



OKLAHOMA PECAN GROWERS ASSOCIATION

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Michael Smith, Editor

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REFLECTIONS ON 2013

Michael Smith

Department of Horticulture and Landscape Architecture



Oklahoma Pecan Growers' Association is published 4 times per year and is a benefit of being an association member. Contact the Oklahoma Pecan Growers' Association c/o Horticulture & Landscape Architecture, Oklahoma State University, 358 Agriculture Hall Stillwater, OK 74078-6027 for further information.

Rainfall over much of Oklahoma was better in 2013 than in 2012 or 2011; however, western Oklahoma remained in persistent drought conditions. The drought outlook for the rest of this winter suggests that drought may return or intensify west of a line from roughly Durant in the south to Ponca City in the north.

Cultivar production in the northern half of Oklahoma was generally fair to good, but production in southern Oklahoma by and large was off. Nuts were typically well filled and kernel color was bright. Disease and insect pressure were both lower than normal. Many producers reported that depredation from crows, blue jays and squirrels was far less than normally experienced. Demand was high for top quality cultivars used in retail markets, supporting good wholesale prices.

The native crop is still being harvested, but it appears smaller than initially believed in southern Oklahoma. Northern Oklahoma producers are reporting a good crop of natives. Neither weather events nor pests in 2013 were serious problems limiting production during the growing season. Unfavorable weather has hampered native harvest. This delay will likely decrease the total harvest. Unfortunately, pecan price has dropped and is likely to affect the total amount harvested.

Oklahoma has experienced cold temperatures, snow and ice this winter. A quick look at some pecan cultivars indicates that low temperatures have not damaged trees. Ice caused serious damage to trees in one area of southeast Oklahoma, but the rest of Oklahoma escaped harm.

I visited several orchards in Georgia during Christmas break. Some orchards had good production and quality, but several reported quality problems. This relates to excessive rainfall during the growing season and the inability to adequately supply fungicides to the upper part of the trees. Many growers reported spraying 17 to 19 times for disease control, using multiple fungicides in each spray, with up to 3 applications by air to improve coverage in the top of the trees. Pecans in the lower part of the tree were generally smaller than normal but with good kernel quality. Those at the tree top were smaller and not filled as well. This made it very difficult to offer consistent good quality pecans to meet demands of high-end markets.

Pecan exports to China appear to be down this year. Although the reasons for the decrease are not definitive, some explanations have been offered. These include a Chinese New Year earlier than in recent years. Similarly, sales in the U.S.A. are stronger before Christmas. Georgia's crop matured later than normal, limiting the time available to harvest and ship to China. In addition, some reports indicated that gifts, including pecans, to certain officials have been curtailed by the government, reducing demand.

What next year's production will be is guesswork. Environmental extremes can radically change production potential. From what I've observed, I believe Oklahoma and Texas will have above average crops. Georgia and New Mexico production will probably be below average. These four states account for about 80% of the U.S.A. pecan acreage.

ENDOWMENT FOR HORTICULTURAL PECAN RESEARCH

The goal to establish an Endowed Professorship dedicated to solving horticultural issues related to pecan fell short. If successful, the money would have been matched 1:1 by a grant from Mr. T. Boone Pickens and another 50% matching funds garnered from Oklahoma. Since we were not successful in obtaining sufficient donations, the money created a research endowment supporting horticultural pecan research. This endowment currently has \$102,511.51. The principal will remain intact and a portion of the interest will be added to the principal annually to increase the endowment. The rest of the interest will support pecan research. Dedicated endowments, such as this, allow research not typically fundable by competitive grants. Research can be supported that is applicable only locally or high-risk, exploratory research requiring preliminary data before the research can be funded competitively. Endowments are a valued resource for scientists.

Contributions to the endowment will be added to the principal. This endowment will fund pecan research long past our lifetimes. Donations should be sent to Michael Smith, Department of Horticulture and Landscape Architecture, 360 Agricultural Hall, Oklahoma State University, Stillwater, OK 74078. Checks should be made out to the O.S.U. Foundation. Donations are tax deductible.

GRADE EARNED IN ORCHARD MANAGEMENT 101: C-

Walt Thrun, Claremore

Oklahoma pecan production for 2013 is expected to be approximately one-third that of last year. It never occurred to me that our orchard performance would mirror that of overall state expectations. However, this was one of the most disappointing years we have experienced. While many of the problems could be attributed to erratic weather patterns, a large part of our particular misfortune falls directly on poor management.

