

2005 POTATO VARIETY TRIALS IN THE MATANUSKA VALLEY, ALASKA

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Overview:

Twenty-two potato varieties were grown under irrigation at the AFES Palmer Research and Extension Center. The trial contained red, white, and russet-skinned varieties. The late-season rains provided ideal conditions for late blight (*Phytophthora infestans*), which appeared in the Matanuska Valley in mid August. Late blight affected the tubers leading to a reduction in marketable potatoes in many varieties.

Introduction:

Potatoes are the most valuable vegetable crop grown in Alaska. The 2004 crop was valued at \$3.47 million with over 50% of the production concentrated in the Mat-Su

Valley. As consumer preferences change and additional varieties become available, it is important to compare these new varieties with our historically grown varieties. Production yield data provides the growers with additional information that can be used in choosing varieties for their next season's crop.

Methods and Materials:

Seed pieces were hand cut and ranged in size from 1.5 to 2.5 oz. Eyes were verified on each seed piece. Fields that had not been planted to potatoes for three years were chisel plowed. Second tillage was done with a rotary harrow followed by



Potatoes in field trials at the Matanuska Experiment Farm.

—PHOTO BY ROSEANN LEINER

2005 Yield Trial Summary

All yields in US tons per acre (T/A)

Red Skinned Varieties	US#1	Small	>16 oz.	Defect ¹	Total	Average Tuber (oz)	Specific Gravity
Ida Rose	20.0	1.0	0.0	1.6	22.6	5.1	1.065
AC Island Red	18.9	0.9	0.3	1.3	21.4	6.0	1.075
Dark Red Norland	17.9	0.5	0.1	0.9	19.4	6.1	1.063
Nordonna	17.4	0.8	0.1	0.6	18.9	5.2	1.064
Chieftain	17.0	0.9	0.3	1.4	19.6	5.7	1.064
Cherry Red	16.1	0.7	0.3	0.6	17.6	5.4	1.069
Alaska Red Eye	14.6	0.7	0.0	0.1	15.4	5.2	1.063
White Skinned Varieties	US#1	Small	>16 oz.	Defect ¹	Total	Average Tuber (oz)	Specific Gravity
Green Mountain	20.1	0.7	0.0	1.2	22.0	5.4	1.077
Canus R10	18.4	0.7	0.0	1.9	21.0	5.1	1.065
Canso	17.0	0.7	0.2	2.1	20.0	5.3	1.059
Kennebec	15.8	0.5	1.5	4.3	22.1	7.1	1.075
Mainstay	15.5	0.5	2.0	3.0	20.9	6.1	1.066
Cascade	15.4	1.2	0.2	4.5	21.3	6.0	1.063
Cal White	14.9	0.8	0.7	3.5	20.0	6.7	1.069
Bake-King	14.9	0.5	0.2	1.0	16.7	5.9	1.079
St John's	10.2	0.7	0.1	1.2	12.1	5.1	1.060
Shepody ¹	6.8	1.5	0.1	1.8	10.2	5.5	1.067
Russet Skinned Variety	US#1	Small	>16 oz.	Defect ¹	Total	Average Tuber (oz)	Specific Gravity
Russet Norkotah	12.0	1.8	0.0	1.1	14.9	5.0	1.069
Yellow Fleshed Varieties	US#1	Small	>16 oz.	Defect ¹	Total	Average Tuber (oz)	Specific Gravity
Yellow Finn	12.3	0.8	0.0	1.5	14.6	4.4	1.071
German Butterball	11.1	3.1	0.0	0.6	14.9	4.0	1.070
Yukon Gold	10.2	0.4	1.0	2.1	13.7	6.7	1.075
Novelty Variety	US#1	Small	>16 oz.	Defect ²	Total	Average Tuber (oz)	Specific Gravity
Swedish Peanut	3.1	3.5	0.0	0.1	6.6	2.5	1.099
LSD for entire trial	0.7				0.8		

1. Shepody planted very late on June 10, 2005

2. Includes all gradeout such as shatter crack, growth crack, second growth, and green.

Note: Significant management decisions such as variety choice should not be made using only a single year's data.

a rubber-tire packer. Plots (24 feet long) were opened and fertilized with a two row planter. Fertilizer (120 N lb/A) was applied at 1200 lb/A of 5-20-20 (NPK) banded into the furrow at planting and supplemented with 60 N lb/A in the form of urea (46-0-0) at the time of hilling. The trial was hand planted and the furrows were closed with a hiller on May 23, 2005. One variety, Shepody, was planted very late (June 10, 2005) because of seed availability.

