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Introduction

The selection of pecan cultivars to plant is probably the most important decision a pecan grower will make. Pecan trees usually live longer than the person who planted them. The mistakes or successes the grower makes in selecting cultivars remain as long as the trees are kept, which can be several generations. Some cultivars perform well when trees are young, then begin alternating cycles of high yields but poorly filled nuts in the on year and low or no yield the following year. Some cultivars performed poorly under production practices of earlier years but perform well under modern production practices of insect and disease control, close-mowed sod, herbicide strip, and irrigation. This bulletin is on the performance of 86 cultivars grown at Tifton, Georgia. Some of these are numbered selections from the USDA breeding program, but for the purpose of this report will be referred to as cultivars. Many of these trees were planted prior to the development of statistics as a science; therefore, this bulletin is not a statistical comparison of one cultivar against another. Instead, this publication looks at the performance of each cultivar, considers the time period that it grew, and the cultural practices it received during that time period, and compares it with the expected performance of a pecan tree. A pecan grower then may look at a cultivar's good and bad points and determine if it fits the objectives. For example, one prominent grower-sheller is interested in the maximum nutmeat production per acre. He would be less concerned about nut size, shape, and percent kernel. Kernel color would be of less interest to the person dealing with chopped meats in the confection industry than to the person selling mammoth halves. This publication describes the yield that can be expected from each cultivar as it ages, indicates the regularity of bearing, and gives a good picture of nut size and filling characteristics, kernel color, and kernel quality. Pollination and pistil receptivity data ([figure 1](#)) should enable the readers to select cultivars to pollinate the cultivars they have or want and determine the cultivars that will be pollinated by the ones they have or want. The amount of data in this report is massive and is intended as a reference. This publication supersedes Georgia Agricultural Experiment Station Bulletin 295 (Worley, Woodard, and Mullinix 1983). Many publications have come from past performance of many of these cultivars (see References). Nut descriptions and photographs of nuts and

nutmeats are available from other publications (Thompson and Young 1985; Goff, McVay, and Gazaway 1989; Santerre 1994; Sparks 1992) and will not be presented here. Literature abounds with publications dealing with one or more cultivar s performance at other locations and is too voluminous to cite here. Our purpose is to show what these cultivars did at this location under the circumstances in which they grew. A short statement is presented that gives our impressions of each cultivar and occasionally some qualifying statements about why a cultivar did what it did.

Materials and Methods

This study covers the largest time span of any known pecan cultivar study in the world where continuous production records have been kept. The first trees were planted 40 × 40 feet apart at the Coastal Plain Experiment Station in 1921 by O.J. Woodard soon after that station was established. This planting included most of the cultivars known at that time: Stuart, Schley, Moneymaker, Nelson, Van Deman, Pabst, Moore, Summers, Success, Frotscher, Alley, Delmas, Mobile, and Curtis. Tesche, Big Z, Bradley, and President were added in 1922 and Mahan in 1928. In 1929, Burkett, Texas Prolific, Farley, Oklahoma, Western Schley, Williamson, Halbert and San Saba were planted. Desirable, Brooks, and Sumner were planted in 1940. Three trees of each cultivar were planted in a row. Because of crowding, the center tree of the earliest plantings was removed in 1944. Success and Nelson were removed in 1960 when a road was constructed on the north end of the orchard. Frotscher was removed in 1991 to allow for fencing.

In 1955, the planting was expanded into an adjacent area with spacing 40 × 50 feet. Usually, four trees of each cultivar were planted, with plums and blueberries interplanted. Plums were removed in 1964 and blueberries in 1970. Cultivars were added to this orchard as follows: 1955—Cape Fear, Elliott, Gloria Grande, and Barton; 1956—Woodard, Davis, and Hastings; 1957—Starking Hardy Giant; 1960—Kernoodle; 1964—Mahan-Stuart, Pensacola Cluster, and Choctaw; 1970—Wichita and Mohawk; 1976—Chickasaw, Cheyenne and Shoshoni; and 1977—Cherokee.

Ivey and additional trees of Woodard, Farley, and Desirable were added at a 40 × 40 foot spacing in 1964. Occasionally, additional trees of some of the same cultivars were added, such as Desirable, Elliott, Farley, Stuart, Van Deman, and Woodard. A maximum of 13 trees of Woodard and 11 of Desirable were included in the data.

In 1979 a new orchard with a spacing of 40 × 40 feet was begun at the Ponder Farm. Many of the newer named cultivars and some numbered selections were included in the planting (table 1). Four trees of each cultivar were included and randomized within years. Additional cultivars have been added to the planting but only those with nine or more years data are included in this report. Table 1 shows yield averaged over trees of the same cultivar and age, but trees might not have been planted in the same year.

Records are not available on fertilizer rates and other cultural practices utilized during the early years of the test, but apparently the best production practices known at the time were used. Trees were sprayed with insecticides beginning in 1962 and fungicides beginning in 1970, using extension service recommendations and scouting for insects. Insecticides were applied only when an insect buildup occurred. Since 1962, trees have received 100 pounds N/acre/year as ammonium nitrate and other nutrients and lime when leaf analysis or soil analysis indicated need. Drip irrigation has been provided through six 1 gal/hour emitters/ tree since the fall of 1974. Irrigation water was applied when the matric potential reached -1 bar. Selective limb pruning has been practiced annually in the older orchards since 1974–75. This procedure molds and holds the trees within the allotted space by removing one to three limbs back to another limb, not leaving a stub and topping at 30 feet. Microsprinkler irrigation has been used in the Ponder orchard, with water applied similarly from one microsprinkler per tree.

Total yield per tree was obtained by harvesting each tree independent of other trees by hand or by a Lockwood harvester. A 50-nut sample was collected from each tree for quality analysis beginning in 1969, sized by categories, separated by 1/16 inch (0.16 cm) of diameter, and then cracked. Kernels were graded into fancy, standard, and amber grades. Percentage of each size, kernel grade, total percentage edible kernel, specific gravity, and percentage fill were calculated. Fancy kernels were plump, well-filled kernels of the brightest color. Standard kernels were similar but darker. Amber kernels were darker than standard kernels and/or had edible kernels with defects. The standard grade corresponds to Goldkist's special grade. Goldkist's color chart was used in grading kernel color. The percentages of the various kernel grades are percentages of the in-shell nut. Nut volume and percentage fill were determined by water displacement. Percentage fill is the percentage of the volume inside the shell that is filled with kernel. The average size and quality values ([table 3](#)) cover all trees over all years that had a measure of the variable. Total percentage kernel is the sum of fancy, standard, and amber for a particular tree in a year, but the overall averages of individual grades may not add to the overall average percentage kernel because of year-to-year variation and rounding. More years' data are available for percentage kernel than for kernel grades for the older cultivars.

Results and Discussion

The yield for each cultivar at each year of the tree's age ([table 1](#)) reveals the precocity and consistency of production for each cultivar. The average annual yield over the first 10 years and at five-year increments thereafter ([table 2](#)) gives a good idea of the returns expected for a cultivar over a specified time period. The average smooths the irregularity in the production curve caused by irregular bearing and also considers the nonproductive development years when no income was produced.

Nutmeats are the ultimate product of pecan production. The average annual yield of nutmeats is also presented for each of the time periods by multiplying the average annual yield by the overall average percent kernel ([table 2](#)). These average

annual yield figures can be used to calculate the time required to recover expenses and make a profit.

One of the obvious observations in the study has been the much greater early life production of cultivars planted after 1954 than those planted before 1955. Those planted later had the advantage of the improved cultural practices that also increased the production of the older trees but at a greater age. None of these older trees appeared among the top five yielders for the first 35 years of the trees age (table 4). Note that Stuart became the top producer (average annual yield since planting) for the first time after 60 years. The reader should be aware that these older cultivars, if planted under the modern cultural practices, would probably produce better than they did in this study. For example, Stuart produced less than 10 pounds of nuts in its first 10 years, compared with 150 for Linberger. There has been no period of yield decline over the tree's age, but it tends to level at some point beyond 25 years. The last year shown for each cultivar is 1994, unless the cultivar was removed earlier. The year for a particular yield can be determined by counting the growing seasons backward from 1994. Many cultivars show wide fluctuations in yield from one year to the next; e.g., Mobile. Others are more consistent; e.g., Gloria Grande. There is not always a clear-cut alternate bearing cycle, but usually the extra large yield year will be followed by a low- or no-yield year. Many of the cultivars that are severe alternate bearers have high yields of poor quality nuts in the on year and few, if any, nuts the next; e.g., Barton and Grabohl. If a method of chemical or mechanical nut thinning were developed, many of these cultivars may be changed from not acceptable to highly acceptable. Cultivars that are extremely scab-susceptible had very low production before scab was controlled by fungicide sprays, but they did well afterwards; e.g., Delmas and Western Schley.

Quality data (table 3) are very important in selecting a cultivar. Large nuts are usually preferred, but there are many good small-nut cultivars. Unfortunately, many of the highly productive large-nut cultivars produce poorly filled nuts with ugly kernels; e.g., Mahan-Stuart. Nuts with >50% kernel, with a large percentage fancy grade kernels with >70% fill, and >.70 specific gravity are desired. Nuts with thick shells (e.g., Owens) and small nuts (e.g., Candy) cannot have a high percentage kernel, although the quality of the kernel may be excellent. With equal shell thickness, the percentage of the nut volume made up of shell decreases with increasing nut size.

To determine which cultivars pollinate each other, one must determine the time period for pistil receptivity in the chart (figure 1), then match this period with one or more cultivars that shed pollen during this period. Since these periods vary from year to year, more than one pollinator will help assure pollination. Protanderous cultivars shed pollen before pistillate receptivity and protogynous ones are receptive before pollen shed. Actual dates of pollen shed should be used in selection of cultivars as pollinators rather than dicogamy type. A protanderous tree might still miss pollinating some protogynous cultivars (Worley et al. 1992).

The average annual yield of the older varieties was handicapped by the lack of modern cultural practices in their early years. Growers who have these varieties will

be interested in the annual yields they can expect from mature trees under modern cultural practices. [Table 5](#) gives data for the older varieties planted in 1956 or earlier. Average yield per tree, average percent kernel, and average yield of kernel/tree are given for 1970–1994 after modern cultural practices were started. The oldest of these trees was planted in 1921, the youngest in 1956. Note that the five highest yielders of nuts in lbs/tree/year during this period were Stuart (139), Gloria Grande (123), Western Schley (109), Farley (105), and Davis (103). The six highest yielders of kernels were Stuart (64), Western Schley (58), Gloria Grande (57), Farley (54), Cape Fear (46), and Woodard (46).

