



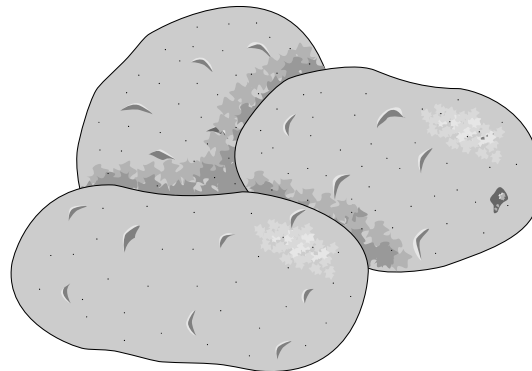
Potato Variety Performance, Alaska 1996

by

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POTATO VARIETY PERFORMANCE—1996

INTRODUCTION

A yield trial comparing 45 named varieties of potatoes (*Solanum tuberosum*) was conducted during the 1996 growing season at the University of Alaska Fairbanks, Agricultural and Forestry Experiment Station's (AFES) Palmer Research Center, Matanuska Farm, located six miles west of Palmer, Alaska.

Varieties with a history of commercial production in the Matanuska Valley (Alaska 114, Bake-King, Green Mountain, and Superior) were included to serve as a comparative base for newly developed varieties, numbered selections or older named varieties that have not been tested at this location. Russet Burbank, the variety most widely grown in the United States, also was included to broaden the base of comparison although past trials have demonstrated its unsuitability for this area. Varieties that compare favorably with the above listed local standards may warrant consideration by commercial growers.

Nonirrigated trials have been conducted annually since 1982, whereas irrigated trials were initiated in 1985. Results of these trials were published in AFES Circulars and are available at AFES offices.

Included in this report are the results of an abbreviated version of the AFES potato yield trial conducted at Delta Junction, Alaska.

MATANUSKA FARM YIELD TRIALS

Cultural Practices

Irrigated and nonirrigated field trials were

established at the Matanuska Farm on May 8 and 9 respectively. Planting was completed three days earlier than in the two previous years. This was possible because the 1996 field site was better drained than the sites used in 1994 and 1995. Seedbed preparation included moldboard plowing to a depth of 10 to 12 inches followed by discing and packing. Potatoes were planted as soon as possible after tilling to minimize loss of early spring moisture which, again in 1996, was in very short supply. Four replicates of each variety, with 15 individual plants per replicate, were planted in rows 36 inches apart in a randomized complete block design. Seed pieces were planted approximately 11 inches apart in the row and covered with 2-3 inches of packed soil with a single row Iron Age^R assist feed planter. Granular fertilizer (10-20-20) was applied at the rate of 120 pounds N, 240 pounds P₂O₅ and 240 pounds K₂O per acre by the planter in bands two inches to the side and two inches below the seed. The fertilizer was composed of monoammonium phosphate (11-51-0), muriate of potash (0-0-60), and urea (45-0-0), and a limestone filler. Tensiometers were installed at depths of 12 and 18 inches to monitor soil moisture. Water was applied to the irrigated plots through overhead sprinklers to maintain tensiometer readings between 20-40 centibars. Weeds were controlled by a preemergent application of Glyphosate (Roundup) and Linuron (Lorox), supplemented by cultivation and hand weeding where necessary. Plants were hilled during the last week of June and the irrigated and nonirrigated plots were harvested on August 27 and August 26 respec-

Table 1. Climatic data for Matanuska Farm during the 1996 growing season.

	April	May	June	July	August	September
Temp. (°F)						
Air						
Daily max.	47.8 (46.4) ¹	62.1 (57.9)	67.7 (65.4)	68.3 (67.5)	64.6 (65.0)	54.9 (56.3)
Daily min.	29.0 (27.3)	36.6 (36.4)	45.6 (44.3)	50.0 (48.0)	46.6 (45.9)	36.3 (38.6)
Daily mean	38.4 (36.9)	49.4 (47.2)	56.7 (54.9)	59.2 (57.8)	55.6 (55.5)	45.6 (47.5)
Soil (4" depth)						
Fallow	38.6	50.8	61.6	63.9	58.2	48.1
Sod	38.6	50.8	61.6	63.9	58.2	48.1
Precip. (in.)	0.12 (0.45)	0.14 (0.73)	0.43 (1.47)	1.50 (2.29)	2.51 (2.46)	0.77 (2.41)

¹Values in parentheses represent 61-year averages.

