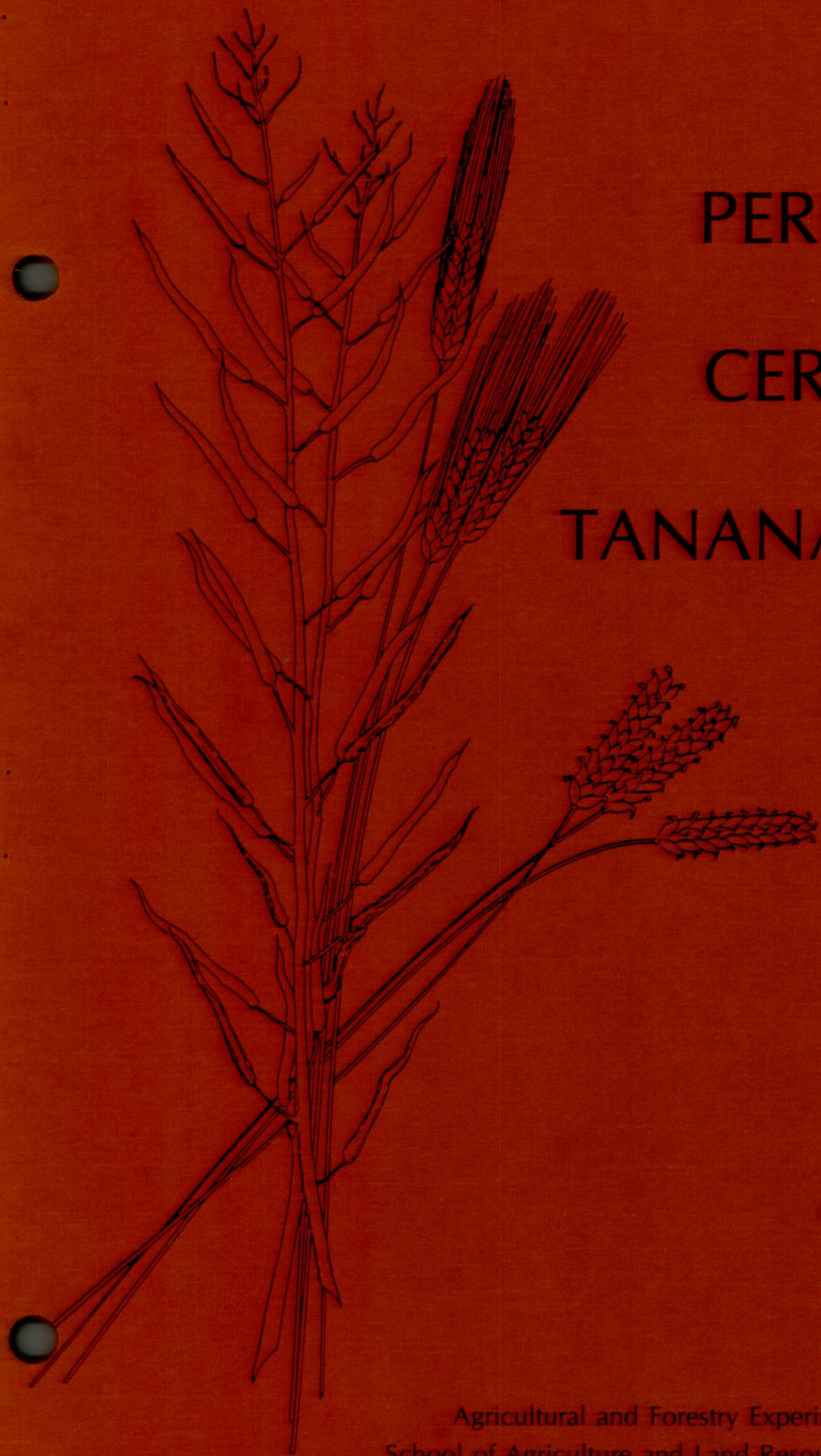




PERFORMANCE  
of  
CEREAL CROPS  
in the  
TANANA RIVER VALLEY  
of  
ALASKA  
1986



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School of Agriculture and Land Resources Management  
University of Alaska

James V. Drew, Dean and Director

Circular 62

June 1987

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"Circular (University of Alaska, Fairbanks. Agricultural  
and Forestry Experiment Station)"

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in the  
Tanana River Valley of Alaska  
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## Introduction

This is the eighth publication of grain performance trials in the Tanana River Valley. The first, published 7 years ago, included the results of spring cereal-variety tests conducted at Fairbanks and Delta Junction during the 1978 and 1979 growing seasons. Beginning in 1980, the variety-test results were annual publications. This report, like last year's, is a shorter version than the first 6 publications of the series. It reflects continued budget constraints caused by Alaska's sagging economy.