Cultivar Comments

Suitable For Planting

- Caddo :** Football-shaped nut, like its Brooks parent, but larger. It is the top yielder (33 lbs/tree/year) in the newest planting at age 16. It has high percent fancy and total percent kernel (53). Small nut size is its major liability.
- Cape Fear :** A good all-around nut, high percent kernel, good kernel color, among the top four yielders from age 25 through 40, about the size of Stuart . Some growers have reported poor filling in some years, but we have not noticed it in this study where selective limb pruning has been used. Sometimes it has been infected with fungal leaf scorch, but that has not been a serious problem here.
- Desirable :** It is appropriately named. The large, well-filled nut brings top price on the market. Yield for this tree should be much better than these records show. The earliest planted trees were along the edge of the orchard and were subject to losses from predators. Some were planted among larger trees and grew off slowly. It is an excellent sheller, yielding many mammoth halves. It tends to shed many of its nuts during the year and thus seldom overloads and yields are comparatively consistent.
- Elliott :** Small, teardrop-shaped nut of extremely high quality. Growers should receive a premium price because of its plump, perfect halves. Percentage fill and specific gravity are high. It bears alternately, but nuts are high quality in the on years. It is excellent as a party nut, and has a distinct hickory nut flavor. Growers should seek those specialty markets that are aware of the merits of this cultivar. Otherwise, it might bring seedling prices. High scab resistance makes it a good choice for dooryard plantings.
- Farley :** This small, cubical, thin-shelled nut has excellent quality nuts (51% kernel) and consistently good yields. The thin shell makes it susceptible to bird damage. The older trees of this cultivar were at the lower edge of the orchard and lost some nuts to predators; thus, yields would have been even greater than those shown. It still

ranked in first place in average annual yield at age 45 through 60. The nut is easily shelled into perfect halves either mechanically or by hand. The tree lacks precocity and also matures fairly late in the season. Resistance to scab and other diseases make it an excellent choice for dooryard plantings. It might be difficult to find Farley trees in nurseries.

- Forkert : A large nut with thin shell and highest percent kernel (59) of any named cultivar. It looks good through the 16th year in these tests. In Mississippi, old trees continue to produce well. It lacks precocity.
- Gloria Grande : Similar to Stuart in kernel quality and tree appearance, but the nut is much larger than that of Stuart . Although percent kernel was only 45, it was the top yielder for in-shell nuts and nutmeats at age 25 through 40. Yield has been consistently high. Black aphids are attracted to it early in the season.
- Stuart : The most widely known and widely planted cultivar in the southeast and is used as a standard to measure other cultivars. Its production in 74 years (73 lbs/tree/year, 34 lbs kernel/tree/year) far exceeds that of any other cultivar of the same age. It did not reach this status until the 65th year. Obviously, this cultivar has been proven over time and still produces well. One of the oldest Stuart trees had the advantage of being a corner tree and the other had the advantage of being an end tree; thus, these yields are greater than one would expect had they been inside the orchard. Stuart is a medium-sized nut with mediocre kernel percent (46) and kernel grade, but percent fill and specific gravity are among the highest. Yield has been excellent and consistent under modern cultural practices. The cultivar lacks precocity.
- Sumner : A local nut of good size and high percentage kernel (52) and good filling characteristics. The tree is precocious and bears consistently good crops. The older trees were planted on the lower edge of the orchard near woods; thus, trees grew off slower than other trees and predatory losses were high early in the study. There was wind damage to one of the old trees during a storm. The cultivar is capable of producing better yields than these data show.
- Woodard : A local nut with extremely thin shell and high percent kernel (55). It made the top five in average annual yield by the 35th year. It is a consistent yielder of high-quality nuts. Its extremely thin shell may present problems if handled roughly. It would be excellent if marketed to those who shell nuts by hand, since it is so easily cracked. It is susceptible to scab, but routine spray programs easily control the problem. Though also susceptible to powdery mildew, it suffers little damage from the mildew s presence.

Suitable to Keep, but Not Recommended for Planting

- Alley : Similar to Stuart in size and quality. Scab and black aphid control might be a problem.
- Big Z : Very similar to Frotscher in nut and kernel appearance and quality. Yields have been good under good management. Kernel color would limit it to chopped nuts or uses where color would not matter.
- Bradley : Small nut.
- Brooks : Small football-shaped nut, spreading tree, very productive. It was planted on an edge of the orchard that subjected it to loss from predators; nuts are easily carried off by birds.
- Burkett : Round-shaped nut similar to a large hickory nut, consistent bearer. Flecking on seed coat reduces kernel grade. High percent kernel. Nuts frequently split at suture. Spreading tree.
- Curtis : It has a small, late-maturing nut with high percentage kernel. A flecking on the kernel testa might be objectional to some markets. High resistance to scab makes it suitable for unsprayed yard plantings. Its small size (89 nuts/lb), low yield, and late maturity are its biggest minuses.
- Davis : An attractive, large in-shell nut with high yield (second place at 25, 30 and 35 years). Its thick shell and low percentage fill make for a low percentage kernel (45). Would be attractive for the in-shell holiday market, but low percent kernel would be a problem for shellers.
- GCPES-2 : This is an unnamed local seedling under test since 1955. The small angular nut is similar to Farley . Percentage kernel (57) is among the highest, and it shells out into unbroken halves. Yields have been mediocre.
- Kernoodle : An extra-large nut (45 nuts/lb) with high percent kernel (53). Kernels are smooth and attractive but a little dark. Nuts frequently split at the suture at harvest, but kernels are usually still good.
- Moneymaker : A controversial old cultivar with good yield, appearing among the top four yielders at age 45 and several times thereafter (table 4). This round nut has a thick shell and low percent kernel (44), but is well filled and has a high specific gravity. Its early maturity in the fall adapts it to the early holiday specialty market. Shellers would discount it for its low percent kernel and dark kernel color.
- Oklahoma : Nut size and kernel quality resemble those of Stuart . Pistil receptivity is extremely late; it would need to be planted with a late pollen shedder. Its major redeeming characteristic is low spreading shape and interior bearing characteristic that should

adapt it well to a pruning program. Yields have been good after modern cultural practices were installed. It was among the top four to five yielders at age 55 through 65.

- Pabst : Yields were second to Stuart at 74 years of age. Nut is about the size of Stuart with a thick shell and low percent kernel (45). Nuts are well filled and attractive for the in-shell trade. Tree has tremendous size, but it is very susceptible to scab and powdery mildew.
- Pensacola
- Cluster : High-yielding cultivar with a large nut, but kernel quality and percentage fill are low.
- President : Small nut with low percent kernel but well-filled nut. One of the trees was affected by a canker and yield was low on it.
- Schley : One of the highest quality nuts (56% kernel, 27% fancy, 79% fill), but yield was low. Very susceptible to scab, but fungicides controlled the problem. Many nut clusters die prematurely.
- Shoshoni : Appears to have overloading and alternate bearing problems. Kernel color, percentage kernel, and filling are only mediocre. Tree has a strong central leader and upright growth habit that gave it the nickname of the moon tree.
- Summers : A small, early-maturing, mediocre-quality nut.
- Van Deman : Large, elongated, thick-shelled nut. It has been a fairly consistent bearer of good quality kernels. The thick shell causes low percent kernel. The nut is attractive for an in-shell nut and kernels are high in oil. Shellers would not like the low percent kernel but would like the high quality kernels.
- 56-6-148 : Seemingly, this one has a quality and filling problem. Yields have been good but it skipped in 1992.
- 57-7-22 : This is a nice-looking, in-shell nut with quality and filling problems.
- 62-5-8 : Small, well filled, elongated nut with 54% kernel. Yields have been consistent but low. It has a shuck decline problem that strikes at about the water stage and removes many of the nuts, even when stress is not severe.

Not Recommended

- Barton : Alternate bears, overloads in the on year and seldom fills. It might be okay if mechanical or chemical thinning becomes feasible.
- Cherokee : Overloads. Does not fill when overloaded. Might be okay with nut thinning. Most nuts are blown out in cleaning.

- Chickasaw : Alternates between an overload of poor-quality nuts and low or no yield the next year.
- Choctaw : Our one tree has not produced high-quality nuts.
- Delmas : Low yield, low quality, and extreme scab susceptibility are too many minuses for this cultivar for Georgia. It performs well in Israel.
- Frotscher : The ugly seed coat condemns this nut to be used only as chopped meats or used where kernel color is not a factor. The in-shell nut is large and fairly attractive, and it might have a place in a specialized market for in-shell nuts, but fill and specific gravity are low. Early yields were very low.
- Grabohl : An extreme alternate bearer. Overloading in the on year causes poor filling, with most of the nuts blown out in the cleaning operation.
- Halbert : Extremely scab-susceptible. Poor performance caused it to be removed in 1961.
- Harris Super : Thin-shelled. Alternate bearing with poor filling in the on year. Might be okay with nut thinning.
- Hastings : Large nut with extremely thin shell, but low quality kernels and poor filling condemn it.
- Ivey : Large angular nut but poor quality kernels and poor filling condemn it.
- Mahan : One of the largest nuts. Its large nut size and thin shell give it a surprisingly high percent kernel (53). Kernels seldom reach the end of the nut, making it one of the lowest in percent fill and specific gravity. Nut thinning might help the fill problem, but yield has been low.
- Mahan-Stuart : This nut combines the bad qualities of Mahan and Stuart , producing an extremely large, poorly filled nut with an ugly, low-quality kernel. Nuts are also susceptible to the water-stage split.
- Mobile : This old cultivar is a classic example of overproduction of poorly filled kernels in the on year and few nuts the next. It averaged only 40% kernel and 61% fill. It must have looked good somewhere as a young tree, because there were many of them planted in the early orchards in Georgia.
- Mohawk : A big, poorly filled nut with high percent kernel, but low quality kernels. It is extremely irregular in production and frequently overloads. Grower experience with this nut in Georgia has been disastrous.

