahoma has been a net importer of large papershell pecans for the local retail market. Over the last decade or so, Oklahoma pecan growers have planted or grafted over ten thousand acres of cultivars that do great in Oklahoma: Kanza, Lakota and Pawnee. It appears that the days of hauling papershell pecans in from out of state days are about over. After wasting two or three generations of pecan growers time and enthusiasm, we are finally in a position to plant and grow pecans with some confidence in success.

**SECOND:** Crop insurance. The USDA has a good crop insurance program for pecans. To qualify you must have grown at least 600 pounds per acre in at least one of the previous 4 years. If you have planted the previously named cultivars, and we get back to near normal rainfall (or you have irrigation) that threshold is within reach. If we get back to normal rainfall and you have a well-managed native grove that threshold is possible. Normally, I am not a big fan of insurance. In this case the USDA subsidizes about 60% of the premiums which is at least worth checking into. If you have one of the new Kanza planting begin keeping good records as soon as possible. The insurance requires several years' records to kick in. Once you make your first 600 pounds per acre crop you should be able to qualify. Insurance will allow you to stay on course with a good fertilizer and spraying (management) program in order to keep your grove in the best possible shape. This is important since you never



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know what the market will do. There is plenty of reason to be optimistic about the market for pecans.

**THIRD:** Pecan Market Order. The American Pecan Board is working on the details of a marketing program similar to the one in place for the other tree nuts for pecans. This Market Order should help increase the demand for both native and papershell pecans. We should have something to discuss this summer at our conference and vote on in 2016.

So that's the three good things that are happening in the Oklahoma pecan groves: suitable varieties, crop insurance, and pecan market order. We just need a little help from the weatherman.

**Note:** To investigate crop insurance contact Stacy Satterwhite with the Oklahoma Farm Bureau in Miami 918-542-3790 Stacey.satterwhite@okfb.com or Danny Geisd with High Plains Insurance in Medford at 580-395-2447 geisd@pldi.net.

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***American Pecan Board Report***  
**By**  
**Scott Landgraf**

The American Pecan Board met in Dallas January 14-16, 2015 to start writing the proposed Marketing Order. With guidance from USDA representatives, the Board carefully worked through each issue to build a framework for our Marketing Order. Decisions were made on the details from how the administrative board will be selected to guidelines on how the Order will be run.

The complete rough draft of the document should be available for review by mid-February. The best way to access the document will be to watch the American Pecan Board website: pecanboard.com. The board's activities will be posted on this site as well.

The Board is going to follow a timeline. The first deadline is the Marketing Order will need to be in the Secretary of Agriculture's office in May. The office staff will review and make necessary changes to the Order. The Order will be published in the Federal Register probably in late July or August. It will not only provide the latest version of the document, but it will set hearing dates during September.

The hearings will be held in the Eastern Region, Central Region, and Western Region. The hearings will be conducted by the USDA for the purpose of testimony in relationship to the Marketing Order. With all the testimony on record, the final version will be drafted in preparation for the Referendum. The Referendum should be brought to a vote during the winter 2016.

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***2015 Pecan Management Course Brochures Available***

Signups have begun and preparations are being made for the 18<sup>th</sup> installment of the Pecan Management Course. The class is held at the Cimarron Valley Research Station near Perkins one Tuesday afternoon a month from March through October. Growers, both new and experienced will have the opportunity to learn from OSU & Noble Foundation staff as well as other successful pecan growers. The fee for the 7 month course is \$250. Deadline for enrollment is February 27, 2015. The first class will begin on March 10. Brochures are available online at <http://okpecans.okstate.edu/pecan-management-course/pdfs/pecan-course-brochure>.

## ***A Grower's Perspective of 2014***

Inasmuch as our orchard is located in the northeast quadrant of the state, this perspective will apply to shared experiences of several growers in that area.

Generally it was not a good year for cultivar production. While our crop was approximately 40% greater than last year, it was still well below expectations. Other local growers had similar results; in fact most fared much worse with several having virtually no crop, especially 'Maramec'. Reasons offered for the poor crop ranged from alternate bearing problems to freeze damage to tree stress evidenced by 'Shuck Decline.' Research indicates that Shuck Decline can affect a portion of a cluster, i.e. several nuts in a cluster can be good quality while others in the same cluster may be worthless. Many trees had great nut loads while many in the same orchard were nearly barren.