## Tanana Valley Weather Summary

The farming area near Delta Junction had a cool, dry growing season in 1986 (table 1). For the period May through September, the weather station reported 7.73 inches of precipitation compared to 9.04 inches for the long-term average. Precipitation for May, June, August, and September was below normal. July was the only wet month with 3.0 inches being recorded. Moisture deficits early in the growing season caused reduced tillering of grain seedlings and resulted in yields which were somewhat lower than long-term averages. However, rainfall from July to the end of the growing season was adequate for grain filling and maturation. Good test weights were recorded for most barley and oat varieties.

**Table 1. Climatic Data for Delta Junction during the 1986 Growing Season.<sup>1</sup>**

	May	June	July	August	September
Temp. (°F)					
daily max.	53.5 (-3.6) <sup>2</sup>	68.3 (+1.2)	68.9 (-0.2)	61.5 (-2.5)	53.5 (+1.7)
daily min.	34.7 (-2.2)	47.7 (+0.6)	51.0 (+0.9)	45.3 (-0.3)	35.2 (-0.1)
daily mean	44.1 (-2.9)	58.0 (+0.9)	60.0 (+0.4)	53.4 (-1.4)	44.4 (+0.8)
Precip. (in.)	0.27 (-0.59)	1.63 (-0.63)	3.00 (+0.32)	1.67 (-0.33)	1.16 (-0.08)

<sup>1</sup>Weather station is 14 miles from test site

<sup>2</sup>Values in parentheses represent deviations from a 24-year average.

The cool temperatures recorded in May caused grain crops to get off to a slow start in Delta Junction. However, a warm June and near normal temperatures for July made it possible for barley and oats to mature on schedule. Wheat, having a longer growing season requirement than barley or oats, was adversely effected by cooler than normal temperatures in August. The test weights recorded for most wheat varieties were well below the standard of 60 pounds per bushel.

Total precipitation for the 1986 growing season, May through September, was slightly below average at the Fairbanks recording station (table 2). Fairbanks received 7.81 inches compared with 8.18 inches for the long-term average. However, moisture deficits occurred in 3 out of 5 months, with only July and August showing a surplus. Poor soil moisture at the start of the growing season, together with lower than normal rainfall in May and June, resulted in grain yields that were noticeably less than long-term averages.

**Table 2. Climatic Data for Fairbanks during the 1986 Growing Season.<sup>1</sup>**

	May	June	July	August	September
Temp (°F)					
daily max.	58.7 (-1.5) <sup>2</sup>	73.4 (+1.7)	73.6 (+0.9)	64.3 (-3.0)	55.2 (-0.2)
daily min.	34.4 (+0.8)	48.5 (+4.4)	51.4 (+4.6)	43.3 (+0.3)	36.6 (+3.0)
daily mean	46.6 (-0.3)	61.0 (+3.1)	62.5 (+2.7)	53.8 (-1.4)	45.9 (+1.4)
Precip. (in.)	0.43 (-0.37)	0.89 (-0.59)	2.85 (+0.75)	2.90 (+0.46)	0.74 (-0.62)

<sup>1</sup>Weather station is 400 yards from test site.

<sup>2</sup>Values in parentheses represent deviations from a 34-year average.

Daily maximum temperatures at Fairbanks for 1986 were cooler than normal in May and August. Warm temperatures in June and July hastened the maturation of all grain crops. Most barley varieties were mature by the end of the first week of August. However, cool, wet conditions during August delayed drying in the field and caused some difficulties with harvest. Maturity dates for most grain crops were close to long-term averages.