Table 2. Irrigated yield trial summary, Matanuska Farm-1996¹.

Variety	Skin ²	US#1 ³	Small ⁴	Other ⁵	Total	Percent US#1	Tuber Weight ⁶	Specific Gravity
Green Mountain	W	20.0	1.1	0.8	21.9	91.3	7.5	1.084
Gold Coin	W	19.9	0.7	1.0	21.6	92.1	7.2	1.088
All Blue	P	19.8	2.0	0.3	22.1	89.6	5.5	1.081
Norland	R	19.0	0.9	2.0	21.8	87.2	6.9	1.080
Red Warba	R	18.8	0.5	7.0	26.3	71.5	8.9	1.074
Bake-King	W	18.0	0.5	0.9	19.4	92.8	7.6	1.087
Purple Viking	P	18.0	1.9	0.6	20.5	87.8	6.4	1.084
Blue Mac	P	17.9	1.2	0.8	19.9	89.9	6.1	1.089
Acadia Russet	Ru	17.6	1.0	1.3	19.9	88.4	6.9	1.083
Goldrush Russet	Ru	16.9	1.1	1.5	19.5	86.7	6.9	1.078
Chieftain	R	16.7	1.2	1.5	19.4	86.1	6.6	1.078
Butte	Ru	16.3	1.3	0.8	18.5	88.1	6.8	1.086
Russet Burbank	Ru	16.1	1.7	3.6	21.4	75.2	5.5	1.089
Yellow Finn	W	16.0	1.1	0.8	17.9	89.4	5.8	1.080
Allagash Russet	Ru	15.9	0.5	1.1	17.6	90.3	8.0	1.085
Alaska 114	W	15.9	1.6	0.2	17.7	89.8	5.4	1.082
Ranger Russet	Ru	15.4	0.4	2.4	18.2	84.6	9.2	1.083
Atlantic	W	15.4	0.9	3.3	19.6	78.6	6.7	1.092
Frontier Russet	Ru	15.0	1.1	0.9	16.9	88.8	7.5	1.086
Kennebec	W	14.9	0.5	3.9	19.3	77.2	8.4	1.077
Nipigon	W	14.3	0.2	3.7	18.3	78.1	9.0	1.078
Avon	W	14.2	0.7	4.0	18.9	75.1	6.9	1.078
White Rose	W	14.2	0.9	2.9	18.1	78.5	7.8	1.077
Red La Soda	R	13.9	0.7	2.6	17.2	80.8	7.5	1.072
IditaRed	R	13.8	0.5	2.4	16.7	82.6	7.4	1.071
Norwis	W	13.3	0.4	1.0	14.8	89.9	8.5	1.076
Alaska Sweetheart	R	13.3	2.2	2.2	17.7	75.1	4.5	1.093
Hilite Russet	Ru	13.2	0.8	0.1	14.1	93.6	6.5	1.080
Yukon Gold	W	12.9	0.3	2.8	16.1	80.1	8.9	1.085
Russet Nugget	Ru	12.5	1.5	0.4	14.4	87.0	5.8	1.090
Norgold Russet	Ru	12.4	1.0	1.3	14.7	84.4	6.6	1.078
Lemhi Russet	Ru	12.3	0.6	1.8	14.7	83.7	7.1	1.081
Denali	W	12.2	0.5	3.1	15.9	76.7	8.5	1.096
Russet Bake-King	Ru	12.0	0.6	1.3	13.9	86.3	6.6	1.093
Russet Norkotah	Ru	11.9	1.5	0.4	13.8	86.2	5.9	1.081
Sangre	R	11.9	0.6	1.1	13.6	87.5	6.8	1.072
Yellow Finn CO	W	11.7	1.3	1.5	14.5	80.7	4.9	1.076
Eide Russet	Ru	11.1	0.9	0.3	12.4	89.5	7.2	1.079
Red Beauty	R	11.1	0.8	2.7	14.5	76.6	6.0	1.081
Belrus	Ru	10.1	1.4	0.1	11.6	87.1	5.1	1.093
Rote Erstling	R	9.4	1.5	0.7	11.6	81.0	5.4	1.082
Nooksack	Ru	9.2	0.4	2.2	11.8	78.0	6.9	1.082
Shepody	W	8.3	0.3	2.2	10.8	76.9	8.4	1.085
Tolaas	Ru	8.2	0.6	2.5	11.3	72.6	7.2	1.076
Superior	W	6.6	0.5	2.2	9.3	71.0	7.4	1.079
Average		14.2	0.9	1.8	16.9	84.0	6.9	1.082
LSD 5% ⁷		3.4			3.4			

¹ Yields expressed in tons per acre.

