‘Darby’ Sweetpotato

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‘Darby’ sweetpotato [*Ipomoea batatas* (L.) Lam.] was developed by the Louisiana Agricultural Experiment Station to provide a cultivar with characteristics similar to those of ‘Beauregard’ but with the potential for earlier production and improved production in sandy soils. ‘Darby’ produces plants (sprouts) earlier in the season than does ‘Beauregard’, and it can be harvested earlier. The roots do not elongate to an objectionable degree in sandy soils when compared to ‘Beauregard’. The expected place for ‘Darby’ in sweetpotato production may be as an early adjunct to the main crop, although in areas where it performs exceptionally well, it may become the main-crop cultivar.

Initially identified and evaluated as L87-59, the cultivar is named in honor of William Darby, a dedicated man whose 11 years of work in Louisiana culminated with publication in 1816 of the first reliable report and map of the cultural and physical geography of the state. He noted that, in Louisiana, sweetpotatoes grew “in excessive abundance, and upon a greater variety of land, than even maize itself.”

Origin

‘Darby’ originated in 1987 as a seedling from a polycross nursery of the previous year. The female lineage is L83-523 and W-151, the latter released in 1986 as ‘Southern Delite’ by the U.S. Dept. of Agriculture–Agricultural Research Service, U.S. Vegetable Laboratory and the South Carolina Agricultural Experiment Station. The female parent of W-151 is W-99, and SC 1166 is the female parent of W-99.

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Description

‘Darby’ has purple-stemmed vines that begin fading gradually, ≈20 cm from the apex, to green with some purple mottling. The canopy biomass is similar to that of ‘Centennial’ and covers the soil surface completely. Unfolded immature leaves are dark purple, changing gradually as they develop to dark green with purple abaxial laminae. Mature leaves have an acute apex and either a cordate or hastate base. Abaxial veins are light purple, those adaxial are green. The petiole is purple on young leaves within 20 cm of the vine apex, gradually changing to green with some purple mottling toward the crown. Storage roots are blocky oval without lobing (Fig. 1). Skin is dark rose compared to light rose for ‘Beauregard’ at harvest and fades slightly in storage. The russet appearance of the skin at harvest becomes smoother in storage. The cortex is 3 to 4 mm in depth, sometimes light yellow, and the flesh is uniformly orange, similar to ‘Beauregard’ and lighter than ‘Hernandez’.

Disease reactions

‘Darby’ and ‘Beauregard’ have reacted similarly for most diseases that we have evaluated in controlled tests. ‘Darby’ is intermediate to resistant for soil rot, caused by *Strepto-*

myces ipomoeae (Person & W.J. Martin) Waksman & Henrici. In severely infested fields, yield is unaffected, but some storage roots may have a few shallow lesions. ‘Darby’ is resistant to fusarium wilt or stem rot, caused by *Fusarium oxysporum* Schlecht. f. sp. *batatas* (Wollenw.) Snyder & Hans.; resistance is greater than for ‘Centennial’ or susceptible ‘Porto Rico’. In greenhouse tests that measure nematode reproduction, ‘Darby’ is susceptible to southern root-knot nematode *Meloidogyne incognita* (Kofoid & White 1919) Chitwood 1949 races 1 and 3, but it has not been evaluated in infested field plots for yield. It is susceptible to the reniform nematode *Rotylenchulus reniformis* Linford & Oliveira 1940, similar to ‘Beauregard’ and ‘Jewel’. ‘Darby’ is resistant to development of internal cork, a disease presumed to be caused by a strain of sweetpotato feathery mottle virus. It is resistant to fusarium root rot, caused by *Fusarium solani* (Sacc.) Mart. emend. Snyder & Hans., similar to ‘Beauregard’ and slightly more resistant than ‘Jewel’. ‘Darby’ also is resistant to bacterial root rot, caused by *Erwinia chrysanthemi* Burkholder, McFadden & Dimock; it is more resistant than ‘Beauregard’ and at least as resistant as ‘Jewel’. It is resistant to *Rhizopus* soft rot, caused by *Rhizopus stolonifer* (Ehr. ex. Fr.) Lind., resembling ‘Beauregard’ and more resistant than ‘Hernandez’ or ‘Jewel’. Incidence of circular spot, caused by *Sclerotium rolfsii* Sacc., has been low (0% to 5%); ‘Darby’ is similar to ‘Beauregard’ in this reaction and has had less circular spot than ‘Jewel’.

