

Pecan Varieties for New Mexico

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Esteban Herrera, Extension Horticulturist

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Pecan orchards are a long lasting and expensive investment, thus careful variety selection is one of the most important decisions a grower makes.

Some factors to be taken into consideration when selecting a variety are regular production capacity, tree strength and branching properties, nut size and quality (for in-shell varieties), kernel percentage (for shelled varieties), maturity (date of shuck splitting), precocity (age of the tree when producing a full crop), pollination characteristics, and susceptibility to zinc and iron deficiency.

Pecan production in New Mexico is limited to southern areas of the state because desirable commercial varieties require a long growing season. Selection of early-maturing varieties is of major importance because nuts of many varieties, even in southern New Mexico, fail to mature properly in some years because of short growing seasons.

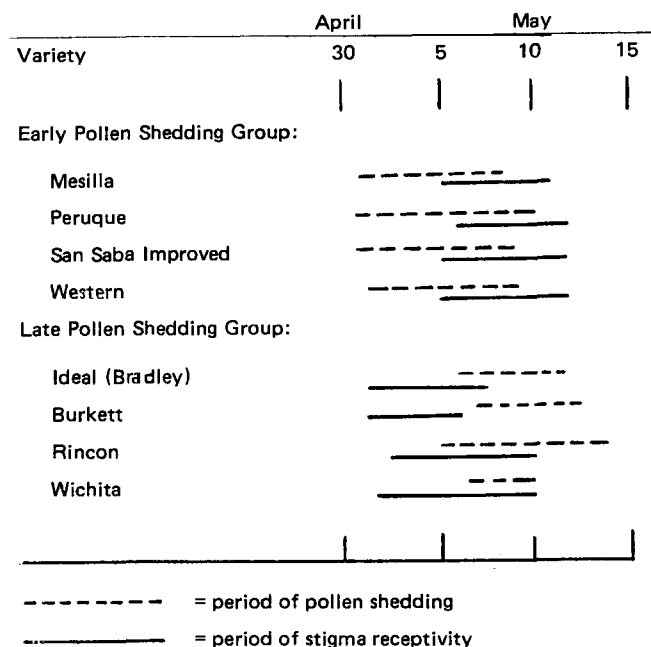
Important commercial varieties for New Mexico are 'Western Schley', 'Wichita', and 'Ideal'. Other varieties may appeal to homeowners, especially new varieties with Indian names, but most of them require longer seasons than those found in southern New Mexico, and these varieties are not well adapted for commercial orchards in New Mexico.

Southern New Mexico's climate offers some advantages for pecan production. High light intensity tends to compensate for the disadvantage of a short growing season. Combined with good irrigation practices and suitable nitrogen fertilization, this stimulates more than adequate foliage development and rapid tree growth. However, because of low mean relative humidity and warm temperatures, special attention must be given to pollination. Varieties chosen for their pollination characteristics may be either pollenizers that shed pollen before their pistillate flowers are receptive (protandrous varieties), or pollenizers that release pollen after their stigma have become receptive (protogynous varieties). Planting more than one variety in an orchard or yard will help ensure adequate fruit set and nut production; select varieties that show some overlap in pollen shed and stigma receptivity characteristics.

Dates and duration of pollen shedding and stigma receptivity of some pecan varieties were similar in research conducted at Las Cruces, New Mexico in 1960 through 1962 (table 1). 'Western Schley', 'Wichita', and 'Ideal' are pecan varieties that may grow better in southern New Mexico. 'Wichita' and 'Ideal' are used mainly as pollenizers. Other pecan varieties available, but not necessarily recommended for commercial pecan orchards in New Mexico, are 'Apache', 'Barton', 'Burkett', 'Cherokee', 'Cheyenne', 'Chickasaw', 'Choctaw', 'Comanche', 'Harper', 'Mesilla', 'Mohawk', 'Rincon', 'San Saba Improved', 'Shawnee', 'Shoshoni', 'Sioux', and 'Tejas'. Possible dates of pollen shed and stigma receptivity for some of these varieties are given in table 2.

'Sullivan', a new variety released by New Mexico State University in 1983, may be considered for northern New Mexico because of its shorter growing

Table 1. Average flowering characteristics of pecan varieties 1962-1964, Las Cruces, New Mexico



season (table 3). 'Salopek', a variety released in 1990 by NMSU, could be a variety that may replace 'Wichita' in southern New Mexico. Other varieties grown mainly in northern states, to be considered for northern New Mexico, but for which there is no information, include 'Major', 'Peruque', and 'Giles' (protandrous); 'Colby' and 'Posey' (protogynous).