It all started with pollination challenges beginning in April. In April of 2012, catkins were noted on all trees by April 4th. In 2013, catkins did not appear widely until April 30th. Delayed budbreak and catkins was the result of an unusually cool spring. It is believed that pollination problems contributed to the greatest July-August nut drop in recent years.

In addition to erratic temperatures which can adversely affect the pollination process, our orchard presently depends too heavily on surrounding and inter-dispersed native trees to supply pollen to our predominately 'Maramec' trees. In the last several years we have grafted strategically spaced 'Kanza' to provide pollen. And even though both 'Maramec' and 'Kanza' are categorized as type II protogynous, the pollen shed dates for 'Kanza' overlaps nicely the pollen receptive time for 'Maramec'.

Erratic weather continued throughout the summer months. Rainfall was heavier than normal during late July and August, and humidity was very high with dew points reaching 78 degrees during August.

Weevil emergence was heavy during the water stage of nut development. I cut into nuts every day. When I thought it was time to apply pesticide, two applications were made in a ten-day period. I was confident the weevil battle had been won. However, while checking nut development on October 1st, numerous weevil infested nuts were found! I had obviously misread the evidence.

I quickly calculated the dates from the pesticide applications to projected harvest dates to see if the larvae would have time to exit the nuts before harvest in an attempt to mitigate the damage. In the eyes of the customer, weevil damaged nuts, if not detected and culled, are not as devastating as nuts that contain larvae. But the problems didn't end there.

Even though 'Maramec' is susceptible to scab, scab was successfully controlled and the nuts were scab free after five fungicide applications ending the first week of August.

However, several weeks later in August, many husks began to darken prematurely. Examination revealed what appeared to be powdery mildew. According to the literature, powdery mildew appearing late in the development cycle would normally not adversely affect nut quality.

The affected nuts experienced shuck-split earlier than the unaffected nuts and were lighter in color than normal. In fact many of the nuts were nearly white at the stem end. The end result was that the majority of affected nuts did not fill properly. Thus, another lesson learned; choose a fungicide combination that combats powdery mildew while simultaneously preventing scab.

Normally our trees retain near full foliage until the third week in November, after harvest. This year full foliage prevailed until November 12th before harvest when the overnight temperature dropped to 18 degrees. All trees were totally defoliated by the next morning revealing nearly half the trees completely void of fruit.

In summary, this year's pecan crop was extremely disappointing due in part to my inept management practice. (I'll not reveal the cost of my mismanagement in case my wife decides to read this article).

However, I'd be remiss if not mentioning several bright spots about this year's pecan season. We have several annual traditions including hosting the second grade from the local Christian school during harvest time. I select several of the best trees to shake in their presence and let them each pick up several pounds of pecans. I illustrate how and why to graft, explain and show them weevil traps, show them ruined nuts where weevils have been, etc. It's quite a feeling when some will say as they leave that they want to do what 'Farmer Walt' does when they grow up.

But perhaps the most gratifying tradition is hosting a group from the local veteran's hospital. After shaking several choice trees, volunteers will help those smiling WWII vets in their wheel chairs fill their Walmart sacks with pecans as they recount memories of their younger days. This year as I stood at attention and saluted them as they left, I thought that perhaps the orchard produced more than I realized.

DORMANT OIL APPLICATION

Jackie Lee, OSU Fruit and Pecan Extension Specialist

Dormant oils control scale insects, aphids, and mites that are overwintering on trees. It is a refined petroleum product formulated for use on trees and shrubs. The name refers to the time of application which should be late winter or early spring when pecan trees are dormant. To determine if you need to apply dormant oils, look back at your pest history and inspect trees. Look at branches for a small (3mm or smaller) round to oval gray/brown raises on the bark. This is a waxy cover that the scale insect uses for protection and to blend into the environment. Scale covers can be several layers thick resembling rough patches of bark (Figure 1). Heavy and repeated infestations can result in limb die back and negatively affect tree health and pecan yields. If aphids, mites, or scale insects have been a problem in the past year, a dormant oil application will help knock down the overwintering populations.

