Sweetpotato Variety Evaluation in Georgia

Timothy Coolong[1*], George Boyhan[1], Cecilia McGregor[1], Cliff Riner[2], Jason Edenfield[3], Aubrey Shirley[4], Chris Tyson[4], and Chris Earls[5]

[1]University of Georgia Dept. of Horticulture; [2]University of Georgia Area Onion Specialist, [3]Toombs County Coop. Ext. Service, [4]Tatnall County Coop. Ext. Service, [5]Candler County Coop. Ext. Service

Background

Sweetpotato (*Ipomea batatas*) acreage has grown in Georgia in recent years reaching approximately 5,000 acres in 2017. The variety Covington is dominant, accounting for more than 80% of acres planted. Covington offers quality and production attributes that growers find attractive; however, recently growers have been trialing other varieties in efforts to increase yields as well as reduce days to harvest. Therefore a variety trial was conducted in 2017 in two locations in Georgia, representing the major sweetpotato production regions in the state.

Methods

Slips of 11 varieties were planted in two locations (Reidsville and Tifton) in Georgia on 15 and 16 June 2017. Slips were planted on rows spaced on 36-inch centers with 12-inch in-row spacing. Plots contained 50 plants each with four replicates of each variety. Plants received 130 lbs/acre nitrogen during the production season. Standard pesticide protocols for Georgia were followed. Sweetpotatoes were harvested approximately 116 days after planting. Sweetpotatoes were graded into US No.1, petite, jumbo, and culls.

Results

'Bayou Belle' was the highest yielding variety in the Tifton, GA trial, though total yields were not significantly different than two other varieties (Table 1). The majority of the yield in Tifton were US No. 1 roots. 'Covington', the industry standard was one of the lowest yielding varieties and not significantly different from the lowest yielding selection 'NC04-531 NC State'.

The top yielding variety in the Reidsville, GA location was 'Orleans'; however, that variety was not significantly different from several other varieties (Table 2). Nonetheless, 'Bayou Belle' and 'Orleans' were two of the top three yielding varieties in both locations. In Reidsville, GA, 'Covington' was also one of the lower yielding varieties. The distribution of US No.1 and US Petite sweetpotatoes was similar in the Reidsville, GA location. In the Tifton, GA location, US No. 1 yields were significantly greater than US Petite yields. Cull rates were similar for some varieties, but overall cull rates were lower in the Tifton, GA trial.

Quality overall was commercially acceptable (Figure 1). Red-skinned varieties appeared more attractive at digging, but after harvest did show damage more than lighter, brown-skinned varieties. The two advanced selections from North Carolina State University did have a propensity to have a "veiny" appearance, that may render a high percentage of them unmarketable for some buyers (Figure 2).

Table 1. Yield of sweetpotatoes grown in Tifton, GA 2017.

Variety	Total Marketable	No. 1[z]	Petite[z]	Jumbo[z]	Cull
	(lbs/acre)				(%)
Bayou Belle	35,340 a[y]	23,730 a	5,930 b	5,670 a	3.7 d
Orleans	32,400 ab	21,040 ab	6,200 b	5,160 a	6.3 cd
Beauregard	31,990 abc	18,450 ab	7,610 ab	5,930 a	7.1 cd
Bellevue	27,390 bcd	17,740 ab	6,010 b	3,650 abc	8.1 bcd
15-60 LSU	27,370 bcd	15,410 bc	11,540 a	420 c	4.0 d
Evangeline	27,060 bcd	15,460 bc	6,730 b	4,880 a	6.7 cd
NC05-198 NC State	25,950 cd	15,630 bc	6,220 b	4,100 a	3.7 d
15-41R LSU	25,880 cd	15,070 bc	7,910 ab	2,910 abc	6.2 cd
Covington	21,430 de	10,880 cd	9,640 ab	920 bc	12.3 ab
Burgundy	18,400 e	10,090 cd	7,240 ab	1,080 bc	13.0 a
NC04-531 NC State	17,200 e	7,510 d	8,940 ab	770 bc	10.8 abc

[z]Graded according USDA standards for No. 1, Petite, and Jumbo sweetpotatoes.
[y]Values within the same column followed by the same letter are not significantly different according to Fisher's Least Significant Difference Test (P<0.05).

Table 2. Yield of sweetpotatoes grown in Reidsville, GA 2017.

Variety	Total yield	No. 1[z]	Petite[z]	Jumbo[z]	Cull
	(lbs/acre)				(%)
Orleans	36,770	15,490	15,280	6,000	14.6
Evangeline	36,200	14,500	12,650	9,050	18.4
Bayou Belle	35,710	14,310	13,920	7,490	12.6
NC05-198 NC State	32,410	9,640	17,180	5,580	12.5
15-41R LSU	32,290	14,580	17,710	0	12.4
15-60 LSU	27,210	16,350	10,080	780	11.6
Beauregard	26,990	14,690	6,140	6,150	14.4
Covington	26,550	14,960	8,990	2,600	15.0
NC04-531 NC State	25,310	14,640	4,710	5,960	8.7
Burgundy	21,850	12,160	4,050	5,630	8.5
Bellevue	15,840	8,440	6,190	1,210	22.6
Fishers Protected LSD (p≤0.05)	*12,950*	*NS[y]*	*7,750*	*3,340*	

[z]Graded according USDA standards for No. 1, Petite, and Jumbo sweetpotatoes.
[y]Not significant

Conclusions

- Multiple varieties outperformed 'Covington' for yields of US No. 1 and US Petite roots.
- Several of the red-skinned varieties had a more attractive appearance at digging, but also showed more damage than lighter-skinned varieties.
- Both NC04-531 and NC05-198 had a large portion of roots with a "vein-like" appearance, which would be problematic.
- 15-41R and 15-60 were two advanced lines that had an attractive appearance and yielded near the middle of the varieties tested.
- Yield is only one of the reasons why growers may choose to grow a particular variety. Quality, appearance, ease of digging, storability, and availability of slips all play a role in why growers choose a specific variety. However, our results suggest that growers in Georgia may want to trial other varieties in addition to the current industry standard.

Figure 1. Representative US No. 1 roots from eleven varieties of sweetpotatoes trialed in southeast and southwest Georgia in 2017.

Figure 2. Appearance of "veins" on some advanced selections may reduce marketability.