

'Evangeline' Sweetpotato

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'Evangeline' 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 southern root-knot nematode resistance and higher sucrose content. 'Evangeline' produces acceptable numbers of uniform plants (sprouts) comparable to 'Beauregard'. Days to harvest for 'Evangeline' and 'Beauregard' are similar; however, 'Evangeline' tends to produce fewer oversized or jumbo grade roots. 'Evangeline' appears widely adapted and particularly valuable in soils infested with southern root-knot nematode.

Origin

Initially identified and evaluated as L 99-35, 'Evangeline' originated in 1999 as a seedling from a polycross nursery of the previous year. The female lineage is L 94-96 ('Bienville'), a 2003 cultivar release by the Louisiana Agricultural Experiment Station, and L 82-508 ('Beauregard').

Description

'Evangeline' has green-stemmed vines corresponding to color charts as 2.5G (green) Y (yellow) 5/4 (Munsell Color, New Windsor, NY) from the apex to the crown of the roots. The canopy biomass is more upright than 'Beauregard'. Unfolded immature leaves are dark purple [5R (red) P (purple) (3/2)]. Leaf color changes over one to two

nodes from the apex to dark green [upper surface: 7.5G (green) Y (yellow) (4/4); lower surface: 5G (green) Y (yellow) (4/4)]. No red or purple pigmentation is present on petioles or stem nodes at maturity. Mature leaves have an acute apex and a cordate base. Leaves are glabrous, entire, and similar in size to that of 'Beauregard'.

The calyx is composed of five green [2.5G (green) Y (yellow) 5/6] elliptic 9-mm long sepals. The flower is mostly light purple [5P (purple) 6/6] on the exterior and darker in the throat of the corolla [2.5R (red) P (purple) 3/6]. The stigma is purple [5R (red) P (purple) 6/6] and the stamens are mostly inferior and attached to the ovary. Flowering is excellent and seed set is fair. Use of 'Evangeline' as a parent in breeding programs is with permission of the Louisiana State University Agricultural Center.

Storage roots are mostly elliptic in Louisiana and slightly more round than 'Beauregard'. Skin is rose [7.5 R (red) 5/6] at harvest and fades in storage, similar to 'Beauregard'. The cortex is 4 to 5 mm in depth and the flesh is more deep orange [2.5 Y (yellow) R (red) 7/12] than 'Beauregard'. Dry matter content is ≈19% to 22% depending on growing conditions.

'Evangeline' and 'Beauregard' have reacted similarly for most diseases we have evaluated in controlled tests. It is intermediate to resistant for soil rot caused by *Streptomyces ipomoeae* (Person & W.J. Martin) Waksman & Henrici. It is resistant to Fusarium wilt or stem rot caused by *Fusarium oxysporum* Schlecht. f. sp. *batatas* (Wollenw.) Snyd. & Hans.; resistance is similar to 'Beauregard'. In greenhouse tests that measure nematode reproduction, it is highly resistant to southern root-knot nematode, *Meloidogyne incognita* (Kofoid & White 1919) Chitwood 1949 race 3; resistance is greater than for highly susceptible 'Beauregard'. Field studies in southern root-knot-infested soils have not been conducted. It is resistant to Fusarium root rot caused by *Fusarium solani* (Sacc.) Mart. emend. Snyd. & Hans., similar to 'Beauregard'. Storage roots are susceptible to bacterial soft rot caused by *Erwinia chrysanthemi* Burkholder, McFadden & Dimock, similar to 'Beauregard'. It is resistant to *Rhizopus* soft rot caused by *Rhizopus stolonifer* (Ehr. ex. Fr.) Lind. Incidence of circular spot, caused by *Sclerotium rolfsii* Sacc., has been low and similar to 'Beauregard' (0% to 5%).

Insect Resistance

'Evangeline' has not been formally tested for relative insect resistance but has not demonstrated any unusual propensity to insect damage in numerous on-farm trials.

Production

'Evangeline' was compared with 'Beauregard' in randomized complete block trials with four replications at the Sweet Potato Research Station in Chase, LA. 'Evangeline' and 'Beauregard' sweetpotato plants were transplanted at 31-cm spacings at early (9 June), middle (16 June), and late (11 July) transplanting dates in 2005. Roots were harvested from 99 to 106 d after transplanting. Average yield for U.S. #1 (51–89 mm in

Table 1. Average yield by grade of Evangeline and Beauregard in replicated trials at various planting dates in 2005.