For weed control, Lorox 50 DF was applied pre-emergence at a rate of 2 lb/A and supplemented by cultivation. Optimal soil moisture levels were maintained using sprinkler irrigation. Late blight disease was detected in our experiments in late August. The trial was sprayed with the fungicide Curzate/Bravo, and the vine desiccant Reglone was sprayed for vine kill on August 22. The plots were mechanically harvested with a single row plot harvester.

Prior to storage, tubers were kept at room temperature overnight to decrease surface moisture. Initial storage temperature was 58°F and over a three week period the temperature was reduced to 38°F. Temperature was lowered more rapidly than normal (three weeks instead of six weeks)

to discourage late blight growth and spread on tubers. Before grading, tubers were warmed overnight to room temperature. Tubers passed over a grading chain with links 2.25 x 2.5 inches. Tubers that fell through this chain were graded as small. Tubers were considered oversize if greater than 16oz and no defects. Oversize and defective tubers were removed by hand. Specific Gravities were determined using standard wet weight-dry weight comparisons. The average weight of US#1 tubers (#1 market grade as defined by the USDA) was determined on a sample size of 40-80 tubers. Plot yields were converted into the local standard unit of measure, US tons per acre (T/A).

Results and Discussion:

The primary market is for US#1 grade potatoes, although there are specialty markets for small “peanut” type potatoes and for high-quality large potatoes. To reflect a consumer demand for red potatoes, seven red varieties were included in this trial. There is still a demand for quality russets, and there appears to be a growing interest by consumers



Detail of potato blossoms.
—PHOTO BY ROSEANN LEINER

in yellow-fleshed varieties such as Yukon Gold. Red varieties generally yielded very well this year; six varieties of reds were in the top ten in US#1 yields for 2005. Although this is the first year of its inclusion in the variety trials, AC Island Red is a promising cultivar with uniform, attractive tubers. Nordonna, Cherry Red, and Alaska Red Eye had minimal gradeout and could also be considered for a market of small-size red potatoes.

Green Mountain was the highest yielding potato in the trials this year. Green Mountain is known for its yield. Two varieties that are new to the trial, Canus R10 and Canso, also produced well. Shepody was planted late this year, so its tuber yield was lower than most varieties. Shepody is a variety that traditionally grows large tubers, but the average tuber size was 5.5 oz this year. Late blight damage was seen on some plants and tubers. Late blight resistant varieties should be identified and considered since the risk for late blight will continue in the future.

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About the Agricultural and Forestry Experiment Station

The federal Hatch Act of 1887 authorized establishment of agricultural experiment stations in the U.S. and its territories to provide science-based research information to farmers. There are agricultural experiment stations in each of the 50 states, Puerto Rico, and Guam. All but one are part of the land-grant college system. The Morrill Act established the land-grant colleges in 1862. While the experiment stations perform agricultural research, the land-grant colleges provide education in the science and economics of agriculture.

The Alaska Agricultural Experiment Station was not originally part of the Alaska land-grant college system. In 1898, the station was established in Sitka, also the site of Alaska's first experiment farm. Subsequent branches were opened at Kodiak, Kenai, Rampart, Copper Center, Fairbanks, and Matanuska. The latter two remain as the Fairbanks Experiment Farm and the Matanuska Experiment Farm. The USDA established the Fairbanks experiment station in 1906 on a site that in 1915 provided land for a college. The land transfer and money to establish the Alaska Agricultural College and School of Mines was approved by the U.S. Congress in 1915. Two years later the Alaska Territorial Legislature added funding, and in 1922, when the first building was constructed, the college opened its doors to students. The first student graduated in 1923. In 1931, the experiment station was transferred from federal ownership to the college, and in 1935 the college was renamed the University of Alaska. When campuses were opened at other locations, the Fairbanks campus became the University of Alaska Fairbanks.

Early experiment station researchers developed adapted cultivars of grains, grasses, potatoes, and berries, and introduced many vegetable cultivars appropriate to Alaska. Animal and poultry management was also important. This work continues, as does research in soils and revegetation, forest ecology and management, and rural and economic development. As the state faces new challenges in agriculture and resource management, the Agricultural and Forestry Experiment Station continues to bring state-of-the-art research information to the people of Alaska.