- Moore : This is another cultivar frequently found in old plantings. It has few redeeming characteristics. The nut size is too small; kernel quality is poor; percentage kernel is low (45); the nut is poorly filled; the tree overloads, causing shuck decline problems; and it is highly susceptible to scab. The nut matures early and could be moved on the early market.
- Nelson : A large nut with few redeeming characteristics. It was discontinued in 1959 when a road was built underneath its branches.
- Owens : A large nut with thick shell and low percent kernel. Yields have been consistently good, but they don't make up for the poor kernel quality.
- San Saba : Small nut with high percent kernel, extreme alternate bearing, and scab susceptibility. It was removed in 1980.
- Starking Hardy
- Giant : It is no giant. It is the earliest maturing nut in the test, with shuck split in August. Earliness is its major redeeming quality. Earliness and small nut size make it extremely susceptible to predatory losses. It may have a place in northern areas or for a super early market if one developed. It is not adapted to South Georgia.
- Success : Our trees were removed in 1959 to make way for a road and the cultivar was not impressive enough to plant in new plantings. It is extremely susceptible to the shuck decline complex and frequently overloads.
- Tejas : The cultivar is extremely prolific and bears too many small, poorly filled nuts in alternate years.
- Tesche : An old cultivar that produces consistent crops of low-quality nuts. It was among the top five yielders from age 40 through 73, but quality and filling were poor. This cultivar is found frequently in very old orchards, but nuts are usually discounted by buyers. Tree limbs have a characteristically twisted structure.
- Texas Prolific : Performance was so poor that trees were removed after 17 years.
- Western Schley : Small elongated nut with high percent kernel (54) and thin shell. This cultivar is to the western belt what Stuart is to the eastern. Yields were practically nothing until fungicide spraying began. Since then, meat yields have been near the top. Alternate bearing has been serious during the last six years. Although scab has been controlled in these research plots, growers with solid plantings of Western Schley have not been able to control scab in the humid East.
- Wichita : Nuts are medium-sized with high percent kernel and good fill. The extreme susceptibility to scab and water-stage split condemn

it for use in the east. Our results are probably better than could be expected in solid plantings of Wichita, because scab pressure was less. This cultivar has been disastrous for most growers in the East.

- Williamson : A Mahan -type nut with filling problems. Yields have been poor.
 53-9-1 : The large, round nut averaged 51% kernel, but kernels were of low quality. Trees overloaded in 1994 and nuts were affected by the shuck decline syndrome.

Not Rated

- Candy : Very precocious with high scab resistance and excellent fill and specific gravity, but small nut size makes low kernel percentage. May be suitable for a specialty market but would ordinarily bring seedling prices.
- Cheyenne : Alternate bears. Although kernel quality has been high, it sometimes has poor filling. Filling may get worse with age; may be okay with nut thinning.
- French : This nut has not been officially named. It is a large, fairly well-filled nut, but has a low percentage kernel due to the thick shell. It ranked first in average annual yield through the first 15 years, but this was primarily because it was topworked onto older trees.
- Jackson : An extremely large nut with dark colored kernels. The trees are too young to evaluate.
- Kiowa : Very similar to Desirable in nut and tree appearance. It looks good through 16 years, but more years of data are needed. Percentage kernel is high (54), but most of the kernels grade standard. Desirable will pollinate it, but it will not pollinate Desirable .
- Linberger : A local, practically unknown cultivar with excellent performance. It ranks second in yield in the Ponder planting through the 16th year (only one lb/tree/year behind Caddo). It is a large nut (52 nuts/lb) with high percent kernel (52), with half of the kernels fancy. Percentage fill and specific gravity have been excellent. The original tree is performing well as an old tree in an orchard situation. Yields have been very consistent with yields averaging 39 lb/tree in 1994 following 122 lb/tree in 1993 in the 16th and 15 years, respectively. This is a cultivar worth watching.
- Maramec : Large nut with high average percent kernel (53). It tends to produce a large number of pops. It is a prized cultivar in Oklahoma, but it is too young to rate in Georgia.

- Melrose : Medium-sized nut with 52% kernel. It has excellent scab resistance; therefore, it might be suitable for yard plantings. Trees are too young to evaluate.
- Moreland : Has excellent yield records through year 14. It has high percent kernel (52) and very high percent fill and specific gravity. Scab resistance is high. Probably suitable for dooryard plantings. It has been recommended in Florida for several years.
- Oconee : A large nut (48 nuts/lb) with high percent kernel (54), with high percent fancy kernels (30) and consistent yield. Its shelling characteristics are excellent, consistently producing attractive halves. The air space between the shell and kernel reduces the percent fill but enhances the shellout of unbroken halves. It appears to adjust its crop load to what it can fill. Yields through year 16 have been good. Black aphids seem to prefer it over many other cultivars. It has good scab resistance. It is promising if it continues to do well as a mature tree.
- Osage : A super-early maturing cultivar similar to Elliott in size and shape. Its major advantage would be for the super-early market, which does not currently exist. It matures before other cultivars, subjecting it to heavy losses from predators.
- Pawnee : Large, early-maturing, well-filled nut. Will probably alternate bear. Trees are too young to evaluate.
- Robinson : Small nut but high percent kernel and medium well fill. Yield has been fairly good but the cultivar bears alternately.
- Shawnee : A long nut with thin shell and high percent kernel (52), but fills poorly in the on years. Appears to be another alternate bearer, but some trees were out of phase with others, even when planted at the same time.
- Sioux : Small nut but with highest kernel grade (49% fancy, 55% kernel) of any cultivar tested. Kernels are similar to Schley and bright yellow and among the top in percent fill and specific gravity. It has been irregular in bearing but yields through year 14 have been second only to 53-3-36. It is one to watch closely.
- 40-9-266 : Has the highest percent kernel of any cultivar in the test (59%), but the tight dorsal grooves frequently trap the packing material. The small nut is well filled and has a high specific gravity. It has gone into an alternate bearing cycle. It is also highly susceptible to scab.
- 41-19-20 : It has a good yield record for 14 years and has high percent kernel (52).

- 49-1-182 : A very large nut (43 nuts/lb) with dark kernels (42% standard and 7% amber) but has been well filled. The data of 14 years already indicate extreme alternate bearing.
- 49-7-11 : A long, medium-sized, well-filled nut of medium quality. The location of these trees was not satisfactory to evaluate.
- 49-20-112 : A small, well-filled nut with good quality kernels of moderate percent kernel (51).
- 53-3-36 : A high-yielding, precocious cultivar that has produced consistent crops during the first 14 years. The small elongated nut is well filled and averaged 53% kernel. It must be sprayed for scab control.
- 53-11-139 : A precocious and prolific selection with small, well-filled nuts. The dorsal groove is almost missing. Percentage kernel is only 48% due to the small nut size. Yields have been consistently high. Might be suitable for a specialty market.
- 55-11-11 : This small, well-filled nut is 52% kernel with 35% fancy kernels. It is very similar to Elliott and would probably pass for one in most markets. It also alternates like Elliott . It was released in 1996 as Kanza for the northern part of the pecan belt.
- 55-12-17 : This small nut is 53% kernel but the kernels are dark (44% standard) and not well filled after 14 years. Alternate bearing will be a problem.
- 61-6-67 : Large, well-filled nut with 49% kernel. Yields have been good for the first 14 years, but it skipped in 1992 and 1994 and yielded 109 lbs/tree in its 13th year. It is primed for an overloading problem unless nuts are thinned. It bears well on the interior of the tree and in shade. It was released in 1996 as Creek .
- 63-16-182 : Small, elongated, well-filled nut with 52% kernel. Yields have been good for the first 14 years.
- 64-11-17 : Small, well-filled nut with dark kernels (44% standard), but 52% total kernel. It appears to have an alternate bearing problem.

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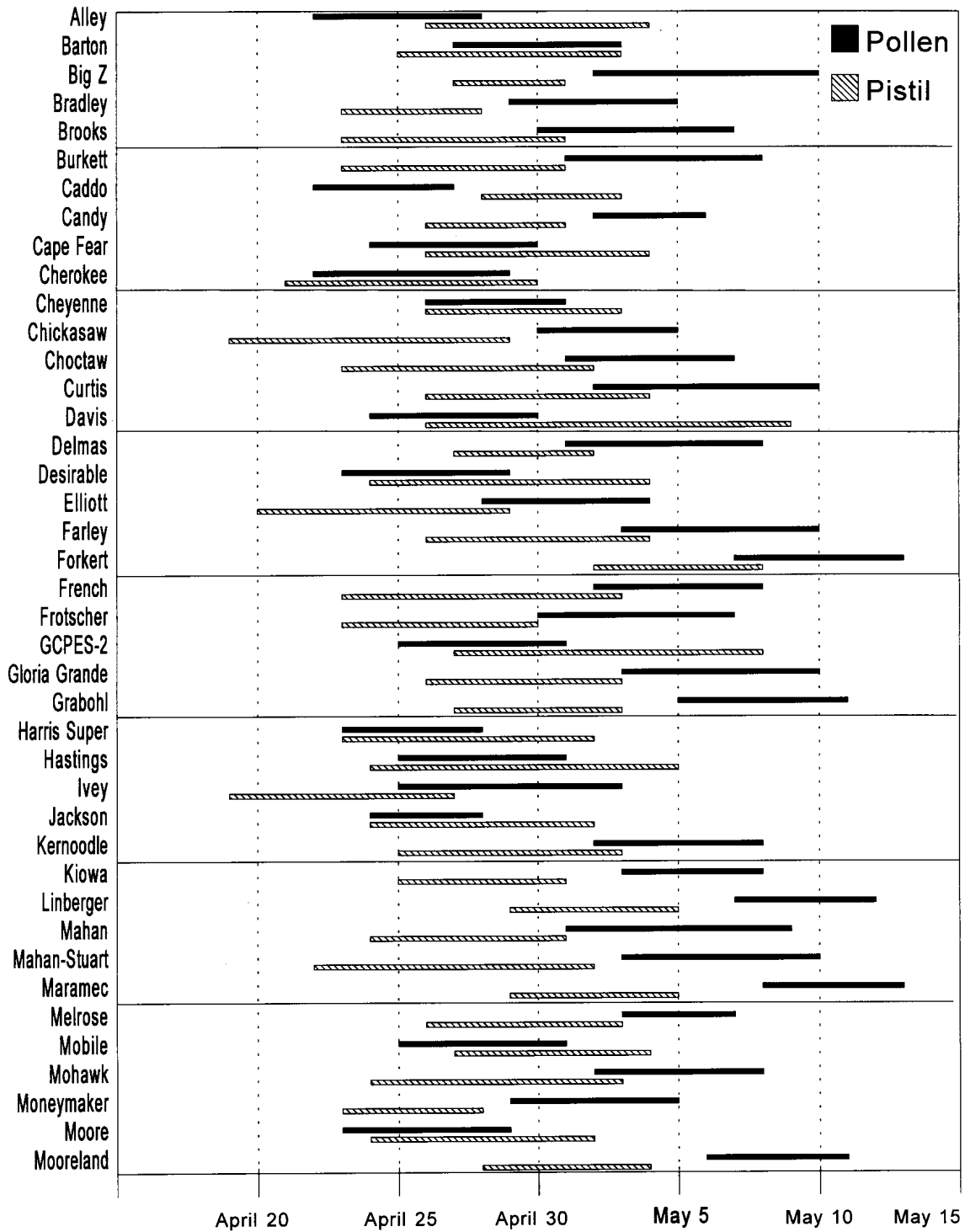


Figure 1A. Average pollen shed (solid line) and pistil receptivity (notched line) dates for pecan cultivars at Tifton, GA.

