



**POTATO VARIETY PERFORMANCE
ALASKA
1987**

by

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INTRODUCTION

A comparative yield trial with thirty-six named varieties and numbered selections of potatoes was conducted at the University of Alaska Fairbanks, Agricultural and Forestry Experiment Station's (AFES) Palmer Research Center during the 1987 growing season. The trial was conducted at the Matanuska Research Farm, located 6 miles west of Palmer on Trunk Road.

Nonirrigated trials have been conducted each year beginning in 1982, and irrigated trials were begun in 1985. Results of previous trials have been recorded in Circulars 49, 54, and 58, available at the Agricultural and Forestry Experiment Station offices in Fairbanks and Palmer.

Varieties with a history of commercial production in the Matanuska Valley (including 'Alaska 114', 'Bakeking', 'Green Mountain', 'Kennebec', and 'Superior') are included and serve as a comparative base for newly developed varieties, numbered selections, or older varieties that heretofore have not been tested at this location. Varieties that compare favorably with the above-listed standards may warrant some consideration by commercial growers.

Also included in this report are the results of abbreviated versions of the AFES potato yield trial that were conducted by cooperating individuals and agencies at nine locations throughout the state.

MATANUSKA FARM YIELD TRIALS

Cultural Practices and Environmental Conditions

Duplicated trials, one to be irrigated and the other not, were planted at the Matanuska Farm on May 12, 1987. Seedbed preparation included plowing to a depth of 8-10 inches followed by discing and packing. Seedbed preparation was scheduled to permit planting as quickly as possible after tilling. In so doing, loss of early spring moisture from the soil was minimized. Four randomly placed replicates of each variety, with twenty-two individual plants per replicate, were planted in rows 36 inches apart. Seed pieces, planted with a single-row, assist-feed planter, were spaced approximately 11 inches apart in the row. They were covered with 2-3 inches of packed soil. Granular fertilizer (8-32-16) was applied at the rate of 1200 pounds per acre by the planter in bands beside and below the seed. The rate of

application of fertilizer was slightly higher in 1987 than in previous years, due to lower levels of residual P_2O_5 and K in the soil. Tensiometers were installed at depths of 6 and 12 inches in the irrigated plots, and water was applied when the tensiometers indicated a deficiency. In the absence of dinoseb, weeds were controlled by cultivation and hand weeding. Although we were able to control weeds in this manner, it was labor intensive, and some type of chemical control will be used in the future.

Seed of most varieties used in these trials was produced on the Experiment Farm, either from stocks inherited from the discontinued USDA potato-breeding program, or from stocks acquired from various certification agencies in the Lower 48 and Canada. This seed may have contained certain latent viruses. Seed of two

varieties ('Green Mountain' and 'Russet Norkotah') was provided by local seed growers. Since these two varieties were produced and stored under conditions that may have been different, direct comparisons of performance with the other thirty-four varieties should not be made. Seed of all varieties except Russet Norkotah was dipped in a 1.85 percent aqueous solution of formaldehyde for two minutes at room temperature in order to kill any pathogenic fungi or bacteria present on the tuber surfaces. The principle target of the formaldehyde dip was *Rhizoctonia solani*. All seed was cut from tubers of similar size.

Early spring weather was sunny and clear, indicating the possibility of a good production year, but cloudy conditions began in May and were virtually constant until August. Air temperatures were slightly above normal for May, and, as a result, emergence began to occur after 25 days. The near-constant cloudiness during June and July gave the impression

of a season much colder and wetter than normal. In fact, rainfall was just slightly above average, and mean temperatures were only slightly cooler than average (table 1). Rainfall was well below average in August and was accompanied by above-average air temperatures and some sunshine. In spite of what appeared to be adequate rainfall (table 1), growth in the nonirrigated plots was clearly less than in the irrigated plots, indicating a moisture deficiency. This may have been due to limited rain and snow fall during winter and early spring resulting in low levels of soil moisture leading into the growing season.