## Standard Varieties

Standard varieties, as defined for this report, are varieties that have performed well consistently in tests conducted in at least two Tanana Valley locations over a period of several years. Standard varieties are used as a means for evaluating new entries in the variety trials each year. Comparisons are made with regard to yield, maturity, quality, and growth measurements. Table 3 shows the long-term performance of barley, oat, and wheat standard varieties grown at test sites located near Fairbanks and Delta Junction.

*Datal*, *Galt*, *Otal*, *Otra*, *Thual*, and *Weal* are the standard barley varieties for the Tanana Valley. These are all 6-row barleys, and the grain is grown primarily for use as animal feeds. *Thual* is a hullless barley which is currently being used as an ingredient in dog feeds. *Weal* is a hooded barley which can also be used as an annual forage crop. *Otal* matures the earliest of the standards, with *Datal*, *Otra*, *Weal*, *Thual*, and *Galt* maturing 1, 3, 7, 8, and 12 days later, respectively.

*Athabasca*, *Cascade*, *Nip*, and *Toral* are the standard oat varieties. *Nip* is a black-hulled oat while the other three varieties are yellow in color. *Nip* and *Athabasca* mature at about the same time and are the earliest of the oat standards. *Toral* and *Cascade* mature 5 and 10 days later, respectively, than *Nip* and *Athabasca*.

*Chena*, *Gasser*, *Ingal*, *Nogal*, and *Park*, are the standard wheat varieties. These are all hard red spring wheats, which is the only class of wheat having very early maturity, a characteristic that is essential for successful wheat production in Alaska. *Ingal* matures the earliest of the standards, with *Nogal*, *Gasser*, *Chena*, and *Park* maturing 1, 6, 7, and 10 days later, respectively.



**Table 3. Long-Term Average and Range of Yields for Barley, Oat, and Wheat Standard Varieties Grown at Fairbanks and Delta Junction (bu/acre).**

Crop Variety	Fairbanks			Delta Junction		
	Average Yield	Range of Yields	Years of Testing	Average Yield	Range of Yields	Years of Testing
<b>Barley</b>						
Datal	74	47-97	8	75	33-105	8
Galt	92	50-127	15	70	28-101	15
Otal	68	40-95	8	77	39-97	8
Otra	79	39-100	15	77	33-123	15
Thual	60	40-77	4	57	21-79	4
Weal	78	43-125	15	63	31-96	15
<b>Oat</b>						
Athabasca	121	87-149	7	132	58-172	8
Cascade	140	114-172	6	145	49-203	6
Nip	120	52-159	15	109	45-183	15
Toral	131	67-204	15	120	52-197	15
<b>Wheat</b>						
Chena	70	40-87	14	45	14-80	14
Gasser	54	33-75	15	39	12-69	15
Ingal	55	18-74	10	40	6-64	9
Nogal	59	40-69	6	44	5-73	6
Park	59	25-76	15	34	9-57	15

## Methods

The Fairbanks test site was situated on a Tanana silt loam soil (pH 6.8) which had been cleared and in production for about 58 years. The land was planted to forage oats the previous year, and the stubble received a late summer tillage. The Delta Junction test site was situated on a Nenana silt loam soil (pH 5.8) which had been cleared for 6 years. The land was fallowed the previous summer. At both sites, fertilizers were applied in the spring with a gravity-flow broadcast spreader and tilled into the soil during seedbed preparation. Plant nutrients were supplied at a rate of 90 lbs N/acre, 60 lbs P<sub>2</sub>O<sub>5</sub>/acre, 60 lbs K<sub>2</sub>O/acre, 10 lbs S/acre, and 0.5 lb B/acre.

Prior to planting, barley and wheat seeds were treated with Vitavax fungicide. Oats received no seed treatment. All grains were planted in rows 7 inches wide, at a depth of 1.5 inches, with a V-belt seeder equipped with a press wheel. Barley was planted at a seeding rate of 72 lbs/acre, wheat at 90 lbs/acre, and oats at 100 lbs/acre. The Delta Junction trials were planted on May 14, and the Fairbanks trials were planted on May 9. Weeds were controlled with a postemergence application of Brominal.