Cultivar	U.S. # 1	Avg. yield (mt·ha ⁻¹) ^{xy}		
		Canner	Jumbo	Total marketable
		Early ^x		
Evangeline	21.7 a	5.6 a	2.8 b	30.1 a
Beauregard	19.2 a	2.5 b	15.0 a	36.8 a
		Middle		
Evangeline	21.0 a	6.8 a	2.7 b	29.9 a
Beauregard	22.3 a	8.2 a	6.6 a	32.3 a
		Late		
Evangeline	8.4 a	8.8 a	0.3 b	17.5 b
Beauregard	12.1 a	6.9 a	3.6 a	22.5 a

^xDifferent letters within columns for a given planting date are significantly different ($P < 0.05$) according to Duncan's multiple range test.

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

^xTransplanting dates and days to harvest: early = 9 June, 106 d; middle = 16 June, 99 d; and late = 11 July, 99 d.

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diameter, 76–229 mm long) grade was comparable to ‘Beauregard’ in all three plantings (Table 1). These results are consistent with 24 replicated on-farm trails; ‘Evangeline’ and ‘Beauregard’ did not differ significantly except in one trial and yield varied minimally ($\approx 2\%$ for all plots combined) for the U.S. #1 grade. Canner (25–51 mm in diameter, 51–178 mm long) grade was greater for ‘Evangeline’ in the first planting only in comparison with ‘Beauregard’. It is not expected that ‘Evangeline’ will produce any greater number of canners in comparison with ‘Beauregard’. ‘Evangeline’ does have a propensity to produce fewer jumbo (larger than U.S. #1 in diameter, length, or both and without objectionable defects) grade roots in comparison with ‘Beauregard’. Jumbos are mostly encountered in fields with a poor plant stand or harvested late, i.e., 120+ d. ‘Evangeline’ may extend the harvest window for a producer without undue numbers of oversized, jumbo roots; ‘Evangeline’ does not appear to need additional growing days to achieve

optimal yield of U.S. #1 grade in comparison with ‘Beauregard’. ‘Evangeline’ stores well and is comparable to ‘Beauregard’.

Plants of ‘Evangeline’ from propagation beds are comparable to ‘Beauregard’ in number and earliness. There is a tendency of roots bedded too deep to produce fewer plants in comparison with ‘Beauregard’ bedded similarly.

Quality Attributes

The most salient feature of ‘Evangeline’ is the sugar content in cured, baked roots.

Roots stored from 3 to 5 months in 2005 and 2006 were baked at 190 °C for ≈ 2.0 h. Sucrose content in baked ‘Evangeline’ was twice ($\approx 63 \text{ mg}\cdot\text{g}^{-1}$ fresh weight) that found in baked ‘Beauregard’ ($\approx 29 \text{ mg}\cdot\text{g}^{-1}$ fresh weight). In contrast, ‘Beauregard’ had nearly twice as much maltose ($\approx 52 \text{ mg}\cdot\text{g}^{-1}$ fresh weight) as ‘Evangeline’ ($\approx 27 \text{ mg}\cdot\text{g}^{-1}$ fresh weight). However, maltose is perceived 30% to 50% less sweet than sucrose ([\[oregonstate.edu/sugar/sweet.html\]\(http://oregonstate.edu/sugar/sweet.html\)\). Total sugar content was \$\approx 10\%\$ greater for ‘Evangeline’ in comparison with ‘Beauregard’. ‘Evangeline’ is perceived as superior in flavor and color as a baked product in comparison with ‘Beauregard’. ‘Evangeline’ was highly rated in canning trials over several years for taste and color and minimal oxidation. ‘Evangeline’ has two to three times the sucrose as ‘Beauregard’ when microwaved, whereas maltose levels are similar for the two varieties. Overall, total sugars are at least one-third more and suggests that ‘Evangeline’ would make an excellent microwavable sweetpotato.](http://food.</p></div><div data-bbox=)

Availability

Limited quantities of foundation seed stock will be commercially available for the 2008 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.