



OKLAHOMA PECAN GROWERS ASSOCIATION

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Michael Smith, Editor

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Notes on the 2007 Pecan Season

Michael W. Smith, Department of Horticulture & Landscape Architecture

Many pecan producers in northern Oklahoma, Kansas and Missouri began the 2007 season with unseasonably warm temperatures followed by a severe freeze in April that killed developing shoots and catkins (Fig. 1). The freeze varied in intensity and duration, extending over about one-half of Oklahoma (Fig. 2). Crop potential in affected orchards was either eliminated or decreased. In addition, mast production potential from oaks, hickories and other species was substantially reduced, suggesting that wildlife depredation will be particularly severe.

Some early season pests were more active than normal. Potato leaf hopper (Fig. 3) damaged pecan leaves (Fig. 4) in many areas of Oklahoma. Potato leaf hoppers do not overwinter in Oklahoma. They migrate from the southern United States on wind currents and start arriving in late April to May. The females, often fertilized, are usually the first to arrive. Large populations continue to migrate through June and early July. Potato leaf hoppers lay eggs in the stems of susceptible plants. Each female lays 2-3 eggs per day and continues to oviposit for at least a month and up to 50 days. Eggs hatch in 7 to 10 days. Nymphs molt five times

from 1st instar to adult in about two weeks. Nymphs feed primarily on the underside of the leaf. Given their limited mobility, nymphs are considered more damaging than adults. There are usually two generations per year; however, because of the long oviposition period, infestations usually consist of overlapping generations.

Another early season foliage pest (Fig. 5) was thrip (Fig. 6). Thrips small size and adult mobility makes control challenging. Thrip larvae and adults are less than one eighth inch and reside in the tightest parts of the plant such as new terminals. Adult thrips readily fly and can easily migrate into and around the field. Thrips have a wide host range, including most ornamental crops and native plants, such as wildflowers, trees and grasses. Adult thrips are easily trapped on yellow sticky cards. Thanks to a combination of innate resistance and patterns of behavior, thrips are difficult to control by insecticide spraying and there is no general agreement on useful insecticides or treatment practices. Cultural practices are also relatively ineffective. The most useful approach to thrip control appears to be natural predators. These include parasitic wasps that lay eggs in larvae and predatory mites and thrips. Some fungi, including *Beauveria bassiana*, are also used to kill thrips.

Damage (Fig. 7) from pecan nut casebearer has generally been unusually light this year. A combination of freezing temperatures after this insect

became active in some areas plus abundant rainfall probably contributed to the low population.

Rainfall and cooler temperatures have made the 2007 season a pleasant surprise compared to the 2006 season. Pecans suffered severe drought stress in 2006, resulting in considerable fruit drop and small nuts. Rainfall during the 2007 has replenished water in ponds and filled up the soil's storage capacity. The rainfall has now become excessive, increasing the potential for nut and leaf losses to disease, particularly scab (Fig. 8). In addition, some orchards have

been flooded for several days. Spring flooding is typically more detrimental to the following year's crop potential than the current year's crop. Orchards and groves on well drained sites with limited flooding will fare best when rainfall is excessive.

Regions outside of the freeze area appear to have an excellent crop. Price predictions suggest that at least the early season prices are expected to be good. On June 7, production predictions at the Louisiana Pecan Growers Association meeting were as follow.

State	USDA 2006 production (million lbs)	Louisiana 2007 prediction (million lbs)
Georgia	40	85
Texas	36	75
New Mexico	46	65
Arizona	12	21
Louisiana	19	12
Oklahoma	14	20
Alabama	6	9.5
N. Carolina	0.6	0.1
California	3.7	3.8
Florida	0.5	2
S. Carolina	1.5	0.5
Kansas/Missouri	3.3	0.1
Arkansas	1.8	1
Mississippi	2.5	3
Total	188.9	298



Fig. 1. Developing pecan shoots and catkins killed during the April 2007 freeze.

