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'Hopi' Pecan

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'Hopi' is a new pecan [*Carya illinoinensis* (Wangenh.) K. Koch] cultivar released 14 May 1999 by the U.S. Dept. of Agriculture (USDA), Agricultural Research Service (ARS), and the Agricultural Experiment Station of Texas. When compared to other protogynous cultivars, 'Hopi' has superior uniformity of production from year to year, high nut quality, and is suitable for planting in the western, disease-free pecan production area of the United States. Its scab [*Cladosporium caryigenum* (Ell. et Lang.) Gottwald] susceptibility makes it unusable for all areas where this disease is a problem. 'Hopi' pecans are large enough to be sold in-shell, or they can be shelled to produce a high proportion of intact halves and large pieces of very high quality.

Origin

The USDA conducts the only national pecan breeding program. Crosses are made at Brownwood and College Station, Texas (Grauke and Thompson, 1996; Thompson and Grauke, 1991). Seedling clones are established on their own roots or budded to pollarded trees for the initial testing at College Station for ≈10 years. Superior clones then enter the National Pecan Advanced Clone Testing System (NPACTS), where they are tested across the southern United States. After 10 to 15 years, the best clones are given Native American names and released to nurseries. 'Hopi' is the 23rd cultivar released by this program in cooperation with various state agricultural experiment stations. All USDA cultivars (with the exception of 'Barton') have Native American names.

'Hopi', tested as selection 39-5-50, is a progeny from a 1939 cross between the 'Schley' and 'McCulley' cultivars made by L.D. Romberg at the USDA Pecan Worksite, Brownwood, Texas. 'Schley' is an old cultivar commonly found in eastern U.S. orchards, while 'McCulley' is a central Texas native cultivar (Thompson and Young, 1984). The original McCulley tree is still growing near Brownwood. Both of these parental cultivars are known for high nut quality and scab susceptibility. The 39-5-50 clone from the original seedling tree was budded to a large pollarded tree and evaluated at Brownwood. On the basis of preliminary performance, extensive national testing was begun in 1966.

Description

Preliminary yield data indicate that 'Hopi' is not precocious or high yielding when compared to some other cultivars in well-managed orchards. Its medium and uniform productivity from year to year, coupled with outstanding nut quality (Fig. 1), are the strong points of this cultivar. A tree at Brownwood yielded 16.2, 15.7, 20.2, and 24.7 kg for the 19th through 22nd years after grafting, respectively. In a test at El Paso, Texas (Table 1), the yields of 'Hopi' were consistent with 'Kanza' and 'Creek', but less than 'Wichita' and 'Western'.

The nuts are ≈62% kernel, and kernel color is excellent (Table 2). 'Hopi' has proven to be a consistent winner in pecan shows for many years, and is rated as a top performer when

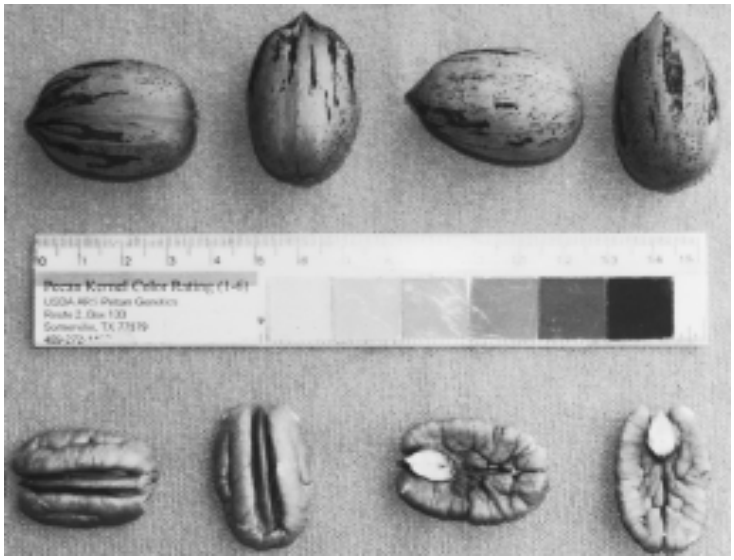

Fig. 1. Nuts and kernels of 'Hopi' pecan. The scale is in centimeters.

Table 1. National Pecan Advanced Clone Testing System (NPACTS) yield data from El Paso, Texas.[z]

	Nut Yield (kg/tree)				
Cultivar	1985	1986	1987	1988	Total
Hopi	5.0	6.03	8.48	11.5	31.0
Kanza	15.4	3.76	3.31	10.9	33.4
Creek	13.0	4.31	2.27	13.2	32.8
Western	28.1	12.02	24.95	24.5	89.6
Wichita	16.3	6.80	33.57	2.3	59.0

[z]This test had three replications, single tree plots, with clones grafted on established open-pollinated rootstocks about 1973.

