OKLAHOMA PECAN GROWERS ASSOCIATION

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In This Issue

Trunk Damage from Sapsuckers: Cause and Effect

Eric T. Stafne, OSU Horticulture & Landscape Architecture

Have you ever noticed certain pecan trees with holes? Lines of holes in perfect rows, row after row? The cause is not always obvious. Holes like these are caused by one thing, but may be confused for another. Wood borers are often blamed, yet they do not possess the acumen to make the holes into perfect lines. Holes in perfect lines are most definitely caused by another creature – the Yellow-bellied sapsucker (*Sphyrapicus varius*) (Fig. 1).

Sapsuckers are close relatives to woodpeckers. They overwinter mainly in Mexico and Central America and spend the summers in the U.S. and Canada. Oklahoma is directly in their migratory pathway and pecans are one of their preferred food sources. The birds are about 7 to 8 inches long with a black head and a white stripe extending down its neck. The yellow-bellied sapsucker has a red forehead with some pale stripes on the chest with a black border to the throat area. Its back is black with white bars and has black wings with some white as well. The yellow breast (or belly) fades to a creamy white from front to rear. The tail is often black with white bars.

It is often thought that the birds are after insects under the bark. While this might be true in some cases, they are more likely after the tree sap that exudes once the bark and wood have been penetrated, hence the name sapsucker. The damage caused by the holes themselves is minimal; however, those holes can be entry points for fungi and bacteria (Fig. 2). Numerous holes on the same tree may actually weaken the trees, causing stress and susceptibility to other maladies. Rarely, the tree may be girdled if an excessive amount of holes are made that surround the entire trunk.

Control of the sapsucker is not easy. Sapsuckers are a migratory, non-game bird and are protected by federal law. Options for control can include exclusion by wrapping the tree trunk with burlap or other material to discourage the birds from returning. Another option is frightening techniques like visual or sound devices. Sometimes, however, these deterrents do not work or

Fig. 1 Yellow-bellied sapsucker (Sphyrapicus varius) Photo by Johnny N. Dell, , Bugwood.org

Fig. 2 Yellow-bellied sapsucker damage
Photo by Chris Evans, River to River CWMA, Bugwood.org

work only for a short period of time. Tactile repellents such as Tanglefoot may be another option to discourage landing upon the trunk.

Above all, one should remember that unless the damage is severe, the tree will likely show little or no problems. It may be best to just let these elegant creatures have their nourishment from a few of their favorite pecan trees and for us to learn to live together in harmony.

References

USDA Forest Service. 1979. Sapsucker damage. In: A guide to common insects and diseases of forest trees in the northeastern United States. Northeast. Area State Priv. For. Insect and Disease Management. Broomall, Penn.

Vann, S. and J.A. Robbins. 2008. Sapsucker damage on woody plants. Univ. Ark. Coop. Ext. Serv. FSA 7561.

Horticulture Pecan Research Endowment

Michael Smith
OSU Horticulture & Landscape Architecture

As of this writing contributions total $56,850, and the Oklahoma Pecan Growers' Association has pledged $20,000. This is your opportunity to make a difference in the future of Oklahoma pecans and O.S.U. research and education. Creation of an Endowed Professorship will ensure that pecan research at O.S.U. continues indefinitely. Remember, our goal is to reach $250,000 to get matching funds from the T. Boone Pickens gift and the State of Oklahoma. Checks should be made out to the **O.S.U. Foundation** and mailed to **Michael Smith, Department of Horticulture and Landscape Architecture, 358 Agricultural Hall, Oklahoma State University, Stillwater, OK 74078.** Contributions to the Endowment are tax deductable.

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Pecan Budbreak

Michael Smith
OSU Horticulture & Landscape Architecture

When the weather finally turned warm and sunny many pecan producers were surprised at how rapidly trees began growth. This can be explained by a longer exposure to chilling temperatures than is normal in this region.

Temperate trees, such as pecan, require cold, non-freezing temperatures while dormant to allow normal budbreak and growth during the spring. If the duration of cold exposure is inadequate a longer exposure to warm temperatures is necessary for growth initiation and budbreak will be more erratic. Exposing trees to cold temperatures for a longer duration reduces the amount of time required for budbreak in warm temperatures.