RECOMMENDED VARIETIES

Note: Descriptions of the varieties do not include disease resistance characteristics, because no disease problems have been discovered in New Mexico.

'Western Schley' (also known as 'Western') (Protandrous).

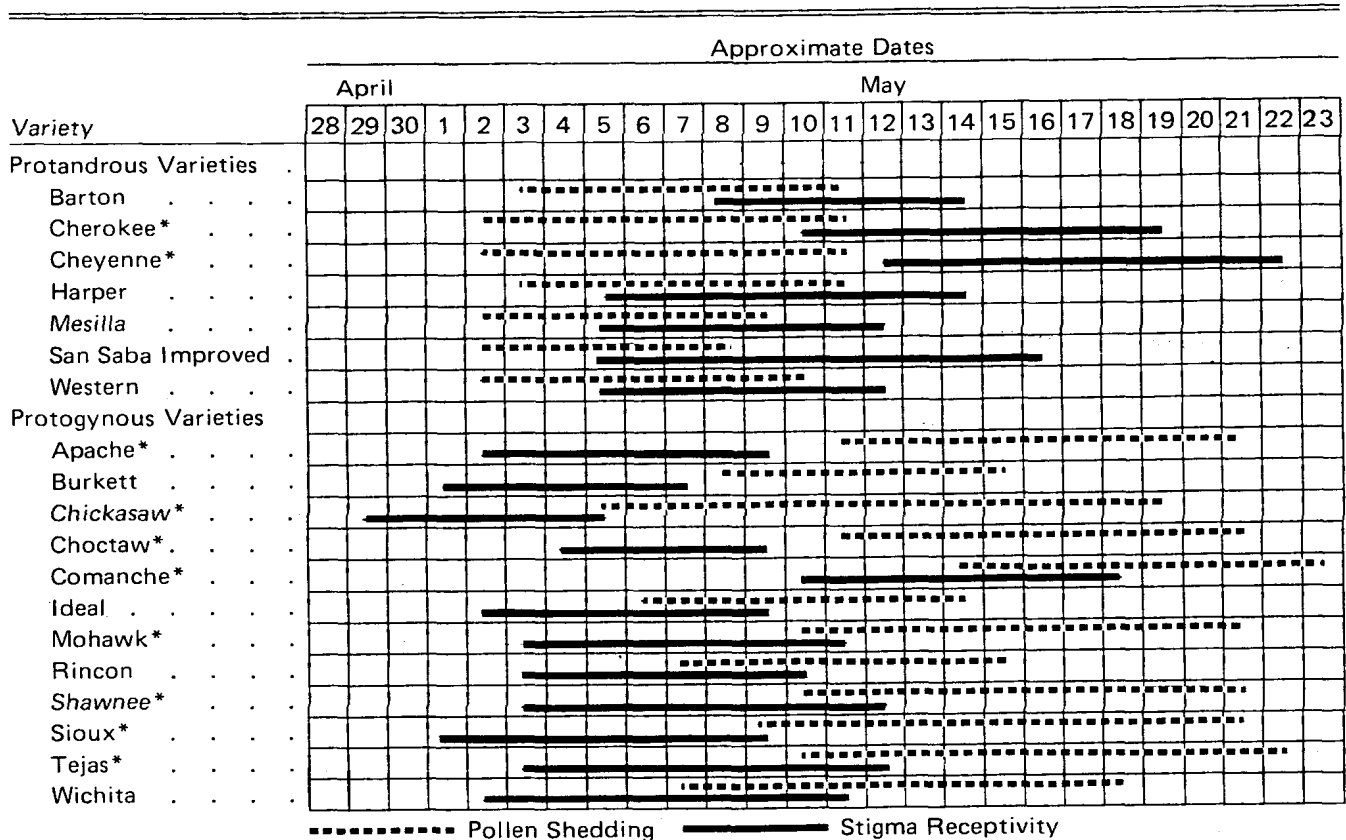
This variety originated as a seedling. The tree is vigorous, a heavy producer, and starts bearing at an early age. It branches profusely and responds well to pruning, making it appropriate for closely spaced

orchards. 'Western' is less susceptible to zinc deficiency than many other varieties. It is also less affected by water stress and heat than other cultivars.