A killing frost (23 degrees Fahrenheit) occurred on September 13, and harvesting began the following day. During the morning hours of digging, a layer of frozen soil was present, often found to be frozen to tubers located near the soil surface. Harvest was completed without problem, and very little frost damage was observed in the harvested crop.

Table 1. Climatic data: Matanuska Farm during 1987 growing season.

	May	June	July	August	September
Air Temp. (°F)					
Daily max.	56.5 (57.7) ¹	60.9 (6-5.2)	64.9 (67.4)	66.2 (64.9)	54.6 (56.4)
Daily min.	37.8 (36.1)	45.3 (44.0)	48.9 (47.7)	47.1 (45.6)	36.7 (38.5)
Daily mean	47.4 (46.9)	53.1 (54.0)	56.9 (57.6)	56.7 (55.3)	45.7 (47.4)
Precip. (in.)	0.90 (0.73)	1.63 (1.52)	2.53 (2.39)	1.76 (2.54)	2.28 (2.40)

¹Values in parentheses represent 52-year averages.

Results and Discussion

Yields in the nonirrigated and irrigated trials are presented in Tables 2 and 3, respectively. Average yields of twelve selected varieties in nonirrigated trials were lower in 1987 than for all the previous five seasons except 1985 (table 4). The same twelve varieties averaged 13.2 tons per acre in irrigated trials over the past 3 years (table 5) compared to 10.9 tons per acre in nonirrigated trials over that period, thus implicating moisture shortage in yield limitations. A strong wind in late summer damaged vines, and thereby may have contributed to reductions in yield. The percentage of US #1 was somewhat higher this year than last, but average specific gravity readings were slightly lower than in 1986. Specific types of gradeout in ten selected varieties are summarized in Table 6.

The top yielder of US #1 tubers, in both the irrigated and nonirrigated trials, was Green Mountain. Its top ranking was attributable to

comparatively high yield and a low percentage of gradeout. Kennebec yielded comparatively well in the nonirrigated trials, but a high percentage of gradeout lowered its ranking in the irrigated trial. Superior, on the other hand, ranked well in the irrigated trial, but was far down the list in the nonirrigated study due to a high percentage of gradeout. Bakeking did well in both trials and had its characteristically high percentage of US #1 tubers. 'Caribe' also yielded well in both trials and may be worthy of consideration by commercial growers who may also wish to consider its two possible disadvantages: low specific gravity and purplish-red skin color.

A peanut-type potato ('Peanut-G') was included in this year's trial. It yielded poorly when compared with the more traditional types of potato. Disadvantages, in addition to poor yield, included small size and extreme depth of tubers in the soil. Specific gravity

readings, however, were higher for Peanut-G than for any other tested variety.

Interesting observations regarding types of gradeout (table 6) in selected varieties should be pointed out. A high incidence of shatter cracking was observed in the harvest of Superior and '18-6' from nonirrigated plots. Shatter cracking to this extent was not observed in other varieties, nor was it observed in

Superior and 18-6 from irrigated plots. Possibly a shortage of soil moisture combined with cooler-than-normal soil temperatures at harvest time stimulate shatter cracking in such varieties as Superior and 18-6. The incidence of second growth in 'Russet Burbank' was high, as in the past, whereas gradeout in Kennebec due to oversize was low, unlike the past.

