

While pecans grow and thrive in most parts of Kentucky, that is not true for all varieties of pecans. Ensuring that the right variety is planted in the right place is critical to producing the highest quality nuts possible. An example would be when considering southern or northern varieties for planting. Woodland owners in many far western Kentucky counties are well aware that native pecan trees grow in abundance. The nuts that these trees produce are generally of excellent quality, but smaller than those produced in the southern states. There is a reason for

flowers (catkins) release their pollen. This keeps individual trees from pollinating themselves. Therefore, to ensure that all your planted trees will be pollinated, you need to have a mixture of varieties so that pollen is always being produced when needed. This can be accomplished by a technical understanding of pollination. A protogynous tree is a tree that has female flowers that are receptive before the catkins produce their pollen. A protandrous tree is a tree that produces pollen before the female flowers are receptive. While protogynous and protandrous are not words we commonly use, understanding them is important for developing

Non-Timber Forest Products

Kentucky Pecans

by John Strang



Greenriver pecan

Photo courtesy: John Strang

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Figure 1. Poor nut fill in pecan and Persian walnut due to a short growing season or tree leaf damage.

this, and it hinges on our growing season length. There just aren't enough days in our growing season for varieties that produce large nuts to fill the shells. As a result, these varieties do not fill, and nut meats produced by southern varieties (such as Stewart and Mahan) are disappointingly shriveled (Figure 1). Furthermore, southern pecan trees may not have enough time in the fall to harden off and avoid winter injury.

Pollination

Pecan trees are wind pollinated, and each tree produces both male and female flowers.

However, the female flowers (nutlet flowers) on a tree are not receptive for pollination when the male

flowers (catkins) release their pollen. This keeps individual trees from pollinating themselves. Therefore, to ensure that all your planted trees will be pollinated, you need to have a mixture of varieties so that pollen is always being produced when needed. This can be accomplished by a technical understanding of pollination. A protogynous tree is a tree that has female flowers that are receptive before the catkins produce their pollen. A protandrous tree is a tree that produces pollen before the female flowers are receptive. While protogynous and protandrous are not words we commonly use, understanding them is important for developing

a planting of pecan that sets nuts well. In order to get good nut set on all trees, a mixture of these two pollination types is necessary. It is important to make sure that the varieties planted have their pollination needs accounted for. This is particularly important in light of the fact that the first harvest usually takes 5-8 years after planting, and a mistake in meeting pollination requirements can substantially increase the years to production. It is also useful to understand that catkins are only found on 1-year-old branches, and nutlet flowers are found on the current year's growth at the ends of young shoots. Pecans are wind pollinated, and the pollen has been reported to travel and pollinate trees up to 1 mile away. In rainy seasons however, when pollen is washed from the air, it is

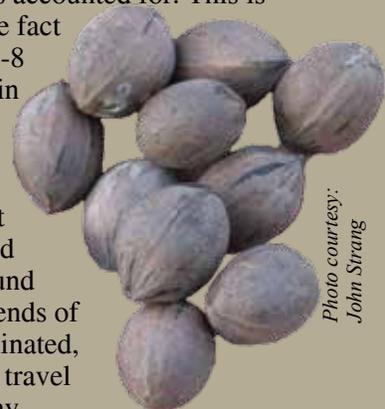


Photo courtesy: John Strang

Figure 2. Major pecan, small in size, but possesses excellent flavor, nut fill and yield characteristics.

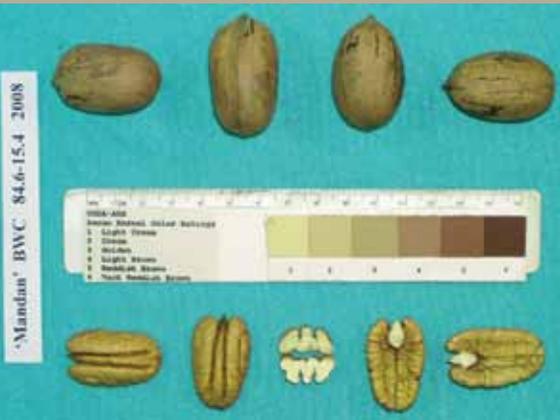


Figure 3. Mandan pecan

Photo courtesy: L. J. Grauke, USDA-ARS Pecan Genetics, Somerville, TX

best to have the pollinator trees in close proximity. Pecan variety recommendations can be found in Table 1 and are arranged by pollen shed period to help with variety selection. The Major and Mandan varieties are shown in Figures 2 and 3.

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Hicans

Pecans occasionally cross with shellbark, shagbark, or bitternut hickory to produce hicans.

