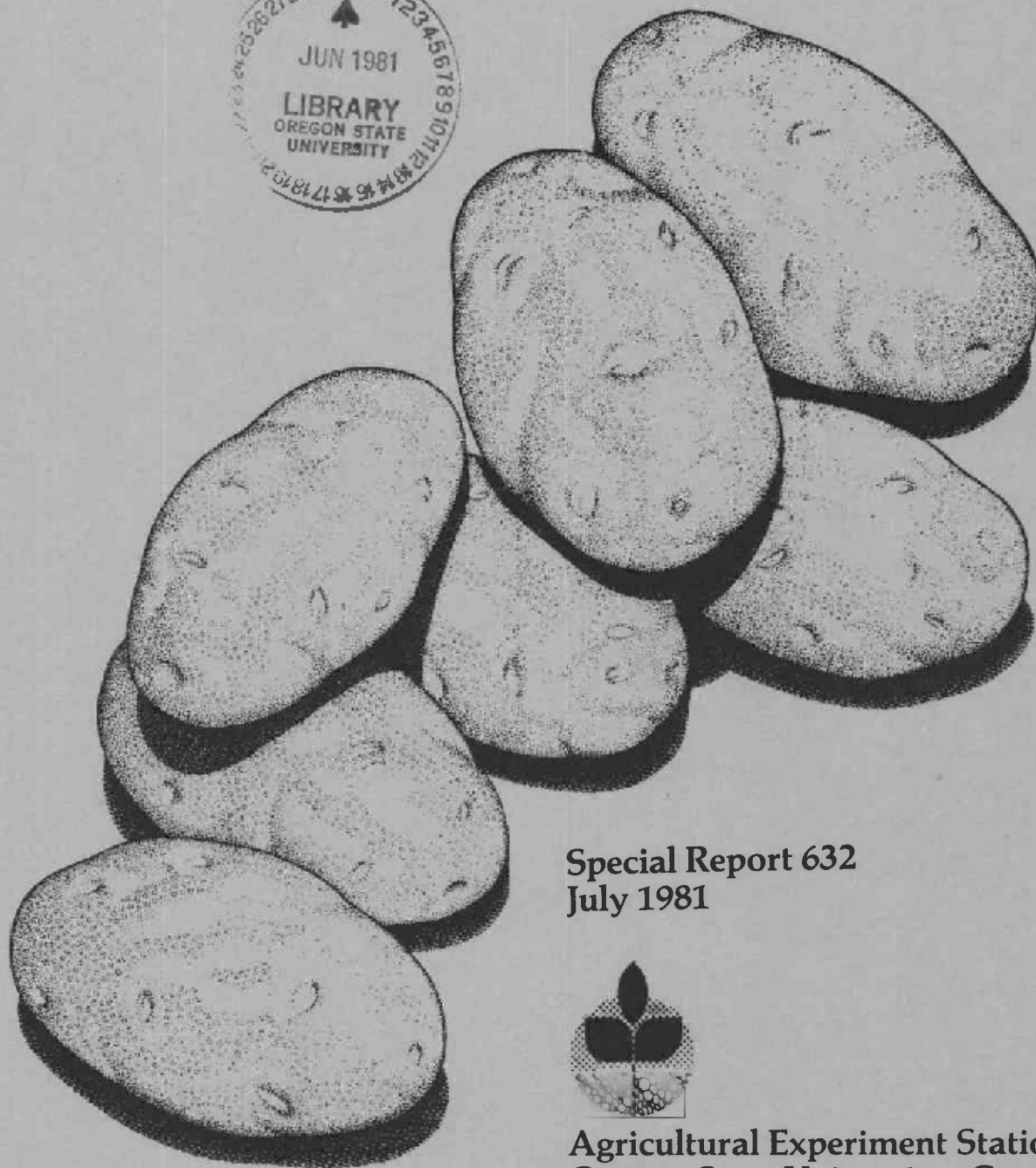
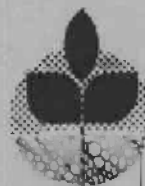


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Oregon Potato Variety Trials 1980