In New Mexico, more acres are planted to 'Western' than any other variety. It is a consistent producer, but tends to overload in some years, producing small nuts, low kernel percentage, and about 5–10% pops every year. Alternate bearing may develop because of the heavy bearing tendency and relatively late nut maturity. In some years, nuts remain in the shuck because of its late-maturing characteristic. 'Western' sheds its pollen before the pistils are receptive (protandrous), and should be pollinated by a late pollen-shedding (protogynous) variety such as 'Wichita'.

The nuts are elongated, rounded on the basal (stem) end and tapered toward the apex. Shells are thin and brown with moderate dark brown stripes. The nuts are medium-sized (63–74/lb), although larger nuts may be produced in some seasons (52/lb). They yield 55–60% kernels. 'Western' nuts are well adapted to mechanical shelling, producing a high percentage of unbroken halves.

Table 2. Average dates and duration of pollen shedding and stigma receptivity of selected pecan varieties in southern New Mexico



*Blossom data collected at Brownwood, Texas, and adjusted to southern New Mexico's growing season

Table 3. Average number of days from flowering to harvest, 1960–1964, Las Cruces, NM.

Variety	Avg. no. of days
Peruque	171
Barton	175
Sullivan	175
Ideal (Bradley)	179
San Saba Improved	180
Rincon	181
Burkett	182
Mesilla	182
Western	189

'Wichita' (Protogynous).

Parentage: 'Halbert' (female) and 'Mahan' (male).

Trees produce good foliage, come into bearing at an early age, are productive, and mature early in the fall, about one week before 'Western'. 'Wichita' holds its foliage well into the fall, which aids in kernel maturation. The trees are moderately upright, grow rapidly when young, and branch readily. However, these trees are slow growers overall. The branches tend to form narrow angles, which may break where high winds occur frequently; however, branch selection can reduce this defect. Trees are susceptible to zinc deficiency, requiring adequate zinc management for proper leaf development and tree growth. Moisture stress affects 'Wichita' trees more than 'Western', causing them to have more “sticktights” at the end of the season after a freeze occurs.

Although 'Wichita' trees tend to overbear, and can fall into a pattern of alternate bearing, this tendency is not as marked as it is in 'Western Schley' trees. Each cluster bears four or five nuts, and seven or more is not unusual. Nuts may be smaller in years of heavy production, but they will be well filled, usually so tightly that kernels are frequently chipped in cracking. In some years, especially when alternate periods of sunlight and cloudiness occur, 'Wichita' pecans tend to crack open along the area opposite the seams, causing pecans to drop.

The nuts are large and have purplish black stripes and splotches on clear, brown shells. They are moderately elongated, with the apical end normally a little smaller than the basal end. 'Wichita' nuts are larger than 'Western Schley'. There may be 50–62/lb, although they sometimes average 44/lb. They yield 56–62% kernels. Unfortunately, kernels turn amber quickly when hot temperatures occur during harvest, a factor that could negatively affect its final price. Pecans should not be left on the tree too long at harvest time. 'Wichita' has two purposes: It can be sold to a sheller

or retailed in-shell. 'Wichita' trees shed pollen late (protogynous) and are good pollenizers to the protandrous 'Western Schley'.

'Wichita' pecans tend to go dormant later than other varieties. This may cause problems in orchards, especially young trees, whenever low temperatures occur early in the fall. Withholding water in late summer or early fall and avoiding nitrogen fertilization after June 30 helps young trees become dormant early and decreases the possibility of late fall or winter injuries. Painting tree trunks with whitewash, a practice recommended for all young pecan trees, will decrease trunk temperature during the day, especially on the southwest side, thus diminishing winter injury resulting from sudden temperature drops that occur in the evenings during the winter.

'Ideal' ('Bradley') (Protogynous).

Parentage unknown, probably of seedling origin.

Trees grow rapidly but they are slower to come into bearing than 'Western Schley' and 'Wichita'. They are not heavy producers and do not have a tendency toward alternate bearing. When trees are young, they are susceptible to injury from severe fall freezes. The tree is a prolific catkin producer and sheds pollen late in the season. 'Ideal' trees usually have a large first fruit drop.