² (R) = red skin, (Ru) = russet skin, (W) = white skin, (P) = purple skin.

³ #1 market grade as defined by the USDA.

⁴ Tubers less than 1.88 inches in diameter.

⁵ Includes oversize, shatter or growth crack, second growth, green, etc.

⁶ Average weight of #1 tubers in ounces.

⁷ LSD: Least significant difference.

Table 3. Nonirrigated yield trial summary, Matanuska Farm-1996¹.

Variety	Skin ²	US#1 ³	Small ⁴	Other ⁵	Total	Percent US#1	Tuber Weight ⁶	Specific Gravity
Russet Burbank	Ru	8.4	1.0	0.6	10.0	84.0	6.4	1.084
White Rose	W	6.6	0.9	0.5	7.9	83.5	6.0	1.081
Gold Coin	W	6.5	0.5	0.7	7.7	84.4	5.3	1.084
Chieftain	R	6.2	0.6	0.3	7.1	87.3	4.5	1.083
Green Mountain	W	6.1	1.0	0.3	7.3	83.6	5.2	1.083
Red La Soda	R	5.6	0.3	0.6	6.5	86.2	5.2	1.082
Sangre	R	5.6	0.6	0.2	6.4	87.5	5.3	1.080
IditaRed	R	5.3	0.3	0.4	5.9	89.8	5.7	1.079
Bake-King	W	5.1	0.3	0.0	5.5	92.7	5.5	1.091
Red Warba	R	5.0	0.3	0.9	6.3	79.4	5.5	1.082
Atlantic	W	5.0	0.6	0.5	6.1	82.0	5.0	1.094
Denali	W	4.9	0.5	0.1	5.5	89.1	5.1	1.098
Yukon Gold	W	4.9	0.8	0.3	6.0	81.7	5.9	1.099
Hilite Russet	Ru	4.9	0.6	0.2	5.7	86.0	4.6	1.088
Nipigon	W	4.8	0.3	0.5	5.7	84.2	6.5	1.085
Ranger Russet	Ru	4.8	0.5	0.4	5.6	85.7	6.0	1.089
Purple Viking	P	4.7	1.4	0.2	6.4	73.4	4.4	1.088
Allagash Russet	Ru	4.7	0.4	0.3	5.4	87.0	5.5	1.091
Norwis	W	4.2	0.2	0.3	4.7	89.4	5.2	1.087
Kennebec	W	4.1	0.4	0.3	4.8	85.4	6.3	1.084
Shepody	W	4.0	0.5	0.0	4.5	88.9	5.6	1.087
Frontier Russet	Ru	3.7	1.0	0.2	4.9	75.5	4.8	1.094
All Blue	P	3.7	2.4	0.1	6.2	59.7	4.2	1.085
Avon	W	3.6	0.6	0.6	4.7	76.6	4.5	1.090
Blue Mac	P	3.5	1.3	1.0	5.8	60.3	3.9	1.087
Goldrush Russet	Ru	3.5	1.1	0.3	4.9	71.4	4.3	1.088
Nooksack	Ru	3.3	0.6	0.0	3.9	84.6	5.1	1.091
Belrus	Ru	3.2	0.8	0.1	4.1	78.0	4.2	1.102
Tolaas	Ru	3.0	0.7	0.4	4.0	75.0	4.9	1.088
Alaska Sweetheart	R	2.9	1.7	0.1	4.7	61.7	3.9	1.092
Eide Russet	Ru	2.9	0.9	0.2	4.0	72.5	4.6	1.088
Acadia Russet	Ru	2.9	1.2	0.4	4.5	64.4	4.1	1.087
Norland	R	2.9	0.9	0.4	4.2	69.0	3.9	1.087
Alaska 114	W	2.7	2.0	0.0	4.7	57.4	3.7	1.095
Russet Nugget	Ru	2.7	1.1	0.0	3.8	71.1	4.9	1.092
Superior	W	2.6	0.4	0.3	3.3	78.8	5.0	1.088
Yellow Finn	W	2.6	1.1	0.2	3.9	66.7	4.3	1.084
Red Beauty	R	2.5	0.9	0.9	4.3	58.1	3.7	1.090
Yellow Finn CO	W	2.4	1.6	0.1	4.0	60.0	3.7	1.081
Butte	Ru	2.4	1.2	0.2	3.7	64.9	3.7	1.085
Rote Erstling	R	2.3	1.3	0.2	3.8	60.5	4.1	1.089
Russet Bake-King	Ru	2.2	0.7	0.5	3.4	64.7	4.4	1.104
Lemhi Russet	Ru	2.1	1.1	0.0	3.2	65.6	4.5	1.092
Norgold Russet	Ru	2.0	0.9	0.4	3.3	60.6	3.5	1.096
Russet Norkotah	Ru	1.8	1.6	0.1	3.5	51.4	4.1	1.098
Average		3.8	0.8	0.3	5.0	76.0	4.7	1.087
LSD 5%		1.7			1.7			