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Agricultural Experiment Station
Oregon State University, Corvallis

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OREGON POTATO VARIETY TRIALS -- 1980

A. R. MOSLEY, M. J. JOHNSON, G. E. CARTER,
C. E. STANGER, AND D. C. HANE

INTRODUCTION

Potato selections were compared in 15 separate plantings at four branch experiment stations, at Oregon State University, and on two commercial farms in the Columbia Basin in 1980 (see map, last page). Selections and varieties used were obtained primarily from the USDA potato breeding program at Aberdeen, Idaho, but also colleagues from the University of California, Davis, North Dakota State University, Colorado State University, the USDA potato breeding program at Prosser, Washington, and from others elsewhere.

Most entries were eye-indexed and increased at least one and usually two years before testing. Increases were made at the Central Oregon Station in Redmond using typical seed production techniques such as hand-cutting, tuber unit planting, skip rows, and severe roguing. After harvest, the increased seed was stored at the Klamath Station and shipped to the various cooperators in time for spring planting. This controlled seed increase sequence was considered important since it not only assured adequate amounts of seed for thorough testing, but also guaranteed some degree of seed uniformity among lots.

One hundred and seven (107) entries were evaluated in 1980, representing a broad range in tuber appearance, yield and internal quality (Table 1). Several of these had shown promise in earlier tests at one or more Oregon locations. Plants were grown using cultural and pest

control procedures common to the specific testing locations. Statistically sound, replicated planting designs were used in all instances. Tubers were weighed and evaluated after harvest using typical commercial quality standards.

The 1980 trials, as usual, were a cooperative effort among the Hermiston, Klamath Falls, Madras and Ontario branch stations, and the Crop Science Department at Oregon State University. Individual tests included: (1) the Oregon Statewide Trial which compared 40 entries at four locations; (2) the Western Regional Trial; (3) two on-farm trials in the Columbia Basin; (4) several tests conducted at the Malheur station, and (5) the Willamette Valley Trial at Corvallis.

Table 1. Potato Varieties and Selections
tested in Oregon in 1978-79

Selection	Locations Tested ¹			Maturity ²	Comments ³
	1978	1979	1980		
49 I 118	--	--	HKMO	L	Long rus. Lge.
A66102-12	--	--	HKMO	L	Lt. rus. Lge, rgh.
A66102-16	--	HO	O	L	Long, rgh. Deep eyes. Poor.
A66107-51	K	HKM	HKMO	M-L	Oblong rus. Dumbells. Poor.
A66122-3	--	HK	--	E	Long rus. Knobs. Int. disc.
A6789-7	K	HK	--	M	Long white. Purple flecks.
A67142-1	HK	K	--	M	
A68710-5	--	--	O	L	
A69327-5	HK	M	HKMO	M-L	O, med rus. Rgh. Poor.
A69657-4	HKO	K	K	E-M	Rgh. Green. Deep eyes.
A69868-2	HK	K	--	L	
A69870-3	--	--	HKMO	M	R-0 rus. Flat. Thick skin.
A69870-6	--	--	HKMO	M	R-0, rus. Lge, rgh.
A69870-10	--	--	HKMO	M	Huge! R-0, rus. Rots?
A70270-3	HK	HKM	HKMO	M-L	O, rus. Rgh? Good skin.
A70286-2	--	--	HKMO	?	O, light rus. OK
A70283-24	--	--	HM	E-M	Rough. Rots, int. necrosis.
A70319-11	HK	HK	--	E-M	Rough skin. Cracks. Poor.
A70365-6	HKO	HKMO	--	M	Lge rus. Hollow heart.
A70365-27	HK	HKMO	--	L	Dark rus. HH, sugar end.
A70383-24	HK	HKM	HKMO	E	Long, rgh. Rus.
A7203-3	HK	K	--	M	
A7248-13	O	O	--	M	
A7269-7	HKO	K	--	L	
A7273-3	HK	HKM	HKMO	M	R-0, Lt. rus. Pointed. Dp. eyes.
A72301-1	--	M	--	M	
A72320-11	O	HKM	--	M	Fair. HH. Sugar end.
A72320-35	O	O	--	L	Lge, some flat and pointed.
A72322-10	--	K	--	M	
A72329-15	--	HKM	--	E	Rough, cracks.
A72331-10	O	K	--	M-L	R-0, coarse rus. Shatters.
A72331-14	O	O	--	M	R-0, rus. Smooth.
A72331-17	O	O	--	E	
A72421-4	--	HKMO	--	E-M	Semi-rus. Fair.
A72450-9	--	O	E		
A72545-2	HK	HKM	HKMO	L	O, lt rus. Good. Smooth.