Nuts of this variety have exceptionally good quality, with a high oil content and superb flavor. Unfortunately, they are small, 70–80/lb. The kernel yield is 55–60%.

The oblong oval nuts are light brown with few markings. They separate easily from the thin shells. They are always well filled, even when trees are heavily loaded. They mature 10–14 days earlier than 'Western'. However, shucks do not appear to be open because they are almost round in shape.

OTHER VARIETIES

'Apache' (Protogynous).

Parentage: 'Burkett' (female) and 'Schley' (male).

This variety combines good production and tree vigor with desirable nut qualities. The young trees are especially vigorous. The tree structure and foliage resemble those of its parents ('Burkett' and 'Schley').

'Apache' nuts are blocky, a little longer than 'Burkett', and slightly flattened on the apex. The shells are thin, with color and markings like 'Western'. 'Apache' nuts fill well to yield about 60% kernels. The crop ripens a little later than 'Western', but the nuts are larger, 45–55/lb.

'Barton' (Protandrous).

Parentage: 'Moore' (female) and 'Success' (male).

Nuts from this variety mature 10–14 days earlier than 'Western' and separate easily from the shucks. The trees bear when quite young and have a tendency toward biennial bearing in New Mexico. The trees are small- to medium-sized, well suited for close spacing. Rosette caused by zinc deficiency is a serious problem when 'Barton' trees are planted in high-alkaline soils or soils containing caliche. They may also be somewhat susceptible to cold.

The nuts are light colored, smooth, attractive, medium to large (50–60/lb), oblong, and somewhat blocky with thin shells. The kernels are light colored and separate easily from the shell. The kernel yield ranges between 50 and 55%. Quality is excellent with high oil content and rich flavor.

Other varieties perform better in New Mexico than 'Barton'; however, it can be a good variety for home plantings and for selling in-shell.

'Burkett' (Protogynous).

Parentage: Seedling origin.

This variety is popular as a landscape tree or in the home orchard. These trees grow vigorously, producing a naturally symmetrical and spreading top. They are not outstanding in yield, but they make up for this to some extent by their rapid growth. The black pecan aphid seems to have a special affinity for 'Burkett' leaves.

When well developed, the nuts are uniformly large, round, and have a distinctive flavor. The shells are moderately thin and the kernels are easily extracted in halves when shelled by hand. The round nuts are not adapted to machine shelling. The nuts are large, 45–60 to the pound. The kernel yield is 50–58%.

Late maturing, 'Burkett' is adapted to long growing seasons and high temperatures. Nuts may be poorly filled when early freezes occur.

'Cheyenne' (Protandrous).

Parentage: 'Clark' (female) and 'Odom' (male).

These are medium-sized trees with profuse lateral branching; limbs are relatively thin but strong. 'Cheyenne' trees have poor shoot growth and small leaves; however they are productive and come into production at an early age. Trees have a protandrous blooming characteristic, making them suitable to pollinate protogynous varieties such as 'Wichita'. This variety has some fruit set problems and has a tendency to alternate bearing.

'Cheyenne' nuts are moderately blocky with blunt, rounded ends and are slightly pointed at the apex. The

kernels have a nice golden color. They are relatively loose in the shell, and pieces separate readily. Parallel grooves in the kernel halves are open and smooth, so the intershell falls out easily in commercial shelling.

Dark stripes and splotches at the apical end on a clear, brown shell make the nuts attractive. They are medium-sized, 55–60/lb, sometimes less. The kernel color is light and the oil content and flavor are excellent. A distinct characteristic of this variety is a slight wrinkling of the kernel surface. The nuts yield 57–61% kernels.

'Cherokee' (Protandrous).

Parentage: 'Schley' (female) and 'Evers' (male).

This variety has not been adequately tested in New Mexico. 'Cherokee' was introduced because of its extreme precocity, high bearing characteristic, early nut maturity and high quality. It appears to be well suited for use in high density plantings as a temporary tree.

The 'Cherokee' tree grows vigorously and branches profusely. It produces many nuts per cluster. The nuts mature early and are well shaped for commercial shelling. Nuts are medium sized, 50–70/lb. Shells are thin and the kernel yield is 55–60%. Kernels are of high quality. The shallow parallel grooves in the kernel halves permit easy release of the corky internal shell upon cracking, a characteristic that aids processing. However, its tendency to produce dark kernels makes it an unacceptable variety for some growers.

