

'Orleans' Sweetpotato

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'Orleans' sweetpotato [*Ipomoea batatas* (L.) Lam.] was developed by the Louisiana Agricultural Experiment Station to provide an orange-fleshed, light rose-skinned cultivar similar to 'Beauregard' (Rolston et al., 1987) with superior storage root shape and disease resistance similar to 'Beauregard'. 'Orleans' produces excellent numbers of uniform plants. Days to harvest for 'Orleans' and 'Beauregard' are similar in the Gulf South production region. 'Orleans' in North Carolina appears competitive with other commercial cultivars; however, roots of 'Orleans' are too long in California to warrant production. The roots are elliptical and consistent in shape in varied soil types outside of California. Because it has superior shape, yields are equal to and mostly superior to 'Beauregard' for the U.S. #1 grade (5.1 to 8.9 cm diameter, 7.6 to 22.9 cm long) in Louisiana and other Gulf South states.

Initially identified and evaluated as LA 05-111, the cultivar is named after the city of New Orleans.

Origin

'Orleans' originated in 2005 as a seedling from an open-pollinated polycross nursery of the previous year. The female lineage is 'NC97A-04' from the North Carolina State University Sweetpotato Breeding Program.

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The female lineage derived from open-pollinated nurseries is NC97-05, NC1528, and 'Regal', originally tested as W-152 (Jones et al., 1985).

Description

'Orleans' has green-stemmed vines corresponding to color charts as 2.5 G (green) Y (yellow) (6/8) (Munsell® Color, New Windsor, NY) from the apex to the crown of the roots. The 'Orleans' canopy biomass appears similar to the Beauregard cultivar. Unfolded immature leaves are dark green [2.5 G (green) Y (yellow) (3/4)] for the upper and green for the lower surface [2.5 G (green) Y (yellow) (3/4)] and change gradually over one to two nodes to a green upper [5 G (green) Y (yellow) (4/4)] and lower [5 G (green) Y (yellow) (3/4)] surface. Mature leaves at five nodes from the apex are glabrous, have an acute apex, and mostly a cordate base and a smooth leaf margin. Mature leaves are similar in size to that of 'Beauregard'. A red [5 R (red) P (purple) (4/6)] marking at the base of the leaf junction with the petiole is larger in comparison with a similar marking found on 'Beauregard' and extends for 1 to 2 cm from the junction in adaxial veins of mature leaves and was present throughout major adaxial veins in immature leaves. 'Beauregard' has no red hue to the veins.

A typical inflorescence of 'Orleans' has two to four clusters of three to six flowers per peduncle. Individual flowers are ≈4.5 cm long from the base of the calyx, and the corolla is 3.5 to 4.0 cm wide at the opening. The inner and outer limbs of the corolla (corollas outermost area, distal from the calyx) are very light purple [2.5 R (red) P (purple) (3/6)]. The darker inner throat of the corolla appears purple [2.5 R (red) P (purple) (3/6)]. Stigmata appear purple [2.5 R (red) P (purple) (7/6)]. Four of the five stamens are inferior to stigmata and attached to the ovary. Storage roots are elliptical without lobing and consistent in shape. Skin is light rose [10R (red) 6/4] and similar to 'Beauregard'

clones (B-14 and B-63) (<http://www.lsuagcenter.com/en/our_offices/research_stations/Sweetpotato/Features/varieties/index.htm>). The 'Orleans' cortex is 4 to 5 mm in depth and similar to 'Beauregard'. The flesh of 'Orleans' is orange [2.5 Y (yellow) R (red) 7/10] and similar to 'Beauregard'. Dry matter content is ≈21% and similar to 'Beauregard' using methodology of La Bonte et al. (2000).

Disease Reactions

'Orleans' was compared with 'Beauregard' in controlled tests. It is intermediate to resistant or similar to 'Beauregard' for soil rot caused by *Streptomyces ipomoeae* (Persen & W.J. Martin) Waksman & Henrici. 'Orleans' and 'Beauregard' are resistant to fusarium wilt or stem rot caused by *Fusarium oxysporum* Schlecht. f. sp. *bataatas* (Wollenw.) Snyder & Hans. 'Orleans' is susceptible and similar to 'Beauregard' in greenhouse evaluations to race 3 of southern root-knot nematode, *Meloidogyne incognita* (Kofoid & White 1919) Chitwood 1949. It was rated as susceptible in 2010 National Sweetpotato Collaborators Group pathology trials (<<http://www.nscg.viazivitaminu.org/>>) conducted by J.A. Thies and D.M. Jackson (USDA Vegetable Laboratory, USDA, ARS, Charleston, SC). It is resistant to fusarium root rot caused by *Fusarium solani* (Sacc.) Mart. emend. Snyder & Hans.; 'Beauregard' is also resistant. Similar to 'Beauregard', storage roots of 'Orleans' are susceptible to bacterial soft rot caused by *Dickeya dadantii* Samson et al. (= *Erwinia chrysanthemi* Burkholder, McFadden & Dimock). Reaction to viruses has not been determined; however, National Sweet Potato Collaborators Group trials in 2011 (<<http://www.nscg.viazivitaminu.org/>>) conducted by C. Yencho and K. Pecota (North Carolina State University, Raleigh, NC) and S. Stoddard (University of California Cooperative Extension, Merced County, CA) reported incidence of Russet Crack caused by the Russet Crack strain of the Sweet Potato Feathery Mottle Virus on storage roots.