In 1992, I conducted a chilling study using container grown Dodd seedlings. Dormant trees were exposed to 43 ^{o}F for 0 to 1800 hours in 300-hour intervals. Nine hundred hours of chilling temperatures were required to achieve 50% budbreak of the terminal bud within 90 days when exposed to 73 °F. Exposure to more than 900 hours chilling reduced the time required for budbreak.

In another experiment trees were exposed to 34, 41, or 48 °F for 0 to 2500 hours in 500-hour intervals then transferred to 73 °F. After 1000 hours trees exposed to 41 °F had more lateral budbreak than those exposed to 34 or 48 °F, suggesting that 41 °F is near the optimum temperature to satisfy the tree's chilling requirement. As the length of the chilling exposure increased from beyond 1000 hours the number of days required to break bud decreased, the number of lateral buds initiating growth increased, and the uniformity of budbreak increased.

These results indicate that our long winter resulted in a shorter response time when exposed to growth promoting temperatures. In addition, budbreak this spring should be more uniform within the tree and there should be fewer differences in budbreak time among cultivars (cultivars have different chilling requirements resulting in differing budbreak; but when chilling exceeds the requirements of all cultivars, budbreak differences are reduced or eliminated) . A benefit of additional chilling may be more lateral budbreak that will increase the tree's bearing potential.

Pecan Leaf Sampling
Charles Rohla, Noble Foundation

Leaf sampling is one of the best methods for determining fertilization needs in the pecan orchard/grove. With the high cost of fertilizer, this simple management technique can save a great amount of money. Leaf sampling allows a producer to determine how much and what type of fertilizer is needed for the operation. At this time, leaf analysis is the most reliable indication of pecan tree fertility. The leaf tissues are sensitive to changes in nutrient supply and can indicate both limiting and excessive nutrients (see Oklahoma State University Fact Sheet 6232).

When taking leaf samples it is important to ensure that samples are taken correctly and at the proper time. Also, samples should be taken from each distinct area of the orchard/grove depending on soil type, management type and tree type.

Procedures for Taking Leaf Samples:

1. Collect samples in July.
2. Do not mix varieties, unless management for the area will be the same.
3. Collect 100 – 150 middle pair of leaflets from the middle leaf of current season's growth (Fig. 1). Avoid leaves in the interior of the tree or from suckers, water sprouts or leaflets damaged by insects or disease.
4. Do not use galvanized containers, rubber gloves or rubber sponges to collect, carry or store samples.
5. Remove spray residue and dirt by washing or dipping in tap water for less than one minute.
6. Dry leaflets after washing by spreading out to air dry until they will crumble. Do not expose to direct sun, or allow exposure to heat while drying.
7. Place dry leaflets in a sample bag and mail to lab. Do not send wet or leaves that are not completely dried. Paper bags work great, only use zip lock bags if samples are **completely** dry.
8. Provide identification for each sample when presenting to lab.
9. Provide identification for each sample including age and variety (improved or native).

The lab cannot analyze samples smaller than 100 leaflets, so collect enough leaves to ensure that your sample is large enough.

Once the samples are dried, samples should be taken to the County Extension office. Samples will be sent to the Oklahoma State University Soil, Water and Forage Analytical Laboratory at Stillwater (cost $20 per sample). Or, samples can be sent to the Noble Foundation in Ardmore and samples will be sent to Servi-Tech Labs at Amarillo, TX (cost $28 per sample).