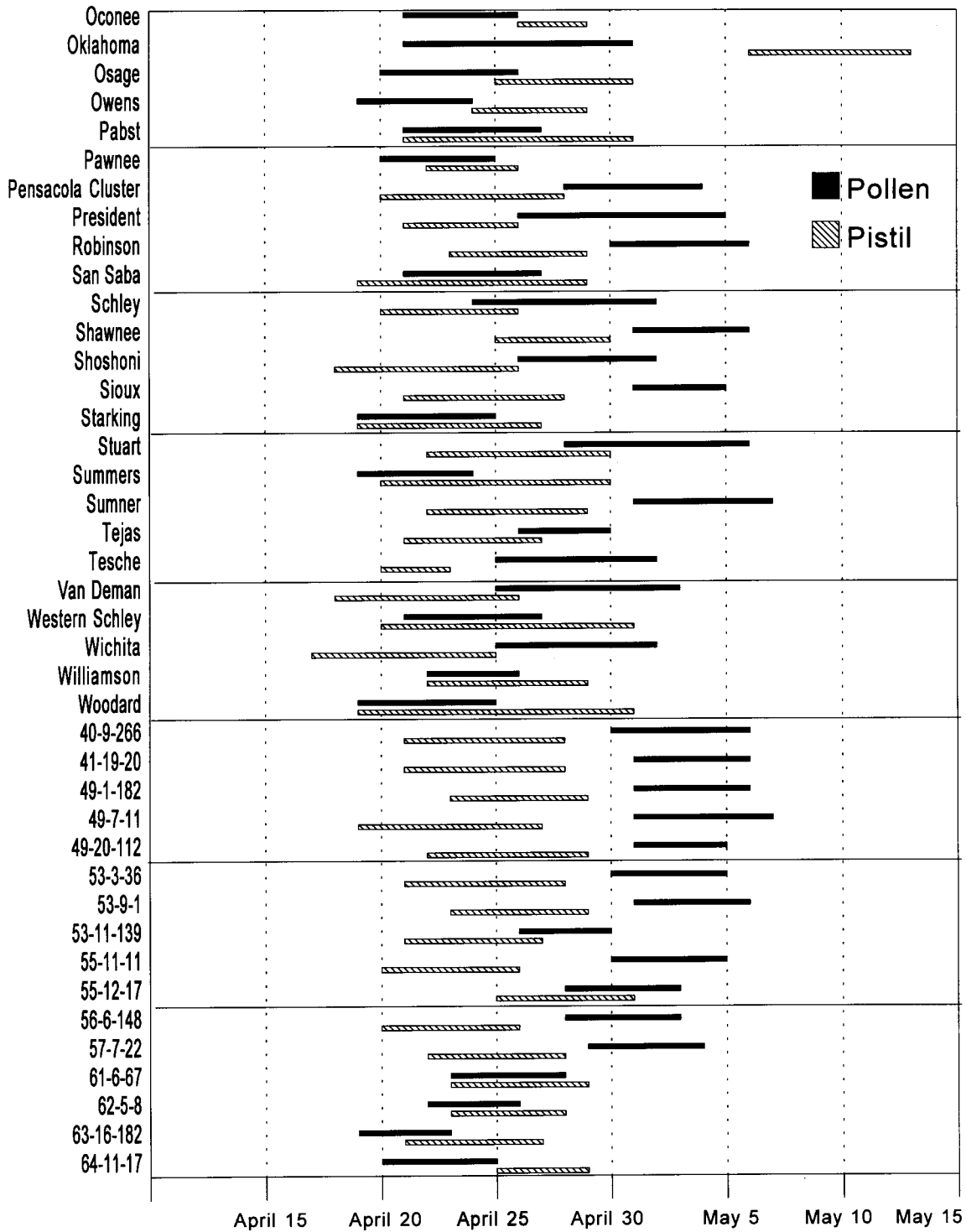


Figure 1B. Average pollen shed (solid line) and pistil receptivity (notched line) dates for pecan cultivars at Tifton, GA.

Table 1. Yearly Yield (lbs/trees) for Pecan Cultivars as Affected by Tree s Age, Tifton, Georgia

No. of growing seasons from trans-planting	Year first planted and cultivar													
	1921													
	Ally	Curt	Del	Frot	Mob	MM	Moor	Nel	Pabs	Sch	Stu	Suc	Summ	Van
4	0	<1	0	0	0	<1	<1	0	0	0	0	0	0	<1
5	0	<1	0	0	<1	<1	2	<1	0	<1	<1	<1	0	0
6	<1	1	0	<1	1	3	3	<1	<1	3	2	3	<1	2
7	<1	<1	<1	0	0	<1	3	0	<1	0	0	<1	0	<1
8	<1	2	0	<1	4	4	13	<1	<1	1	2	5	<1	3
9	5	6	4	2	8	17	7	10	4	6	6	10	<1	9
10	3	8	<1	0	5	<1	6	0	1	<1	4	2	<1	10
11	11	0	3	0	27	24	46	37	14	20	13	39	6	14
12	<1	33	<1	0	0	5	<1	<1	0	<1	8	2	0	24
13	11	9	9	6	12	32	23	28	18	24	12	40	7	31
14	3	27	<1	0	<1	3	2	0	1	<1	16	0	<1	34
15	<1	7	1	0	25	7	43	20	30	4	21	50	0	29
16	4	17	<1	0	35	5	7	<1	5	6	18	17	2	37
17	33	46	0	3	18	69	44	46	40	27	28	42	18	51
18	10	39	3	2	27	0	4	13	25	6	13	17	29	51
19	22	32	0	6	34	59	38	43	27	9	28	50	0	50
20	20	45	<1	36	33	5	17	27	26	13	27	17	35	67
21	15	36	<1	0	16	61	29	11	15	7	37	35	3	54
22	30	41	16	14	18	27	27	20	31	26	17	33	19	59
23	7	43	2	0	2	24	24	3	5	4	27	27	4	54
24	2	5	0	0	74	10	21	55	43	1	31	36	15	67
25	30	68	0	1	0	39	135	55	42	2	36	62	102	45
26	10	3	<1	46	44	17	31	10	18	3	12	10	7	93
27	3	45	<1	0	13	81	61	22	44	16	47	57	<1	23
28	23	59	<1	30	128	81	71	51	87	5	99	59	107	83
29	<1	<1	0	94	<1	12	3	69	17	0	2	52	17	32
30	<1	28	0	0	74	137	64	<1	66	45	94	62	39	76
31	36	57	22	<1	97	21	39	0	83	41	72	55	28	23
32	22	0	24	0	7	25	26	0	28	3	83	31	11	0
33	74	58	25	104	116	173	110	100	78	102	91	82	144	103
34	0	0	0	0	0	0	0	0	0	0	24	4	0	0
35	0	0	0	0	0	0	0	0	0	0	2	<1	0	0
36	32	0	59	43	73	119	31	0	96	16	137	80	17	31
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	15	3	4	53	57	26	0	26	0	47	0	12	17
39	14	19	1	0	28	31	4	0	31	2	48	4	15	13
40	27	<1	20	0	92	110	44	0	26	0	88	re-	<1	32
41	72	52	15	0	52	50	0	0	75	0	100	moved	41	39
42	0	0	0	0	0	0	0	0	0	0	0	in	0	0
43	39	41	40	81	115	131	69	24	94	38	185	1959	78	46
44	0	0	0	0	56	0	45	0	36	0	45		3	7
45	53	24	16	0	111	101	37	10	102	52	117		102	68
46	0	0	0	26	37	5	21	0	19	0	125		6	32
47	39	4	47	7	95	78	18	0	61	8	6		30	8
48	8	0	<1	0	<1	2	0	discon-	0	0	69		0	8
49	91	16	111	6	166	152	109	tinued	98	95	199		61	63
50	44	59	3	53	3	2	18	1967	68	15	30		98	83
51	69	35	59	73	141	128	82		105	95	226		90	95
52	7	<1	6	0	17	4	0		45	2	12		14	12
53	43	50	58	196	111	105	73		32	71	293		77	83
54	10	26	28	108	8	51	15		80	14	49		40	45
55	75	91	94	126	128	133	110		156	78	255		149	98
56	39	31	12	112	<1	67	5		114	42	52		65	89



Table 1 (continued)

No. of growing seasons from trans-planting	Year first planted and cultivar													
	1921													
	Ally	Curt	Del	Frot	Mob	MM	Moor	Nel	Pabs	Sch	Stu	Suc	Summ	Van
57	48	69	58	52	113	86	79		43	61	153		68	78
58	51	37	21	61	76	53	12		112	35	223		124	89
59	85	43	71	65	82	121	87		62	54	124		68	88
60	27	70	0	34	93	20	0		63	16	156		88	75
61	88	61	91	45	103	137	51		125	67	199		65	122
62	86	56	0	66	34	2	0		49	22	81		76	66
63	37	44	91	70	170	144	106		72	34	245		76	130
64	77	84	16	59	34	43	24		61	56	206		143	93
65	55	37	84	12	98	66	70		38	29	90		32	46
66	117	114	82	70	56	92	47		93	70	220		83	169
67	81	0	47	35	85	2	66		101	15	37		41	67
68	85	93	109	133	59	144	65		62	83	212		93	134
69	70	31	24	25	96	12	53		92	3	71		64	68
70	36	35	40	75	6	75	33		32	30	137		37	63
71	28	73	14	re-	87	75	81		65	39	153		95	96
72	5	0	<1	moved	0	10	0		4	0	7		2	1
73	37	7	73		104	42	20		68	31	115		30	63
74	79	102	4		2	147	121		35	32	126		84	97

Cultivar Codes: Ally = Ally; Curt = Curtis; Del = Delmas; Frot = Frotscher; Mob = Mobile; MM = Moneymaker; Moor = Moore; Nel = Nelson; Pabs = Pabst; Sch = Schley; Stu = Stuart; Suc = Success; Summ = Summers; Van = Van Deman.