¹ Yields expressed in tons per acre.

² (R) = red skin, (Ru) = russet skin, (W) = white skin, (P) = purple skin.

³ #1 market grade as defined by the USDA.

⁴ Tubers less than 1.88 inches in diameter.

⁵ Includes oversize, shatter or growth crack, second growth, green, etc.

⁶ Average weight of #1 tubers in ounces.

⁷ LSD: Least significant difference.

tively. Harvest was completed prior to any freezing temperatures in the area and the harvested crop went into cold storage in very good condition.

Seed used in these trials was produced on the Matanuska Farm from stocks acquired from the Alaska Division of Agriculture or from stocks acquired from various certification agencies in the contiguous 48 states and Canada. Some of the varieties may have contained certain latent viruses.

RESULTS AND DISCUSSION

In 1996, for the fourth year in a row topsoil and subsoil moisture levels were very low. Snowmelt added little moisture to the soil and rainfall in April and May totalled 0.26 inches (Table 1), less than 25% of the rather meager long term average (Table 1) for that two month period. Rainfall continued to be far below average through July although August rainfall was slightly above the long term average. By August, however, yield levels had been established in the nonirrigated plots and the late rain had little positive effect.

Compounding the moisture problem in the nonirrigated plots were the above average temperatures that continued through the month of July. Daily mean temperatures from April through July were from 1.4 to 2.2°F above the long term average (Table 1), increasing the demand for the severely limited supply of water in the soil.

Tables 2 and 3 contain summaries of the irrigated and nonirrigated yield trials respectively. In the irrigated trials the average yield of US #1 tubers across all 45 varieties was 14.2 tons per

acre and the total yield average was 16.9 tons per acre. In the nonirrigated trials the average yield of US #1 tubers across the 45 varieties was 3.8 tons per acre whereas the total yield was 5.0 tons per acre. All of these average yield figures are lower than they were in 1995. For the third time in five years at the Matanuska farm site, rainfall has provided less than the minimum amount of water required by potatoes to produce commercially acceptable yields. Green Mountain was at the top of the irrigated trial list and Bake-King, a popular commercial variety, was among the best yielders. Russet Burbank yielded significantly more than all other varieties in the nonirrigated trial although it must be remembered that yields of this variety vary greatly from year to year, and that it usually ranks near the bottom of the list.

Summaries of production of US #1 tubers by selected varieties over the past five years are presented in Table 4 (irrigated) and 5 (nonirrigated). The yields for the various varieties in the irrigated trial (Table 4) again are generally similar to yields by that variety in previous years. In the nonirrigated trials (Table 5), however, the yields of each variety tend to vary greatly from year to year. For example, the average yield of the 11 selected varieties in Table 5 is 30% of the yield by the same varieties in 1995.

A summary of the different types of gradeout for eleven selected varieties is presented in Table 6. Bake-King is observed to have its typically high percentage of US #1 tubers but Green Mountain and Allagash Russet also had US #1 percentages above 90 in the irrigated portion of the trial.

Table 4. Comparative summary of US #1 tuber yields of selected varieties in irrigated trials conducted from 1992 through 1996¹.