Table 2. Nonirrigated yield trial summary, Matanuska Farm.¹

Variety ²	US #1 ³	Small ⁴	Other ⁵	Total	Percent US #1	Tuber Weight ⁶	Specific Gravity
Green Mountain	12.4	0.9	0.9	14.2	87.8	6.0	1.093
6-78-139-80	12.3	1.3	0.1	13.6	89.9	5.3	1.084
Kennebec	12.0	0.4	2.0	14.3	83.5	8.3	1.084
Shepody	11.7	0.3	0.6	12.6	93.1	8.6	1.084
Acadia Russet	11.6	0.8	0.8	13.1	88.3	6.2	1.085
Rosa	11.6	1.2	0.8	13.6	85.2	5.6	1.078
Caribe	11.2	0.3	2.4	13.8	80.9	7.8	1.069
3-79-280-81	11.2	0.8	0.8	12.8	87.9	6.0	1.089
Alaska Red	10.9	1.2	0.6	12.7	84.4	4.8	1.082
Lemhi	10.8	1.1	1.8	13.6	78.9	6.5	1.086
6-5	10.8	0.7	1.1	12.7	85.6	6.2	1.084
Bakeking	10.5	0.4	0.9	11.8	89.2	6.7	1.093
Bintje	10.4	1.8	0.5	12.8	81.5	4.2	1.086
Maverick	10.4	1.0	1.2	12.6	82.7	5.5	1.069
Russet Burbank	10.2	1.2	0.4	11.7	86.9	5.2	1.094
3-79-270-81	10.2	1.4	1.1	12.6	80.5	6.2	1.083
Alaska 114	10.0	1.0	0.3	11.2	89.0	5.0	1.077
18-6	9.7	0.5	3.0	13.2	73.1	5.9	1.074
3-79-168-81	9.7	1.0	0.5	11.1	87.1	5.3	1.090
Nooksack	9.6	0.6	0.8	11.0	87.2	5.5	1.095
Sangre	9.6	0.7	1.2	11.4	84.0	5.5	1.073
Allagash	9.0	0.4	1.0	10.4	85.8	6.8	1.078
Jemseg	8.7	0.7	0.8	10.2	85.2	5.3	1.073
Superior	8.2	0.3	4.0	12.4	66.9	6.3	1.075
ND 860-2	8.1	1.4	0.6	10.1	80.8	3.9	1.083
Highlat Russet	7.6	0.9	1.0	9.4	80.1	6.0	1.084
Krantz	7.3	0.3	1.3	8.9	81.3	6.6	1.078
Norking	7.2	0.9	2.2	10.2	69.9	6.0	1.083
Alaska Russet	7.0	0.5	2.8	10.4	67.1	6.1	1.081
Nemarus	6.8	1.3	3.6	11.6	59.0	5.4	1.080
Denali	6.6	0.8	2.0	9.4	72.6	5.2	1.093
Reddale	5.9	0.2	6.6	12.7	46.7	7.2	1.071
Centennial Russet	5.3	0.5	1.6	7.4	73.1	5.6	1.075
Russette	4.4	1.3	0.3	6.0	72.9	5.4	1.084
Peanut-G	3.0	2.6	0.1	5.6	53.8	3.2	1.105
Russet Norkotah	2.5	1.2	0.0	3.7	65.6	4.2	1.077
Average	9.0	-	-	11.2	79.1	-	1.083
LSD 5% ⁷	2.0	-	-	2.2	-	-	-

¹Yields expressed in tons per acre.. All figures represent least-square means of 4 replications.

²Numbered selections originated in the breeding program of C.H. Dearborn.

³#1 market grade as defined by US Department of Agriculture.

⁴Tubers less than 1.75 inches in diameter.

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

⁶Average weight of #1 tubers in ounces.

⁷LSD: Least significant difference based upon plot-wide variation .