Our orchard experienced several problems due primarily to cumulative tree stress. Some freeze damage was evident. Secondary growth of lower leaf stems had fewer leaflets than normal in many cases. The end result was inconsistent nut quality ranging from nuts that exceeded 'Maramec' expectations, i.e. 45 nuts per pound and 58% kernel weight to smaller nuts with lesser kernel quality. All 'Maramec' nuts, however, were consistently light gold in color.

Lesser kernel quality can be partially attributed to the fact that rain fall during August and September was 3.65 inches compared to the normal of 8.0 inches or just 45% of normal while rain fall during the scab season, i.e. May through July was 93% of normal.

I have never seen such product inconsistency in our orchard in a given season. We lowered prices and weighed heavy to insure that our customers were well compensated for the inconsistency. There were, however, several favorable factors in 2014. Five fungicide applications totally prevented scab and only one single pecan was noted with weevil damage. The primary reason for the absence of weevils is that they all emerged early in the water stage. We applied two pesticide applications beginning in mid-August; however, there was no subsequent emergence.

A basic truth is that the probability of producing any quality pecans with a cultivar such as 'Maramec' located in a scab prone environment is extremely low without sound management practices. The weather at the time of harvest was ideal. As a result there were no moisture problems during harvest or during storage prior to selling.

Harvest was completed on November 11<sup>th</sup> while the trees still had total foliage. During that day the temperature began to fall and subsequently dropped 50 degrees in 18 hours and the trees were completely defoliated within two days.

As previously mentioned tree stress is the predominant challenge in our orchard and tree thinning will begin as soon as our retail operation shuts down. But trees can incur stress for several reasons. And even though our quadrant of the state generally receives more rain than those areas west of us, rain has been lower than normal for the past five years in our area.

Consider the following cumulative statistics for our specific location:

<u>Year</u>	<u>Actual Rain</u>	<u>Normal Annual</u>	<u>Actual as % of Normal</u>
2010	28.30 in	Rain Fall 45.39 in	62.3%
2011	31.25 in		68.9%
2012	29.85 in		65.8%
2013	36.35 in		80.1%
2014*	<u>31.08 in</u>	_____	<u>68.5%</u>
5 yr	156.83 in	226.95 in	69.1%

\* Precipitation thru 12-23-2014

All relevant weather data and significant orchard activities are logged in a daily planner to be used as a supplemental guide for current analysis and future planning.

On a lighter note our friends from the Veteran's Center and grade school children were totally oblivious to such challenges as they watched in awe as several trees were shook for them and then they were turned loose to fill their Wal-Mart sacks with pecans. In about two weeks we will begin to clean up branch piles, prune low hanging branches, and begin removing trees. Then in March we will spread Nitrogen according to last July's leaf analysis and begin all over again.

The year 2015 will begin with several economic advantages including lower organic fuel prices and several new, much lower priced, generic fungicides. A growing season ends when the production is converted to cash and deposited in the bank.

**Thought for the day:** Productivity isn't defined as how well we do with what we have, rather productivity is defined as how well we do with out total opportunity, and productivity is still ultimately expressed in economic terms.

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## *How to Reduce Pest Populations with Sanitation Practices*

Jackie Lee, PhD

OSU Fruit and Pecan Extension Entomologist

Sanitation can be an effective method of cultural control for some insect pests of pecan. The hickory shuckworm (*Figure 1*) is a moth that lays eggs on or near pecan nuts. These are usually easy to distinguish by a scaly white appearance (*Figure 2*). The eggs hatch into caterpillars that feed on the nut or husks. During the growing season more than 1 generation can develop. Before the shell hardens, the caterpillars enter the nut and feed on the young kernel. The damaged nut will usually drop to the ground. After the shell hardens, the caterpillars will bore into the husks. A sign of this feeding is black stains on the shell or husk. The hickory shuckworm overwinters in the husks on the ground. Sanitation will help control this pest in small plantings. Each fall or early spring, remove and burn all husks. This will destroy the pupating insects. During the growing season, remove and burn any immature nuts that fall and this will decrease the population.

