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'Western Schley' Pecan

DARRELL SPARKS[1]

'Western Schley' is by far the most widely planted cultivar in the western United States pecan belt. 'Western Schley' was originated by E. E. Risien, San Saba, Tex. This cultivar was selected by Risien from his orchard of some 1000 San Saba seedlings (6). Risien planted the seed for this orchard in 1895 (26). The nuts were planted with the belief that many of the seedlings would come true to their parent (10) which, of course, did not happen. The selection was named 'Western Schley' by Risien and released by Risien sometime before or in 1924 (2). Evidently, Risien believed this selection was equal to 'Schley,' which was grown primarily in the southeastern United States, hence the name, 'Western Schley.' 'Western Schley' has been used in breeding, but only one cultivar, 'Harper,' has been released with 'Western Schley' parentage.

Budbreak is relatively late and occurs about the same time as 'Stuart' (24). The foliage is glossy and exceptionally dark green. The color fades under conditions of prolonged exposure to intense sunlight. Fading, however, does not occur as readily as in 'Wichita' and 'Schley.' The leaflets are especially wavy or convoluted as in 'Wichita' and 'Mahan.' The distal portion of the rachis often curves upward with the result that the leaf appears to be swayback as in 'Curtis.' The shoots tend to be spindly with a relatively high number of leaves per unit of length. In the early spring the bark of the shoot is bright green and glossy. As the growing season progresses the bark turns reddish brown. Sometimes older branches have patches of bark with reddish iron-like color. The coloration of both the shoot bark and branch bark are distinguishing characteristics of 'Western Schley.' The tree has a spreading canopy with an open growth form which is enhanced by the pole-like branches (Fig. 1). This open canopy no doubt contributes to a high production of nuts. The tree is a very vigorous grower. Like 'Stuart,' the crotch angles of 'Western Schley' are relatively narrow but strong. Hence, the tree requires very little training.

'Western Schley' is protandrous. 'Ideal' (mistakenly called 'Bradley') is a reasonably good pollinizer for 'Western Schley' in the Las Cruces pecan region of New Mexico (24). Extensive overlapping of pollen shedding and pistillate receptivity often occurs in 'Western Schley' (7, 11, 13, 16, 19, 28). For this reason, selfing is commonly assumed to occur in this cultivar. Evidence for the capacity for selfing in this cultivar is the substantial fruit set occurring in an isolated 'Western Schley' orchard planted without pollinizers near Lubbock, Tex. Additional indication of selfing is the abnormally heavy third fruit drop in this orchard. Selfing has been demonstrated to increase the magnitude of the third drop (20, 25). Selfing also reduces kernel quality (20) and consequently, extensive selfing in 'Western Schley' would be expected to decrease kernel development. That the kernel is detrimentally affected by selfing is supported by the fact that cross-pollination increases kernel quality in 'Western Schley' (14). 'Western Schley' seed make poor rootstocks in that the seedlings are small as demonstrated by Hinrichs (12) and by data of Mielke et al. (15). The small size of seedlings has

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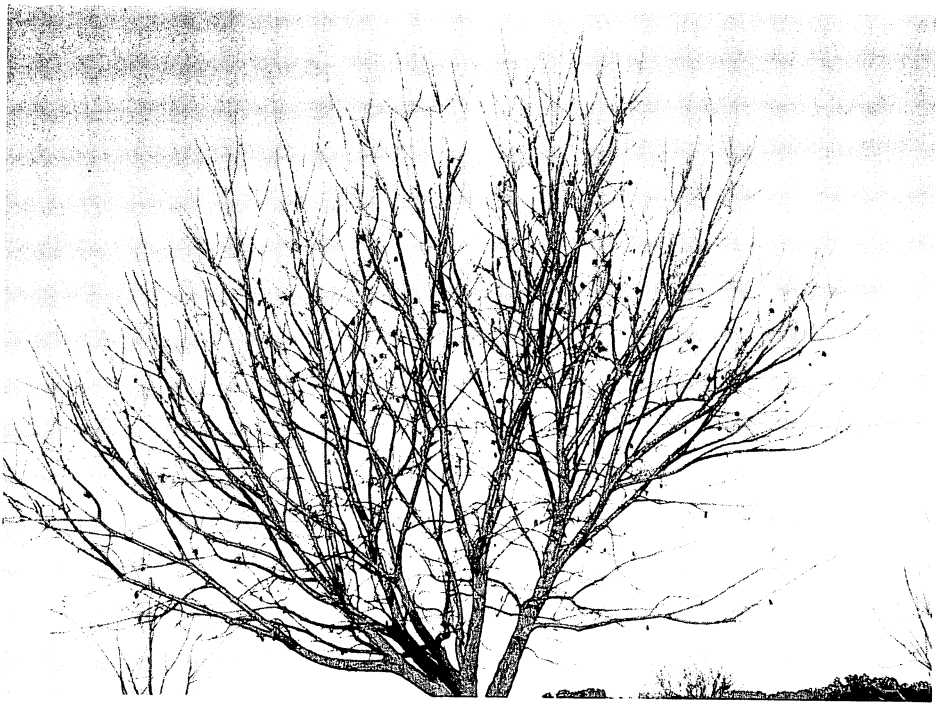