Table 3. Irrigated yield trial summary, Matanuska Farm.¹

Variety ²	US #1 ³	Small ⁴	Other ⁵	Total	Percent US #1	Tuber Weight ⁶	Specific Gravity
Green Mountain	15.5	0.8	0.9	17.1	90.2	6.1	1.090
Caribe	14.8	0.4	3.3	18.5	80.1	8.1	1.068
Superior	14.5	0.6	2.9	18.1	81.1	6.8	1.075
6-78-139-80	14.1	2.7	0.3	17.1	82.2	4.4	1.082
Bakeking	13.8	0.6	1.2	15.6	88.4	7.5	1.093
Rosa	13.8	1.4	0.9	16.2	85.6	5.3	1.074
Alaska 114	13.6	1.2	0.8	15.6	87.4	5.0	1.083
Lemhi	13.6	1.6	1.5	16.7	81.5	5.9	1.089
18-6	13.5	0.7	2.3	16.5	81.9	6.4	1.075
Acadia Russet	13.3	1.4	0.9	15.6	85.5	6.4	1.081
Alaska Red	13.0	2.3	0.7	16.0	81.3	4.4	1.084
Jemseg	12.8	0.9	1.2	14.9	85.4	6.1	1.072
Kennebec	12.7	0.7	2.7	16.0	79.1	6.8	1.080
Sangre	12.6	1.4	0.6	14.6	85.9	5.5	1.074
3-79-280-81	12.6	1.1	1.7	15.4	81.0	5.6	1.088
Shepody	12.4	0.6	2.1	15.0	82.3	7.8	1.083
Maverick	12.3	1.7	3.4	17.3	70.5	5.3	1.073
Allagash	12.2	0.5	0.7	13.4	90.8	7.0	1.076
Denali	12.1	0.9	1.3	14.2	84.6	5.8	1.097
Alaska Russet	12.0	1.1	1.3	14.4	83.2	5.8	1.083
6-5	12.0	1.4	1.1	14.5	82.6	5.8	1.086
Norking	11.6	1.4	1.1	14.1	82.4	5.7	1.087
Bintje	11.5	2.7	0.9	15.1	76.2	4.5	1.084
Nooksack	11.2	1.0	0.4	12.6	88.7	4.9	1.089
3-79-270-81	11.1	1.2	1.0	13.3	83.4	5.5	1.081
ND 860-2	11.0	1.3	1.3	13.6	81.0	4.7	1.083
3-79-168-81	10.8	1.9	0.8	13.4	80.4	5.0	1.094
Krantz	10.5	0.3	2.1	12.9	80.9	8.4	1.076
Reddale	10.3	0.7	4.7	15.7	65.7	6.2	1.070
Highlat Russet	10.2	1.4	1.8	13.4	76.0	5.5	1.082
Russet Burbank	9.9	1.6	1.5	13.1	75.9	5.4	1.092
Nemarus	8.8	1.7	3.0	13.4	65.3	5.8	1.083
Russet Norkotah	6.5	1.2	0.3	8.0	77.2	6.0	1.076
Centennial Russet	5.8	0.8	1.9	8.5	68.1	5.6	1.074
Russette	3.3	1.6	0.2	5.1	62.3	5.0	1.086
Peanut-G	2.9	3.6	0.1	6.5	46.6	3.4	1.101
Average	11.5	-	-	14.2	77.4	-	1.082
LSD 5% ⁷	2.1	-	-	2.1	-	-	-

¹Yields expressed in tone per acre. All figures represent least-square means of 4 replications.

²Numbered selections originated in the breeding program of C.H. Dearborn.

³#1 marketgrade as defined by the US Department of Agriculture.

⁴Tubers less than 1.75 inches in diameter.

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

⁶Average weight of #1 tubers in ounces.

⁷LSD: Least significant difference based upon plot-wide variation.

