

Gourmet and Fingerling Potato Cultivar Trial
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Introduction

Gourmet or small grade potatoes are of growing interest to certain markets around the world and in parts of the United States. Although small-sized potatoes could be sorted out of a regular potato harvest, cultural practices can be used to purposefully grow a higher percentage of smaller potatoes for this market. Early harvest and spacing were used to determine the possibility of gourmet potato production for 16 cultivars a replicated RACE trial in 2003. The cultivars Kennebec, Dark Red Norland and Yukon Gold were included as checks.

Materials and Methods

Potatoes were cut for seed on 16 April. Only seed larger than 2 ounces were cut; the seed of the fingerling cultivars were not cut. On 19 April, seed of each cultivar was planted in two rows spaced 42 inches apart and 12 feet long with seed spaced 9 inches apart in the rows. A 3 ft space between plots was planted with contrasting colored potatoes. The plots were replicated four times. Admire 2F was applied in the furrows after seed potatoes were laid in the furrows but before covering with soil.

Fertilizer was applied prior to planting at a rate of 84 lbs of nitrogen per acre as 19-19-19. On 6 June, the potatoes were sidedressed with ammonium nitrate at a rate of 81 pounds of nitrogen per acre. The potatoes were then cultivated and hilled. Because of the wet season, only one fertigation of ammonium nitrate was made (10 lb N/acre) through the drip system.

A tank mix of Gramoxone and Dual Magnum was used for weed control after planting but before the majority of potatoes emerged. Sprays of Quadris, NuCop, and Bravo were applied for disease control throughout the season. Baythroid was used when pest management scouting indicated the need for Colorado potato beetle control.

One row of each cultivar was sprayed with the dessicant diquat on 1 July; these rows were dug by hand for the early harvest on 9 July. Three cultivars that were too small to be harvested on 9 July were sprayed with dessicant on 13 July and dug on 21 July. After potatoes were harvested, they were washed and graded into three marketable grades and culls. The grades, based on tuber diameter, included large (>2 ¼" dia.), medium (1 ¾" to 2 ¼"), small or creamers (1" to 1 ¾") and culls (unmarketable). The two fingerling potato cultivars were graded based on length, including long (>3 1/2"), medium (2" to 3 ½"), short (< 2") and culls (unmarketable). These are market grades, not USDA grades.

The remaining rows of potatoes in each plot were sprayed with diquat on 10 August and harvested, washed and graded on 23 August (late harvest). The above grades were used again. At both harvests, representative samples from all four replications of the 16

cultivars were laid out on tables in order to rate the tubers for shape and size uniformity, and overall appearance. The late harvest potatoes were also rated for tuber smoothness and eye depth.

Results

Early harvest. The early harvested potatoes were dug approximately 80 days after planting. Because the vines were sprayed with a desiccant a week before harvest, the skins of most potatoes in the early harvest were intact after harvesting and washing.

Within the red-skinned group, Rose Gold and Red Gold had the highest yields of smaller-sized potatoes while Reddale had the lowest yield of small potatoes (Figure 1). Butte and Corola had significantly higher yields of small-sized potatoes among the five white-skinned cultivars (Figure 1). All Blue had significantly higher yields of gourmet or small-sized potatoes than Caribe (Figure 1); this was largely because tubers were graded based on diameter and the majority of All Blue tubers were very long and thin (more like a large fingerling type).

The red-skinned cultivars with the highest total marketable yield from the early harvest were Red Gold, Red Pontiac and Reddale (Table 1). All Red, Red Norland and Red Cloud had relatively low yields at the first harvest. Butte, Superior, and Corola, had the highest total marketable yields in the white potato group. Caribe and All Blue had similar total marketable yields in the early harvest (Table 1).

Late harvest. The late harvested potatoes were dug with a commercial potato digger approximately 120 days after planting. Skin set was good on most cultivars. Although yields of smaller tubers were low for the second harvest, Rose Gold had the highest yield of small grade tubers (Figure 2). Red Gold and All Red also had fairly high yields of small sized tubers while Reddale had the lowest yield of this size class among the pink/red cultivars. Butte and Corola had significantly higher yields of small-sized tubers among the white cultivars at the late harvest, while Kennebec, Yukon Gold and Superior had low yields of this size class. All Blue yielded significantly more small-sized tubers than Caribe, although as with the early harvest, the tubers were thin and very long, unlike all the other cultivars (Figure 2).