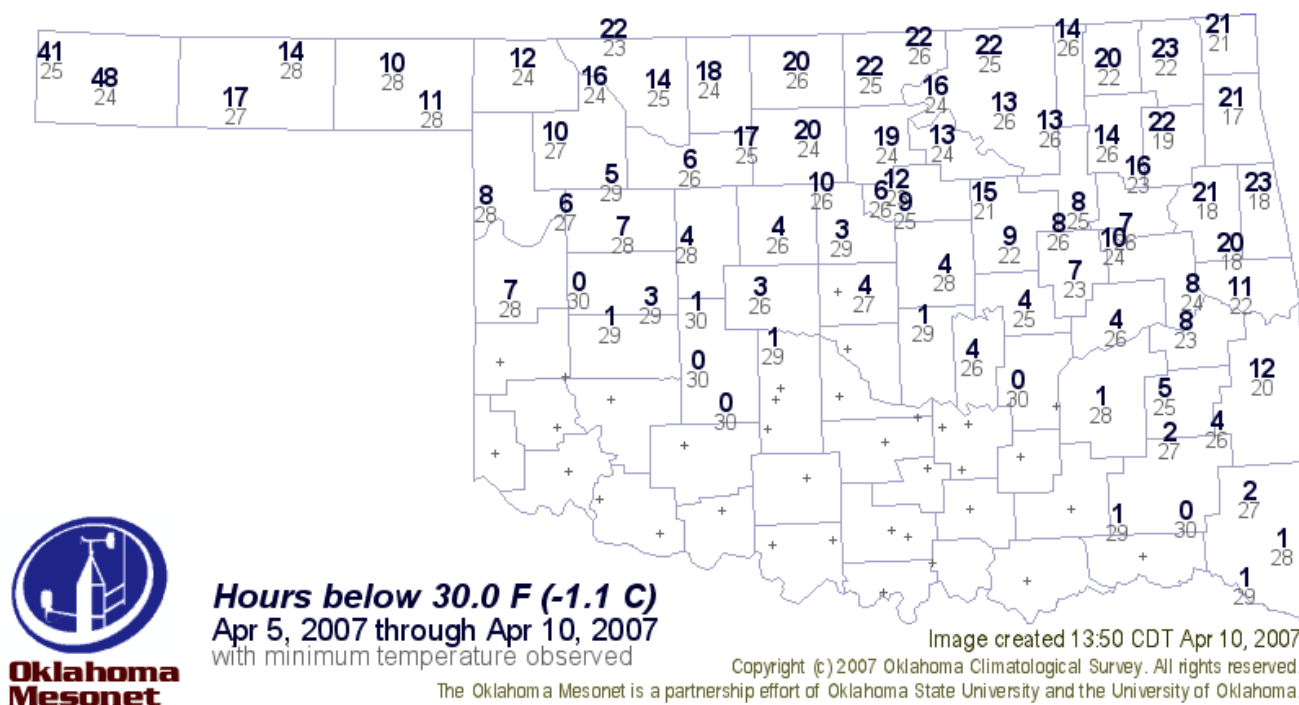


Fig. 2. Hours below 30 °F (top, bold number) and minimum temperature reached (bottom number) April 5 – 10, 2007.



Fig. 3. Potato leaf hopper adult and nymph.



Fig. 4. Pecan leaf damaged by potato leaf hopper.



Fig. 5. Pecan foliage damaged by thrips.



Fig. 6. Adult thrip.



Fig. 7. Pecan flowers damaged by pecan nut casebearer.

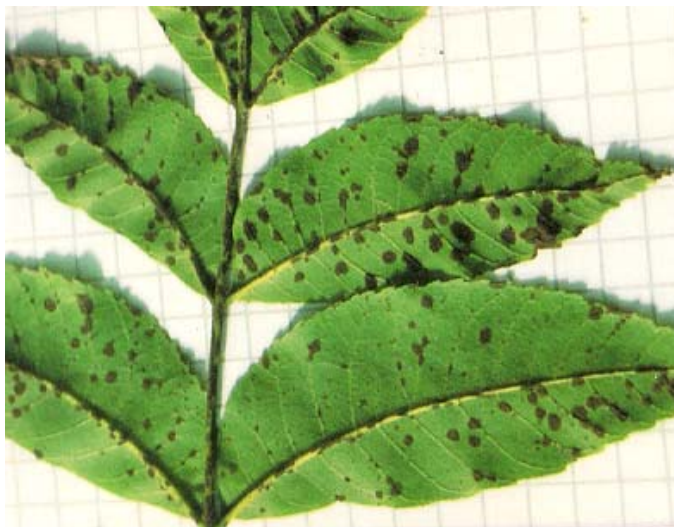


Fig. 8. Pecan scab on leaf.