Table 4. Comparative summary of US #1 tuber yields of selected varieties in nonirrigated trials conducted from 1983 through 1987.¹

Variety	1983	1984	1985	1986	1987	Average ²
Alaska 114	16.7	14.2	7.2	14.3	10.0	12.4
Bakeking	12.4	12.4	9.3	12.1	10.5	12.2
Denali	13.1	12.6	8.5	11.4	6.6	10.8
Green Mountain	16.7	15.0	9.1	15.5	12.4	14.8
Kennebec	18.4	16.5	9.8	13.6	12.0	14.9
Lemhi	14.1	11.6	8.4	14.8	10.8	12.3
Rosa	-	-	10.5	14.1	11.6	13.3
Russet Burbank	15.2	9.2	8.2	11.0	10.2	10.6
Shepody	-	14.4	9.4	14.2	11.7	12.4
Superior	9.8	12.4	8.6	11.1	8.2	10.7
3-79-270-81	16.9	13.1	9.4	14.8	10.2	12.9
18-6	18.0	16.4	9.2	14.0	9.7	14.5
LSD 5% ³	1.5	1.9	2.1	2.5	2.0	
Average	15.1	13.4	9.0	13.4	10.3	12.7

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

² Average includes yields from 1982 (not shown).

³ Least significant difference.

Table 5. Comparative summary of US #1 tuber yields of selected varieties in irrigated trials conducted from 1985 through 1987.¹

Variety	1985	1986	1987	Average ²
Alaska 114	13.3	12.2	13.6	13.0
Bakeking	14.6	12.3	13.8	13.6
Denali	13.1	12.3	12.1	12.5
Green Mountain	15.2	13.0	15.5	14.6
Kennebec	13.8	16.9	12.7	14.5
Lemhi	12.3	10.8	13.6	12.2
Rosa	14.4	12.7	13.8	13.6
Russet Burbank	10.3	8.5	9.9	9.6
Shepody	14.3	12.8	12.4	13.2
Superior	14.7	14.2	14.5	14.5
3-79-270-81	14.8	15.4	11.1	13.8
18-6	14.6	13.7	13.5	13.9
LSD 5% ³	2.0	3.2	2.1	
Average	13.8	12.9	13.0	13.2

¹ Yields expressed in tons per acre. #1 market grade as defined by US Department of Agriculture.

² Average calculated on yields from 1985-1987.

³ Least significant difference.

Table 6. Type and quantity of gradeout observed among selected varieties in irrigated and nonirrigated trials.¹