## 1985 Test Results and Variety Descriptions

Table 4 gives the results of barley, oat, and wheat variety trials conducted at Fairbanks and Delta Junction during the 1986 growing season. *Jackson* and *Svendel* were the new entries in the barley variety trials that stimulated the most interest among grain growers. *Jackson*, a 6-row barley from Alberta, produced disappointing yields. At Delta Junction, the 50 bu/acre yield of *Jackson* was well below yields of all the standard varieties. However, the 49 lb/bu test weight, good resistance to lodging, and early maturity warrants continued testing of this variety. *Svendel* is a 6-row, early-maturing barley developed by a Delta Junction seed producer. At Delta Junction, *Svendel* out-performed *Weal*, *Otra*, and *Thual*, but was exceeded in yield by *Otal*, *Datal*, and *Galt*. At Fairbanks, *Svendel* produced a yield that was about equal to *Otal*, *Otra*, and *Thual*, but was less than *Galt*, *Datal*, and *Weal*. Testing of this variety will continue in 1987.

*Hankkija's Eero*, *Hankkija's Pokko*, and *Jo 1184 (Arra)* are three barley varieties that have performed well in interior Alaska trials conducted over a 5-year period. In 1986, foundation seed for these barleys was purchased from Finland and initial seed increases were successfully grown at two Alaska locations. In 1987, registered seed of these varieties will be distributed to a select group of Alaska farmers for production of certified seed.

At both test sites, oat yields were generally lower than long-term averages. *Pol*, a very early-maturing Swedish oat, produced the highest yield (106 bu/acre) at Delta Junction. The cooler than normal August temperatures at this location favored *Pol* over varieties requiring a longer growing season. For the second year in a row, *Calibre* produced the highest oat yield (121 bu/acre) at Fairbanks. *Calibre* is a late maturing variety from Saskatchewan.

Overall, 1986 wheat yields at Delta Junction can be described as mediocre when compared to long-term averages. ACA 2569 MS 57-8, an experimental line from Norway, produced the highest yield (50 bu/acre). The cool August temperatures were likely responsible for substandard test weights of wheat. No variety produced a test weight equal to or greater than the standard of 60 lbs/bu. *Gasser* and *Park* both had a test weight of 56 lbs/bu which was the highest recorded at this location. The wheat trials at Fairbanks had yields that were a little below long-term averages. However, most varieties had good test weights. The highest yield recorded at this test site was 59 bu/acre by *Taipio*, a late maturing Finnish variety.

The origin and some selected characteristics of grain varieties included in the 1986 testing program are presented in Table 5. Appended to this report of results for the 1986 growing season are complete listings for all spring barley, oat, and wheat varieties tested since 1971 at Fairbanks and Delta Junction by the Agricultural and Forestry Experiment Station (Appendix tables A-1, 2, and 3).

**Table 4. Grain Variety Trials Conducted at Delta Junction and Fairbanks During the 1986 Growing Season.**

Variety or Experimental Line	Delta Junction University Research Farm		Fairbanks University Farm	
	Yield	Test weight <sup>2</sup>	Yield	Test weight <sup>2</sup>
	(bu/acre)	(lbs/bu)	(bu/acre)	(lbs/bu)
<b>Barley</b>				
ACA 2563 H349-204	69	47	43	43
ACA 2564 H349-220	61	45	45	44
ACA 2566 H349-348	72	46	57	45
Andre	57	49	50	48
Bowman	54	48	33	47
Datal <sup>1</sup>	69	46	47	45
Galt <sup>1</sup>	75	46	50	47
Hankkija's Eero	90	46	49	40
Hankkija's Pokko	85	45	53	42
Heartland	91	47	25	44
Jackson	50	49	38	45
Jokioinen 1184 (Arra)	77	46	43	43
Klages	62	48	48	47
Otal <sup>1</sup>	74	49	40	43
Otra <sup>1</sup>	57	45	39	40
Samson	41	42	45	43
Svendel	63	47	40	44
Thual (hulless) <sup>1</sup>	56	61 <sup>3</sup>	40	54
Tupper (hulless)	44	58 <sup>3</sup>	40	53
Weal <sup>1</sup>	56	40	52	34
Average	65	46 <sup>3</sup>	44	44 <sup>3</sup>
<b>Oat</b>				
ACA 2575-9063				
Voll/Selma	102	33	71	31
Athabasca <sup>1</sup>	105	39	87	36
Calibre	84	37	121	41
Cascade <sup>1</sup>	99	39	115	37
Fidler	96	33	87	36
Jasper	88	38	99	36
Nip <sup>1</sup>	91	36	77	32
OT 736	99	36	98	34
OT 745	102	40	112	38
Pol	106	34	79	29
Toral <sup>1</sup>	99	38	83	36
Average	97	37	94	35
<b>Wheat</b>				
ACA 2569 MS57-8	50	54	52	61
ACA 2571 MS273-150	42	54	50	61
Benito	30	50	46	62
Canuck	36	51	53	62
Chena <sup>1</sup>	39	54	40	56
Gasser <sup>1</sup>	42	56	37	56
Katepwa	32	51	50	62
Nogal <sup>1</sup>	46	54	40	56
Park <sup>1</sup>	33	56	42	60
Taava	43	50	55	60
Tapio	47	54	59	61
Ulla	44	53	44	59
Average	41	53	47	59