Table 1 (cont)

Selection	Locations Tested ¹			Maturity ²	Comments ³
	1978	1979	1980		
A72545-3	HK	K	--	L	
A72596-6	--	KM	--	E	
A72601	HK	H	--	E	Rgh skin. Hollow.
A72602-2	K	HKMO	HKMO	E-M	O, rus. Thick skin. Fries?
A72605-2	HK	K	--	L	
A72619-7	HK	HKM	--	M-L	Lt rus.
A72685-2	O	O	O	L	Blocky rus. OK.
A72687-11	--	M	--	E-M	
A7302-1	--	K	--	L	
A7346-11	O	HKM	HKMO	E-M	O, lt rus.
A7353-3	--	--	O	E	
A7353-16	--	HKM	--	M	Semi-rus. Smooth.
A7353-25	O	O	--	L	O-L, lt rus. Int flecking.
A7358-3	--	HKMO	--	L	Lt rus. Small. Hollow.
A7393-2	O	HKM	--	E-M	Smooth
A73143-4	O	O	--	E-M	Large, flat, deep eyes.
A73175-6	--	HKMO	--	E-M	Lt rus, large
A73373-6	--	--	O	E	
A73400-3	O	O	--	M-L	Round, deep eyes. Cracks. Poor
A73414-15	O	O	--	L	Long, flat. Poor.
A7403-3	--	--	HKMO	L	R-O, dark rus. Lge.
A7411-2	--	--	O	E?	
A7419-2	--	--	O	E?	
A7465-8	--	--	HKMO	--	No yield. Discard.
A7474-12	O	O	HKMO	M	Lgt. Lt rus. Cracks. Discard.
A7487-3	--	--	O	E	
A7487-5	--	O	--	M-L	
A7497-3	--	--	HKMO		O, dk. rus. OK.
A74104-1	--	O	--	E	
A74104-8	--	--	O	E	
A74104-14	--	O	--	M-L	
A74104-18	--	--	HKMO	E	R-O, lt rus. Scaly? Poor?
A74106-10	--	--	HKMO		O, dk. rus. Smooth.
A74108-1	--	O	--	M	
A74109-8	--	--	K		
A74112-1	--	O	--	M	
A74114-4	--	O	O	E-M	
A74117-9	--	O	O	M-L	
A74124-3	--	O	HKO	L	White. Late?
A74126-5	--	O	--	M-L	

Table 1 (cont)

Selection	Locations Tested ¹			Maturity ²	Comments ³
	1978	1979	1980		
A74127-2	--	0	HKMO	M-L	R-0, flat rus. Light.
A74129-4	--	--	HKMO		R-0, white to lt. rus. Good.
A74135	--	0	0	M-L	
A74183-1	--	0	0	E-M	
A74195-2	--	--	HKMO		Crescent-shape. Rgh. Poor.
A74204-4	--	--	0	E	
A74265-2	--	0	0	L	
A74343-1	--	--	K		
A74389-1	--	0	0	L	
A74391-1	--	0	--	E	
A74393-7	--	0	0	E	
A74404-3	--	0	HKMO	M	R-0, lt rus. Good.
A74406-2	--	0	--	E-M	
A74416-8	--	0	--	E	
A74543-5	--	0	0	L	
A74585-17	--	--	0	L	
A74595-11	--	0	0	M-L	
A74595-15	--	0	--	L	
A74595-17	--	0	0	E	
A74596-7	--	0	--	L	
A7578-1	--	--	0	E-M	
A7589-2	--	--	0	E-M	
A7596-1	--	--	0	M	
A75182-1	--	--	0	M	
A75188-3	--	--	0	M	
A75195-2	--	--	0	L	
A75291-4	--	--	0	M	
A75383-1	--	--	0	M	
AC67560-1	HO	HO	HKMO	E-M	Lge, round, red. Scab?
AD7267-1	--	--	H	M	
AD7377-1	--	--	H	M-L	
AK28-8	--	--	W		
ALR4-1	--	HKO	HKMO	L	R-0, lt rus. to white.
ALR22-2	0	0	0	E	
Allagash	--	--	HW	E	
Atlantic	HK	HKMOW	HKW	M	Round rus.

