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'Creek' Pecan

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'Creek' is a new pecan [*Carya illinoinensis* (Wangenh.) K. Koch] cultivar released 20 May 1996 by the U.S. Dept. of Agriculture, Agricultural Research Service (USDA–ARS), and the agricultural experiment stations of Alabama, Georgia, Louisiana, and Texas. 'Creek' is being released because of its precocity, productivity, disease resistance, and potential suitability as a temporary cultivar (to be removed during the first tree-thinning process of the orchard) in the southeastern United States. Pecans from this cultivar are large enough to be sold inshell or shelled to produce large quantities of near-perfect halves and large pieces.

Origin

'Creek', tested as selection 61-6-67, is a progeny from a 1961 cross between 'Mohawk' and 'Starking Hardy Giant' made by L.D. Romberg at the W.R. Poage Pecan Field Station, USDA–ARS, Brownwood, Texas (Fig. 1). The clone was budded to a branch of a large pollarded bearing tree in 1962, and forced in 1963. Nuts were first harvested from this branch in 1967, and extensive testing was started in 1968.

Description

Preliminary data indicate that the precocity and yield potential of 'Creek' as a young tree are excellent. In young orchards at Fairhope, Ala., this cultivar has performed well compared to standard cultivars (Table 1) (Nesbitt et al., 1995). It produced almost 30 kg/tree in 1993 (11th leaf), but like most cultivars in this experiment, did not produce a crop in 1994. Mechanically thinned trees of 'Creek' at the same location did set a full crop in 1994, but the nuts did not mature due to excess rainfall, late-season shuck disorders, and heavy pressure from shuckworm (Goff et al., 1995). 'Creek' has performed adequately at Albany, Ga., but not as well as 'Cape Fear' (Table 2). 'Cape Fear' started yielding a little earlier and heavier at Tifton, Ga., than did 'Creek'. (Table 3). In this test, 'Creek' yielded about like 'Cape Fear', 'Caddo', and 'Oconee'. Nut quality of 'Caddo' and 'Oconee' was usually better than 'Creek'. 'Creek' has not performed well at Brownwood, Texas (Thompson and Hunter, 1983; Thompson et al., 1981), yielding much less than 'Wichita'. It did not perform well in California either (Sibbett et al., 1988). Nut quality is also inferior to 'Wichita'; therefore, 'Creek' is not recommended for the central or western United States.

'Creek' is an efficient cultivar in terms of producing large yields of kernels per unit of tree size (Table 4). This trait, along with its precocity, suggest that 'Creek' may be well-adapted to close spacing. Trees of this cultivar tend to overbear as mature trees and produce low-quality kernels unless some system of nut thinning or tree hedging to limit crop is practiced. Mechanical shaking at half shell-hardening to remove excess nuts in obvious overproduction years has proven effective in increasing nut quality and ensuring a return crop the following year (Goff et al., 1995). Grower experience also suggests that 'Creek' continues to produce well, compared to other cultivars, when the trees are crowded and shaded.

Percent fruiting shoots, nuts per cluster, and percent nut drop of 'Creek' were similar to those for 'Desirable' at Shreveport, La., in

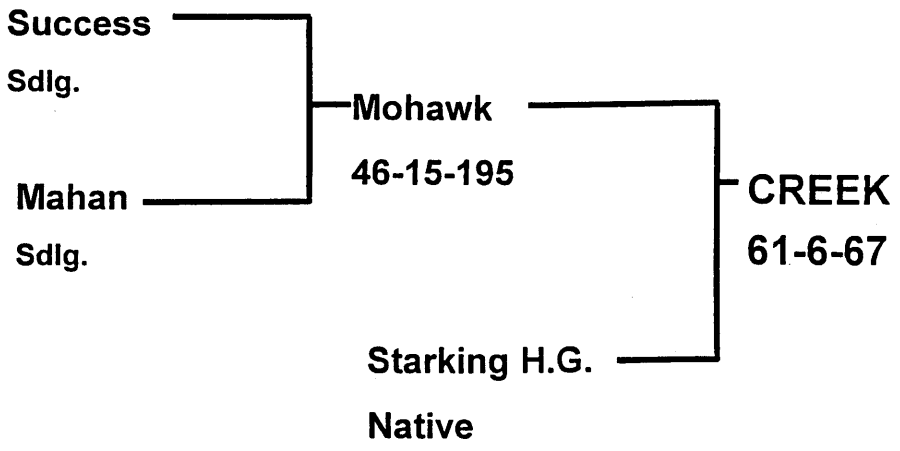

Fig. 1. Pedigree of 'Creek' pecan, including the USDA–ARS experimental numbers (in parentheses), where appropriate.