'Chickasaw' (Protogynous).

Parentage: 'Brooks' (female) and 'Evers' (male).

This variety is recognized for its extreme precocity and early nut maturity, good foliage, and high quality. The trees are vigorous and branch profusely, even while young. These characteristics also make 'Chickasaw' suited for use in high-density plantings as a temporary tree.

The nuts are borne in large clusters. They have a medium-thick shell and a satisfactory shape for shelling, although the basal end is considerably larger than the apex. They are medium-sized to small (55–75/lb). The parallel grooves of the kernel halves permit free release of the corky internal shell upon cracking and shelling. Nuts yield 52–58% kernels.

'Choctaw' (Protogynous).

Parentage: 'Success' (female) and 'Mahan' (male).

This variety requires a long growing season and may mature too late for use in some pecan-growing areas of New Mexico.

The trees are vigorous, branch freely, and have the general appearance of eastern varieties. They begin to

bud and leaf out late, which may protect them from late spring frosts. Leaves remain green until killed by a hard freeze, which may account for the late maturity of nuts. 'Choctaw' usually bears heavily.

The nuts are large (40–50/lb) and symmetrical. The thin shucks open well when nuts are mature. The shells are thin and careful handling is needed to prevent shell breakage. Some nuts may split when hot dry days are followed by extremely wet periods. Some pecans are also broken during mechanical harvesting. The kernels separate well from the shell, are bright colored and smooth, and have a high oil content and rich flavor. Kernel yield is approximately 60%.

'Comanche' (Protogynous).

Parentage: 'Burkett' (female) and 'Success' (male).

This variety produces a large nut, 35–50/lb. It is recommended for areas where 'Burkett' does well and is used principally for the in-shell trade. The nuts are more or less round, similar to those of 'Burkett', but with more shell markings. Shucks are medium thick and have ridges along each of the four sutures, also much like 'Burkett'.

The trees are vigorous, with medium-sized leaves. They are reported to be difficult to train because they tend to produce narrow-angle crotches.

'Comanche' kernels are bright colored, high quality, and free of the black pepper-like dots found on 'Burkett' kernels. The kernel yield is 52–57%.

'Desirable' (Protandrous).

Parentage: Unknown, probably 'Success' and 'Jewett'.

This variety bears a large pecan with very good kernel quality. Nut shape is oblong or blocky with an obtuse base and an apex that varies from obtuse to obtuse-asymmetric. It is a regular producer, seldom producing massive crops that exhaust the tree or bring on alternate bearing. 'Desirable' takes approximately eight years to come into production. Young trees growing vigorously will break when subjected to heavy rains and high winds, like 'Wichitas'. 'Desirable' in the western region produces a tree with no alternate bearing, is drought tolerant, and exhibits no zinc deficiency. However, it produces a low average crop and low kernel yield (below 55%). The tree is moderately open and usually has a massive catkin production.

'Harper' (Protandrous).

Parentage: 'Mahan' (female) and 'Western Schley' (male).

This cultivar was released in 1967 by the NMSU Agricultural Experiment Station. The buds break

slightly later in the spring than 'Western' buds, giving 'Harper' a little more protection against late spring frosts. The trees tend to bear biennially, but less so than 'Western' or 'Wichita'.

The nuts mature about 10 days earlier than 'Western' and are about 20% larger (53–60/lb), but sometimes do not fill well. They are longer in diameter than 'Western' and are more tapered from apex to base. Shucks separate from the nuts readily, leaving few stick-tights. The shell's outer surface is somewhat smoother than 'Western'. 'Harper' nuts have thin, medium-colored shells, moderately marked with black.

The kernels are straw colored and relatively smooth. Grooves are straight, parallel, and of medium width and depth. Kernel quality is more uniform from year to year than either 'Western' or 'Wichita'. Shell-out yields 55–60% kernels.

'Mesilla' (Protandrous).

Parentage: 'Onliwon' (female) and 'Humble' (male). A cultivar released by NMSU-AES.

This variety produces vigorous, stately trees that are excellent for landscaping, producing an abundance of both nuts and shade. The trees are precocious and prolific, and the abundant foliage is resistant to the black pecan aphid.