Dormant oil applications should be made when temperatures are above freezing and before bud swell, bud break, or new growth forms. The ideal temperature for application is between 40 and 70 degrees. If dormant oil is applied too early, before hardening off, the trees can sustain winter injury. Also, if the temperature is too low, the oil will not mix well in solution and you will not get adequate coverage needed to control overwintering insects. Late February through March should be a good time to make these applications, although check the weather and make sure there will not be any freezing temperatures or rain for a few days after applications.

The oil must be applied with enough water to get thorough coverage (read label recommendations). Coverage is very important so that the spray can reach in between the cracks and crevices of the bark where many insects hide. The oil coats the insects and fills the spiracles. Insects use their spiracles to breathe and when they are blocked, they suffocate. Dormant oils will suppress insects by killing overwintering adults and eggs which can result in slowing the seasonal build-up of these pests in the spring. Dormant oils can be purchased at any garden center and are relatively inexpensive. Use paraffinic oils with unsulfurated residues (UR) greater than 92%. Remember to read the label and follow all label recommendations.



Figure 1. Build-up of obscure scales on tree limb.

PECAN GRAFTWOOD SOURCES - 2014

Becky Carroll, Senior Agriculturist
Oklahoma State University

Hort 5

Name and Address	Walnut																									
	Caddo	Cheyenne	Choctaw	Creek	Giles	Graking	Kanza	Lakota	Mandan	Maramec	Mohawk	Nacono	Navaho	Oconee	Osage	Pawnee	Peruque	Posey	Shoshoni	Sioux	Stuart	Waco	Black	Carpathian		
Dick Hoffman 7104 E. 32nd Ave Stillwater, OK 74074 Phone: 405-372-3583 www.hoffmanpecanfarm.com hoffmanpecanfarm@gmail.com	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X		X	X	X	X	X	X		All varieties \$2.00 per 12" stick (2 grafts/stick) Minimum order 5 sticks per variety. Add \$8.00 for priority mail shipping. Call or write about varieties not listed.
Wes Rice 2204 Kyme Dr. Ponca City, OK 74604 Phone: 580-765-7049 wrice@poncacity.net	X						X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	Price: \$2.00 per 12" stick (2 grafts/stick). Minimum of 3 sticks per variety. Add \$8.00 for postage & handling. 10 black walnut & other pecan varieties available if ordered by March 15.
Wolf Creek Pecan Ranch Bill or Vicki Dodd 12011 South 2nd Street Jenks, OK 74037 Phone (home) 918-299-7947 or (cell) 918-625-1963 vkdwvd@cox.net					X		X				X					X										Price: \$2.00 per 12" stick (2 grafts/stick). Minimum of 5 sticks per variety. Plus postage. Place orders before March 1.

This list does not imply endorsement of listed suppliers by CES or discrimination against unlisted suppliers. This list is for educational purposes only.

DOUBLE NUT

Bruce Wood, USDA-ARS, Byron, GA

It appears likely that this double-nut contains two distinct embryos—i.e., similar to non-identical, or paternal, twins in animals (Fig. 1). The nut specimen you have is probably rarer than the multi-cotyledon (i.e., triple or quadruple kernels) nuts often seen from Mahan and its offspring. These multi-cotyledon nuts can arise from an extra division of the cell that eventually becomes the endosperm, producing 4 instead of the usual 2 cotyledons (with 3 cotyledons occurring when the 4th one terminates development soon after cell division). This rarer double-nut appears to have been caused by an event occurring early during the development of the female ovule.

The event resulting in this double-nut appears to have occurred when the initial female megasporocyte [In this case a diploid ($2n$ = double set of chromosomes = 32 chromosomes in pecan) cell of female origin that undergoes a type of cell division, termed meiosis, where there is production of four haploid ($1n$ = single set of chromosomes = 16 chromosomes) cells called megaspores.] began the process of division preceding production of the usual 4 megaspores [the female haploid ($1n$) gamete] as a prerequisite to producing the embryo sac (with 3 of these megaspores degenerating into a degenerated megaspore portion of a single cell) with 1 cell possessing a nucleus that ends up being the embryo sac after a second cycle of meiosis. In other words, an early stage female germ cell 'divided an extra time' to result in downstream production of 2 ovules within the same pecan female flower structure.