Selection	Locations Tested ¹			Maturity ²	Comments ³
	1978	1979	1980		
B6987-201	--	--	HW	M	
B7024-81	HO	HO	--	E	R-0, white. Scab.
BA9309-1	--	O	--	M-L	
Belchip	--	W	--	M	
Bintje	--	--	W	M-L	
Bison	HK	HKMW	--	E	Red. Smooth, small.
Butte	HO	HKMOW	HKMO	M-L	O, smooth rus. Good.
Centennial	HK	HK	--	E	Dark, pitted rus. HH.
Chieftain	HK	HKM	HKMO	E	Red. Lge.
Chipbelle	--	--	O	M	
Crystal	W	HW	W	M	R, white chipper.
Dakchip	--	HW	W	M	R, white chipper.
Delta Gold	--	--	W	M	Yellow flesh. Round.
Denali	W	HW	W	M	R, white chipper.
FL162	--	--	W	M	R, white chipper.
FL1168	--	--	W	M	R, white chipper.
Haig	--	W	--	E	Round, early chipper.
Haig (new)	--	W	--	E	Later than Haig
Kennebec	W	HW	W	M	Oblong white
Lemhi	HKO	HKMOW	HKMOW	M	O, rus. Good. Hollow?
Monona	--	W	W	M	R-0, white chipper.
Nampa	HK	HK	--	L	Long. Large eyes.
NDA451-2	--	--	O	E-M	
NDA514-2	--	--	O	E-M	
NDA8694-3	O	HKMOW	HKMO	E	R, lt rus. to white. Rgh.
NDA9249-3	--	HKMOW	H	M	Hollow?
NDD47-1	--	--	W		
Nooksack	HKO	HKMW	KW	L	R-0, Lge. Thumbnail crack.
Norchip	W	HW	W	M	R, small. Dp. eyes. Chipper.
Norgold	OW	HKMO	HKMO	E	R, smooth rus.
Norland	W	--	--	E	Red
Norland, D.R.	W	--	--	E	Red
Pioneer	HO	O	O	E	Red
R. Burbank	HKOW	HKMOW	HKMOW	L	Long rus.
R. Bur., Gen 3	--	--	HKM	L	Long rus.
R. LaSoda	--	W	--	M	Red

Table 1 (cont)

Selection	Locations Tested ¹			Maturity ²	Comments ³
	1978	1979	1980		
R. LaSoda #5	--	W	--	M	Red
R. LaSoda #10	--	W	--	M	Red
Superior	--	W	--	E	
TND14-1	--	--	W	M	
Superior, New	--	W	--	E-M	Large, late. High yields.
TXA17-1	--	O	--	L	
TXA83-1	--	O	--	M-L	
TXA218-2	--	--	O	E-M	
TXA218-5	--	--	O	E-M	
TXA218-7	--	--	O	M	
TXA331-1	--	--	O	M-L	
Targhee	HK	HKM	HKMO	M-L	R-0, dark, coarse rus.
WC435-3	--	--	HKMO		R-0, dk rus. Attached stolons
WC521-12	--	HO	HK	M-L	R, white to lt rus.
WC612-13	--	HO	H	L	R, lt rus.
WC672-2	--	--	HO	E-M	R, flat, rus.
WD641-10	--	--	H	M-L	R, dk rus.
Wn541-2	--	--	HKMO		Dark, rgh. Discard.
Wn630-5	--	--	HKMO		Long, lge white. Ok.
Wn641-11	--	--	HKMO		R-0, lt rus.
Wn667-10	--	KM	--	E-M	--
Wn670-3	--	H	--	L	Smooth, oval. Hollow. Cracks.
Wn701-14	--	HKM	HKMO	L	R-0. Rgh. Dk rus. Poor.
Wn708-5	--	H	--	E	R, white. Smooth.
Wn720-2	--	KM	HKMO	M-L	R-0, rus. OK?
Wn730-2	--	M	--	L	--

¹H = Hermiston; K = Klamath Falls; M = Madras; O = Ontario; W = Willamette Valley at Corvallis.