These are generally self-sterile and need to be pollinated by an early pollen-producing pecan such as Major. The Burton and Burlington (Figure 4) hican varieties are self-fertile. However, most hicans are not very productive and seem to be particularly attractive to pecan weevils. There is one exception - the variety known as T-92 - which produces large nuts (35-40/lb), has a light colored kernel, and has excellent quality.



Figure 4. Burlington hican

Photo courtesy: John Strang

Culture

While growing pecans in Kentucky is not difficult, there are several important issues that are important for success, which are discussed below. However, as with any practice, there are lots of details. For those serious about growing pecans, additional recommendations and details on pecan culture, insect, disease, and weed control can be found in the Cooperative Extension publication Nut Tree Growing in Kentucky (ID-77) listed in the reference section of this article.

Planting

Early spring is the best time to plant pecan trees. A soil test is highly recommended so that you can adjust soil pH to 6.5, as well as adjust phosphorus, potassium, and magnesium levels. A soil test submitted through your county extension office will provide fertilizer recommendations. Needed amendments should be broadcast and plowed in prior to planting. Pecans grown for nuts are generally spaced 50' X 50'. When trees arrive, inspect them and keep as cool as possible to delay growth. Roots should be kept moist and not be allowed to dry out. Plant as soon as soil

conditions are dry enough to avoid soil compaction. Pecans have a long taproot, and it is best to leave it as long as possible to improve tree survival. Dig deep holes to accommodate the taproot with enough width to spread out lateral roots. Broken roots will need to be pruned off at the break. Set trees at the same level at which they grew in the nursery, firm the soil around the roots, and water well.

Early Tree Care

Care during the first year is critical for planting success. Trees should not be fertilized the first season, because excessive growth frequently leads to winter injury. One third of the top growth should be removed at planting to improve survival and assure strong growth. The leader should be cut back to a bud and lateral branches are removed. It is extremely important to water the trees weekly as needed throughout the first year. Good weed control around the bases of the trees is very important for establishment and can include use of herbicides, cultivation, and mulching or a combination of these methods. Growers should not expect much top growth the first season, since much of the growth takes place underground and involves increasing taproot size. Paint the lower 30-36 inches of trunk in late fall with a white indoor latex paint, or place a white plastic wraparound guard around the base of each tree to prevent sunscald injury during the winter. Sunscald produces a vertical split in the bark on the southwest sides of trees. If deer are a problem, a tree shelter may be necessary. Fertilization should begin the second season in late February with an application of 1 lb of 10-10-10 fertilizer for each inch of trunk diameter five inches above ground.

Pecan Disease and Insect Concerns Pecan scab

This is one of the most serious fungus diseases encountered by pecan growers in Kentucky. Infections begin shortly after bud break under wet growing conditions and young leaves, leaf petioles, and nut shucks (hull around the nut) become infected, resulting in small spots olive to black in color. This fungus leads to leaf drop, lack of nut fill, and nut drop. Since pecan trees eventually become very large and are difficult for most growers to spray, planting of resistant varieties is highly recommended. Pecan insect and disease samples may be sent through county extension offices to the UK Plant Disease Diagnostic Laboratories for identification and control recommendations.

Pecan weevil

In Kentucky, the female pecan weevil attacks pecan nuts in late August and early September as the nut kernels begin to harden. She chews a small hole through the nut shell and deposits eggs. Small white grubs hatch and feed on the nutmeat during the fall (Figure 5). At maturity, each grub chews a hole in the nut, drops to the ground, and burrows into the soil where it lives until the



Figure 5. Pecan weevil and nut damage.

Photo courtesy: John Strang

following August or where it may remain for an additional year. The grubs pupate prior to emergence, become adults, and the cycle starts over. Control involves applying an insecticide during early to mid-August to kill the females before they can lay their eggs—once eggs are deposited inside the nuts, insecticide controls do not work. Proper insecticide spray timing is essential to achieve control.

Stinkbug

Stinkbugs can cause serious nut losses (Figure 6). This insect has piercing-sucking mouthparts that are inserted into the nuts to extract food before the shell hardens. In the process, nut kernels are dramatically affected. Weed management can help reduce losses. With the introduction of the brown marmorated stink bug, control of these pests will be a challenge in coming years.



Figure 6. Characteristic stink bug damage on pecan.

Twig girdler

These beetles girdle twigs, causing them to drop in late summer. The female lays an egg in the portion of the twig that will fall. The larva then feeds on and overwinters in the twig. The result is loss of shoots that will bear nuts and additional tree branching. Control involves collecting the girdled twigs and burning them.

Pecan phylloxera

Pecan phylloxera, a small, soft-bodied insect, induces the development of galls on new leaf growth. Overwintering eggs in bark crevices hatch in the spring, and the nymphs begin feeding on new tissue. Galls are induced by a compound secreted by the phylloxera. There are several generations of this insect a season. A dormant oil spray will help control overwintering eggs, and an insecticide spray just before or at budbreak will help control crawlers.