Table 1. Yield of nuts at Fairhope, Ala., for 'Creek' and standard pecan cultivars (12.2 × 12.2-m tree spacing). Leaf refers to growing season after grafting.

	Yield (kg/tree)									
	Leaf									
Cultivar	4	5	6	7	8	9	10	11	12	Total
Creek	0.1	0.9	0.5	6.1	4.4	16.5	5.7	29.6	0	64.0
Cape Fear	0.1	1.2	1.2	8.0	12.5	30.2	2.0	0	0.1	55.4
Kiowa	0.4	1.5	1.1	5.9	16.3	13.1	21.9	15.2	0.5	76.0
Forkert	0	0.1	0.1	1.3	3.5	16.1	6.1	34.6	0	61.9
Stuart	0	0	0	0.7	3.6	9.2	7.4	27.8	0	48.9

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1991 (Table 5). More data are needed, however, to adequately characterize this new cultivar for these characteristics.

Nut size of 'Creek' is similar to that of 'Cape Fear' and is a little smaller than that of 'Kiowa', 'Forkert', and 'Oconee' (Table 6). Nut shape is elliptical, with an acute apex and base shape (Fig. 2). The shell is thick. 'Creek' is generally a good shelling pecan, since the dorsal grooves on the top of the kernel are not pinched and allow easy removal of packing material during shelling. Kernel color is generally good.

Time of nut maturity is similar to that of 'Wichita', 'Mohawk', and 'Moneymaker', i.e., 8 to 10 days before 'Cape Fear' and 'Choctaw' and 14 to 16 days before 'Desirable' and 'Kiowa'. 'Creek' nut maturity at Fairhope, Ala., and at Tifton, Ga., is about 8 Oct.

'Creek' is protandrous, with midseason pollen shed and mid- to late-season pistillate receptivity. Time of pollen shed is similar to that of 'Oconee', and 3 to 5 days after 'Desirable', 'Cheyenne', 'Caddo', and 'Cape Fear'. Time of pistillate receptivity is 5 to 7 days after that of 'Cape Fear', 'Cheyenne', and 'Desirable', but ≈2 days earlier than that of 'Caddo'. There appears to be more overlap of pollen shed and pistil receptivity in 'Creek' than in many other cultivars. 'Creek' likely will be a good pollinizer for 'Choctaw', 'Stuart', 'Schley', 'Sioux', 'Gloria Grande', and 'Wichita' and likely will be well pollenized by these same cultivars.

'Creek' has moderate scab resistance [*Cladosporium caryigenum* (Ell. et Lang.) Gottwald] (Table 4), and this disease is easily controlled with routine scab control measures. 'Creek' has medium susceptibility to hickory shuckworm (*Cydia caryana* Fitch), but exhibited high susceptibility to pecan phylloxera (*Phylloxera devastatrix* Pergande) at Brownwood, Texas. (Calcote and Hyder, 1980). 'Creek' showed no susceptibility to southern pecan leaf phylloxera (*P. russellae* Stoetzel) at Brownwood (Calcote, 1983).

Availability

Budwood and graftwood will be supplied only to nursery operators. All requests should be sent to T.E.T. The USDA does not have any trees for distribution.

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Table 2. Yield of nuts at Albany, Ga., for 'Creek' and control pecan cultivars. Leaf refers to growing season after grafting.

	Yield (kg/tree)				
	Leaf				
Cultivar	5	6	7	8	Total
Creek	0	8.2	9.2	18.2	35.5
Desirable	1.3	2.6	8.8	9.0	21.7
Shoshoni	0	10.6	11.3	17.4	39.2
Cape Fear	6.2	9.6	15.8	21.0	52.6

Table 3. Yield of nuts at Tifton, Ga., for 'Creek' and control pecan cultivars. Leaf refers to growing season after grafting.