Variety	1992	1993	1994	1995	1996	Average ²
Allagash Russet	11.7	16.6	15.9	15.7	15.9	15.2
Alaska 114	18.1	19.3	13.6	18.8	15.9	17.1
Bake-King	16.2	15.9	15.4	11.7	18.0	15.4
Denali	15.4	17.5	12.3	14.9	12.2	14.5
Green Mountain	19.4	19.5	18.5	13.5	20.0	18.2
IditaRed	22.4	18.1	14.8	20.2	13.8	17.9
Kennebec	20.1	18.8	22.8	17.1	14.9	18.7
Lemhi Russet	13.8	17.3	12.9	12.1	12.3	13.7
Russet Burbank	16.3	13.4	12.1	12.1	16.1	14.0
Shepody	15.6	15.4	15.7	11.4	8.3	13.3
Superior	16.6	16.6	17.6	16.4	6.6	14.8
Average	16.9	17.1	15.6	14.9	14.0	15.7
LSD 5% ³	3.3	2.4	4.5	3.3	3.4	-

¹ Yields expressed in tons per acre (- indicates variety not tested). #1 market grade as defined by the US Department of Agriculture.

² Average calculated on yields from 1992-1996.

³ Least significant difference.

Table 5. Comparative summary of US #1 tuber yields of selected varieties in nonirrigated trials conducted from 1992 through 1996¹.

Variety	1992	1993	1994	1995	1996	Average ²
Allagash Russet	10.2	7.3	5.0	11.7	4.7	7.8
Alaska 114	10.2	6.1	5.1	15.4	2.7	7.9
Bake-King	9.3	6.3	6.1	8.1	5.1	7.0
Denali	7.5	3.1	5.8	14.0	4.9	7.1
Green Mountain	13.2	9.5	5.0	15.0	6.1	9.8
IditaRed	11.6	5.0	6.2	18.9	5.3	9.4
Kennebec	13.5	8.4	6.6	15.6	4.1	9.6
Lemhi Russet	8.1	4.7	4.0	13.5	2.1	6.5
Russet Burbank	11.4	8.4	3.2	10.6	8.4	8.4
Shepody	11.7	7.5	8.6	11.4	4.0	8.6
Superior	9.6	5.8	4.8	11.9	2.6	6.9
Average	10.6	6.6	5.5	13.3	4.5	8.1
LSD 5% ³	2.3	1.8	2.0	2.2	1.7	-

¹ Yields expressed in tons per acre (- indicates variety not tested). #1 market grade as defined by the US Department of Agriculture.
² Average calculated on yields from 1992-1996.
³ Least significant difference.

Percentages of US #1 tubers generally were lower for each variety in the nonirrigated portion of the trial and this often was due to the high percentage of undersized tubers. Five varieties produced undersized tubers in excess of 10% of their total yields and two of these, Alaska 114 and Lemhi Russet, produced undersized tubers in excess of 34% of their total yields. Very few varieties produced significant numbers of oversized tubers with only IditaRed (8.4) and Shepody (12.1) exceeding eight % of their total yields. More than 10% of the tubers produced in the irrigated trial by variety Superior were damaged by shatter cracks. In the majority of seasons, shatter cracking is not present at such a high level in Superior and when it is, usually it is associated with high soil moisture at the time of harvest. However, soil moisture was not particularly high at harvest time this year.

TRIALS AT DELTA JUNCTION

Seed pieces of ten potato varieties were planted at the AFES site near Delta Junction, Alaska on May 15, 1996. Granular fertilizers (8-32-16 at the rate of 1430 pounds per acre and 20.5-0-0-24 at the rate of 170 pounds per acre) were broadcast and incorporated prior to planting. Rainfall was adequate during late June and July although rainfall was below average for the season as a whole. Temperatures were slightly above average for the season as a whole, and no irrigation water was applied at any time during the season.

A light frost damaged some upper leaves on August 8 followed by a hard killing frost on September 7. Plots were harvested on September 11. Yields were above average for the Delta Junction location (Table 7) with most of the gradeout found in the undersize category.

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DISCLAIMER

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Table 6. Type and quantity of gradeout observed among selected varieties in irrigated and nonirrigated trials in 1996¹.