Figure 1. Tree form is 'Western Schley.' Note the pole branching habit which makes this cultivar more suited to mechanical hedging than most other pecan cultivars.

Figure 2. Drooping branch habit of 'Western Schley' pecan trees due to the formation of fruit on short branches along the length of a long slender pole-like branch.

been attributed to extensive selfing in 'Western Schley.' In the Crystal City, Tex. area, 'Western Schley' often has a relatively large fourth drop.

'Western Schley' is moderately precocious (24) and, under excellent cultural conditions, the tree can be in commercial production within six years from transplanting. The fruit is borne on shoots from relatively short branches that arise along the length of long branches. Thus, as in 'Pawnee' and 'Shawnee,' the fruit appears to be borne along the length of long poles. Fruiting shoots tend to be maintained along the branches because of the open canopy. When in heavy production, these poles often droop from fruit weight in July-September (Fig. 2). 'Western Schley's' fruiting pattern makes the tree particularly suited to hedging. When the tree is heavily hedged, nut production is restored within three to four years. The tree is prolific and, as a result, very well managed 'Western Schley' orchards with a full stand of trees may have average yields of 1500 to 2000 pounds per acre. The tree is a fairly consistent producer.

Date of nut maturity is about three days before 'Stuart' (24). Under some conditions, the shuck dries along the suture prior to dehiscence (Fig. 4). The shuck is thick (5) with pronounced sutures (Fig. 3).

Nut shape is obovate. Base shape is mostly obtuse, but is variable and sometimes is obtuse asymmetric, round asymmetric, or acute. The apex is likewise very variable. Although mostly cuspidate asymmetric, the apex can also be cuspidate or obtuse asymmetric. The apex is broadly grooved along the suture. Most nuts have unequal shell halves. Nut cross section is oblate. The suture is elevated, but ridges are not evident. Shell surface is exceptionally rough. Stripes are moderate. Much of the shell surface is densely dotted causing the nut to appear dirty and unattractive. Markings are reddish-brown on a light brown background (24).

Nuts are not large and average about 64 nuts per pound. The nut is too small to sell well in the inshell trade. The shell is thin. A percentage kernel of 57 is good with 60 being excellent. The kernel color rating is 6.2 (1 = dark; 10 = light) which is somewhat less than 'Stuart' and 'Desirable.' Mature 'Western Schley' trees tend to overproduce with the result that the kernel percentage decreases down to the low 50's. Thus, the capacity of 'Western Schley' to produce high quality nuts is greatly diminished. The tendency for kernel quality to decrease with tree age is a major disadvantage. Kernel quality can be restored by hedging because hedging increases the leaf area per fruit. Hedging to maintain nut quality has been practiced extensively in the El Paso, Tex.-Las Cruces, N. M. area; but the practice is on the decline, mainly because of the loss in nut production during the first three years or so following hedging (24).

Although a high percentage of the 'Western Schley' crop is shelled, the nut is not a good cracker. The difficulty of removing packing tissue from the deep kernel grooves during shelling and the likelihood for the kernel shoulders to break during cracking decrease the adaptability of 'Western Schley' to mechanical processing. The shoulders tend to break because the rigid, central partition wall does not freely separate from the shell during cracking and shelling (24). Kernel stability either inshell or shelled is only fair (27).