Shucks separate readily from the nuts. 'Mesilla' may produce up to 10% blank nuts (pops) in some seasons. The nuts are large (47–55/lb), oval-oblong, dark brown with black stripes and sprinkled with small black pepper-like dots. Shells are medium to thick, but the kernels shell out well and are of excellent flavor. Kernel percentage ranges from 50–61%.

'Mohawk' (Protogynous).

Parentage: 'Success' (female) and 'Mahan' (male).

The trees are vigorous with large foliage of the eastern type. Their growth habit is intermediate between erect and spreading. This variety was introduced because of its large (30–50/lb), attractive, high-quality nuts. Trees produce pecans at an early age. Nuts mature early and are particularly desirable for early in-shell retail marketing; however, they must be harvested two or three times each season. They grow well in areas like Ft. Stockton, Texas, but in New Mexico after reaching full production age (over 14 years old), trees tend to alternate bear and produce small low quality pecans.

The nuts are blocky, similar to 'Stuart', but are slightly more elongated with more rounded ends. The flinty shell is thin with little soft inner shell. There is also little of the central septum between halves and it separates easily upon shelling. The kernel surface is

fairly smooth, and the parallel grooves are shallow and open. Plump kernel development has not been consistent from year to year. Shell-out ranges between 55 and 60% kernels.

'Pawnee' (Protandrous).

Parentage: 'Mohawk' (female) and 'Starking Hardy Giant' (male).

One of the latest varieties released by USDA, it has the characteristic of maturing exceptionally early, being prolific, and precocious. Trees probably have low chilling requirements. Tree form is very upright and narrow, making it appropriate for high density plantings. It has narrow but strong crotch angles. Once the tree begins full production, lower branches often droop. The tree is very tolerant to winter freezes. Nut shape is an oval that approaches being oblong. The base is round and the apex is cuspidate. Nut size is large, about 49/lb in young trees. Kernel percent is about 56–57%. Both nut size and kernel percent are expected to decrease when trees reach full production.

'Rincon' (Protogynous).

Parentage: 'Delmas' (female) and 'Onliwon' (male). A cultivar released by NMSU-AES.

These trees are hardy, vigorous (especially when young), and produce vigorous, attractive foliage. They are slow to come into bearing, but bear consistently, relatively free from the biennial bearing habit.

Nuts are large (45–50/lb), medium to thick shell, elongated, and dark brown with black stripes. The high-quality kernels shell out clean and are characteristically striped with small pepper-like dots. The kernel percentage ranges from 52–56%.

'Salopek' (Protogynous).

Parentage: 'Wichita' (female) and 'Onliwon' (male). This variety was officially released in 1990 by the NMSU Agricultural Experiment Station.

Little information is available in relation to tree growth. Nuts are oblong in shape with an oval cross section, the base is obtuse, while the apex shape is acute. The outer shell is thin, making nuts easy to crack and resulting in high percent of intact halves.

'San Saba Improved' (Protandrous).

Parentage: seedling.

These trees are medium-sized and open-branched. Young trees grow reasonably well but are slow to bear. Once they start, they bear regularly without

overload, but sometimes have a tendency to alternate bearing. Leaves drop early in the fall, which aids in harvesting. 'San Saba Improved' matures two to three weeks earlier than 'Western', and nuts separate readily from the shucks. On young trees, the nuts are a large, in-shell type, but when the tree ages it produces a smaller nut.

The slightly elongated nuts are small, 72–77/lb. Kernel quality and high shell-out, 55–60%, make this variety popular with shellers.

'Shawnee' (Protogynous).

Parentage: 'Schley' (female) and 'Barton' (male).

The trees grow vigorously but produce few lateral shoots. The leaves are of intermediate size. Because of its precocity, 'Shawnee' is well suited for close planting (temporary trees), and responds favorably to pruning. The variety is prolific, bearing well-filled, high-quality nuts, 50–70/lb. Nuts ripen early in the season.

Nuts are light brown with relatively few dark stripes. They are slightly elongated, round at the center and at the base, but moderately flattened at the apex. The ends are relatively blunt, with the apex coming to a point. The thin shells account for the kernel yield of about 60%.

Kernels are smooth with neat shallow parallel grooves on the dorsal side and little septum grooves on the ventral side and at the base. They are bright in color and have an excellent flavor and good keeping quality. This variety is a favorite with shellers, but it is also acceptable to the in-shell trade.

'Shoshoni' (Protogynous).

Parentage: 'Odom' (female) and 'Evers' (male).