There are normally mitotic (i.e., a $2n$ cell producing two $1n$ cells) divisions occurring in three generations of nuclei of the female gametophyte. Thus, when the flower was pollinated by many different pollen grains, 'two pollen germ tubes' grew down the style of the female flower, probably following a boron and/or hormonal

concentration gradient, to the ovule, whereupon they entered the embryonic sac of the two ovules to discharge their four male nucleoli (two from each of the two male parents). Normally, pecan nuts are double fertilized, with two sperm nucleoli (1n; from the same pollen grain) travel down a single pollen tube from a single pollen grain of the pollen parent where they enter the embryo sac of the ovule to fertilize two awaiting female nucleoli (1n). Merging of the 'first' sperm nucleoli with the egg nucleoli produces the diploid zygote (2n, 1 set of chromosomes from female parent and 1 set from the male parent) that becomes the zygotic embryo, which becomes a diploid (2n) cell due to the fusion of the sperm (1n) and the egg (1n), and potentially becomes the next generation pecan tree. Merging of the 'second' sperm nucleoli with the 'second' female nucleoli (2n) within the embryo sac produces the double fertilization event leading to production of the 'endosperm' (3n) of the seed.

The endosperm is triploid (3n), containing three sets of chromosomes, of which 2 sets are from the female parent and 1 set is from the male parent. This new nuclear endosperm later produces the 'liquid' endosperm (i.e., water-stage of fruit development) which later disappears as cell layers are laid down with fruit development in mid to late August to produce the 2 lobes of the cotyledons we know as 'kernel halves or nutmeats'. Note that typically each embryo sac contains 8 megaspores, but only one of them ends up contributing to the zygote (i.e., the fertilized embryo) and a second contributing to the endosperm (cotyledon). So, in the case of the double-nut situation, 2 embryo sacs appear to have been produced instead of the usual single sac, and there was fertilization of the egg nucleoli within each embryo sac by sperm arising from two different pollen grains (possibly from 2 different male parents), resulting in non-identical or paternal twins. Because of the close physical proximity of both developing ovaries, there was fusion of the shell structure, producing the physical double-nut appearance. This means that the seed most likely contains embryos and cotyledons on one side containing DNA from pollen source 'A' and the other side potentially containing DNA from pollen source 'B' (or also possibly from 2 different trees of the same pollinating cultivar; or alternatively, from 2 different pollinating cultivars).



Fig. 1. Double nut.

OKLAHOMA STATE PECAN SHOW 2014

Becky Carroll

It's that time of year again! Remember to save back a couple of pounds of your best pecans to enter in the state show this year. There will not be any qualifying regional or district pecan shows this year. However, some county/area shows will be held at the discretion of the County Extension Educator. Winning entries from county shows will be sent to the state show. If no county/area show is available, growers may enter pecans directly by sending samples to Oklahoma State University, Department of Horticulture, Attn: Becky Carroll, 358 Ag Hall, OSU, Stillwater, OK 74078. Samples should arrive by January 24, 2014.

Samples should be entered in a sealed plastic or paper bag. Label the bag on the outside and place a label inside the bag. Information should include exhibitors name and address, county, and type of pecan entered. Be sure to follow the guidelines that are listed below before sending entries.

A few helpful hints: Take the time to select pecans that are all the same cultivar, or same size and shape natives – don't send mixed pecans. Select uniform, clean, uncracked pecans. Presentation can make the difference between two very similar samples. Make sure to send 2 pounds of pecans in a labeled and sealed bag.

General Rules and Guidelines

- All entries must be grown in Oklahoma during the current season.
- Each entry shall consist of two pounds of nuts.
- Entries deemed unworthy by the judges will not compete for awards.
- Label each entry as to exhibitor's name, address and cultivar of nuts. If more than one native (seedling) pecan exhibit is made, identify the nuts from separate trees by numbers. Only one exhibit of each cultivar or native tree may be entered by one individual.
- Each entry will compete in one of the following 28 classes:

1. Apache	20. Sioux
2. Barton	21. Squirrels Delight
3. Burkett	22. Stuart
4. Cheyenne	23. Success
5. Choctaw	24. Western
6. Comanche	25. Wichita
7. Graking	26. Other Cultivars
8. Gratex	27. Large-Native (seedling) 60 nuts/lb or larger
9. Kanza	28. Small-Native (seedling) more than 60 nuts/lb
10. Kiowa	
11. Mahan	
12. Maramec	
13. Mohawk	
14. Pawnee	
15. Peruque	
16. SanSaba Improved	
17. Schley (eastern)	
18. Shawnee	
19. Shoshoni	
- Each grower is allowed to participate at one county show of his or her choice.