Pecan Trees and Lightning

Eric T. Stafne, Department of Horticulture & Landscape Architecture

This year has been unusual in Oklahoma because of the massive amounts of rain. A low pressure system has been sitting on top of us for weeks now, drawing up tropical moisture from the Gulf of Mexico. In some ways it is a welcome respite from the oppressive heat and drought conditions of 2006; however, sometimes the rains are imbedded within violent storms that can cause extensive damage through wind, hail, and lightning.

Lightning tends to strike taller, solitary trees. So, it stands to reason that as pecan trees age and get larger, they will be more susceptible to lightning strikes. When lightning strikes a pecan tree (or any tree) the electrical energy tends to follow the path of least resistance in the tree, meaning that it often follows the grain of the wood or flows through the cambium layer. Thus the anatomy of a tree itself can have an effect on the extent of damage the lightning will inflict. Vandergriff and Clatterbuck (2005) stated that when lightning strikes a tree the sap along the strike boils, gener-



Fig. 1 Damage caused by a lightning strike that lead to a fire



Fig. 2 The lightning strike trail down the bark.

ating steam, and causing cells to explode. Often there is visual evidence of a lightning strike: bark stripped or cracked running from the strike point to the ground in a straight or spiral line, foliage wilting, and broken branches. However, damage can range from minimal (very little noticeable damage and full recovery) to severe (massive external injury leading to plant death). In some cases a tree may survive the lightning strike but be rendered unproductive, thereby necessitating its removal. Lightning strikes can also go unnoticed because the injury inflicted may be entirely internal (cambium damage) and/or below ground (root damage). In these cases the tree may recover or manifest symptoms later.

External damage from lightning strikes may require cleanup and corrective pruning. Extensive pruning is a big and sometimes expensive job. Before embarking on a big, time-consuming job the tree should be monitored to see if it will recover. Another post-strike problem is the creation of entry wounds for insects and disease. Bark beetles are associated with colonization in lightning damaged trees.

The two photos that follow are from the same tree, the first of the trunk (Fig. 1) and the second of the canopy

branches (Fig. 2). These photos were taken on Jim Smith's property in Shawnee in 2006.

Literature cited:

Vandergriff, D.S. and W.K. Clatterbuck. 2005.

Lightning protection for trees. Univ. Tennessee Ext. SP-658.

Pecan Show Top Winners

The 2006 State Pecan Show was recently exhibited at the 77th annual OPGA meeting in Lawton. The top three winners in each class received ribbons while plaques were awarded at the banquet to the overall top winners.

Best of Show entry was a Pawnee grown by Tom Lee of Stillwater. The Pawnee weighed in at 36.9 nuts/lb and 54.5 % Kernel. Tom also won the highest percent kernel with a Peruke measuring 59.1 % kernel.

The largest pecan entered in the show was a Podsednik grown by Louis Russell also of Stillwater. His giant pecan measured 23.1 nuts per pound.

Champion Seedling was presented to Pecans of Merritt of Kingfisher County. Virginia Autry & Jean Ann Casey grew a seedling that was 94.8 nuts per pound and 51.8 percent kernel.

OPGA Honorees for the 2007 Meeting

The Grower of the Year award was presented to Al & Mary Newkirk of Miami, OK. They were recognized for their years of support to the OPGA and hard work as pecan growers.

Justin McDaniel, Pontotoc County Extension Educator was the recipient of this year's Herman Hinrichs award. This honor is given to an individual who has made many contributions to the pecan industry. Justin has been very active building his county pecan program, is a graduate of the Fundamentals of Pecan Management Course, and for several years has been the auctioneer for our benefit auction following the banquet.



2007 OPGA Meeting and Show

Thanks to all who contributed to the OPGA Annual Meeting and Show and to those that contributed to the Silent Auction and Food Auction. Proceeds for the auctions are a valued source of research funds.