Twig girdlers are also pest that can be managed with good sanitation practices. The twig girdler is a small beetle that has one generation in Oklahoma per growing season (*Figure 3*). Some indicators of twig girdlers include: small branches accumulating on the ground, the presence of clean-cut twigs, and/or dangling (flagged) branch tips within a tree. The Twig girdler female chews a V-shaped groove around a small twig, girdling it (*Figure 3*). She then will lay an egg underneath the bark on the girdled limb. This portion of the limb dies quickly and will fall to the ground with the larva inside. The small larva will overwinter in the fallen twig. During the following spring, the larva resumes feeding, consuming most of the wood. As the larva grows it bores further down into the twig and fills the tunnel with wood shavings and waste. Pupation occurs in a cavity within the twig. Adults emerge in late summer and early fall. Homeowners should collect and destroy infested twigs and branches they find on the ground, beginning in the fall or early spring. This will eliminate the overwintering larvae. Infested limbs should also be pruned out and burned, if feasible.

Nearly all fruit and foliage diseases of pecans, including scab, overwinter on plant parts infected the year before. Complete removal and destruction of leaves and shucks during the winter can reduce carry-over of scab and other diseases.

Sanitation is a cheap environmentally friendly way to manage these pecan pests, especially for small plantings. Larger commercial plantings may require additional pest management tactics, but will benefit from good sanitation practices.

Figure 1. Hickory shuckworm adult moth.



Figure 2. Hickory shuckworm egg covered in white scales on pecan.



Figure 3. Twig girdler and girdled stem.



## PECAN GRAFTWOOD SOURCES - 2015

Becky Carroll, Senior Agriculturist  
Oklahoma State University

Hort 5

Name and Address	Walnut																								
	Caddo	Choctaw	Creek	Giles	Graing	Greenriver	Kanza	Lakota	Major	Mandan	Maramec	Mohawk	Nacono	Navaho	Oconee	Osage	Pawnee	Peruque	Posey	Shoshoni	Sioux	Stuart	Black	Carpathian	
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## *Sulfur: An Essential Element*

Michael Smith, Dept. of Horticulture and Landscape Architecture

Sulfur (S) serves many functions in plants. It is used in the formation amino acids, proteins, and oils. It is necessary for chlorophyll formation and activation of certain enzymes. Sulfur is a structural component of some amino acids.

Sulfur is considered a secondary element along with magnesium and calcium. It is required in about the same quantity as phosphorus. The amount of S required is closely related to the nitrogen (N) supplied.

Weathering of plutonic rocks (rocks formed when volcanic magma cools and solidifies below ground) releases sulfides ( $S^{2-}$ ) of metals that are oxidized to sulfate ( $SO_4^{2-}$ ). These sulfates are precipitated as soluble and insoluble salts, such as gypsum ( $CaSO_4$ ),  $MgSO_4$ ,  $Na_2SO_4$  and  $K_2SO_4$  or absorbed by organisms. Sulfur is also derived from the atmosphere during rain events. Other S source were a byproduct in certain fertilizers. Superphosphate contained 12% S, ammonium sulfate 24% S and gypsum supplied large quantities of S.

Modern technology has reduced atmospheric pollution resulting in less S deposition from rainfall. Higher analysis N and P fertilizers have eliminated S as a component. These advances suggest that S may become limiting, particularly in sandy soils or in arid conditions where S is participated as insoluble or slowly soluble salts.

Much of the S in soils is bound in organic matter. This serves as a slowly available S source. Erosion or repeated soil tillage depletes soil organic matter, reducing the soil's total S content.

The S requirement for pecan is not well established. Pond et al., (2006) suggested a leaf elemental sufficiency range of 0.14%- 0.19% S in the western U.S.A. The sufficiency range suggested in Georgia is 0.25%-0.5% (Wells, 2009). In Oklahoma, the minimum sufficiency range suggested was 0.20% S.

In 2012, the Oklahoma Pecan Growers' Association funded a proposal to determine the status of S in Oklahoma orchards and determine the response of pecan to applied S. Leaf samples were collected in July from pecan orchards across Oklahoma. Leaf elemental S concentrations ranged from a low of 0.17% to a high of 0.25% S. Sulfur concentrations in most orchards were 0.19%-0.21%.

