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## Potato Cultivar Trial

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# Potato Cultivar Trial

## **Abstract**

The trial objective was to identify potato cultivars with good quality for processing or fresh-market use adapted to Iowa growing conditions. Several cultivars were planted in replicated trials on April 14, 2004, and on April 18, 2005, in rows 38 in. apart and in plots consisting of twenty-two seed pieces spaced 11 in. apart. Potatoes were grown in a sandy soil and with overhead irrigation. The 2004 mild temperatures and favorable growing conditions led to excellent yields and quality (see Potato Cultivar Trial, Annual Fruit/Vegetable Progress Report 2004, FG 601). The 2005 growing season was a little more challenging with above-normal temperatures and below-normal rainfall, necessitating frequent irrigations. Because of the weather, yields and quality were just fair to good in 2005. Plots were harvested at about the same time area commercial fields were—late July to early August. Performance data between cultivars were similar for both years. Table 1 presents this year's findings, while Table 2 provides an average of 2004 and 2005.

## **Disciplines**

Agricultural Science | Agriculture

## Potato Cultivar Trial

Vince Lawson, farm superintendent

### Introduction

The trial objective was to identify potato cultivars with good quality for processing or fresh-market use adapted to Iowa growing conditions. Several cultivars were planted in replicated trials on April 14, 2004, and on April 18, 2005, in rows 38 in. apart and in plots consisting of twenty-two seed pieces spaced 11 in. apart. Potatoes were grown in a sandy soil and with overhead irrigation. The 2004 mild temperatures and favorable growing conditions led to excellent yields and quality (see Potato Cultivar Trial, Annual Fruit/Vegetable Progress Report 2004, FG 601). The 2005 growing season was a little more challenging with above-normal temperatures and below-normal rainfall, necessitating frequent irrigations. Because of the weather, yields and quality were just fair to good in 2005. Plots were harvested at about the same time area commercial fields were—late July to early August. Performance data between cultivars were similar for both years. Table 1 presents this year's findings, while Table 2 provides an average of 2004 and 2005.

### Results and Discussion

The check, or standard, cultivars in this evaluation were Atlantic and Snowden. Atlantic is grown because of its ability to mature quickly and produce good chipping potatoes at mid-July harvest. Unfortunately, it has a tendency to develop internal heat necrosis and large tubers with a hollow heart under certain conditions or when harvest is delayed. Snowden takes longer to mature, but it has excellent tuber quality later in the summer when Atlantic can develop problems. Both of the checks performed well in this evaluation in terms of yield, tuber size, and

specific gravity. However, Atlantic was by far the most susceptible to forming a hollow heart. Over 60% of its large tubers showed some degree of hollowness when cut open in both trials (Table 2).

Of the new cultivars, Ivory Crisp and MegaChip were identified as having the best potential for summer-harvest chipping potatoes in southeast Iowa. Ivory Crisp, in particular, had large yields of high-quality tubers free of a hollow heart or any visible defects. MegaChip also looked promising, as it produced good-quality tubers of an acceptable size in a relatively short season. Despite these attributes, total yield was lower than the check cultivars. Seed spacing was approximately 11 in. in this trial and since MegaChip is reported to have a low tuber set, it is possible that a higher-density planting would increase its yield potential.

Marcy produced good yields of large, smooth tubers with netted skin, similar to Atlantic, but specific gravity readings were lower. This could be an area of concern for early harvest, since these results indicate Marcy might need a longer growing season to obtain the desired solids in the tubers for making potato chips. Reba is reported to be a dual-use potato. This attractive, round white tubers looked suitable for tablestock use, but the specific gravity readings were too low for chipping. Pike and Dakota Pearl showed a problem under our growing conditions. Tubers, when cut open, revealed scattered brown spots in the tuber flesh.

The trial also included four fresh-market cultivars—two russets and two reds. Both of the russet cultivars, Russet Norkotah and Goldrush, performed well producing large,

attractive tubers with good shape. They produced a high percentage of desirable U.S. No. 1 tubers and didn't seem prone to having poor shape like many russet cultivars do when grown here. Dakota Jewel is a red-skinned white-fleshed cultivar released by North Dakota State

University, which was evaluated for the first time here in 2005. Compared with Dark Red Norland, it had a better yield of tubers with brighter red skin color. It looked like it might grow well here and merits further trials, although a few tubers with a hollow heart were noted.

**Table 1. 2005 potato cultivar yield, average tuber weight, specific gravity, and comments.**

	Total yield (cwt/A)	U.S. No. 1 yield (cwt/A)	Average tuber weight (oz)	Specific gravity	Comments
Ivory Crisp	296.7	279.3	6.1	1.083	Good-quality tubers
Atlantic	273.4	244.1	6.1	1.086	Hollow heart in large tubers
Marcy	247.6	227.0	5.8	1.079	Round, smooth, netted skin
Snowden	242.6	215.3	4.8	1.080	Nice but a little small
MegaChip	208.4	191.2	6.0	1.078	Nice large tubers
Pike	176.6	149.3	5.3	1.077	Internal browning
Dakota Pearl	170.4	138.4	4.3	1.079	Small, internal browning
Reba	149.3	134.4	5.3	1.068	A little scab
Russet Norkotah	337.4	306.2	7.2	1.070	Russet, nice appearance
Goldrush	294.8	270.5	6.9	1.069	Russet, nice appearance
Dakota Jewel	317.5	293.1	5.9	1.065	Dark red skin, white flesh
Dark Red Norland	260.5	235.9	6.2	1.059	Reddish skin, white flesh
Average	248.3	223.8	5.8	1.074	

**Table 2. Two-year, 2004 and 2005, average yield, tuber weight, and specific gravity readings.**

	Total yield (cwt/A)	U.S. No. 1 yield (cwt/A)	Average tuber weight (oz)	Specific gravity	% Hollow heart in large tubers <sup>1</sup>
Ivory Crisp	298.0	279.8	5.8	1.087	0
Atlantic	304.1	279.5	6.4	1.090	60
Marcy	269.8	247.2	5.6	1.083	10
Snowden	281.0	255.8	5.0	1.086	0
MegaChip	243.2	225.1	5.8	1.086	10
Pike	215.8	197.5	5.5	1.082	0
Dakota Pearl	229.8	202.0	4.9	1.082	13
Reba	231.7	212.4	5.6	1.074	20
Russet Norkotah	293.1	281.9	6.7	1.075	0
Goldrush	294.6	259.4	6.8	1.074	0
Average	266.4	244.2	5.8	1.082	

<sup>1</sup>Average of four replications from cutting open ten of the largest tubers from each plot.