Meal Sponsors

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Oklahoma Farm Bureau
Womack Nursery Company

Donations to Silent Auction

Whippoorwill Ranch Pecan Farm
Womack Nursery
Cedar Creek Pecan Farm
Crabtree Pecan Shop
Valley View Pecans
Virginia Pesmark
Show Pony Farms
Jessie Diaz

Winners at the Food Auction

Paul & Maxine Haydon
Gary Mount
Joel Savage
Scott Landgraf
Andrea Mount
Bob Knight
Bill Mackin
Emma Savage
Jim Smith
Carrell Bryant
Hunter Savage
Al Newkirk
Jacob Savage
Jim Burt

Jim Luscomb
Peggy Weatherly
Flying G Ranch
Blake Savage
Bill Ault

Winners at the Silent Auction

Brandon Fowler
Cecil Crabtree
Ed Boyd
Merritt Farms
Dick Hoffman
Martin Mount
Diane Couch
Royce Fleming
Pecan and Ag Equipment Co.
Peggy Knight
Deann Smith
Jim Smith
Janice Landgraf

Helpful Internet Sites

<http://www.hortla.okstate.edu/pecan/> The OSU Pecan Management Page, includes access to extension fact sheets, faculty web sites, and links to many important areas for pecan growers.

<http://www.hortla.okstate.edu/pecan/opga/index.html> The Oklahoma Pecan Growers' Association web site, includes past Newsletters, Officers and Directors, and other useful information.

<http://www.ams.usda.gov/fv/mnncs/shipnut.htm> USDA web site reporting pecan prices from selected regions.

<http://agweather.mesonet.ou.edu/> The Oklahoma Mesonet with current weather information, historical climate data and useful models.

<http://www.cdms.net/LabelsMsds/LMDefault.aspx> CDMS Agro-chemical Data Base, labels and MSDS for agricultural chemicals.

<http://www.nass.usda.gov/> The USDA Agricultural Statistics Service web site, with acreage, producer numbers and prices for many agricultural commodities, including pecans.

<http://soils.usda.gov/> The USDA – NRCS site with soil information.