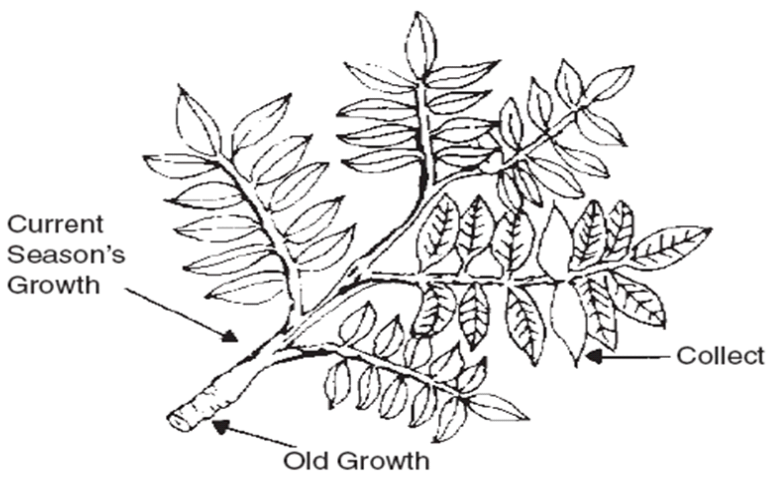

Figure 1. Collect the middle pair of leaflets located on a middle leaf of the current season's growth

Bud Damage from the Spring 2009 Freeze

Michael Smith and Becky S. Cheary
OSU Horticulture & Landscape Architecture

Freezing temperatures on 7 April 2009 (Fig. 1) damaged developing pecan buds throughout most of Oklahoma. Bud injury was evaluated on several cultivars at an orchard in northeastern Oklahoma. Bud development (Table 1) and death (Table 2) varied among cultivars with the greatest rate of death in 'Pawnee', 'OK642', and 'Mohawk'. The cultivars with the best bud survival were 'Giles', 'Kanza' and 'Mount'. Within cultivars bud survival was closely related to the bud development stage (Table 3). However, comparisons at the same bud development stage indicated that certain cultivars possessed greater cold tolerance (Table 4). Thus cultivars avoiding damage had a later budbreak and/or developing tissue had greater freeze tolerance. Budbreak was delayed on branches that were vegetative the previous season compared to those that bore fruit, resulting in less bud injury on vegetative branches in some cultivars (Table 5).

Table 1. Compound bud developmental stage on 7 April 2009 for selected pecan cultivars. Data are pooled over the five distal compound buds and previous year's shoot type.

		Percentage by bud development stage		
Cultivar	No. buds observed	Outer bud scale intact	Outer bud scale split	Outer bud scale shed
		East field		
Kanza	300	82[z]	8	10
Giles	200	81	12	7
Maramec	50	64	16	20
Nacono	300	57	19	24
OK642	200	42	12	46
Oconee	300	38	23	39
Pawnee	400	23	22	55
Caddo	300	7	17	76
		West field		
Kanza	500	70	18	12
Giles	250	56	18	26
Barton	100	44	22	34
OK642	100	40	27	33
Mount	150	35	25	40
Pawnee	500	24	33	43
Mohawk	50	16	8	76

Table 2. Primary compound bud survival of selected pecan cultivars following a freezing event during budbreak on 7 April 2009. Data are pooled over bud position on the branch and previous year's shoot type.

	East field		West field	
Cultivar	No. buds observed	Live buds (%)	No. buds observed	Live buds (%)
Mount	---	---	150	100[z]
Giles	200	99	250	95
Kanza	300	96	500	87
Barton	---	---	100	56
Mohawk	---	---	50	40
Pawnee	400	89	500	35
OK642	200	98	100	16
Oconee	300	89	---	---
Nacono	300	87	---	---
Caddo	300	85	---	---
Maramec	50	82	---	---

Table 3. The influence of compound bud position (number from the distal end of the shoot where 1 = most distal) on survival following a freezing event during budbreak on 7 April 2009 for selected pecan cultivars. Data are pooled over shoot type.

		Live buds (%)				
	No. buds	Compound bud position from the distil end of the shoot				
Cultivar	observed	1	2	3	4	5
			East field			
OK642	40	100	98	98	100	98
Giles	40	98	98	100	100	100
Kanza	60	95	95	93	98	100
Pawnee	80	83	84	91	93	98
Oconee	60	78	87	93	93	95
Nacono	60	77	83	90	93	92
Maramec	10	70	80	70	100	90
Caddo	60	63	87	88	92	93
			West field			
Mount	30	100	100	100	100	100
Kanza	100	84	78	87	93	97
Giles	50	84	94	96	100	100
Barton	20	55	55	55	55	60
Mohawk	10	30	40	40	40	50
Pawnee	100	23	31	34	42	46
OK642	20	5	5	10	25	35