		Total	#1	Undersize	Oversize	Shatter crack	Growth crack	Second growth	Other ²
Acadia Russet	(NI) ³	13.1	11.6 (88.5)	0.8 (6.1)	0.1 (0.8)	0.3 (2.3)	0.1 (0.8)	0.0 (0.0)	0.3 (2.3)
	(I)	15.6	13.3 (85.3)	1.4 (9.0)	0.1 (0.6)	0.2 (1.3)	0.0 (0.0)	0.2 (1.3)	0.4 (2.6)
Alaska 114	(NI)	11.2	10.0 (89.3)	1.0 (8.9)	0.0 (0.0)	0.1 (0.9)	0.1 (0.9)	0.0 (0.0)	0.2 (1.8)
	(I)	15.6	13.6 (87.2)	1.2 (7.7)	0.0 (0.0)	0.1 (0.6)	0.2 (1.3)	0.1 (0.6)	0.6 (3.8)
Bakeking	(NI)	11.8	10.5 (89.0)	0.4 (3.4)	0.0 (0.0)	0.3 (2.5)	0.0 (0.0)	0.1 (0.8)	0.6 (5.1)
	(I)	15.6	13.8 (88.5)	0.6 (3.8)	0.1 (0.6)	0.1 (0.6)	0.0 (0.0)	0.3 (1.9)	0.8 (5.1)
Green Mountain	(NI)	14.2	12.4 (87.3)	0.9 (6.3)	0.1 (0.7)	0.3 (2.1)	0.1 (0.7)	0.1 (0.7)	0.4 (2.8)
	(I)	17.1	15.5 (90.6)	0.8 (4.7)	0.0 (0.0)	0.3 (1.8)	0.1 (0.6)	0.1 (0.6)	0.5 (2.9)
Kennebec	(NI)	14.3	12.0 (83.9)	0.4 (2.8)	0.4 (2.8)	0.4 (2.8)	0.0 (0.0)	0.3 (2.1)	0.8 (5.6)
	(I)	16.0	12.7 (79.4)	0.7 (4.4)	0.1 (0.6)	0.2 (1.3)	0.6 (3.8)	0.3 (1.9)	1.5 (9.4)
Russet Burbank	(NI)	11.7	10.2 (87.2)	1.2 (10.3)	0.0 (0.0)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)	0.1 (0.9)
	(I)	13.1	9.9 (75.6)	1.6 (12.2)	0.0 (0.0)	0.0 (0.0)	0.1 (0.8)	1.4 (10.7)	0.1 (0.8)
Shepody	(NI)	12.6	11.7 (92.9)	0.3 (2.4)	0.0 (0.0)	0.1 (0.8)	0.1 (0.8)	0.2 (1.6)	0.3 (2.4)
	(I)	15.0	12.4 (82.7)	0.6 (4.0)	0.8 (5.3)	0.1 (0.7)	0.2 (1.3)	0.5 (3.3)	0.6 (4.0)
Superior	(NI)	12.4	8.2 (66.1)	0.3 (2.4)	0.1 (0.8)	3.5 (28.2)	0.0 (0.0)	0.2 (1.6)	0.2 (1.6)
	(I)	18.1	14.5 (80.1)	0.6 (3.3)	0.6 (3.3)	0.7 (3.9)	0.1 (0.6)	0.2 (1.1)	1.3 (7.2)
3-79-270-81	(NI)	12.6	10.2 (81.0)	1.4 (11.1)	0.0 (0.0)	0.7 (5.6)	0.1 (0.8)	0.1 (0.8)	0.2 (1.6)
	(I)	13.3	11.1 (83.5)	1.2 (9.0)	0.0 (0.0)	0.3 (2.3)	0.1 (0.8)	0.2 (1.5)	0.4 (3.0)
18-6	(NI)	13.2	9.7 (73.5)	0.5 (3.8)	0.5 (3.8)	2.3 (17.4)	0.1 (0.8)	0.2 (1.5)	0.0 (0.0)
	(I)	16.5	13.5 (81.8)	0.7 (4.2)	0.8 (4.8)	1.3 (7.9)	0.1 (0.6)	0.1 (0.6)	0.0 (0.0)

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

²Includes green, rotten, etc.

³NI = not irrigated, I=irrigated.

TRIALS AT OTHER LOCATIONS IN ALASKA

General Procedures

Seed of ten potato varieties was sent to nine cooperators for planting at nine locations throughout Alaska. Many of the co-operators are private citizens, while others are employed by state (Agricultural and Forestry Experiment Station), state-Federal (Cooperative Extension Service), or private (Maniilaq Association, Copper River Native Association) agencies. When environmental conditions permitted, seeds were planted in rows 36 inches apart with plants 11-12 inches apart in the row. At most

locations, commercial fertilizers were applied at a rate comparable to that applied at the Matanuska Farm. Crop maintenance, including irrigation, fertilization, weed control, and hilling, was carried out by the cooperator at each site and may have varied from site to site. At all locations except Kake, harvest occurred after a frost. Total yields and US #1 yields for each variety at each site are summarized in Table 7. Season lengths at the nine sites, plus Matanuska Farm, are summarized in Table 8.