No. of growing seasons from trans-planting	Year first planted and cultivar													
	1922				1928		1929							
	BigZ	Brad	Pres	Tes	Mah	Burk	Far	Hal	Okla	SSab	TPro	WSch	Will	
4	0	0	0	0	2	0	0	0	0	0	0	0	0	
5	1	<1	<1	<1	<1	0	<1	0	0	0	<1	4	0	
6	<1	<1	0	<1	5	0	<1	0	2	0	<1	3	<1	
7	3	2	<1	2	1	<1	3	<1	1	4	1	12	1	
8	7	4	<1	5	20	0	4	0	13	1	0	14	1	
9	<1	10	1	4	3	0	6	0	<1	8	0	15	<1	
10	27	36	3	3	39	1	10	0	20	0	0	4	7	
11	0	0	0	19	0	5	13	0	5	7	0	35	4	
12	23	27	4	18	51	9	27	<1	9	6	<1	5	14	
13	2	<1	7	15	4	5	15	<1	15	15	<1	7	6	
14	24	57	6	22	26	10	28	5	5	0	8	24	15	
15	16	21	<1	28	18	14	41	1	17	3	4	2	4	
16	32	60	26	17	32	5	44	<1	8	0	0	0	8	
17	20	17	6	49	14	18	61	6	45	0	0	0	47	
18	48	80	14	46	33	3	39	<1	5	0	re-	0	<1	
19	15	22	13	46	5	9	49	5	53	1	moved	3	26	
20	18	35	11	35	24	29	50	0	40	0	in	0	23	
21	17	40	20	72	60	8	52	0	55	0	1945	0	5	
22	2	19	6	10	2	24	47	8	21	6		16	5	
23	64	30	11	55	47	23	67	8	36	28		<1	4	
24	19	135	57	42	20	16	34	10	24	11		20	15	
25	69	24	10	63	36	43	86	10	13	9		23	24	
26	20	78	30	44	27	8	36	0	10	1		3	0	
27	75	111	24	91	<1	0	19	0	12	0		0	0	
28	5	16	25	32	<1	40	67	0	36	22		23	35	
29	65	75	13	70	37	0	14	0	0	0		0	0	
30	80	34	13	111	0	17	52	0	11	0		0	34	
31	21	71	20	23	20	11	54	0	23	0		0	22	
32	103	46	4	150	4	19	15	0	31	8		0	0	
33	0	0	6	0	5	61	29	0	22	17		<1	22	
34	0	0	0	<1	69	0	0	re-	0	0		0	0	
35	61	49	27	21	0	48	44	moved	57	64		52	72	
36	0	0	0	48	80	39	69	in	13	0		0	11	
37	54	39	20	63	0	78	51	1961	75	0		0	34	
38	30	42	23	64	102	13	23		44	0		0	0	
39	0	37	35	45	0	26	56		29	24		10	58	
40	73	124	27	96	69	0	0		18	0		0	0	
41	0	0	0	0	0	88	82		82	77		38	77	
42	145	73	52	134	98	82	39		60	<1		<1	0	
43	19	29	34	0	0	53	109		81	84		101	73	
44	114	90	125	139	59	81	174		111	0		0	9	

Table 1 (continued)

No. of growing seasons from trans- planting	Year first planted and cultivar												
	1922				1928		1929						
	BigZ	Brad	Pres	Tes	Mah	Burk	Far	Hal	Okla	SSab	TPro	WSch	Will
45	14	14	0	57	3	52	112		146	108		87	13
46	52	55	58	72	32	56	100		158	50		159	140
47	0	16	13	14	48	105	237		45	140		167	2
48	120	97	60	57	54	88	27		29	7		160	73
49	28	22	83	122	12	84	117		263	116		136	24
50	95	87	123	57	50	101	144		60	6		176	129
51	22	24	15	48	14	57	62		42	133		33	0
52	119	97	89	151	91	109	150		93	0		143	35
53	119	86	109	117	0	65	122		132	re-		194	119
54	98	128	66	148	107	89	116		85	moved		48	4
55	100	25	100	79	0	52	73		75	in 1980		226	30
56	80	80	38	102	75	109	122		24			125	27
57	103	62	85	108	78	63	65		21			147	28
58	48	78	53	73	64	78	98		131			153	75
59	111	13	35	110	112	93	160		114			107	32
60	77	106	74	113	41	75	125		167			72	71
61	121	8	38	87	70	85	52		89			129	38
62	83	77	19	105	42	11	66		87			0	19
63	124	83	12	99	70	92	149		73			139	98
64	41	78	33	47	38	4	19		57			0	0
65	108	67	24	125	1	72	101		128			210	5
66	63	90	40	26	89	99	94		91			14	28
67	139	49	49	101	<1								
68	31	68	12	53									
69	125	7	0	27									
70	38	96	57	79									
71	52	2	0	0									
72	110	99	<1	13									
73	78	14	48	139									

Cultivar codes: BigZ = Big Z; Brad = Bradley; Pres = President; Tes = Tesche; Mah = Mahan; Burk = Burkett; Far = Farley; Hal = Halbert; Okla = Oklahoma; SSab = San Saba; TPro = Texas Prolific; WSch = Western Schley; Will = Williamson

No. of growing seasons from trans- planting	Year first planted and cultivar												
	1940			1955			1956					1957	
	Brks	Des	Sumn	Bart	CapF	Ell	GG	Dav	GCP2	HarS	Hast	Wood	SHG
4	0	0	<1	0	<1	0	0	0	0	0	0	0	0
5	0	0	6	0	10	0	2	0	0	0	0	<1	0
6	0	3	9	0	15	0	9	3	1	3	0	2	0
7	0	3	13	4	9	5	7	1	0	2	0	2	0
8	<1	5	10	11	26	<1	10	11	20	30	1	5	0
9	2	12	16	26	31	13	25	34	18	25	6	8	0
10	0	8	20	31	44	10	36	17	11	47	13	16	<1
11	2	14	18	6	37	16	34	44	7	45	7	17	2
12	10	24	43	67	57	23	51	34	26	58	20	41	6
13	3	24	34	7	60	23	48	7	2	8	9	23	2
14	25	23	18	49	35	22	37	110	50	116	36	47	9
15	5	36	1	126	117	64	92	61	27	<1	22	51	12
16	0	33	<1	3	10	70	85	111	98	112	55	58	17
17	23	40	12	126	91	74	101	60	25	4	31	50	35
18	0	34	0	2	31	48	98	124	95	115	58	57	19
19	14	35	5	117	93	135	157	136	45	13	79	60	58
20	14	42	6	11	18	10	68	199	123	199	54	75	56
21	10	42	23	146	158	138	240	97	50	0	88	57	75
22	0	41	51	2	6	59	127	152	57	148	64	58	53
23	0	46	0	118	159	106	151	103	124	40	83	77	44
24	45	43	60	22	83	95	206	98	33	181	71	57	50
25	0	45	17	125	115	66	57	128	63	9	85	71	70
26	27	55	100	0	86	95	167	135	107	198	70	53	32
27	0	38	0	147	170	78	96	59	24	0	67	53	48
28	26	30	72	0	27	88	166	184	74	194	60	52	29
29	0	27	0	165	183	83	130	88	67	102	65	48	34
30	80	34	82	51	74	133	181	136	53	103	53	71	3
31	0	45	2	125	133	27	84	39	45	151	52	53	13
32	40	33	65	24	136	152	170	123	82	25	52	59	17
33	12	82	7	126	112	22	111	91	62	175	16	102	1

Table 1 (continued)

No. of growing seasons from trans-planting	Year first planted and cultivar												
	1940			1955			1956					1957	
	Brks	Des	Sumn	Bart	CapF	Ell	GG	Dav	GCP2	HarS	Hast	Wood	SHG
34	75	50	99	20	91	133	122	153	44	0	72	62	21
35	60	39	70	79	48	29	109	10	13	137	32	66	9
36	125	25	58	22	85	87	96	83	81	73	61	116	0
37	38	23	27	101	88	108	90	11	0	6	3	24	9
38	113	33	74	9	16	3	22	171	43	136	69	117	29
39	91	83	35	141	176	138	116	36	39	0	48	78	
40	93	19	84	6	29	35	128						
41	80	87	40										
42	110	58	103										
43	74	36	26										
44	111	58	129										
45	79	79	117										
46	85	50	56										
47	125	119	159										
48	62	56	30										
49	82	68	132										
50	25	94	24										
51	53	0	154										
52	42	63	43										
53	9	17	63										
54	28	72	110										
55	66	62	0										

Cultivar codes: Brks = Brooks; Des = Desirable; Sumn = Sumner; Bart = Barton; CapF = Cape Fear; Ell = Elliott; GG = Gloria Grande; Dav = Davis; GCP2 = GCPES2; HarS = Harris Super; Hast = Hastings; Wood = Woodard; SHG = Starking Hardy Giant.