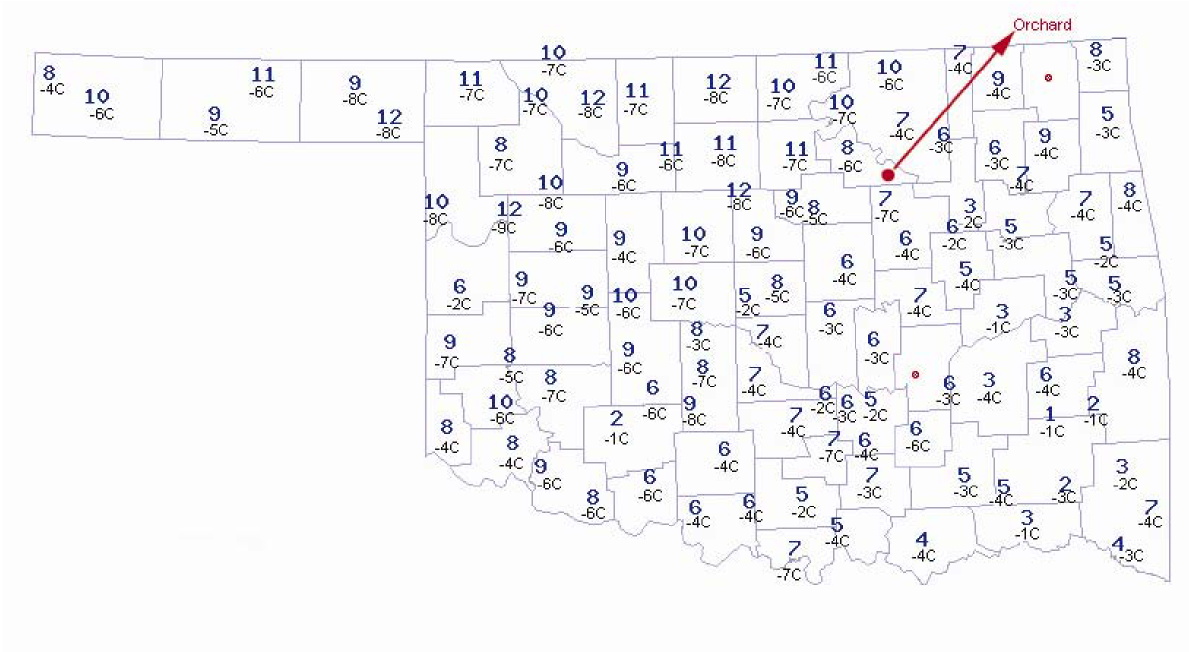

Fig. 1. Hours below freezing (upper number) and minimum temperature (lower number) during 7 April 2009 in Oklahoma. Data were obtained from Oklahoma's Mesonet that includes at least one weather station in each of county (2). The test orchard location is indicated on the figure.

Table 4. Compound bud survival at various developmental stages following a freezing event on 7 April 2009 for two pecan cultivars. Data are pooled over bud position on the branch and branch type.

Compound bud development stage	Cultivar	No. buds observed	Live buds (%)
Outer bud scale intact	Pawnee	119	45
	Kanza	350	92
Outer bud scale split	Pawnee	166	34
	Kanza	88	78
Outer bud scale shed	Pawnee	215	31
	Kanza	62	76

Fig. 4. Compound pecan bud composed of two dead catkin buds and a live central mixed bud. This bud was judged as live since it would be capable of producing a shoot with a pistillate flower cluster.

Table 5. The influence of previous year's shoot type on compound bud survival following a freezing event during budbreak on 7 April 2009 for selected pecan cultivars. Data are pooled over position on the branch.

	Live buds (%)			
Cultivar	No buds observed	Fruiting shoot	No buds observed	Vegetative shoot
East field				
Giles	145	98	55	100
OK642	140	98	60	98
Kanza	250	96	50	100
Pawnee	275	89	125	90
Oconee	235	86	65	100
Nacono	235	85	65	92
Caddo	255	83	45	91
West field				
Mount	105	100	45	100
Giles	200	94	50	98
Kanza	425	88	75	86
Barton	80	45	20	100
Pawnee	405	30	95	56
Mohawk	35	28	15	67
OK642	40	12	60	18

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