Table 7. Yield trial summary from selected Alaskan locations.¹

Variety	<u>Ambler</u>		<u>Copper Center</u>		<u>Delta Junction</u>		<u>Fairbanks</u>		<u>Kake</u>		<u>Kenai-Soldotna</u>		<u>Kodiak</u>		<u>Kotzebue</u>		<u>Palmer</u>		<u>Trapper Creek</u>	
	#1 ²	Total ³	#1	Total	#1	Total	#1	Total	#1	Total	#1	Total	#1	Total	#1	Total	#1	Total	#1	Total
Alaska Red	11.3	14.5	3.9	9.3	12.6	15.8	15.5	17.5	11.7	17.0	3.3	6.0	3.1	5.0	10.2	13.1	13.0	16.0	1.8	3.8
Alaska 114	13.6	16.2	2.6	7.0	14.7	18.9	12.3	15.0	4.2	10.1	5.0	7.5	3.4	5.3	7.8	10.8	13.6	15.6	4.4	8.6
Bakeking	12.3	14.6	2.6	6.9	13.0	15.8	10.4	11.5	12.1	15.0	4.3	5.3	3.6	4.7	7.3	9.8	13.8	15.6	4.3	7.4
Denali	8.4	9.7	1.3	7.7	10.1	13.8	7.3	10.2	12.1	16.4	5.1	8.4	4.0	6.1	7.2	12.4	12.1	14.2	2.5	6.8
Green Mountain	15.1	18.4	2.3	8.5	13.4	18.3	13.5	14.8	14.0	20.3	7.6	11.4	5.1	7.0	9.5	13.0	15.5	17.1	8.4	12.7
B8883-13	11.9	15.3	2.9	8.2	10.6	14.2	12.8	14.5	10.7	14.9	4.9	7.8	3.4	5.0	7.5	9.8	-	-	5.5	8.2
Kennebec	14.3	15.9	3.7	6.6	15.3	18.5	15.0	17.5	13.0	16.0	6.7	8.4	3.6	5.5	8.0	10.5	12.7	16.0	2.6	5.4
Lemhi	8.9	12.6	2.1	7.1	10.5	14.6	12.3	16.4	14.6	18.3	6.5	8.8	3.3	5.0	8.5	11.8	13.6	16.7	2.8	6.0
18-6	12.3	15.5	2.9	8.2	15.0	17.6	15.0	16.2	12.5	17.9	5.4	8.3	4.4	5.8	8.6	11.4	13.5	16.5	4.3	6.1
10-1	11.5	13.7	4.3	8.7	10.0	13.2	14.5	15.8	11.7	15.6	4.2	7.0	4.1	5.9	5.5	9.0	-	-	8.2	12.0

¹ All #1 and total yields are expressed in tons per acre (- indicates variety not tested). Yield figures represent the average of three replications at all locations except Palmer, where there were 4 replications.

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.

Table 8. Length of the 1987 potato growing season at ten locations in Alaska.

Location	Plant to harvest (days)	Killing frost ¹	Plant to killing frost (days)
Ambler	86	3 (27°F)	83
Copper Center	86	8 (22°F)	78
Delta Junction	111	7 (27°F)	104
Fairbanks	120	16 (26°F)	104
Kake	157	0 -	157 ²
Kenai-Soldotna	107	4 (25°F)	103
Kodiak	147	36 (29°F) ³	111
Kotzebue	90	1 (29°F)	89
Palmer	125	1 (23°F)	124
Trapper Creek	91	10 (27°F)	81

¹Number of days prior to harvest that killing frost occurred, followed in parenthesis by the actual temperature if it is known

²First frost did not occur until 19 days after harvest.

³Damaged, but did not kill, the vines.

Specific Site Information

Ambler - The Ambler trial was conducted by Lori Restad (Manilaq Assn.) and John Blower, and was planted in Mr. Blower's garden in Ambler. Planting occurred on June 8. The month of July was very dry, and it was necessary to irrigate on several occasions. Water was not a limiting factor to growth as the crop could be irrigated when necessary. A 27-degree Fahrenheit frost severely damaged the vines on August 30, and the crop was harvested on September 2. The 1987 growing season in Ambler was judged to be above average.

Copper Center - The trial in Copper Center was conducted by Les Sutherland of the Copper River Native Association (CRNA). The plot was located at Mile 104 of the Richardson Highway, across from the CRNA headquarters. Planting occurred on June 6. The month of June was cold and wet, and no irrigation was necessary. July was hot and dry, and water was applied on several occasions. The weather again was cold and wet in August. A killing frost (22 degrees Fahrenheit) occurred on August 23, and light freezes were recorded on several occasions during the week prior to that date. The crop was harvested on August 31. Mr. Sutherland calls the 1987 year, below average for potato production.