<sup>1</sup>Standard variety.

<sup>2</sup>The standard test weights for the above crops are as follows: barley, 48 lbs/bu; oats, 32 lbs/bu; and wheat, 60 lbs/bu.

<sup>3</sup>Test weights for hulless barleys were not included in the average.



**Table 5. Origin and Characteristics of Grain Varieties  
Tested in 1986.**

Crop variety	Origin	Maturity class	Resistance to lodging	Description
<b>Barley</b>				
ACA 2563 H349-204	Norway	early	fair	6-row
ACA 2564 H349-220	Norway	early	excellent	6-row
ACA 2566 H349-348	Norway	early	fair	6-row
Andre	Washington	late	fair	2-row
Bowman	North Dakota	late	excellent	2-row
Datal	Alaska	very early	fair	6-row
Galt	Alberta	medium	good	6-row
Hankkija's Eero	Finland	early	good	6-row, semi-dw.
Hankkija's Pokko	Finland	medium	good	6-row
Heartland	Manitoba	late	excellent	6-row
Jackson	Alberta	early	good	6-row
Jokioinen 1184 (Arra)	Finland	very early	fair	6-row
Klages	Idaho	late	fair	2-row
Otal	Alaska	very early	fair	6-row
Otra	Finland	very early	fair	6-row
Samson	Alberta	late	excellent	6-row
Svendel	Alaska	early	good	6-row
Thual	Alaska	medium	fair	6-row, hullless
Tupper	Saskatchewan	medium	good	6-row, hullless
Weal	Alaska	early	good	6-row, hooded
<b>Oat</b>				
ACA 2575-9063				
Voll/Selma	Norway	very early	excellent	yellow, short
Athabasca	Alberta	very early	excellent	yellow, short
Calibre	Saskatchewan	late	excellent	yellow, med. ht.
Cascade	Alberta	medium	excellent	yellow, med. ht.
Fidler	Saskatchewan	late	excellent	yellow, med. ht.
Jasper	Alberta	early	excellent	yellow, med. ht.
Nip	Sweden	very early	good	black, med. ht.
OT 736	Alberta	medium	excellent	yellow, med. ht.
OT 745	Alberta	medium	excellent	yellow, med. ht.
Pol	Sweden	very early	good	yellow, short
Toral	Alaska	early	good	yellow, med. ht.
<b>Wheat</b>				
ACA 2569 MS57-8	Norway	medium	excellent	short
ACA 2571 MS273-150	Norway	early	excellent	short
Benito	Manitoba	late	excellent	short
Canuck	Manitoba	late	good	med. ht.
Chena	Finland	early	fair	med. ht.
Gasser	Alaska	early	poor	med. ht.
Ingal	Alaska	very early	fair	short
Katepwa	Manitoba	medium	good	short
Nogal	Alaska	very early	fair	med. ht.
Park	Alberta	early	good	med. ht.
Taava	Finland	late	excellent	med. ht.
Tapio	Finland	late	excellent	med. ht.
Ulla	Finland	medium	excellent	med. ht.