2006 Oklahoma State Pecan Show Results
Becky Carroll, Extension Assistant

First Name	Last Name	Class	Variety	kernel %	nuts/lb	County	Placing	Special Award
Tom	Lee	02 - Barton	Barton	52.3	49.4	Payne	1	
Dick	Hoffman	02 - Barton	Barton	50.9	47.4	Payne	2	
Mary	Powell	03 - Burkett	Burkett	51.9	60.9	Tillman	1	
Mary	Powell	04 - Cheyenne	Cheyenne	53.8	47.4	Tillman	1	
Pecans of Merritt		04 - Cheyenne	Cheyenne	44.0	62.7	Kingfisher	2	
Tom	Lee	05 - Choctaw	Choctaw	52.6	37.8	Payne	1	
Jim	Smith	05 - Choctaw	Choctaw	45.0	34.4	Pottawatomie	2	
Mary	Powell	05 - Choctaw	Choctaw	51.8	49.8	Tillman	3	
Dick	Hoffman	08 - Gratex	Gratex	58.6	66.5	Payne	1	
Dick	Hoffman	09 - Kanza	Kanza	49.2	54.8	Payne	1	
Tom	Lee	09 - Kanza	Kanza	48.8	58.0	Payne	2	
Tom	Lee	12 - Maramec	Maramec	55.1	41.6	Payne	1	
Larry	Martin	12 - Maramec	Maramec	56.5	41.4	Stephens	2	
Mike	Mayer	12 - Maramec	Maramec	53.7	36.9	Muskogee	3	
Dick	Hoffman	12 - Maramec	Maramec	54.5	41.0	Payne		
Walt	Thrun	12 - Maramec	Maramec	54.2	44.6	Rogers		
Pecans of Merritt		12 - Maramec	Maramec	46.0	47.7	Kingfisher		
Mike	Mayer	13 - Mohawk	Mohawk	53.2	27.5	Muskogee	1	
Dick	Hoffman	13 - Mohawk	Mohawk	53.2	32.4	Payne	2	
Tom	Lee	13 - Mohawk	Mohawk	54.2	35.0	Payne	3	
Dorothy	Bennett	13 - Mohawk	Mohawk	52.7	43.3	Okfuskee		
Virginia	Walker	13 - Mohawk	Mohawk	57.6	53.7	Tillman		
Mary	Powell	13 - Mohawk	Mohawk	53.8	33.6	Tillman		
Pecans of Merritt		13 - Mohawk	Mohawk	50.1	46.6	Kingfisher		
Tom	Lee	14 - Pawnee	Pawnee	54.5	36.9	Payne	1	Best of Show
James	Bennett	14 - Pawnee	Pawnee	55.8	45.1	Okfuskee	2	
Mike	Mayer	14 - Pawnee	Pawnee	54.7	38.3	Muskogee	3	
Dick	Hoffman	14 - Pawnee	Pawnee	55.3	40.6	Payne		
Mary	Powell	14 - Pawnee	Pawnee & mixed	54.1	53.3	Tillman		
Tom	Lee	15 - Peruque	Peruque	59.1	72.1	Payne	1	Highest % kernel
Dick	Hoffman	15 - Peruque	Peruque	58.1	72.5	Payne	2	
Pecans of Merritt		18 - Shawnee	Shawnee	51.7	64.0	Kingfisher	1	
Dick	Hoffman	19 - Shoshoni	Shoshoni	44.9	45.1	Payne	1	
Mike	Mayer	22 - Stuart	Stuart	43.0	39.3	Muskogee	1	
Travis	Wilson	22 - Stuart	Stuart	45.1	42.3	Okfuskee	2	
Nicole	Foreman	22 - Stuart	Stuart	42.9	57.4	Okfuskee	3	
Pecans of Merritt		24 - Western	Western	55.0	60.1	Kingfisher	1	
Tom	Lee	25 - Wichita	Wichita	57.5	46.8	Payne	1	
Larry	Martin	25 - Wichita	Wichita	58.6	54.1	Stephens	2	
Dick	Hoffman	26 - Other cultivars	Oconee	54.0	35.8	Payne	1	
Tom	Lee	26 - Other cultivars	Oconee	53.4	35.4	Payne	2	
Tom	Lee	26 - Other cultivars	Creek	48.3	44.3	Payne	3	
Louis	Russell	26 - Other cultivars	Podsednik	53.1	23.1	Payne		Largest Pecan
Dick	Hoffman	26 - Other cultivars	642	49.9	62.0	Payne		
Travis	Wilson	26 - Other cultivars	Williamson	47.2	51.4	Okfuskee		
Bill	McAnally	26 - Other cultivars	Williamson	47.5	63.5	Rogers		
Larry	Martin	27 - Large Seedling	Large seedling	47.5	52.8	Stephens	1	
Pecans of Merritt		28 - Small Seedling	Seedling	51.8	94.8	Kingfisher	1	Champion Seedling
Mary	Harrison	28 - Small Seedling	Small seedling	40.9	117.8	Okfuskee	2	

**Oklahoma Pecan Growers' Associaton
2007 Pecan Food Show
Best Western Hotel & Convention Center,
Lawton, Oklahoma**

Adult Division

Pecan Pies

Grand Champion – Marcy Luter, Morrison, OK

Class A – Standard

1st Place – Andrea Bryant, Roff, OK - Pecan Pie
2nd Place – Linda Bryant, Ada, OK - Pecan Pie

Class B – Other Pies

1st Place – Marcy Luter, Morrison, OK – Caramel Pecan Pie
2nd Place – Janice Grundmann, Shawnee, OK – Cream Cheese Pecan Pie
3rd Place – Andrea Bryant, Roff, OK – Buttermilk Pecan Pie

Pecan Cakes

Grand Champion – Linda Riley, Lawton, OK

Class A – Uniced

1st Place – Jancie Grundmann, Shawnee, OK – Peanut Butter Chocolate Cake
2nd Place – Mary Newkirk, Miami, OK – Pecan Cake in a Crust
3rd Place – Janice Cranor, Bartlesville, OK – Turtle Cake

