

Horticulture Research, 1987 – Overton

Research Center Technical Report 87-1

Texas A&M University Agriculture Research &
Extension Center at Overton

Texas Agricultural Experiment Station
Texas Agricultural Extension Service

Overton, Texas

1987

'SOUTHERN DELITE' SWEET POTATO

Alfred Jones, P. D. Dukes, J. M. Schalk,
M. G. Hamilton and R. A. Baumgardner

INTRODUCTION

'Southern Delite' sweet potato [Ipomoea batatas (L.) Lam.] was developed jointly by the USDA and the South Carolina Agricultural Experiment Station. This cultivar has high yield and excellent baking qualities in combination with high levels of resistance to a wide array of disease and insect pests.

ORIGIN

'Southern Delite', previously tested as W-151, originated as an open-pollinated seedling of W-99 polycrossed in 1977 with 29 other parental selections in Charleston, South Carolina. W-99 is an open-pollinated seedling out of SC 1166 from a 1974 polycross of 30 parents. SC 1166 was obtained from the breeding program of the late Mr. J. A. Martin, Department of Horticulture, Clemson University. As each generation was open-pollinated, the exact pedigree of 'Southern Delite' is unknown.

DESCRIPTION

'Southern Delite' has entire leaves with 1 to 3 shallow points on the margins and dark purple veins on the lower surface. Foliage density is good and vine growth is vigorous and moderately long with red coloration at leaf junctions and vine nodes. Vine tip chlorosis may develop during periods of high temperature and rapid growth. Skin color of storage roots varies from rose to dark copper depending on the soil type in which it is grown. Marketable roots are fusiform in shape with orange flesh which may develop light purpling under extreme environmental growth stresses. Carotene content is slightly higher than in 'Jewel' but not as high as in 'Centennial'. Dry matter content is equivalent to that of 'Jewel'. It has excellent baking qualities similar to 'Jewel' or 'Centennial'. Our observations indicate that roots store better than those of 'Jewel' and sprout better than 'Jewel' or 'Centennial'. Flowering is sufficient for breeding purposes with no special treatment required.

DISEASE AND INSECT RESISTANCE

The combination of pest resistances of 'Southern Delite' is similar to that of 'Regal' and is superior to that of other available cultivars. 'Southern Delite' is similar to 'Regal' in its resistance to internal cork, a viral disease, and to stem rot or wilt caused by the soil-borne fungus Fusarium oxysporum f. sp. batatas (Wr.) Snyder & Hans. It has exceptional resistance to southern root knot [Meloidogyne incognita (Kofoid & White)], equal to that of 'Nemagold' or 'Tinian' (PI 153655). It is resistant to sclerotial blight in the plant bed and circular spot of storage roots in the field. Both diseases are incited by Sclerotium rolfsii Sacc. in plant beds. It has a moderate level of resistance to soil rot, or pox, caused by Streptomyces ipomoea (Person & W. J. Martin) Waks. & Henrici, and is less diseased than 'Centennial', 'Jewel', or 'Resisto', but is not as resistant as 'Jasper'. On rare occasions some roots in storage have been observed with canker symptoms.

'Southern Delite' is generally similar to 'Regal' and more highly resistant than 'Resisto' to the following soil insects: the WDS complex (wireworm-Diabrotica-Systema) which includes the southern potato wireworm (Conoderus falli Lane), the tobacco wireworm (C. vespertinus Fabricius), the banded cucumber beetle (Diabrotica balteata Le Conte), the spotted cucumber beetle (D. undecimpunctata howardi Barber), the elongate flea beetle (Systema elongata Fabricius), the pale-striped flea beetle (S. blanda Melsheimer), S. frontalis Fabricius (a flea beetle), and to the sweet potato flea beetle (Chaetocnema confinis Crotch.). It has high levels of resistance similar to that of 'Resisto' and 'Regal' to larvae of at least two species of white grubs, Plectris aliena Chapin and Phyllophaga ephilida Say.

In 11 replicated trials conducted over a 7-year period at Charleston, SC, an average of 68% of 'Southern Delite's roots were free of soil insect damage compared to 12% in the susceptible SC 1149-19, 36% in 'Jewel' and 34% in 'Centennial'. The level of resistance in 'Southern Delite' corresponds to 84% control of the WDS soil insect complex, 73% control of sweet potato flea beetles and 94% control of white grubs (P. aliena). These levels of control could not

be achieved with recommended chemical treatments used on a susceptible cultivar. In 5 trials conducted in Louisiana during 1979-83, the genetic resistance of 'Southern Delite' provided an average control of white grubs (*P. ephilida*) of 94% compared to 82% control from chemical treatment of the susceptible 'Centennial'.

YIELD

'Southern Delite' has been yield tested extensively in South Carolina, North Carolina and Louisiana over a period of 7 years and was included in regional trials for 4 years (Table 1). Its yields have been consistently similar to 'Jewel' and 'Centennial' over a wide range of environments. In trials conducted in the presence of high root-knot nematode infestations, yields of 'Southern Delite' were 28% higher than those of the susceptible 'Centennial'. If yield estimates had taken into account soil insect injuries, marketable yields in many locations would have been much higher in the resistant 'Southern Delite' than in the standards. These results suggest that 'Southern Delite' has good yield stability.

AVAILABILITY

Foundation seed in limited quantities will be commercially available for the 1987 crop season. Requests for roots or vines should be made to the South Carolina Foundation Seed Association, Clemson, SC 29634.

Table 1. Yields of 'Southern Delite', 'Jewel', and 'Centennial' from 1982, 1983, 1984 and 1985 regional trials²

Cultivar	Yield (MT/ha)				
	Canners	US #1	Jumbo or over size	Total marketable	Culls
Southern Delite	8.0	14.8	4.0	26.8	4.3
Jewel	6.5	16.1	3.3	25.9	3.5
Centennial	8.1	14.3	3.7	26.1	4.5

²States include Alabama, Arkansas, Georgia, Kansas, Louisiana, Maryland, Missouri, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia. MT/ha x .446 = tons/A.