Trees are early bearing and heavy producers when young, making them ideal for temporary trees. They have strong branch crotches, early nut maturity, good nut quality, and an especially wide adaptability range. Trees are usually hardy to winter cold; they have withstood temperatures of 14°F without injury. *This variety is worthy of trial plantings in more northern areas of New Mexico.* The strong, upright growth habit of 'Shoshoni' may make it well adapted to high-density planting, needing less pruning than most other varieties. Trees are low producers after reaching full production stage.

Nuts mature early, but with unusually heavy crops some cork may adhere to the kernels. Nuts tend to sprout in heavy rainfall later in the season in the West. The large nuts, 40–60/lb, have a shape suitable for shelling. Shelling quality is good, yielding a high percentage of whole kernel halves upon shelling. Shell-out ranges between 50 and 58%.

'Sioux' (Protogynous).

Parentage: 'Schley' (female) and 'Carmichael' (male).

The nuts have exceedingly high kernel quality and are easily cracked and shelled with commercial machinery. The trees combine good vigor and high production, but they tend toward biennial bearing. Trees come into production at an early age and the crop ripens early to mid-season, earlier than 'Wichita' and considerably earlier than 'Western'. Trees tend to bloom early in the season, making them susceptible to late freezes.

Like 'Wichita', 'Sioux' is precocious and offers possibilities in orchards where close spacing and annual pruning is practiced. The nuts are somewhat flat. Shells are medium brown with stripes. 'Sioux' produces smaller nuts than most varieties grown in New Mexico, 60–80/lb, but it is an excellent shelling pecan of extra-high quality.

The smooth, bright kernels have high quality, an excellent appearance, and a high oil content of excellent flavor. The parallel grooves in the kernel halves are small and shallow, which makes for easy shelling. The kernel yield is 58–61%.

'Stuart' (Protogynous).

Parentage: seedling.

'Stuart' is the most important pecan cultivar. It is widely planted in the Southeast and contributes a dominant percentage of the world's total pecan yield. Budbreak occurs relatively late for 'Stuart'. The canopy of young 'Stuart' trees is among the narrowest of all pecan cultivars. It forms an upright and compact tree. Branches have narrow crotch angles, and trees are very sensitive to overcrowding. Trees are not precocious. Nuts mature in early mid-season. However, shuck dehiscence is staggered over a long period, an undesirable trait, and the tree usually has to be shaken multiple times during harvest season. Nut shape is oblong with a round to obtuse base and an obtuse to obtuse-asymmetric apex. Nuts are blocky, having a

classical shape among pecan cultivars. Nuts are large. With 46–52/lb, they have excellent shelling characteristics and produce a high percentage of halves. However, nuts have a low kernel percent, averaging 47–49%.

'Sullivan' (Protogynous).

Parentage: 'Stuart' (female) and 'Nugget' (male).
A variety released by NMSU-AES in 1983.

Named for Dr. Darrell T. Sullivan, professor emeritus in NMSU's horticulture department, this variety produces elongated nuts with thin shells and shallow, medium-wide kernel grooves, characteristics favorable for shelling. Nuts weigh slightly more than nuts from 'Western', but less than nuts from 'Wichita'. It averages 65/lb. Kernel percentage averages 56%. 'Sullivan' is suitable for planting in northern New Mexico areas where the growing season is too short for maturing 'Western'. 'Sullivan' averages about 175 days from pollination to shuck split. 'Sullivan' pecan nuts are usually on the ground before shucks split naturally on 'Western' or 'Wichita' pecan varieties.

'Tejas' (Protogynous).

Parentage: 'Mahan' (female) and 'Risien #1' (male).

Trees have precocity, prolific bearing, extreme vigor, strong branch crotch angles, dense foliage, moderately early ripening, and excellent cracking and shelling qualities. They are alternate bearers. 'Tejas' is considered excellent for high-density planting or as a temporary tree, and is suitable for landscaping. It is an excellent pollenizer for most varieties because it sheds pollen for a long period of time. This is a vigorous tree that could be appealing for homeowners.

The nuts are well shaped for commercial cracking and shelling. The dorsal parallels are shallow, so the corky internal shell separates easily from the kernels. Kernel shell-out is 50–56% and consists mostly of unbroken halves. Nuts are medium to small and somewhat variable, 50–75/lb.

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