Class B – Iced

1st Place – Linda Riley, Lawton, OK – Italian Cream Pecan Cake
2nd Place – Louise Bryant, Ada, OK – Milky Way Cake
3rd Place – Linda Bryant, Ada, OK – Fudgy Chocolate Cake

Pecan Breads

Grand Champion – Marcy Luter, Morrison, OK

Class A – Quick Breads

1st Place – Marcy Luter, Morrison, OK – Spiced Pear Bread
2nd Place – Linda Bryant, Ada, OK – Orange Nut Bread
3rd Place – Kathy Schoenecke, Meeker, OK – Cherry Pecan Bread

Pecan Cookies

Grand Champion – Kathy Schoenecke, Meeker, OK

Class A – Cookies

1st Place – Marcy Luter, Morrison, OK – Oatmeal Cookies
2nd Place – Janice Grundmann, Shawnee, OK – Ice Box Cookies
3rd Place – Becky Carroll, Tryon, OK – No-bake Bars

Class B – Brownies

1st Place – Kathy Schoenecke, Meeker, OK – Brownie Cheese Cake Bars

2nd Place – Diana Grundmann, Earlsboro, OK – Pecan Pie Bars
3rd Place – Marcy Luter, Morrison, OK – Chocolate Cream Cheese Brownies

Pecan Candy

Grand Champion – Linda Bryant, Ada, OK*

Class A – Fudge

1st Place – Andrea Bryant, Roff, OK – Three Minute Fudge

Class B – Brittle & Pralines

1st Place – Linda Bryant, Ada, OK – Pecan Pralines
2nd Place – Andrea Bryant, Roff, OK – Pecan Brittle

Class C – Divinity

1st Place – Linda Bryant, Ada, OK – Divinity*
2nd Place – Andrea Bryant, Roff, OK – Divinity

Class D – Other

1st Place - Marcy Luter, Morrison, OK – Raspberry Pecan Truffles
2nd Place – Becky Carroll, Tryon, OK – Toasted Pecan Cranberry Bark
3rd Place – Janice Cranor, Bartlesville, OK – Martha Washington Candy (Bon Bons)

Pecan Meats

Grand Champion – Kathy Schoenecke, Meeker, OK

Class A – Salted & Spiced

1st Place – Kathy Schoenecke, Meeker, OK – Worcestershire Roasted Pecans
2nd Place – Becky Carroll, Tryon, OK – Hickory Flavored Pecans
3rd Place – Janice Cranor, Bartlesville, OK – Cajun Pecans

Class B – Candied

1st Place – Andrea Bryant, Roff, OK – Southern Candy Pecans
2nd Place – Marcy Luter, Morrison, OK – Sugared Pecans
3rd Place – Janice Grundmann, Shawnee, OK – Sugar and Spice Pecans

Pecan Specialty Foods

Grand Champion – Becky Carroll, Tryon, OK

Class A – Desserts

1st Place – Linda Bryant, Ada, OK – Nutty Chocolate-covered Potato Chips
2nd Place – Laken Gooch, Tulsa, OK – Turtle Bites
3rd Place – Marcy Luter, Shawnee, OK – Chunky Chocolate Pecan Bars

Class B – Non-desserts

1st Place – Becky Carroll, Tryon, OK – Pecan Pineapple Spread
2nd Place – Linda Bryant, Ada, OK – Pecan Parmesan Crackers

Junior Division**Pecan Pies****Grand Champion – Jenna Murray, Fletcher, OK****Class B – Other Pies**

1st Place – Jenna Murray, Fletcher, OK – German Chocolate Pie

Pecan Breads & Rolls**Grand Champion – Andrew Reil, Elgin, OK****Class A – Quick Breads**

1st Place – Andrew Reil, Elgin, OK – Butter Pecan Bread

Pecan Cookies**Grand Champion – Lauren Baldwin, Lawton, OK****Class A – Cookies**

1st Place – Lauren Baldwin, Lawton, OK – Pecan Pie Bars

2nd Place – Jenna Murray, Fletcher, OK – Holiday Thumbprint Cookies

3rd Place – Diana Kirby, Lawton, OK – Pecan Teddy Bear Cookies

Pecan Candy**Grand Champion – Lauren Baldwin, Lawton, OK****Class B – Pecan Brittle or Pralines**