Insect resistance

A heavy infestation of white grub *Phyllophaga ephelida* (Say) was encountered in only one trial, and in this instance the degree of resistance in ‘Darby’ and of ‘Beauregard’

Fig. 1. External characteristics of ‘Darby’ sweetpotato roots.

Table 1. Average yield by grade in replicated trials in Louisiana.

Cultivar	Avg yield (Mg·ha ⁻¹) ^{z,y}			
	U.S. #1	Canner	Jumbo	Total marketable
		1990		
Darby	17.6	6.0	3.7	27.2
Beauregard	11.9	8.1	1.6	22.6
		1991		
Darby	21.6	8.6	2.1	32.3
Beauregard	18.9	9.6	1.6	31.1
		1992		
Darby	22.7	11.5	4.4	38.7
Beauregard	22.7	10.1	2.2	35.1
		1993		
Darby	16.8	7.5	1.4	25.6
Beauregard	17.6	9.0	1.3	27.9

^zAverage of six trials in 1990, six in 1991, eight in 1992, and seven in 1993; Mg·ha⁻¹ × 0.446 = U.S. tons per acre; Mg·ha⁻¹ × 17.84 = 50 lb bu. per acre.

^ySizes of roots: U.S. #1: 51–89 mm in diameter, 76–229 mm long; canner: 25–51 mm in diameter, 51–178 mm long; jumbo: larger than U.S. #1 in diameter or length or both, and without objectionable defects.

Table 2. Average yield by grade of 'Darby' and 'Beauregard' in National Sweetpotato Collaborator Regional trials.^z

Cultivar	Avg yield (Mg·ha ⁻¹)			
	U.S. #1	Canner	Jumbo	Total marketable
		1992		
Darby	16.0	7.1	4.3	27.4
Beauregard	17.5	8.1	4.0	29.6
		1993		
Darby	18.3	6.3	6.0	30.6
Beauregard	19.3	8.5	4.7	32.5

^zStatistical treatment of these tests was not feasible.

was similar and moderate and higher than for 'Centennial'. 'Darby' has no antibiosis resistance to the sweetpotato weevil [*Cylas formicarius elegantulus* (Summers)], but has resistance to the sweet potato flea beetle (*Chaetocnema confinis* Crotch.).

Production

'Darby' was compared with 'Beauregard' in randomized complete-block trials with four, five, or six replications at various locations in Louisiana. There were six trials in 1990, six in

1991, and seven in 1993. These covered a wide range of planting dates and growing days. Yield and grade of 'Darby' compared favorably with that of 'Beauregard' (Table 1). Differences between these cultivars in yield of U.S. #1 grade roots were statistically significant ($P \leq 0.05$) in eight of the 27 trials, and in six of these instances, 'Darby' produced the higher yield. 'Darby' and 'Beauregard' were included in the National Sweetpotato Collaborators 1992 and 1993 trials at 14 and 15 locations, respectively. The yield of 'Darby' averaged less than that of 'Beauregard', except the jumbo grade (Table 2). 'Darby' yielded poorly in several states, thus lowering the average.

Plants of 'Darby' reach harvestable stage for first cutting several days to 1 week earlier than 'Beauregard'. Regrowth is excellent. Plants are straight and sturdy, well suited for mechanical harvesting and planting. 'Darby' is generally ready to harvest 5 to 6 days earlier than 'Beauregard' when the two cultivars are planted at the same time, as evident by more jumbo grade roots at harvest (Table 1).

Culinary characteristics of 'Darby' are similar to those of 'Beauregard'. The cultivar stores well, remaining marketable up to 10 months in controlled environments; however, it may respond to elevated temperatures by sprouting more quickly than 'Beauregard'.

Availability

Limited quantities of foundation seed stock will be commercially available for the 1995 crop season. Requests for roots should be made to the Sweet Potato Research Station, P.O. Box 120, Chase, LA 71324. Plant patent protection will be sought.