	Yield (kg/tree) at leaf ages						
Cultivar	Avg annual yield through 10	11	12	13	14	15	Avg annual yield through 15
Creek	5.1	28.5	2.0	40.6	0	19.9	10.3
Cape Fear	5.6	16.7	25.7	27.2	16.0	53.0	13.1
Caddo	6.1	21.1	18.1	23.0	15.4	42.4	13.9
Forkert	3.2	5.5	25.9	14.1	11.1	45.1	8.9
Kiowa	3.0	11.1	10.1	13.5	5.6	51.9	10.6
Oconee	5.6	10.6	25.0	28.6	13.4	17.6	10.1

Table 4. Tree size, yield efficiency (measured through the 12th leaf), and nut scab ratings of 'Creek' compared to control pecan cultivars at Fairhope, Ala. Scab ratings are on a 1 to 5 scale (1 = most resistant) (Hunter and Roberts, 1978).

Cultivar	Trunk diam (cm)	Kernel ($g \cdot cm^{-2}$)	Nut scab rating
Creek	20.9	85.0	1.1
Cape Fear	27.1	47.5	2.0
Kiowa	24.8	78.4	1.2
Forkert	26.9	60.9	1.5
Stuart	24.0	43.6	2.0
Cheyenne	19.6	39.9	4.2

Table 5. Percentage of shoots fruiting, blossom count, and nut drop for 'Creek' and standard cultivars at Shreveport, La., on dates given in 1991.

		Nuts/cluster		
Cultivar	Fruiting shoots (%)	6–14	7–16	Nut drop (%)[z]
Creek	47	2.8	1.6	44
Cape Fear	43	3.2	2.1	33
Forkert	45	2.1	1.8	14
Maramec	52	3.4	1.7	50
Desirable	46	2.8	1.7	40

[z]For clusters on 7–16.

Table 6. Nuts per kilogram and percent kernel of 'Creek' compared to control cultivars at Tifton, Ga. (TIF); Albany, Ga. (ALB); Fairhope, Ala. (FH); and Brownwood, Texas (BW). Each value represents an average of several trees over years.

	Nuts/kg					Kernel content (%)				
Cultivar	TIF	ALB	FH	BW	Mean	TIF	ALB	FH	BW	Mean
Creek	120	112	117	125	119	50	50	47	48	49
Cape F	121	112	123	121	119	52	54	47	53	51
Caddo	149	---	---	174	161	53	---	---	57	55
Forkert	112	108	101	---	107	59	62	57	---	59
Kiowa	104	---	101	110	105	54	---	50	58	54
Oconee	105	---	---	---	105	55	---	---	---	55
Desirable	106	110	---	---	108	51	50	---	---	50

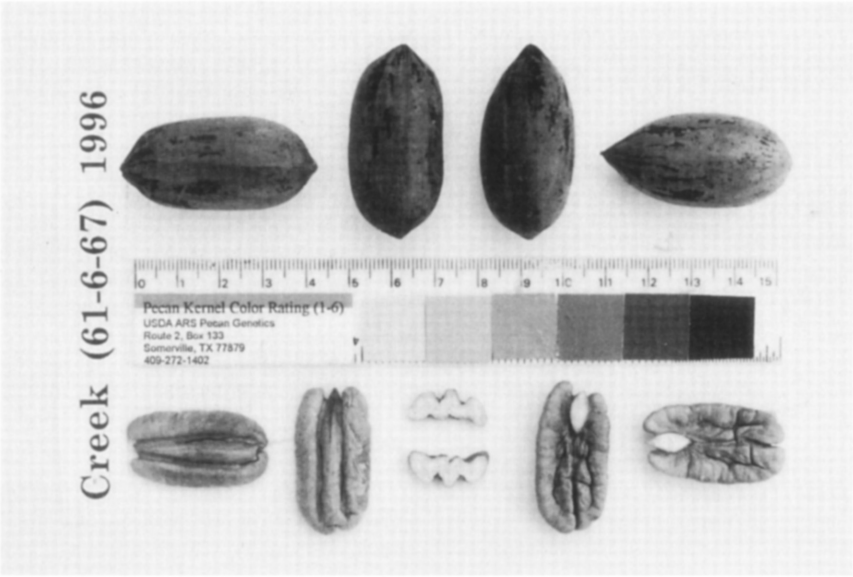

Fig. 2. Nuts and kernels of 'Creek' pecan.

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