'Western Schley' has one characteristic that is especially favorable for climates that are marginally short for pecan; for example, the El Paso area of Texas, the Las Cruces area of New Mexico, and Oklahoma. This characteristic is that the tree enters dormancy with ensuring leaf drop relatively early in the fall. Early seasonal dormancy is of primary importance in marginal climatic areas in order for the tree to

escape major damage from freezes. Young 'Western Schley' trees also have good resistance to fall freezes in the southeastern United States (9).

'Western Schley' is very susceptible to scab (17, 18, 21). However, it can be grown successfully under the humid conditions of the southeastern United States if properly timed fungicide sprays are applied. The open canopy is no doubt a contributing factor in scab control. Regardless, 'Western Schley' is not recommended for the southeastern United States because the small nuts are not suited for the Thanksgiving and Christmas trade. 'Western Schley' is extremely susceptible to downy spot (8) and, with severe infections, massive defoliation occurs. The foliage is also susceptible to vein spot and liver spot (8) and is moderately susceptible to fungal leaf scorch. 'Western Schley' is immune to southern pecan leaf phylloxera (1, 3), but is susceptible to pecan phylloxera (4). 'Western Schley' is moderate resistance to hickory shuckworm (5). 'Western Schley' foliage is very susceptible to potato leafhopper damage. The damage can be as severe or worse than with 'Desirable' which is also very sensitive to this insect. The susceptibility of 'Western Schley' to yellow and blackmargined aphids is acute with nearly the severity of 'Cheyenne.'

One of the most critical nutritional parameters for 'Western Schley' tree growth and fruit production is a proper balance of nitrogen and potassium. Developing fruits differentially drain potassium from the leaves (22) which may cause a high nitrogen to potassium ratio or accentuate an existing high ratio. If fruiting is excessive and leaf potassium is very low, the tree dies back during the following growing season and, in extreme cases, may die. Dieback and tree death have been major problems with 'Western Schley' in Brazil. The severity of an imbalance of nitrogen and potassium is more severe for 'Western Schley' than 'Desirable' due to 'Western Schley's' higher fruiting capacity. This cultivar is tolerant to low zinc (10). 'Western Schley' is much more salt tolerant than 'Wichita' and, consequently, does better than 'Wichita' under saline conditions. The third fruit drop is especially sensitive to drought (23).

The nuts on a 'Western Schley' tree are difficult to shake mechanically, particularly if harvested early. This difficulty is due to the fact that the fruit is borne on a whippy shoot with a long spindly peduncle (Fig. 4). When the tree is shaken, the net result is that the shaking energy is dissipated in the whippy shoot rather than in the fruit cluster. 'Western Schley' nuts are especially susceptible to losses from birds. The slender nut is easily carried by birds.

Overall, 'Western Schley' is not an ideal cultivar. However, 'Western Schley's' high yielding ability and suitability to marginal pecan climates make this cultivar highly successful. The huge acreage of relatively young trees will ensure 'Western Schley's influential position in the market for many years; but, as these trees mature, maintaining nut quality will become an increasing problem.

Figure 3. Spindly peduncle of 'Western Schley' fruit cluster which makes mechanical shaking of the nuts difficult.

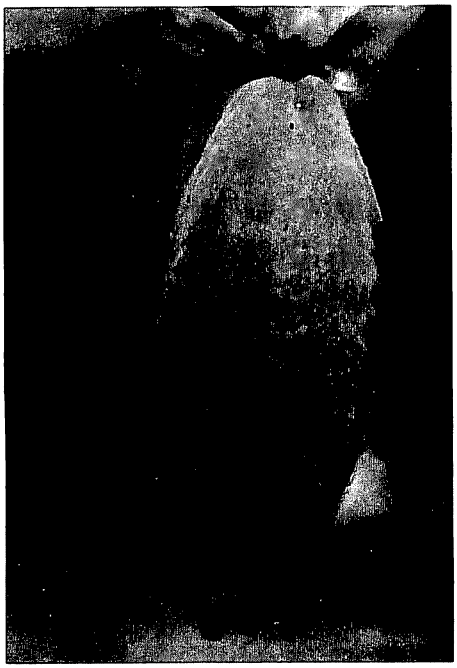

Figure 4. Drying along the suture of 'Western Schley' fruit just prior to shuck opening. This characteristic is not universal on all fruits.

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