No. of growing seasons from trans-planting	Year first planted and cultivar													
	1960	1963	1964			1970	1974	1976			1977			
	Kern	Ivey	Choc	MStu	PhCl	Mohk	Fren	Chey	Csaw	Ssho	Ckee	Tej	49711	551111
4	0	0	0	0	0	0	4	4	16	2	<1	<1	1	0
5	1	0	1	0	0	3	15	8	24	12	3	4	<1	<1
6	1	0	3	3	<1	10	19	11	1	20	9	10	<1	2
7	7	1	0	4	<1	25	37	14	41	9	12	3	1	12
8	11	1	6	10	4	6	31	15	0	29	51	22	6	5
9	19	5	39	12	0	51	48	15	50	21	3	19	<1	21
10	11	9	20	36	13	16	55	31	0	43	53	24	8	9
11	37	8	10	11	13	63	89	13	70	34	0	30	0	24
12	48	7	72	33	51	31	40	25	0	41	62	16	0	9
13	20	18	1	26	40	48	107	31	50	80	0	58	4	62
14	97	50	56	27	68	73	6	13	0	1	74	4	0	2
15	34	31	11	92	90	114	81	86	101	119	0	110	23	26
16	86	63	50	40	30	0	46	14	0	0	2	0	0	0
17	64	38	1	76	102	109	42	9	7	7	43	66	0	18
18	51	81	76	33	84	0	72	58	73	61	21	0	0	7
19	83	56	8	68	81	71	3	0	0	0				
20	53	76	55	41	75	0	135							
21	60	46	34	56	102	81	23							
22	105	77	55	61	66	50								
23	7	46	46	87	123	0								
24	119	78	0	67	57	136								
25	46	12	72	48	108	0								
26	50	70	0	60	45									
27	125	54	62	53	41									
28	7	35	0	61	85									
29	205	58	23	0	0									
30	22	<1	53	85	103									
31	60	33	2	16	62									
32	75	49												
33	0													
34	77													
35	0													

Cultivar codes: Kern = Kernoodle; Ivey = Ivey; Choc = Choctaw; MStu = Mahan Stuart; PhCl = Pensacola Cluster; Mohk = Mohawk; Fren = French; Chey = Cheyenne; Csaw = Chickasaw; Ssho = Shoshoni; Ckee = Cherokee; Tej = Tejas; 49711 = 49-7-11; 551111 = 55-11-11.

Table 1 (continued)

No. of growing seasons from transplanting	Year first planted and cultivar											
	1979											
	Cadd	Fork	Grab	Kiow	Linb	Ocon	Osag	Owen	Rob	Shaw	409266	6258
4	<1	0	3	1	<1	0	<1	0	0	<1	1	0
5	3	4	21	4	3	2	<1	<1	4	3	5	<1
6	13	10	11	8	13	6	13	10	10	9	19	<1
7	15	<1	16	10	10	10	0	6	2	6	5	2
8	16	12	25	8	24	23	11	21	28	14	20	7
9	27	6	24	17	29	29	22	23	9	25	7	11
10	38	38	24	15	64	52	28	30	46	32	27	20
11	46	12	27	24	21	23	31	35	20	23	23	11
12	40	57	27	22	79	55	17	31	7	35	50	20
13	66	31	27	46	56	63	32	57	80	38	47	31
14	27	24	6	3	25	30	6	43	0	46	2	29
15	94	99	72	114	122	39	63	111	138	33	99	30
16	65	30	0	0	39	73	40	62	0	34	7	27

Cultivar codes: Cadd = Caddo; Fork = Forkert; Grab = Grabohl; Kiow = Kiowa; Linb = Linberger; Ocon = Oconee; Osag = Osage; Owen = Owens; Rob = Robinson; Shaw = Shawnee; 409266 = 40-9-266; 6258 = 62-5-8.

No. of growing seasons from transplanting	Year first planted and cultivar												
	1980	1981											
	Siou	Cand	Mara	Melr	More	Pawn	411920	491182	4920112	53336	5391	5311139	551217
4	<1	1	<1	<1	<1	<1	<1	<1	<1	3	1	3	0
5	16	6	<1	<1	2	<1	<1	2	<1	6	4	7	0
6	3	22	4	8	11	2	6	5	9	14	12	12	1
7	12	23	6	4	15	3	15	15	18	12	16	22	9
8	7	38	21	15	18	16	20	5	20	21	20	36	20
9	62	46	14	13	20	18	30	45	45	31	20	37	20
10	20	56	40	4	34	33	61	16	29	58	24	37	37
11	82	50	18	38	41	42	22	76	67	42	33	42	60
12	0	58	33	5	24	20	44	1	5	39	20	32	<1
13	124	84	66	48	53	82	54	97	102	87	20	77	66
14	8	18	31	45	64	10	15	0	45	70	94	53	0

Cultivar codes: Siou = Sioux; Cand = Candy; Mara = Maramec; Melr = Melrose; More = Moreland; Pawn = Pawnee; 411920 = 41-19-20; 491182 = 49-1-182; 4920112 = 49-20-112; 53336 = 53-3-36; 5391 = 53-9-1; 5311139 = 53-11-139; 551217 = 55-12-17.

No. of growing seasons from transplanting	Year first planted and cultivar					
	1981					1986
	566148	57722	61667	6316182	64117	Jack
4	<1	<1	3	0	0	0
5	<1	0	5	6	0	0
6	4	4	9	<1	5	2
7	10	17	15	8	12	2
8	12	25	25	1	14	12
9	22	24	32	18	46	14
10	46	15	25	5	15	
11	56	55	63	17	35	
12	0	2	5	59	12	
13	97	63	109	10	77	
14	78	57	0	72	2	

Cultivar codes: 566148 = 56-6-148; 57722 = 57-7-22; 61667 = 61-6-67; 6316182 = 63-16-182; 641117 = 64-11-17; Jack = Jackson.

Table 2. Average Annual Yield of Nuts and Nutmeats (lbs/tree/year) at 10th Growing Season and Five-Year Increments Thereafter

Cultivars	Yr. 1st planted	Growing Season																											
		10		15		20		25		30		35		40		45		50		55		60		65		70		74	
		Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats
Alley	1921	<1	<1	2	1	6	3	11	6	11	6	13	7	13	7	15	8	17	9	13	7	16	8	20	10	24	12	25	13
Curtis	1921	2	1	6	3	14	8	21	11	22	12	13	7	12	6	14	8	14	8	16	9	19	10	22	12	24	13	25	14
Delmas	1921	<1	<1	1	<1	1	<1	2	<1	1	<1	3	1	5	2	6	3	9	4	12	5	14	6	17	7	20	9	20	9
Frotscher	1921	<1	<1	<1	<1	3	1	3	1	8	4	10	5	10	5	11	5	11	5	22	10	26	12	28	13	30	14		
Mobile	1921	2	1	6	2	11	4	14	6	21	8	24	10	27	11	32	13	34	14	39	16	41	16	44	18	46	18	46	18
Moneymaker	1921	2	1	6	3	12	5	16	7	23	10	26	11	30	13	33	15	36	16	40	18	42	18	45	20	47	21	48	21
Moore	1921	3	1	10	5	17	8	25	11	28	13	29	13	28	13	28	13	29	13	31	14	32	14	33	15	34	15	35	16
Nelson	1921	1	<1	6	2	11	4	15	6	21	8	21	8	18	7	17	7	16	6	(47)									
Pabst	1921	<1	<1	5	2	10	5	13	6	19	9	22	10	23	10	28	13	30	14	35	16	38	17	41	18	43	19	49	22
Schley	1921	1	<1	4	2	6	3	7	4	8	4	11	6	10	6	11	6	12	7	16	9	18	10	20	11	21	12	22	12
Stuart	1921	1	<1	6	3	10	5	15	7	18	8	22	10	28	13	35	16	40	18	51	23	59	27	67	31	72	33	73	34
Success	1921	2	1	10	5	15	8	19	10	24	12	25	13	25	13	(39)													
Summers	1921	<1	<1	1	<1	5	2	10	5	14	7	18	8	16	8	20	9	22	10	26	12	31	15	35	16	37	17	38	18
Van Deman	1921	2	1	10	4	21	9	30	13	36	15	12	5	13	5	15	6	18	8	22	9	27	11	32	13	37	16	38	16
Big Z	1922	4	2	7	3	12	6	18	9	23	11	25	12	26	13	30	15	33	16	38	19	42	21	46	23	48	24	50	25
Bradley	1922	5	2	10	5	19	9	24	11	29	13	30	14	32	14	33	15	36	16	39	18	42	19	43	19	45	20	44	20
President	1922	<1	<1	1	<1	5	2	9	4	11	5	11	5	12	5	16	7	21	9	26	12	28	13	28	13	28	13	28	13
Tesche	1922	1	<1	8	4	15	7	22	10	30	13	22	10	36	16	39	17	42	18	48	21	52	23	55	24	55	24	55	24
Mahan	1928	7	4	11	6	14	7	18	10	17	9	17	9	22	12	23	12	24	13	26	14	30	16	31	16	31	16	(67)	
Burkett	1929	<1	<1	3	2	5	3	9	5	10	5	12	6	15	8	21	11	27	14	32	17	36	19	37	20	38	20	(66)	
Farley	1929	2	1	10	5	19	10	27	14	29	15	32	16	33	17	41	21	49	25	56	29	59	30	60	31	61	31	(66)	
Halbert	1929	<1	<1	<1	<1	<1	<1	2	<1	2	<1	3	1	(33)															
Oklahoma	1929	4	2	6	3	12	5	16	7	15	7	17	8	19	9	27	12	35	16	40	18	44	20	48	22	48	22	(66)	
San Saba	1929	1	<1	3	2	2	1	4	2	4	2	6	3	6	3	11	6	16	9	18	10	(52)							
Texas Prolific	1929	<1	<1	<1	<1	2	1	(17)																					
Western Schley	1929	5	3	3	2	3	2	5	3	5	3	6	3	6	3	10	5	25	14	35	19	42	23	46	25	45	24	(66)	
Williamson	1929	1	<1	4	2	8	4	8	4	9	4	12	6	13	6	16	8	21	10	23	11	25	12	25	12	25	12	(66)	
Brooks	1940	<1	<1	3	1	5	2	6	3	10	4	14	6	23	10	31	14	35	15	36	16								
Desirable	1940	4	2	10	5	17	9	22	11	25	13	12	6	15	8	20	10	26	13	27	14								
Summer	1940	6	3	1	<1	2	3	8	4	15	8	21	11	24	12	31	16	36	19	39	20								
Barton	1955	7	4	22	11	29	15	40	20	45	23	48	24	49	25														
Cape Fear	1955	12	6	29	15	30	16	45	23	55	29	62	32	64	33														
Elliott	1955	3	2	13	7	25	13	38	19	48	24	51	26	55	28														
Gloria Grande	1955	9	4	23	10	39	18	62	28	76	34	83	37	84	38														
Davis	1956	6	3	21	9	47	21	61	27	71	32	73	33	73	33	(39)													
GCPES-2	1956	5	3	11	6	27	15	35	20	40	23	41	23	41	23	(39)													
Harris Super	1956	11	5	22	10	39	18	46	22	58	27	64	30	63	30	(39)													
Hastings	1956	2	1	7	3	19	9	31	14	36	16	37	17	41	18	(39)													
Woodard	1956	3	2	14	8	25	14	33	18	37	20	54	30	57	31	(39)													