	Total	#1	Under size	Over size	Shatter crack	Growth crack	Green	Other ²
Acadia Russet	4.5	2.9(64.4)	1.2(26.7)	0.0(0.0)	0.3(6.7)	0.1(2.2)	0.0(0.0)	0.0(0.0)
	19.9	17.6(88.4)	1.0(5.0)	0.3(1.6)	0.8(4.0)	0.1(0.5)	0.0(0.0)	0.1(0.5)
Alaska 114	4.7	2.7(57.4)	2.0(42.6)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)
	17.7	15.9(89.8)	1.6(9.0)	0.0(0.0)	0.0(0.0)	0.1(0.6)	0.1(0.6)	0.0(0.0)
Allagash Russet	5.4	4.7(87.0)	0.4(7.4)	0.0(0.0)	0.0(0.0)	0.3(3.7)	0.1(1.9)	0.0(0.0)
	17.6	15.9(90.3)	0.5(2.8)	0.8(4.5)	0.1(0.6)	0.2(1.2)	0.1(0.6)	0.0(0.0)
Bake-King	5.5	5.1(92.7)	0.3(5.5)	0.0(0.0)	0.0(0.0)	0.1(1.8)	0.0(0.0)	0.0(0.0)
	19.4	18.0(92.8)	0.5(2.6)	0.6(3.1)	0.0(0.0)	0.1(0.5)	0.1(0.5)	0.1(0.5)
Gold Coin	7.7	6.5(84.4)	0.5(6.5)	0.0(0.0)	0.0(0.0)	0.2(2.6)	0.0(0.0)	0.5(6.5)
	21.6	19.9(92.1)	0.7(3.2)	0.3(1.4)	0.0(0.0)	0.1(0.5)	0.6(2.8)	0.0(0.0)
Green Mountain	7.3	6.1(83.4)	1.0(13.3)	0.0(0.0)	0.1(1.0)	0.1(1.3)	0.0(0.0)	0.1(1.0)
	21.9	20.0(91.3)	1.1(5.0)	0.4(1.7)	0.0(0.0)	0.0(0.0)	0.4(1.7)	0.1(0.3)
IditaRed	5.9	5.3(89.8)	0.3(5.1)	0.1(1.7)	0.2(3.4)	0.0(0.0)	0.0(0.0)	0.0(0.0)
	16.7	13.8(82.6)	0.5(3.0)	1.4(8.4)	1.0(6.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)
Lemhi Russet	3.2	2.1(65.6)	1.1(34.4)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)
	14.7	12.3(83.7)	0.6(4.1)	0.0(0.0)	0.5(3.4)	0.2(1.4)	0.7(4.7)	0.4(2.7)
Sangre	6.4	5.6(87.5)	0.6(9.3)	0.1(1.6)	0.0(0.0)	0.1(1.6)	0.0(0.0)	0.0(0.0)
	13.6	11.9(87.5)	0.6(4.4)	0.4(2.6)	0.2(1.7)	0.2(1.2)	0.0(0.0)	0.4(2.6)
Shepody	4.5	4.0(88.9)	0.5(11.1)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)	0.0(0.0)
	10.8	8.3(76.9)	0.3(2.8)	1.3(12.0)	0.0(0.0)	0.0(0.0)	0.4(3.7)	0.5(4.6)
Superior	3.3	2.6(78.8)	0.4(12.1)	0.0(0.0)	0.1(3.0)	0.1(3.0)	0.0(0.0)	0.1(3.1)
	9.3	6.6(71.0)	0.5(5.4)	0.8(8.6)	1.0(10.5)	0.1(0.5)	0.3(3.2)	0.1(0.8)

¹ Weights expressed in tons per acre. Values in parentheses indicate percent of total yield.

² Includes primarily second growth; also rotten, misshapen, etc.

³ (NI) = not irrigated, (I) = irrigated.

Table 7. Summary of the 1996 yield trial results for Delta Junction and Palmer¹.

Variety	DELTA JUNCTION		PALMER	
	#1 ²	Total ³	#1	Total
Allagash Russet	2.5	6.4	15.9	17.6
Bake-King	12.2	18.7	18.0	19.4
Butte	8.0	15.3	16.3	18.5
Green Mountain	7.8	16.7	20.0	21.9
IditaRed	9.7	15.9	13.8	16.7
Lemhi russet	9.3	15.6	12.3	14.7
Rote Erstling	1.5	9.0	9.4	11.6
Sangre	3.6	7.7	11.9	13.6
Superior	12.0	18.5	6.6	9.3
Yukon Gold	5.2	8.2	12.9	16.1

¹ All #1 and total yields are expressed in tons per acre. Yield figures represent the average of three replications at all locations except Palmer where four replications were averaged.
² #1 market grade as defined by the US Department of Agriculture.
³ Total yield = #1 plus gradeout. Gradeout includes undersize, oversize, growth and shatter crack, green, etc.