An experiment was initiated at Noble Foundation's McMillian orchard near Madill to evaluate pecan response to applied S. This site was chosen because trees had the lowest leaf S concentration observed with Oklahoma. Trees were 6-year-old 'Pawnee' when the study was initiated. Fertilizer treatments were applied in March annually and included 1) no fertilizer applied, 2) urea, 3) elemental S, 4) urea plus elemental S, and 5) ammonium sulfate. Application of urea or ammonium sulfate supplied 1.4 lb/tree N, and elemental S or ammonium sulfate treatments supplied 1.6 lb/tree S. Fertilizer treatments were uniformly spread by hand from the trunk to the drip line. Treatments were replicated five times in a randomized complete block design with treatment trees bordered by trees receiving like treatment.

Leaf samples were collected annually in July and analyzed using standard procedures. Trunk diameters 4.5 ft above ground were measured annually while trees were dormant. Flower counts on 30 shoots/tree were made annually in May.

Annual application of elemental S or ammonium sulfate was ineffective in changing leaf S concentration relative to the control (*Table 1*). Application of N rarely affected leaf N concentration during the first 2 years of the study. There were few differences among treatments in the concentration of other elements tested. The lack of response to applied treatments may be due adequate native N and S availability. Another possibility is the extremely low leaf Zn concentrations affecting uptake and utilization of N and S. According to records trees received two Zn applications; however, young rapidly growing pecan trees in this area of Oklahoma should receive 5 to 7 applications at 2 lbs/100 gal using zinc sulfate containing 36% Zn . Availability of Noble Foundation personnel to apply Zn in a timely manner prevented sufficient Zn applications.

Neither trunk diameter growth nor percentage of flowering shoots were affected by treatment (*Table 2*). Urea or S application reduced cluster size compared to the control. However, this result is probably random error rather than a real difference.

To date this study has been uninformative. Current plans are to continue the study and additional year. Trees will receive better management, allowing possible treatment differences to materialize. Also, rates of fertilizer will be doubled in 2015 to ensure adequate S is available to elicit a response if S is limiting.

Literature cited:

- Pond, A.P., J.L. Walworth, M.W. Kilby, R.D. Gibson, R.E. Call, and H. Núñez. 2006. Leaf nutrient levels for pecans. *HortScience* 41:1339-1341.
- Smith, M.W., C.T. Rohla, and W.D. Goff. 2012. Pecan leaf elemental sufficiency ranges and fertilizer recommendations. *HortTechnology* 22:594-599.
- Wells, M.L. 2009. Pecan nutrient element status and orchard soil fertility in southeastern coastal plain of the United States. *HortTechnology* 19:432-438.

**Table 1.** The influence of fertilizer treatment on July pecan leaf elemental concentrations in 2013 and 2014.

Year	Fertilizer applied	Dry weight (%)						Dry weight ( $\mu\text{g/g}$ )		
		N	P	K	Ca	Mg	S	Zn	Fe	Mn
2013	None	2.38	0.126	0.79	1.72	0.45	0.22	21	50	857
	Urea	2.52	0.132	0.85	1.98*	0.46	0.23	21	54	1124
	Sulfur	2.52	0.128	0.85	1.80	0.43	0.21	21	50	979
	Urea + sulfur	2.48	0.124	0.80	1.85	0.47	0.22	22	55	1169
	Ammonium sulfate	2.62*	0.127	0.85	1.74	0.45	0.22	20	57	1393*
2014	None	2.37	0.122	0.94	1.51	0.41	0.20	17	57	519
	Urea	2.32	0.120	0.91	1.58	0.38	0.20	15	59	602
	Sulfur	2.32	0.120	0.93	1.64	0.41	0.21	17	60	627
	Urea + sulfur	2.39	0.128	0.94	1.71	0.43	0.21	18	65	731
	Ammonium sulfate	2.34	0.124	0.94	1.56	0.34	0.21	18	60	960

\*Significantly different from the control using Dunnett's test, 5% level.

**Table 2.** The influence of fertilizer treatment on pecan trunk growth, flowering and cluster size in 2014.

Fertilizer applied	Trunk dia. increase (cm)	Flowering shoots (%)	Cluster size (No.)
None	1.84	27	5.6
Urea	1.56	37	4.6*
Sulfur	2.38	31	4.4*
Urea + sulfur	1.72	37	4.6*
Ammonium sulfate	2.26	35	5.1

\*Significantly different from the control using Dunnett's test, 5% level.

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