## Appendix

### Table A-1. Barley Varieties Tested at Fairbanks and Delta Junction, 1971-1986.

Variety or Experimental Line	Years of testing		Variety or Experimental Line	Years of testing	
	Fairbanks	Delta Junction		Fairbanks	Delta Junction
Abee	2	2	Jubilee	4	4
ACA 2561 M 268	2	2	Karl	1	1
ACA 2562 P 693	2	2	Klages	1	1
ACA 2563 H 349-204	3	3	Klondike	1	2
ACA 2564 H 349-220	3	3	Larker	1	1
ACA 2565 H 349-347	2	2	Lidal	11	10
ACA 2566 H 349-348	3	3	Leduc	1	1
Advance	1	1	Lot EX1-N	1	1
Amy	1	1	Lud	2	2
Andre	1	1	Mari	2	2
Argyl	1	1	Massey	1	1
Balder	3	2	Melvin	4	5
Beacon	1	1	Mingo	1	1
Bedford	1	1	Moravian III	1	1
Belle	1	1	Norbert	1	1
Betzes	6	5	Nova	1	1
Bode	1	1	NRGB 79-2	1	1
Bonanza	3	3	Olli	7	6
Bonus	2	3	Onda	1	1
Bowman	1	1	Otis	2	0
Brock	2	0	Otal	8	8
Br 6505-5	2	0	Otra	12	14
Br 6505-21	2	0	Paavo	7	8
Br 6505-31-1	2	0	Palliser	4	2
BT 334 (Johnston)	2	2	Paragon	2	0
BT 521 (Samson)	3	3	Parkland	2	0
Carlsberg II	1	1	Piroline	3	2
Cathy	1	1	Poco	1	1
Centennial	1	2	Polaris	4	4
Conquest	2	0	Prilar	1	0
Cree	1	1	Primus II	2	1
Datal	8	8	Rovaniemi Sel. 70-B (Finnaska)	6	5
Diamond	1	1	Scout hulless	2	2
Dickson	1	0	Shabet	5	6
Dolores	1	1	Stanka	3	1
Early Carlsberg II	1	1	Steptoe	3	3
Early Freja	1	1	Strom	1	1
Early Hannchen	1	1	Summit	2	3
Edda	8	7	Svendel	1	1
Elrose	1	1	Thual hulless	4	4
Empress	2	2	Tibet hulless	5	3
Erbet	1	1	Trebi	1	0
Ershabet	2	2	Triumph	3	3
Etu	1	1	Trophy	1	0
Exp HV No.9	1	1	Tupper hulless	2	2
Exp HV No. 14	1	1	Unitan	1	0
Fairfield	3	4	Vale 70	1	1
Fergus	2	0	Weal	16	15
Firlbecks III	2	1	Weal Selection	1	1
Freja	1	1	Windsor	2	3
Frontier	1	0	62 II-62-2-378-411	3	3
Galt	16	15	66 II-62-1-209-204	1	1
Gateway 63	5	5	66 II-62-2-174-191	3	3
Hankkija's 72802	2	2	66 II-62-3-9-9	2	2
Hankkija 673	1	2	66 II-62-3-12-12	1	1
Hankkija's Aappo	1	1	67-38	1	1
Hankkija's Eero	8	9	67-488-999	3	3
Hankkija's Pokko	5	5	67-942-241	2	2
Hannchen	1	1	68-3	1	1
Harrington	1	1	70-1591-14-11	1	0
Heartland	1	1	71-584-58	1	0
Herta	1	0	71-991-63	1	0
Hiland	1	0	71 II-67-18-1	1	0
HV #52	1	1	71 II-67-19-91	1	0
Hyproly	1	0	71 II-67-21-111	1	0
Hyproly Normal	1	0	71 II-67-22-6	1	0
Jackson	1	1	71 II-67-22-18	1	0
Jokioinen 1103	4	4	71 II-67-22-125	1	0
Jokioinen 1184 (Arra)	5	5	71 II-67-22-149	1	0
Jokioinen 1315	4	4	74 Ab 4302	1	1