1st Place – Russell Godfrey, Lawton, OK – Pecan Toffee

Class D – Other Candy

1st Place – Lauren Baldwin, Lawton, OK – Pecan Pretzel Candy

Pecan Specialty Food**Grand Champion – Elizabeth Godfrey, Lawton, OK****Class A – Desserts**

1st Place – Elizabeth Godfrey, Lawton, OK – Apple and Pecan Kisses

Class B – Non-desserts

1st Place – Conner Carroll, Tryon, OK – Spiced Granola

President's Corner*Robert Schoenecke, OPGA President*

The OPGA 77th annual conference and pecan show held on June 17-19 at Lawton, Oklahoma was a great success. Approximately 200 were in attendance to enjoy the festivities and the field day at the Montz orchard. I want to sincerely thank each person that had a part in putting together a great conference and especially the Montz Fam-

ily for their great hospitality at their beautiful orchard.

As always, Dr. Mike Smith did a fantastic job choosing the speakers and topics for the conference. I would also like to publicly thank all the directors and officers who worked so hard in keeping things going smooth.

Each conference is designed to give our members the latest information, research, technology, products and equipment to help us move toward the future with a level of confidence and encouragement to reach our goals. We have the opportunity to visit with other producers about how they implement various practices and how those practices are working for them. We have the opportunity to visit orchards and see first hand how these practices are applied. At each conference, I am always encouraged by the individuals that have such a positive outlook toward the future and work so hard to reach their goals. Such is the case with the Montz family. It was really a inspiration to hear Tim talked about how they first got started with pecans and how they have built their orchard and business to what it is today. I believe each of us were amazed at his story and each of one should be able to return home and work toward our goals with the confidence that those goals are possible.

As we look to this next years conference I trust that you will be able to share in the encouragement of other producers. I am already looking forward to working with our officers and directors for the 78th annual conference and pecan show.



Tim Montz, Speaking at his Orchard in Charlie, TX

Producers Challenges Spark Survey

Charles Rohla, The Noble Foundation

Over the past two years, while working at the Noble Foundation I have been asked a number of different questions by producers, some which have been difficult to answer. Last year during the drought, several people asked how the drought was going to affect the 2006 pecan crop, as well as the 2007 pecan crop, and how it was going to affect the tree's health during the coming years. I visited orchards in southern Oklahoma and northern Texas that had several trees that had lost their entire crop and some that had even dropped leaves very early. Many producers questioned the survival of these trees. Unfortunately, this question was difficult to answer. A lot of the time the best answer I could give was "wait and see". As I have gone back to these same orchards to look at the trees this year, it is amazing to see the difference a year can make. In some orchards, the trees that had lost their crop or dropped their leaves early last year, look great this year with dark green leaves and a good crop set. However, in some orchards, these trees did suffer severe dieback and will take several years to come back into production the way they were before 2006. In some instances, these trees completely died. It is hard to imagine that these trees have survived for decades and some even centuries and the drought last year was just too much. One positive side note about the death or severe dieback of these trees is that the trees were generally scattered around the orchards and will be great trees to remove to help open up the orchard floor. I guess you could say this is Mother-Nature's way of thinning the orchards.

In addition to drought problems, producers lucky enough to have a good crop in 2006 had to fight the weevil. With the lack of rain, a lot of people were not worried about weevil until it rained. The fact of the matter is that insects are very adaptive and weevil still found their way out of the soil without the rainfalls. In a lot of orchards, it was so dry that the soil cracked and this enabled the weevil to emerge, in a lot of places they emerged very early. So early in fact, that people who did scout for weevil found weevil and if they sprayed then aphids became a problem. One thing to remember is that weevil will not cause a lot of damage until the pecans are in dough stage (stage after water stage). This is the stage when females start laying their eggs in the pecans. Before this time weevil may sting a nut to see if it is suitable to lay eggs. This nut will either fall off the tree or become a stick tight. However, it will not be a nut that you will pick up and cause the value of

your crop to lessen because it is in your final product. The amount of damage during this time does not justify spraying. 2006 was perhaps the worst year for weevil that anyone can remember. Weevil emerged without the rain and when it did rain there was a very large emergence. Also, there was a very late emergence which caused several orchards to sustain a high damage. A number of orchards exhibited over 50% damage while a few had total loss due to the weevil damage.