- Each grower is allowed to enter one entry in each show class with the exception of Class 26 (Other Cultivars), Class 27 (Large-seedling) and Class 28 (Small- seedling)
- Each grower may enter one entry from each native (seedling) tree.
- Entries should be shipped or mailed to arrive at the show at least one day prior to the deadline.
- County pecan shows will not be affected by these rules and procedures.
- Samples will be placed in cold storage, and judged before the Oklahoma Pecan Growers Annual Meeting. At that time, the winning entries will be displayed with awards and recognitions. All entries will become the property of the OPGA.
- First, second, and third place winners in each class at the State Pecan Show will receive ribbons.
- State Pecan Show Special Awards – Plaques will be awarded for the largest pecan entry, the entry having the highest kernel percentage, the champion native and the best entry of the show.
- If a qualifying show is not available, growers may submit entries in accordance with these guidelines directly to the State Show. Entries in the state show must be received **by January 24, 2014** at the following address:

Oklahoma State University
Department of Horticulture & LA
Attn: Becky Carroll
358 Ag Hall
Stillwater, OK 74078



Oklahoma Pecan Growers' Annual Meeting June 12-14, 2014

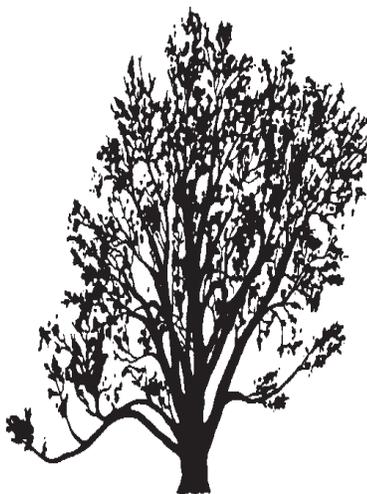
Tulsa Convention Center
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You can access your discounted group rate online by visiting www.tulsadowntown.doubletree.com and following the directions below.

- Complete the dates and preferences section.
- Click on "Add special rate codes".
- Enter OPG in the group code section then click on "CHECK AVAILABILITY".
- After completing the reservation a confirmation number will be emailed to your guest.

For guests that prefer to make reservations by phone they may call 1-800-838-7914 and provide the above group code to receive the discounted group rate.

For more information about the conference contact *amanda.early@okstate.edu*.



Classified ads may be placed in the newsletter for free by OPGA members. Send your ad to Mike Smith at mike.smith@okstate.edu and it will appear in the next newsletter and subsequent newsletters until notification to remove the advertisement.

NEW PECAN BOOK --- by Wes Rice., Pecans - Volume II, A Grower's Perspective.

Color pictures and descriptions of over 80 cultivars, including Oklahoma releases. Updates on all facets of pecan culture. Over 350 color pictures. Perfect bound - \$32.95+\$2.50 S&H and 8% sales tax or AG exemption. Hard cover - \$46.95 +\$3.00 S&H and 8% sales tax or AG exemption. Wes Rice, 580-765-7049, 333 Braden School Rd., Ponca City, OK 74604.

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Will finance your storage and transportation cost until you sell your pecans. For more information, please call Larry Jones at 325-673-4801.

TWO SAND FILTERS complete with 1 1/2 hp electric circulation pump (for drip irrigation filtering) \$150.00. Also small slider bed conveyor with complete electric drive system including gear motor, sheaves, belts, etc. (Build your own pecan elevator). \$150.00

Kearby Weatherly 918-407-3079

MEMBERSHIP APPLICATION

We invite you to become a member of the Oklahoma Pecan Growers' Association. Membership includes the OPGA Newsletter, Pecan South and pecan Grower. Make your checks payable to OPGA and mail to:

Oklahoma Pecan Growers' Association
Amanda Early, Treasurer
2115 N. Dobi
Stillwater, OK 74075
amanda.early@okstate.edu 405-744-8800

Name _____

Street Address _____

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Phone _____ Email _____

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_____ NEW MEMBER

Grower Member--\$75.00

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Oklahoma State University
358 Agricultural Hall
Stillwater, OK 74078-6027

Return Service Requested