## Appendix

**Table A-2. Oat Varieties Tested at Fairbanks and Delta Junction, 1971-1986.**

Variety or Experimental Line	Years of testing		Variety or Experimental Line	Years of testing	
	Fairbanks	Delta Junction		Fairbanks	Delta Junction
ACA 2575-9063 Voll/Selma	3	3	Markton	1	0
Astro	1	1	Nip	16	15
Athabasca	7	8	OAC Woodstock	2	2
Calibre	3	3	Ogle	1	1
Cascade	6	6	Orbit	2	2
Cavell	6	5	OT 736	1	1
Cayuse	6	5	OT 745	1	1
Ceal	6	5	Pendek	12	12
Cherokee	1	0	Pol	5	5
Chief	1	1	Puhti	1	1
Clark	1	1	Random	6	5
Cody II	1	0	Rapida	1	0
Dumont	2	2	Rodney	13	12
Eagle	3	3	Rovaniemi Sel. (Orion)	2	2
Fidler	3	3	Russell	2	1
Foothill	2	3	Sioux	4	3
Frazer	5	5	Spear	1	1
Garry	2	1	Terra	1	2
Gemini	0	1	Toral	16	15
Glen	5	4	Valko	1	1
Golden Rain	3	2	Vicland	1	0
Grizzly	4	4	Victory	5	5
Harmon	6	5	Vouti	1	1
Hinoat	0	1	61 II-55-21-25-8	1	1
Hudson	4	3	61 II-55-21-58-14	1	1
Jasper	1	1	61 II-55-21-15-5	6	5
Kelsey	4	3	65 II-58-10-4-3	1	1
Larry	1	1	65 X-58-26-3-2	1	1
Laurent	2	2	65 X-58-33-2-2	1	1



## Appendix

**Table A-3. Wheat Varieties Tested at Fairbanks and Delta Junction, 1971-1986.**

Variety or Experimental Line	Years of testing		Variety or Experimental Line	Years of testing	
	Fairbanks	Delta Junction		Fairbanks	Delta Junction
ACA 2569 MS 57-8	3	3	MT 6728 (Isoline)	4	4
ACA 2570 MS 57-144	2	2	Napayo	0	1
ACA 2571 MS 273-150	3	3	Neepawa	4	5
Anza	1	0	Nogal	6	6
Arabian	1	1	Norana	1	1
Benito	1	1	Opal	1	0
Butte	1	1	Pac. Triple Dwarf	1	0
Canthatch	6	4	Park	16	16
Canuck	1	1	Peak 72	0	1
Capa	1	0	Pitic 62	7	5
Carpo	1	0	Polk	1	1
Colano	2	1	Rovaniemi Se. 70-W (Chena)	14	14
Columbus	1	1	Ruso	8	6
Crim	2	0	Saunders	7	6
Dundas	2	2	Selkrik	2	1
ECM 316	1	0	Sheridan	2	0
Fletcher	1	0	Siberian Bearded	3	2
Fortuna	2	1	Siberian Beardless	3	2
Garnet	1	0	Sinton	2	2
Gasser	16	16	Sonora 64	1	0
Glenlea	0	1	Springfield	0	1
Idaed	1	0	Taava	5	5
Ingal	10	10	Tapio	5	5
Katepwa	1	1	Thatcher	7	6
Kharkov (spr.)	2	1	Thatcher (insens.)	1	0
Kitt	1	0	Ulla	5	5
Leader	1	1	Vernon	2	2
Lemhi 66	1	0	Wakooma	1	1
Macoun	1	1	Wascana	1	1
Manitou	4	2	WS 1502	1	0
Mexipak	2	1	6WA 637	3	2
MN 7083	1	0	6WA 666	1	0
MN 70113	1	0	6WA 675	1	0
MT 676 (Isoline)	1	0	6WA 679	1	0
MT 671 (Isoline)	1	0	6WA 688	1	0
MT 677 (Isoline)	1	0	6WA 693	1	0
MT 6711 (Isoline)	1	0	6WA 699	2	1
MT 6717 (Isoline)	1	1	6WA 701	1	0
MT 6721 (Isoline)	1	0	6WA 725	1	0
MT 6722 (Isoline)	1	0	6WA 735	2	1
MT 6723 (Isoline)	1	0	6WA 746	5	3
MT 6725 (Isoline)	1	0	6WA 748	1	0
MT 6727 (Isoline)	1	0	5560 II-53-1-45-2	4	4



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