Delta Junction - The Delta Junction trial was conducted by Don Quarberg (CES). He planted on May 12 in a plot 4 miles N-NE of Delta Junction. Though the month of May was dry, the remainder of the season received above-average rainfall, and little irrigation was necessary. A 27-degree Fahrenheit frost occurred on June 11, and, though it possibly delayed growth, no lasting damage was done to the crop. On July 29, urea was applied at the rate of 70

pounds nitrogen per acre to counter nitrogen-deficiency symptoms in the crop. On August 22, the temperature descended to 27 degrees Fahrenheit, seriously damaging the vines. The crop was harvested on August 31, ending what Quarberg characterized as a better-than-average growing season for potatoes.

Fairbanks - The trial in Fairbanks was conducted by Dr. Frank Wooding (AFES) and was planted on May 18 at the AFES farm. Growing conditions for the 1987 season were about average at this location. Rainfall was limited early and late in the season and may have restricted yields to some degree. A killing frost of 26 degrees Fahrenheit occurred on August 31, and harvest was completed on September 14.

Kake - The trial at Kake was conducted by Mr. and Mrs. Chuck Larson. Planting was completed on May 16, and the crop was harvested on October 10. The first frost did not occur until 19 days after harvest, so frost was not a factor in determining season length. June was extremely wet and cloudy, followed by a very dry July. The Larsons indicate 1987 was a below-average year for potatoes and gardening in general.

Kenai and Soldotna - Warren Larson (CES) planted this trial at the community garden in Kenai on June 3. Emergence was slow due to the cold, cloudy weather. Irrigation water was applied four times during the summer, so ample water was available to the growing crop. A vine-killing frost (25 degrees Fahrenheit) occurred on September 14, although a minor amount of frost damage has been observed on August 31. Harvest was completed on September 19.

Kodiak - This trial was planted by Patricia Lods on May 31 in her garden near Kodiak City. Mrs. Lods used chicken manure as an alternative to chemical fertilizers. June rainfall totaled 13 inches followed by a two-month period when little rain fell. The extreme and irregular rainfall had a negative effect on production. A light frost (29 degrees Fahrenheit) occurred on September 19, damaging but not killing the vines. Harvest occurred on October 24.

Kotzebue - The Kotzebue trial was planted by Lori Restad (Maniilaq Assn.) on June 12 at a garden site near the Senior Citizens Center in Kotzebue. The month of July was dry, but irrigation water was applied when necessary. A 29-degree Fahrenheit frost occurred on September 9, and harvesting commenced the following day. A better-than-average yield was recorded for 1987.

Palmer - The trial in Palmer was planted on

May 12 at the Matanuska Experiment Farm. Soils were dry initially, but irrigation water was applied as needed. Clear sunny weather was in short supply and may have caused some yield reductions. High winds in the final weeks of the season damaged vines and may have adversely affected yields to some degree. A killing frost (23 degrees Fahrenheit) occurred on September 13, and harvest occurred the following day.

Trapper Creek - The Trapper Creek trial was planted by Philip Smith on June 23 at a site 1 mile northeast of the Parks Highway-Petersville road intersection, approximately two miles from downtown Talkeetna. Moisture was not a limiting factor at any time during the season. Cloudy weather was common throughout the growing season, and probably adversely affected yields. A 27-degree Fahrenheit frost occurred on September 12, and harvest followed on September 21.

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Kake: Mr. and Mrs. Chuck Larson
Kenai: Soldotna : Warren Larson (CES)
Kodiak: Patricia Lods
Kotzebue: Lori Restad (Maniilaq Association)
Trapper Creek: Philip Smith.