²E = early; M = midseason; L = late

³Shape: R = round; O = oblong; L = long. Skin: W = white; Rus = Russet.
HH = hollow heart

OREGON STATEWIDE TRIAL

Four similar plantings of approximately 40 common entries were made at the Central Oregon (Madras), Columbia Basin (Hermiston), Klamath (Klamath Falls), and Malheur (Ontario) branch stations in 1980. Each entry was replicated at least four times at each location. Individual plots were typically single rows from 20 to 30 feet long. Plants were grown and pests were controlled using commercially acceptable practices and materials.

HERMISTON

The Hermiston area is characterized by sandy soils and an extremely long, hot growing season. Yields, therefore, tend to be relatively high with new fields producing up to 35 tons per acre of Russet Burbank potatoes. Late-maturing varieties tend to perform relatively better in the Columbia Basin than in other Oregon production areas.

The Columbia Basin potato industry is based primarily on Russet Burbank for processing into french fries and other frozen products. Because current processing technology is based on Russet Burbank, replacement varieties must be similar in terms of processing and storage and even tuber conformation. Therefore, emphasis is placed on long, russet-skinned, late-maturing selections with some propensity for processing. Early-maturing russets with good tuber appearance would also be well received for fresh market.

Procedure -- Forty-one varieties and selections were planted in loamy fine sand at the Hermiston station on April 9. Seedpieces were spaced approximately nine inches apart in 34-inch rows. Plots were

single rows 25 feet long, replicated four times in a randomized block design. Fertilizer was banded at planting at the rate of 100 lbs N/acre, 150 of P_2O_5 , 150 K_2O , 60 S, and 1 lb/acre of boron. Eighty lbs/acre of additional N was broadcast on May 21 and 45 pounds was foliar-applied through sprinklers on June 13 and 30 and on July 17 for a total seasonal nitrogen rate of 315 lbs/acre.

Weeds were controlled by dalapon (5 lbs/A) on April 3, Eptam (3 lbs ai/A) on April 7, and metribuzin (1/2 lb ai/A) on June 10. Dyfonate, Temik and Monitor were used as labelled for wireworms and other insects. Approximately 30 inches of water were applied through overhead sprinklers as needed during the growing season. Fungicides were not necessary. Vines were sprayed with dinitro and oil on September 11 and the plots were harvested on September 25.

Results -- Most entries produced higher No. 1 yields than Russet Burbank (Table 2). This was not surprising since Russet Burbank as usual was very prone to second growth and other shape problems. Russet Burbank total yields were considerably above average. Entries appearing to have some promise at Hermiston included A74404-3 (which lead in total and No. 1 yields), 491118, A66102-12, A69870-3, A7403-3, Butte, Lemhi, and Targhee. A69870-3 and A7403-3 showed some tendency toward hollow heart as did Russet Burbank. A74404-3 was moderately susceptible to both hollow heart and discoloration of the vascular ring. A74404-3 will be carefully monitored for these disorders in future tests.