With the challenges that producers faced in 2006, I decided that I needed to better understand the management practices that were used in these pecan operations. It costs to manage an orchard properly, but at some point, management is not cost effective. There are several strategies that can be used to ensure proper management of an orchard. Keeping trees healthy (taking leaf samples and fertilizing accordingly) and using traps to monitor when pecan nut casebearer and pecan weevil are in orchards are some of the easiest things a producer can do to increase the bottom dollar. Using the right chemicals when you spray can increase the residual and protect your crop longer. In order to determine how producers are managing their orchards, I have decided to survey the pecan producers within the Noble Foundation to see what management practices they use. This will help us better serve producers by allowing us to determine materials that need to be covered in the articles, presentations and future research we will perform. So, if you are a cooperator with the Foundation and you receive a survey, please take the time to fill it out and send it back to us.

How might the 100 year flood or June rainfall event affect pecan weevil emergence?

Phillip Mulder, OSU Extension Entomologist

A few folks have called our offices asking this question about weevil emergence in a flood year. The question is a good one and unfortunately, we don't have any concrete answers only anecdotal stories. Most of the literature dealing with soil permeability and weevil emergence discusses emergence after drought conditions and the influences of moderate rainfall, not flood conditions. The expectation is that weevil emergence and numbers may be down based on widespread flooding of bottomland areas where pecan is typically grown. Hinrichs and Thomson (1955) were the first to gather data concerning amounts of rainfall and subsequent weevil emergence. Over a span of four years in Oklahoma they found that emergence occurred earlier in the season following rainfall in late July and early August.

Later, data from Raney et al. (1970) confirmed the 1955 data and they stated that “weevil emergence increased 3-4 days after a 1-2 inch rainfall.” Much subsequent work in Oklahoma, Louisiana and Texas has determined that while rainfall may partially determine the emergence patterns of adult pecan weevil, ultimately the words of Harp (1970) stated it best when he suggested that “the pecan weevil had evolved in perfect synchrony with the fruit maturity of its host and emerged each year accordingly.” Therefore, it appears rainfall may be linked to emergence of weevils but only as it affects soil permeability in late season.

With Oklahoma experiencing the wettest June in 99 years, the resounding concern, or hope for many, is that excessive moisture has somehow created an unfavorable environment for weevil survival. Since many of the flooded areas have retained water for several weeks many folks might assume that weevil emergence could be set back. This is unlikely, but weevils may begin emerging early, thereby affecting post emergent longevity before pecans become suitable for oviposition. Most pecan growers understand that pecan weevils burrow into the soil profile about six inches below the surface; however, many do not realize what happens once they arrive in that temporary holding area. After larvae exit the tree, by chewing through the damaged nuts, they burrow into the soil to the desired

depth and begin to construct an almost impenetrable earthen cell. Within this cell they will remain as larvae, pupae and later adults without feeding until environmental cues and years of co-evolutionary experience tell them it is time. Post-feeding 4th instar larvae and pre-reproductive adults have greater fat body content, undeveloped reproductive organs, and an 8-fold decrease in oxygen consumption compared to active stages. These characteristics have led to many difficulties in rearing this insect in the laboratory, where a constant supply of weevils could provide year round specimens for study. This does, however, tell us that diapausing weevil larvae, pupae and adults are well protected, do not feed and can essentially sip oxygen to preserve themselves and their air supply.

Anecdotal evidence from growers in Texas have shown continued weevil emergence after bottomland trees were standing in water for a two month period. No suggestions were provided on quantifying any reductions in weevil numbers after these flood events. Similarly, in Oklahoma, heavy rainfall which substantially flooded clay bottom soils in the Haydonville area during studies conducted in 1999-2001 have experienced subsequent weevil populations that would rival any other typical year. These insects are indeed the denizens of the flood plains, where pecan is typically a native species.

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