Although no red potato had significantly higher total marketable yields than others, Red Pontiac, Red Cloud and Reddale were at the top of the list (Table 1). Kennebec, Corola, and Butte had significantly higher total marketable yields than Superior or Yukon Gold in the white potato group. Caribe and All Blue had similar total yields (Table 1).

Tuber characteristics. Red Gold, Rose Gold and Red Norland were rated the highest in overall appearance among all cultivars and also received high ratings for shape uniformity. Red Gold and Corola rated high in size uniformity. All Red and Red Norland exhibited very good red skin color in both harvests. None of the white cultivars was outstanding in appearance, although Butte was rated the best among them. The tuber shape of All Blue (2003 seed obtained from Johnny's Selected Seeds) was round-oval in last year's RACE trial while this year's All Blue (from Pinetree Garden Seeds) was long

and cylindrical. It is possible that two somewhat different types are being sold by different companies under the same cultivar name.

Fingerlings. There was no significant difference between the total marketable yields of the two fingerling cultivars, Swedish Peanut and Russian Banana, in the early or late harvests (Table 1, Figure 3). In the late harvest, Russian Banana had significantly higher yield of long tubers than Swedish Peanut (Figure 3). Swedish Peanut, however, had very thick vines, hindering spray coverage for sufficient vine-killing, thus leading to moderate skin damage for the early harvest. Russian Banana had a higher number of culls than Swedish Peanut. Russian Banana appeared cylindrical, while Swedish Peanut appeared more rounded. It had shallower eyes than Russian Banana. Both cultivars grew secondary tubers at the late harvest (Table 2).

Discussion

Early harvest results in a larger percentage of smaller potatoes although the overall yield is lower compared to the later harvests. In this trial, cultivars were identified that responded well to close spacing and early harvest by yielding more small-sized tubers. In both harvests, All Blue, Corola, Butte, and Rose Gold had relatively high yields of small grade potatoes; however, tubers in this size class were a small percentage of total marketable yields. Superior, Reddale and the controls Red Norland, Kennebec and Yukon Gold had low yields of small-sized potatoes in the early and late harvests, and appear unlikely to produce many small tubers under any cultural practices (Figures 1 and 2). Some of the cultivars were outstanding in appearance and merit small-scale grower trials (especially Rose Gold, but also Red Gold, Butte, and Red Norland).

Other cultural practices that could promote a larger percentage of small- sized potatoes include closer spacings, smaller seed size, and planting dates. As these trials have shown, cultivar choice plays a large part in producing small-sized “gourmet” potatoes.

Table 1. Early and late harvest yields and physical characteristics of gourmet potato cultivars, Lexington, KY, 2004.

Cultivar	Seed Source	Late Total Mkt Yield (cwt/A) ¹		Early Total Mkt Yield (cwt/A) ¹		Flesh Color ²	Skin Color ²	Shape
Red Pontiac	SS	419	a	222	ab	white	pale red	oval
Red Cloud	WP	380	ab	152	def	white	pale red	oval, somewhat flat
Reddale	WP	365	ab	213	abc	white	pale red	round/oval
All Red	PT	328	bc	125	f	pink	dk red	oval
Red Gold	JS	281	cd	239	a	yellow	pink	round
Rose Gold	WP	272	cd	185	bcd	yellow	lt pink	round/oval
Red Norland	SS	194	e	133	ef	white	red	oval
Kennebec	PT	400	a	116	f	white	white	oval/long
Corola	PT	387	ab	190	bcd	yellow	white	oval/blocky
Butte	WP	365	ab	197	abc	white	russet	oval/long/blocky
Superior	JS	255	de	194	bc	white	white	round/oval
Yukon Gold	PT	244	de	182	bcd	yellow	white-lt yellow	round/oval
Caribe	WP	286	cd	192	bcd	white	purple	round/oval/long
All Blue	PT	284	cd	174	cde	violet	dk purple	oval/very long
Fingerlings								
Russian Banana	WP	191	a	68	a	lt yellow	beige	long
Swedish Peanut	WP	175	a	68	a	lt yellow	beige	oval/long

¹ Numbers followed by the same letter are not significantly different (Duncan Waller LSD P= 0.05)

² Color lt = light, dk = dark

Table 2. Appearance ratings for potato cultivars, Lexington, KY, 2004.