Table 2 (continued)

		Growing Season																																	
		10		15		20		25		30		35		40		45		50		55		60		65		70		74							
		Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats						
Cultivars	Yr. 1st planted																																		
Starking Hardy Giant	1957	<1	<1	2	1	11	6	20	10	21	11	20	10	16	8																				
Kernoodle Ivey	1960 1963	5	3	19	10	31	16	38	20	40	21	40	21																						
		2	1	11	5	24	12	30	14	32	15	32	15																						
Choctaw	1964	7	3	15	7	21	10	25	12	25	12	25	12																						
Mahan-Stuart	1964	6	3	17	7	25	11	33	14	36	15	35	15																						
Pensacola Cluster	1964	2	1	19	8	33	15	44	19	46	20	47	21																						
Mohawk	1970	11	6	29	15	31	16	35	18																										
Wichita	1970	14	8	19	11	35	20	37	21																										
French	1974	21	9	35	15	41	18	40	18																										
									(21)																										
Cheyenne	1976	11	6	21	11	23	12																												
							(19)																												
Chickasaw	1976	13	5	24	10	23	10																												
							(19)																												
Shoshoni	1976	14	7	27	13	19	9																												
							(19)																												
Cherokee	1977	13	5	18	7	18	7																												
							(18)																												
Tejas	1977	8	4	22	10	16	8																												
							(18)																												
49-7-11	1977	1	<1	2	1	2	1																												
							(18)																												
55-11-11	1977	5	3	5	3	6	3																												
							(18)																												
Caddo	1979	11	6	31	16	33	17																												
							(16)																												
Forkert	1979	7	4	20	12	20	12																												
							(16)																												
Grabohl	1979	12	6	21	10	19	9																												
							(16)																												
Kiowa	1979	7	4	23	12	22	12																												
							(16)																												
Linberger	1979	15	8	30	16	30	16																												
							(16)																												
Oconee	1979	12	6	22	12	25	14																												
							(16)																												
Osage	1979	7	4	16	8	17	9																												
							(16)																												
Owens	1979	9	4	26	11	28	12																												
							(16)																												
Robinson	1979	10	5	23	12	21	11																												
							(16)																												
Shawnee	1979	9	5	19	10	20	10																												
							(16)																												
40-9-266	1979	9	5	21	12	20	12																												
							(16)																												
62-5-8	1979	4	2	11	6	12	6																												
							(16)																												
Sioux	1980	12	7	23	13																														
					(14)																														
Candy	1981	19	8	29	13																														
					(14)																														
Maramec	1981	9	5	17	9																														
					(14)																														



Table 2 (continued)

Cultivars		Yr. 1st planted		Growing Season																											
				10		15		20		25		30		35		40		45		50		55		60		65		70		74	
				Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats	Nuts	Meats
Melrose	1981	5	3	15	8																										
Moreland	1981	10	5	21	11																										
Pawnee	1981	8	4	17	9																										
41-19-20	1981	13	7	24	12																										
49-1-182	1981	9	4	19	9																										
49-20-112	1981	12	6	25	13																										
53-11-139	1981	13	6	24	12																										
53-3-36	1981	13	7	35	18																										
53-9-1	1981	10	5	21	11																										
55-12-17	1981	8	4	15	8																										
56-6-148	1981	9	4	22	11																										
57-7-22	1981	9	4	19	9																										
61-6-67	1981	11	5	21	10																										
63-16-182	1981	4	2	13	7																										
64-11-17	1981	9	5	16	8																										
Jackson	1986	3	2																												
			(9)																												

Note: Nummeats are calculated by multiplying the average annual yield by the overall average percentage kernel. Numbers in parenthesis are number of growing seasons for oldest trees of a cultivar if <74 and not an increment of 5.



Table 3. Mean Quality and Size Characteristics for Pecan Cultivars

Cultivar	Nuts/ lb	Percentage in kernel quality grades				Per- centage kernel	Nut volume cm ³	Per- centage fill	Specific gravity	Percentages in size diameters (inches)				
		Fancy	Standard	Amber	<13/ 16					13/ 16	14/ 16	15/ 16	>15/ 16	
Alley	67	28	19	4	51	10	74	.76	1	19	39	32	9	
Barton	68	16	28	10	50	11	61	.62	2	12	27	36	23	
Big Z	64	5	26	18	49	12	66	.65	1	6	27	41	26	
Bradley	70	8	31	7	45	9	73	.78	5	55	32	7	1	
Brooks	89	20	21	3	44	7	68	.77	58	37	2	1	2	
Burkett	54	9	34	11	53	12	75	.73	0	0	0	3	97	
Caddo	68	34	18	1	53	8	73	.80	3	42	46	9	1	
Candy	78	30	14	<1	44	7	83	.87	5	63	31	1	0	
Cape Fear	55	33	18	3	52	11	76	.77	1	3	11	24	64	
Cherokee	73	<1	27	14	41	9	67	.74	3	28	37	21	12	
Cheyenne	65	32	16	4	52	10	66	.73	1	8	34	37	22	
Chickasaw	77	2	32	8	42	10	52	.63	0	8	30	37	25	
Choctaw	55	11	27	11	48	14	59	.63	1	1	7	17	74	
Curtis	89	23	29	2	54	12	78	.77	19	68	11	3	0	
Davis	51	15	27	6	45	12	65	.74	1	7	30	42	20	
Delmas	61	17	24	5	44	12	69	.70	1	11	21	37	29	
Desirable	48	27	21	3	51	13	74	.75	0	2	5	19	75	
Elliott	77	37	13	3	51	8	77	.80	1	14	42	34	9	
Farley	62	19	28	3	51	10	70	.75	1	2	9	29	59	
Forkert	50	39	17	2	59	12	74	.75	1	2	11	32	54	
French	52	13	27	4	44	12	72	.74	1	3	24	35	38	
Frotscher	63	2	14	28	46	12	58	.65	0	4	14	41	42	
GCPEs-2	70	18	34	10	57	9	73	.73	1	15	36	35	13	
Gloria Grande	46	18	24	4	45	14	70	.74	1	1	4	16	79	
Grabohl	67	13	23	11	46	12	54	.60	1	16	34	34	16	
Halbert	-	-	-	-	47	-	-	-	-	-	-	-	-	
Harris Super	66	22	18	9	47	11	62	.67	1	14	31	36	19	
Hastings	59	5	24	18	45	14	54	.57	0	1	2	13	84	
Ivey	42	4	26	18	48	17	65	.66	0	1	2	4	94	
Jackson	39	12	41	0	53	15	80	.80	0	0	0	3	97	
Kernoodle	45	19	27	6	53	15	69	.69	0	0	1	10	89	
Kiowa	47	15	36	3	54	13	72	.75	0	1	6	25	68	
Linberger	52	24	25	2	52	11	75	.80	1	7	28	41	24	
Mahan	50	6	38	9	53	15	62	.64	1	5	21	38	35	
Maramec	52	14	34	5	53	12	75	.74	1	22	50	22	5	
Mahan Stuart	41	2	16	23	42	19	61	.62	0	1	3	5	92	
Melrose	65	19	31	2	52	9	72	.76	2	25	43	22	8	
Mobile	66	6	26	9	40	12	61	.67	2	26	40	24	7	
Mohawk	45	8	32	12	52	16	61	.65	0	1	2	5	92	
Moneymaker	68	6	32	7	44	9	74	.78	1	11	24	33	33	
Moore	90	9	28	7	45	8	66	.72	25	72	3	1	0	
Moreland	59	15	34	3	52	10	81	.81	1	16	52	28	5	
Nelson	45	-	-	-	40	-	-	-	-	-	-	-	-	
Oconee	48	30	23	1	54	13	70	.72	1	1	5	23	71	
Oklahoma	57	12	30	4	45	11	70	.77	1	10	39	38	18	
Osage	81	21	27	3	51	7	73	.79	5	40	41	13	1	
Owens	49	10	29	3	43	13	67	.74	0	1	9	21	68	
Pabst	57	20	24	2	45	12	77	.80	0	9	31	32	26	
Pawnee	54	20	33	1	54	11	81	.81	1	11	33	33	22	
Pensacola														
Cluster	49	18	22	4	44	13	66	.72	1	1	4	24	70	
President	65	13	29	4	45	10	73	.80	3	57	34	7	1	
Robinson	66	20	30	3	53	9	71	.76	5	33	36	19	8	
San Saba	90	11	34	8	55	8	73	.65	3	74	23	1	0	
Schley	71	27	23	5	56	9	79	.79	9	51	33	7	1	
Shawnee	60	30	19	3	52	11	67	.72	1	25	52	19	3	
Shoshoni	58	16	29	4	49	11	71	.73	0	1	6	17	76	
Sioux	71	49	6	<1	55	8	80	.81	20	66	9	3	1	
Starking														
Hardy Giant	84	11	26	13	50	7	79	.80	45	52	2	0	0	
Stuart	55	10	31	6	46	12	81	.79	0	2	12	33	54	
Success	-	-	-	-	50	-	-	-	-	-	-	-	-	
Summers	76	24	20	5	47	9	71	.70	2	33	42	20	3	
Sunner	53	18	30	4	52	11	75	.78	1	6	25	40	29	
Tejas	76	20	20	7	47	9	63	.73	12	62	24	2	1	
Tesche	73	4	29	11	44	9	63	.70	3	29	46	19	3	
Texas Prolific	-	-	-	-	45	-	-	-	-	-	-	-	-	
Van Deman	58	21	18	3	42	11	71	.79	3	29	43	21	5	
Western Schley	71	20	28	6	54	9	76	.77	16	69	14	1	1	
Wichita	60	16	33	7	56	10	77	.78	2	28	40	24	5	
Williamson	61	6	31	10	49	11	65	.70	15	69	17	2	1	
Woodard	60	25	26	4	55	11	70	.67	0	2	13	32	54	
40-9-266	73	21	34	5	59	8	75	.78	11	52	28	8	1	
41-19-20	59	17	32	4	52	10	75	.77	2	25	46	22	5	
49-1-182	43	1	42	7	49	14	75	.76	0	1	5	20	74	
49-7-11	62	13	36	4	53	10	73	.77	4	22	28	40	6	
49-20-112	64	26	23	2	51	10	73	.75	1	21	45	26	7	
53-3-36	76	33	18	<1	52	8	77	.78	12	69	14	4	1	
53-9-1	50	7	36	7	51	13	74	.76	1	1	1	6	90	
53-11-139	86	21	24	3	48	7	77	.79	12	82	6	1	0	
55-11-11	68	35	17	<1	52	8	80	.82	1	16	44	33	7	