Table 2. National Pecan Advanced Clone Testing System (NPACTS) data averaged over 4 years from five locations [Visalia, Ca.; Baton Rouge, La.; Brownwood, Texas (two tests); and El Paso, Texas] comparing the 'Hopi' pecan to other cultivars for nut characteristics.

	Cultivar					
Characteristic[z]	Hopi	Kanza	Creek	Pawnee	Wichita	Western
Nut L/W ratio	1.5	1.5	1.9	1.8	2.1	2.1
Nut wt (g)	6.3	5.8	8.0	8.9	8.0	6.2
Nut density	0.76	0.83	0.83	0.83	0.81	0.80
Kernel wt (g)	3.9	3.1	4.4	5.2	4.9	3.8
Pack.DG (%)	26	3	8	3	8	23
Pack.VG (%)	4	12	9	11	8	5
Kernel (%)	62	55	54	58	61	61
Kernel color	1.8	2.2	2.3	2.2	2.3	2.4
Kernel fuzz (%)	0	3	25	14	3	10

[z]Nut L/W ratio = nut length/nut width; nut density = nut weight/nut volume; pack.DG = packing material remaining in dorsal grooves after shell is removed; pack.VG = packing material remaining in ventral groove after shell removal; and kernel fuzz (%) = the proportion of the testa or kernel surface covered with adhering packing material. Kernel color is on a 1–10 scale with 1 being the lightest (most desirable) color.

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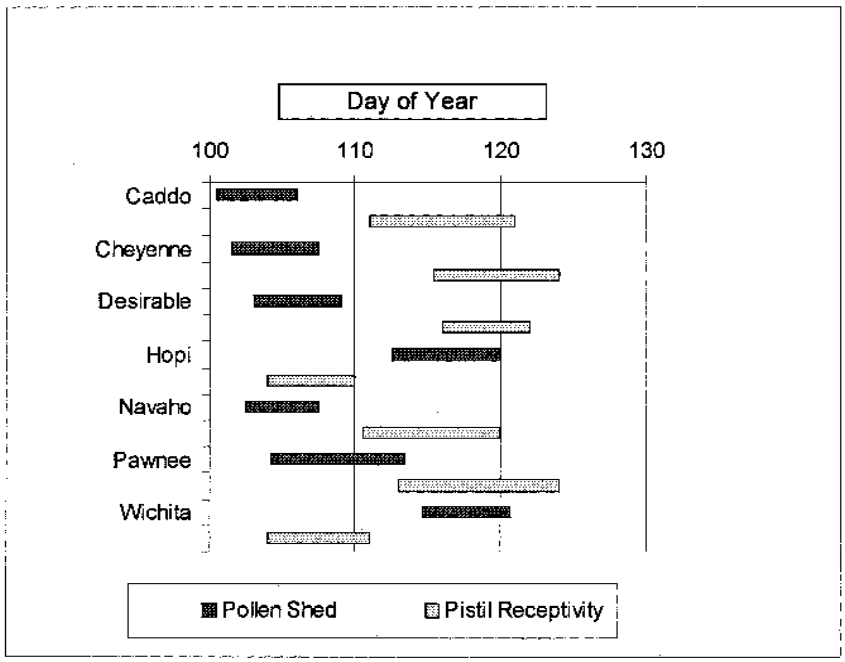

Fig. 2. Pollen shed and pistil receptivity for 'Hopi' pecan and control cultivars at College Station, Texas, in 1999. Day of year 100 = Apr. 10.

trees experience stressful environmental conditions. 'Hopi' has a unique ability to produce quality nuts when other cultivars overbear and produce nuts of inferior quality. Therefore, 'Hopi' is more uniform in production from year to year, and less prone to alternate bearing, the main problem in pecan production today.

Spring budbreak is similar to 'Sioux', 'Oconee', and 'Caddo'; and earlier than 'Desirable' and 'Pawnee'. 'Hopi' is protogynous (Fig. 2), with early pistil receptivity and late pollen shed (similar to 'Wichita' and 'Choctaw'). 'Hopi' should be a good pollinizer for, and well pollenized by 'Pawnee', 'Western', 'Cheyenne', and 'Caddo'. Time of nut maturity is midseason at Brownwood, Texas (11–20 Oct.), or similar to 'Western' and 'Cheyenne'. Trees are upright in growth habit and develop strong limb angles and a wind-resistant tree structure.

'Hopi' is moderately susceptible to scab and downy spot (*Mycosphaerella caryigena* Demaree and Cole) diseases, and should not be grown in humid environments. It is resistant to vein spot (*Gnomonia nerviseda* Cole). 'Hopi' has medium susceptibility to yellow (*Monellia caryella* Fitch and *Monelliopsis pecans* Bissell) and black (*Melanocallis caryaefoliae* Davis) aphids.

Availability

Budwood and graftwood will be supplied in 2000 only to nurseries. All requests should be sent to T.E.T. The USDA does not have any trees for distribution. Some budded or grafted trees should be available from nurseries for planting in early 2001.

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