Cultivar	Skin color	Smoothness (1-5) ¹	Eye depth (1-5) ²	Shape Uniform. (1-5) ³	Size Uniform. (1-5) ³	Overall Appearance (1-9) ⁴	Comments
Red Pontiac	lt red	4	4	2.8	3.0	5.5	Some skinning in early harvest, rough looking tuber.
Red Cloud	red	3	4	3.5	3.5	6.5	Irregular larger tubers, skin well developed at early harvest.
Reddale	lt red	3	3	3.5	3.0	6.5	Some growth cracks, skin well developed at early harvest.
All Red	red	3	3	2.8	3.0	6.0	Very nice skin color, slightly rough looking, some growth cracks.
Red Gold	pink	4	3	4.0	4.0	7.5	Very nice color, slight skinning, attractive shape.
Rose Gold	white-pink	4	4	4.0	3.3	7.5	Attractive, pinkish cast on white skin, some skinning at early harvest.
Red Norland	dk red	4	3	4.3	3.5	8.0	Attractive, smooth, nice red skin color, skin well developed at early harvest.
Kennebec	white	2	3	2.5	3.0	4.0	Largest tubers are ugly with secondary tubers, peeling skin, somewhat rough appearance.
Corola	white	3	5	3.0	4.0	4.5	Many blocky shaped, knobby textured russet.
Butte	brown	3	4	3.0	3.8	6.0	Somewhat knobby, long and rough, nice skin.
Superior	white	2	2	3.0	3.0	5.5	Largest tubers are ugly and cracked.
Yukon Gold	white	3	3	3.3	3.0	5.0	Largest tubers are ugly and cracked, some skinning at first harvest, light pink eyes.
Caribe	purple	3	4	2.5	3.0	4.5	Some growth cracks, rough appearance, skin peeled badly at first harvest.
All Blue	dk purple	2	3	2.8	2.5	4.0	Long and rough, nice skin, irregular, long and knobby, like scabby russet tuber.
Fingerlings							
Russian Banana	white-brown	2	3	2.5	3.0	4.0	Skin well developed at first harvest, some secondary tuber growth at second harvest.
Swedish Peanut	white-brown	3	4	2.5	3.0	3.5	Skinned badly at first harvest, very thick vines, some secondary tuber growth at second harvest.

¹ Smoothness 1 = rough, 5 = smoothest, late harvest rating only.

² Eye Depth 1 = deep eyes, 5 = shallow eye depth, late harvest rating only

³ Uniformity Rating 1= least uniform, most variable, 5 = completely uniform.

⁴ Overall Appearance: these data are averages from the early (12 July) and late (Aug 27) harvest ratings where 1 = worst, 9 = best.

Figure 1. Early harvest yields of small, medium, large and cull tubers, Lexington, KY, 2004.