Table 3 (continued)

Cultivar	Nuts/ lb	Percentage in kernel quality grades			Per- centage kernel	Nut volume cm ³	Per- centage fill	Specific gravity	Percentages in size diameters (inches)				
		Fancy	Standard	Amber					<13/ 16	13/ 16	14/ 16	15/ 16	>15/ 16
55-12-17	67	6	44	3	53	10	69	.71	0	24	40	26	10
56-6-148	55	6	41	2	48	11	69	.74	1	22	46	25	6
57-7-22	70	11	34	3	49	11	58	.63	1	10	18	32	40
61-6-67	54	14	32	3	49	11	79	.81	1	28	48	20	2
62-5-8	78	19	33	2	54	7	83	.87	83	17	0	0	0
63-16-182	71	24	26	2	52	8	75	.79	34	57	6	2	1
64-11-17	75	7	44	2	52	8	74	.80	15	62	22	1	0



Table 4. Average Annual Yield Rank

For first years	1st		2nd		3rd		4th		5th	
	Cultivar	Avg. annual yield	Cultivar	Avg. annual yield	Cultivar	Avg. annual yield	Cultivar	Avg. annual yield	Cultivar	Avg. annual yield
10	French	21	Candy	19	Linberger	15	Wichita	14	Shoshone	14
15	French	35	Caddo	31	Linberger	30	Mohawk	29	Cape Fear	29
20	Davis	47	French	41	Harris Super	39	Gloria Grande	39	Wichita	35
25	Gloria Grande	62	Davis	61	Harris Super	46	Cape Fear	45	Pensacola Cluster	44
30	Gloria Grande	76	Davis	71	Harris Super	58	Cape Fear	55	Elliott	48
35	Gloria Grande	83	Davis	73	Harris Super	64	Cape Fear	62	Woodard	54
40	Gloria Grande	84	Cape Fear	64	Elliott	55	Barton	49	Tesche	36
45	Farley	41	Tesche	39	Stuart	35	Moneymaker	33	Bradley	33
50	Farley	49	Tesche	42	Stuart	40	Bradley	36	Summer	36
55	Farley	56	Stuart	51	Tesche	48	Moneymaker	40	Oklahoma	40
60	Farley	59	Stuart	59	Tesche	52	Oklahoma	44	Moneymaker	42
65	Stuart	67	Farley	60	Tesche	55	Oklahoma	48	Western Schley	46
70	Stuart	72	Tesche	55	Big Z	48	Moneymaker	47	Bradley	45
74	Stuart	73	Pabst	49	Moneymaker	48	Mobile	46	Van Deman	38

Table 5. Average Yield and Percent Kernel of Mature Trees Since 1969 Under Modern Cultural Practices

Varieties	Avg. annual yield lbs/tree	Avg. % kernel	Avg. kernel yield lbs/tree
Alley	55	50	28
Barton	67	49	33
Big Z	84	48	40
Bradley	62	47	29
Brooks	67	44	29
Burkett	74	53	39
Cape Fear	88	52	46
Curtis	50	54	27
Davis	103	44	45
Delmas	44	45	20
Desirable	53	51	27
Elliott	82	51	42
Farley	105	51	54
Frotscher	69	45	31
GCPES-2	59	57	34
Gloria Grande	123	46	57
Harris Super	85	46	39
Hastings	61	46	28
Mahan	46	53	24
Mobile	68	41	28
Moneymaker	70	45	32
Moore	50	45	23
Oklahoma	93	46	43
Pabst	71	46	33
President	48	45	22
San Saba	59	53	31
Schley	40	56	22
Starking Hardy Giant	26	50	13
Stuart	139	46	64
Summers	72	49	35
Sumner	68	52	35
Tesche	85	43	37
Van Deman	82	42	34
Western Schley	109	53	58
Williamson	43	47	20
Woodard	83	55	46

Note: The youngest trees were planted in 1956 and the oldest in 1921.

Conversion Table

U.S. Abbr.	Unit	Approximate Metric Equivalent
Length		
mi	mile	1.609 kilometers
yd	yard	0.9144 meters
ft or '	foot	30.48 centimeters
in or "	inch	2.54 centimeters
Area		
sq mi or mi ²	square mile	2.59 square kilometers
acre	acre	0.405 hectares or 4047 square meters
sq ft or ft ²	square foot	0.093 square meters
Volume/Capacity		
gal	gallon	3.785 liters
qt	quart	0.946 liters
pt	pint	0.473 liters
fl oz	fluid ounce	29.573 milliliters or 28.416 cubic centimeters
bu	bushel	35.238 liters
cu ft or ft ³	cubic foot	0.028 cubic meters
Mass/Weight		
ton	ton	0.907 metric ton
lb	pound	0.453 kilogram
oz	ounce	28.349 grams
Metric Abbr.	Unit	Approximate U.S. Equivalent
Length		
km	kilometer	0.62 mile
m	meter	39.37 inches or 1.09 yards
cm	centimeter	0.39 inch
mm	millimeter	0.04 inch
Area		
ha	hectare	2.47 acres
Volume/Capacity		
liter	liter	61.02 cubic inches or 1.057 quarts
ml	milliliter	0.06 cubic inch or 0.034 fluid ounce
cc	cubic centimeter	0.061 cubic inch or 0.035 fluid ounce
Mass/Weight		
MT	metric ton	1.1 tons
kg	kilogram	2.205 pounds
g	gram	0.035 ounce
mg	milligram	3.5 × 10 ⁻⁵ ounce

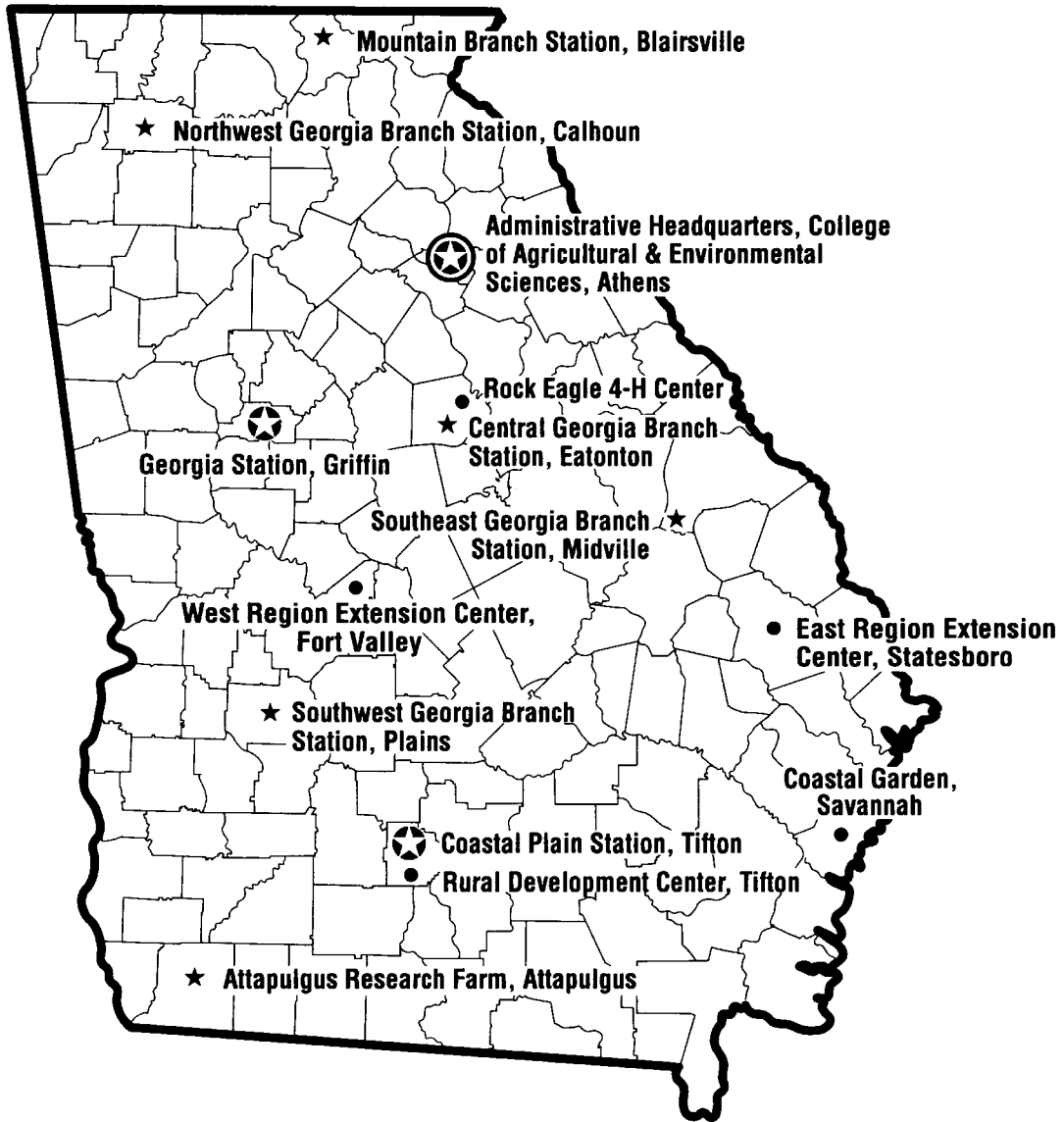
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Experiment Stations Map



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