Harvesting and Storing Pecans

At maturity, pecans drop from their husks to the ground and are picked or swept up. Nuts that do not have enough time to mature or have some problem typically remain stuck in the husks and tend not to drop. A period of curing is needed to reduce nutmeat water content and enhance flavor. Unshelled nuts can be cured and kept for a period in mesh bags in a cool, dry well-ventilated area. Keep in mind that squirrels and chipmunks will happily make their way into an open garage or barn to help relieve you of your pecans. It is best to shell pecans and keep them in an airtight container in the freezer to maintain quality, as the oils in pecans will become rancid with time.

Pecan Crackers

There are several nut crackers that work particularly well on pecans. The Texas Inertia Cracker (Figure 7) shatters the shell, producing many kernel halves. The process can be speeded up considerably using the Mechanical Cracker (Figure 8).

Growing pecans is a satisfying and rewarding experience that requires patience for a number of years to attain significant production. The Kentucky Nut Growers Association (KNGA) is made up of many dedicated individuals with a strong interest in propagating and growing nuts who collec-



Figure 8. Mechanical Pecan Cracker from Stonemango
Design & Mfg. LLC
13528 Floyd Cir,
Dallas TX 75243

All photos courtesy:
John Strang



tively possess a wealth of practical information. The KNGA holds several meetings a year and members welcome anyone who share their interest. The meetings revolve around grafting, sharing information, and sampling nut varieties. Additional information can be found on association's website at: <http://www.pawpaw.kysu.edu/KNGA.htm>

Kentucky Grafted Pecan Tree Sources

England's Orchard and Nursery, 2338 Highway 2004, McKee, KY 40447. Phone: 606.965.2229; e-mail: nuttrees@prtcnet.org; website: www.nuttrees.net
Nolin River Nut Tree Nursery, 797 Port Wooden Rd., Upton, KY. Phone: 270.369.8551; e-mail: john.brittain@gte.net; website: www.nolinnursery.com

References

Masabni, J., J. Strang, R. Jones, R. Bessin, and J. Hartman. 2007. Nut Tree Growing in Kentucky (ID-77) <http://www.ca.uky.edu/agc/pubs/id/id77/id77.pdf>



Figure 7. Texas Inertia Cracker. Dowel rod attached to red plunger at left is pulled back which further stretches the rubber band and is then released. This shatters the nut shell without appreciable damage to the kernel.

Table 1. Recommended northern pecan varieties

Variety*	Pollen shed	Flowers receptive	Nuts/lb	Comments
Yates 68	early	late	60-70	Medium-sized nut, very thin shell, 59% kernel, excellent kernel quality
Fisher	early	late	74	Medium-sized nut, 48% kernel, productive, very hardy far northern pecan, matures early
Major	early	late-v. late	78	Medium-sized, round to oval nut, small, plump, sweet buttery, excellent flavored kernels, 49% kernel, ripens medium-early, vigorous tree
Mandan	early- mid	mid-late	46-52	2009 USDA release, 63-65% kernel, early nut maturity, high yield, high nut quality, shells out easily into halves, very new outstanding variety
Pawnee	early- mid	late	57	Large, soft-shelled excellent quality nut, 58% kernel, matures early, medium susceptibility to scab, may require fungicide sprays
Hirschi (Steuck)	early-mid	late	72	Kernels golden to light brown, 49% kernel, scab susceptible
Greenriver	mid	early-mid.	70	Medium-large thinned shelled nuts, 49% kernel, plump fine flavored kernels, ripens late
Yates 127	mid	late	65-70	Medium-sized nut, very thin shell, 55% kernel, probably self-pollinates
Colby	late	early	55-60	Medium to large nut, 50% kernel, good flavor, productive tree, needs 160-day season, some scab resistance
Posey	late	early	72	Medium to large nut, 54% kernel, excellent flavor, very good cracking quality, bears well, ripens medium-early
Kanza	late	early	77	High quality 54% kernel, cracks mostly in halves with no packing material, highly productive
Hickry's Major	unknown	unknown	57	Productive, normally 3 to 5 nuts per cluster, fills well, very good flavor, 53% kernel, cracks out similar to Major, seedling of Major, but nut is twice as large. Appears to be scab resistant, but this characteristic is still being evaluated, new upcoming variety.
*All varieties listed are scab resistant unless otherwise noted.				

About the Author:

John Strang, Ph.D., is an extension specialist in the University of Kentucky Department of Horticulture. He is responsible for continuing education and applied research in the areas of fruit and vegetable production. John also edits the Fruit Facts Newsletter, www.ca.uky.edu/fruitfacts

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