Insect Resistance

'Orleans' is currently under trial for relative insect resistance, but it has not demonstrated any unusual propensity to insect damage in numerous on-farm trials.

Production

'Orleans' was compared with 'Beauregard' in randomized complete block trials with three or four replications at various locations in Louisiana, Arkansas, Mississippi, and Alabama. There were three to seven trials each year over a four-year period (2008 to 2011). These covered a wide range of planting dates and growing days. 'Orleans' produced yields comparable to and exceeding 'Beauregard' in regional trials at various planting dates (Table 1). Yield in sandy loam soils (Montrose, AR; Elberta, AL; Bonita, LA) and silt loam soils (Wisner, LA) showed

Table 1. Yield by grade of 'Orleans' in replicated trials.

Cultivar	Avg yield (Mt·ha ⁻¹) ^a			Total marketable
	U.S. #1	Medium	Jumbo	
2009				
Grand Prairie, LA, midseason ^b				
Orleans ^c	33.6 a ^x	7.0 a	1.0 a	41.7 a
Beauregard	32.9 a	6.1 a	4.4 a	43.3 a
2009				
Foley, AL, early season				
Orleans	25.3 a	12.4 a	1.7 a	39.4 a
Beauregard	26.6 a	9.3 a	0.0 b	38.8 a
2009				
Vardaman, MS, midseason				
Orleans	22.4 a	13.4 a	1.0 a	41.3 a
Beauregard	16.0 a	22.8 a	3.1 a	43.0 a
2009				
Grand Prairie, LA, late season				
Orleans	24.0 a	9.8 a	1.5 a	35.4 a
Beauregard	13.6 a	7.1 a	3.6 a	24.3 a
2010				
Montrose, AR, midseason				
Orleans	20.9 a	10.9 a	4.0 a	35.8 a
Beauregard	7.6 b	15.4 a	4.0 a	27.0 a
2011				
Forest, LA, midseason				
Orleans	25.9 a	17.1 a	2.8 a	46.6 a
Beauregard	23.1 a	19.0 a	4.3 a	46.5 a

^aSizes of roots: U.S. #1: 5.1 to 8.9 cm diameter, 7.6 to 22.9 cm long; medium (canner): 2.5 to 5.1 cm diameter, 5.1 to 17.8 cm long; jumbo: larger than U.S. #1 in diameter or length or both and without objectionable defects.

^bEarly-season plantings (through May 15), midseason plantings (16 May to 15 June), late-season plantings (16 June through July).

^cValues followed by the same letter are not significantly different at a level of significance, $P=0.05$. Means separation by Duncan's multiple range test.

'Orleans' ranked higher in yield of U.S. #1 grade in comparison with 'Beauregard' in 19 of 24 test plots. Replicated plots have shown 'Orleans' has consistent yields for early-, middle-, or late-season plantings. Yield declines are within norms in poor environments. 'Orleans' has harvestable roots ≈ 115 to 120 d after planting, which is the typical development time for sweetpotatoes and comparable to 'Beauregard'. The yield of Jumbo grade (larger than U.S. #1 in diameter or length or both and without objectionable defects) is consistently less in comparison with 'Beauregard' and indicative of a more consistent root set skewed toward U.S. #1 grade. In 24 trials, 'Beauregard' ranked higher in 21 trials for Jumbo grade in comparison

with 'Orleans'; total yield differs little between 'Orleans' and 'Beauregard'. Root production was also evaluated in numerous locations throughout the United States in the National Sweetpotato Collaborator trials in 2011 (<<http://www.nscg.viazivitamou.org/>>). Yield of 'Orleans' for U.S. #1 grade was competitive with 'Beauregard' and 'Covington' in trials in North Carolina, the largest U.S. production region for sweetpotato. 'Orleans' ranked first in comparison with these two varieties in one trial and third in a second trial (C. Yencho and K. Pecota, North Carolina State University, Raleigh, NC). In California, U.S. #1 yield is not competitive with other commercial dessert-type cultivars (S. Stoddard, University of California Cooperative

Extension, Merced County, CA). In total, these data reflect consistent high yield characteristics for 'Orleans'. Plants of 'Orleans' from propagation beds are prolific and similar to 'Beauregard'; however, elongation is slower than 'Beauregard' and comparable to 'Covington' (Yencho et al., 2008). No differences in storage quality are noted in comparison with 'Orleans' and 'Beauregard'; roots are sound and marketable after six to seven months of storage.

Quality Attributes

Orange-fleshed 'Orleans' has excellent culinary characteristics. Sugar profiles for baked 'Orleans' and 'Beauregard' are similar for five-month-old stored roots baked at 190 °C for ≈ 2 h. Sucrose content in baked 'Orleans' (2.8 mg·g⁻¹) on a fresh weight basis (fwb) is similar to baked 'Beauregard' (2.9 mg·g⁻¹ fwb). 'Orleans' and 'Beauregard' had similar maltose content (≈ 6 mg·g⁻¹ fwb) and total sugar content (≈ 11.4 mg·g⁻¹ fwb) using methodology of La Bonte et al. (2000). 'Orleans' requires similar baking time in comparison with major dessert-type cultivars. French fry quality is also equal to 'Beauregard' (data not shown).

Availability

Limited quantities of foundation seed stock will be commercially available for the 2013 crop season. Requests for roots should be made to the Sweet Potato Research Station, P.O. Box 120, Chase, LA 71324. Intellectual property protection will be sought.

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