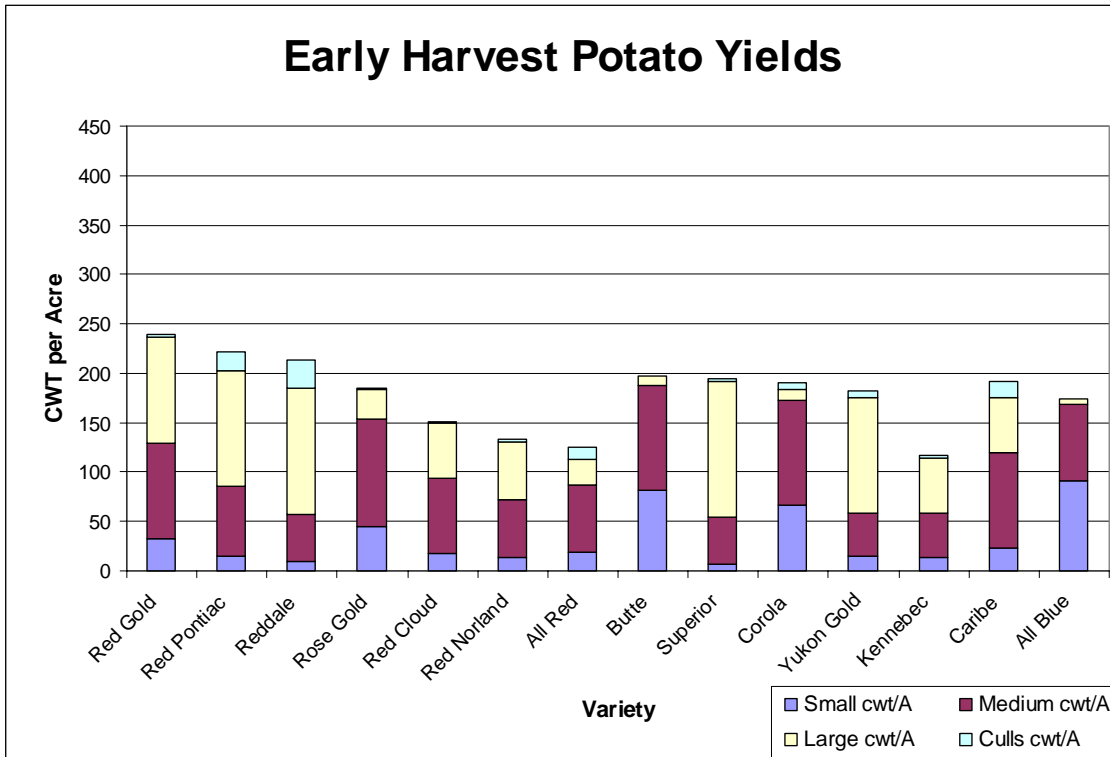


Figure 2. Late harvest yields of small, medium, large and cull tubers, Lexington, KY, 2004.

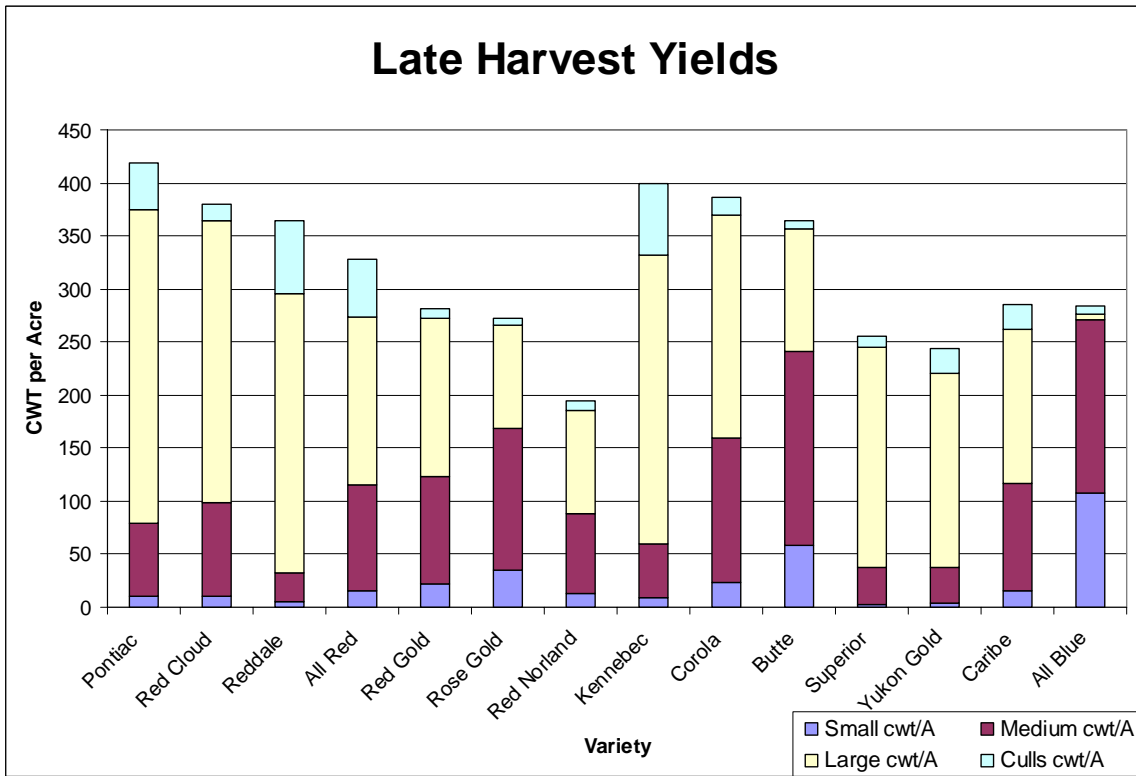


Figure 3. Fingerling yields of short, medium, long and cull tubers for early and late harvests, Lexington, KY, 2004.