Table 2. Yield, Quality, and Tuber Characteristics, STATEWIDE TRIAL. Hermiston

Entry	Yield, cwt/A		% No. 1	Specific Gravity	Percent ¹		Comments ²
	No. 1	Total			HH	VD	
49 I 118	690	799	86	1.084	0.0	0.0	Long rus. Lge, immature.
A66102-12	663	773	86	1.091	0.0	0.0	Lt. rus. Lge, immature.
A66107-51	629	840	75	1.082	10.0	6.7	Long. Rgh. Deep eyes. Discard.
A69327-5	564	653	86	1.086	10.0	0.0	Oblong rus. Imm. Dumbells. Discard.
A69870-3	660	704	94	1.083	13.3	0.0	R-0 rus. Lge. Thick skin. OK.
A69870-6	666	724	92	1.076	12.5	0.0	Round rus. Lge, rgh. Deep eyes.
A69870-10	564	612	92	1.078	17.5	0.0	Huge! Rots! R-0 rus.
A70270-3	503	582	86	1.081	5.0	0.0	Oblong, att. rus. Immature.
A70286-2	532	597	89	1.078	12.5	0.0	Oblong, lt. rus.
A70383-24	561	810	69	1.084	2.5	5.0	Long, rgh. rus. Discard.
A7273-3	660	725	91	1.080	0.0	0.0	R-0 rus. Deep eyes. OK. Poor color.
A72602-2	597	662	90	1.088	2.5	0.0	Ob. rus. Mature. Thick skin. Good fry.
A7346-11	417	467	89	1.076	5.0	0.0	Oblong rus. Smooth.
A7403-3	692	751	92	1.087	5.0	0.0	R-0 rus. Lge. Dark.
A7465-8	223	267	83	1.084	0.0	0.0	Terrible! Discard.
A7474-12	610	871	70	1.081	2.5	5.0	Lt rus, rgh. Cracks. Discard. Drop.
A7497-3	547	617	89	1.083	9.2	0.0	Oblong, dk. rus. Lge, El. hide. Keep.
A74104-18	541	608	89	1.075	0.0	0.0	R-0, Lt. rus. Good.
A74106-10	420	493	85	1.081	0.0	0.0	Ob. rus. Smooth. El hide. Good.
A74124-3	450	564	80	1.075	2.5	2.5	White. Immature. Sencor susc?
A74127-2	537	610	88	1.084	0.0	0.0	Lt. rus. Imm. Flat. R-0.
A74129-4	595	639	93	1.070	15.0	0.0	R-0 white, Lt. rus. Good.
A74195-2	573	623	92	1.084	0.0	0.0	Crescent-shaped. Rgh. Discard.
A74404-3	844	957	88	1.084	6.7	10.0	R-0, Lt. rus. Good.
AC67560-1	537	643	83	1.071	0.0	2.5	Lge. round red. Bright. Scab.

(Continued on next page)

Table 2 (cont)

Entry	Yield, cwt/A		% No. 1	Specific Gravity	Percent ¹		Comments ²
	No. 1	Total			HH	VD	
ALR4-1	537	605	89	1.087	0.0	0.0	R-0, lt. rus. to wh. Smooth, green?
Butte	627	676	93	1.090	0.0	0.0	Oblong rus. Smooth. Good.
Chieftain	681	729	93	1.066	5.0	5.0	Red. Scab. Bright color.
Lemhi	653	692	94	1.087	2.5	2.5	Oblong rus. Deep eyes. Dark. OK.
NDA8694-3	421	470	90	1.072	0.0	0.0	Round wh. Lt. rus. Rgh.
Norgold	343	407	84	1.071	5.0	0.0	Small. Round rus.
R. BURBANK	495	660	75	1.085	10.0	16.7	See Gen. 3
R. Bur. Gen 3	520	701	74	1.087	6.7	10.0	Long, rgh. rus. Some rots.
Targhee	732	789	93	1.086	0.0	0.0	R-0 rus. Thick skin.
WC435-3	374	438.7	85	1.082	7.5	0.0	Dk. rus. El. hide. Attached stolons.
Wn541-2	219	310	71	1.067	7.5	0.0	Rots! Dark, rgh. Discard.
Wn630-5	597	692	86	1.085	0.0	0.0	Lge. Long white.
Wn641-11	255	285	87	1.078	0.0	0.0	Round-oblong, lt. rus. Small.
Wn701-14	480	554	86	1.090	0.0	0.0	R-0. Rgh. Dark. Discard.
Wn720-2	524	557	94	1.089	2.5	0.0	R-0 rus. Att. Immature.
Average	544	630	84	1.081	4.3	1.5	
LSD _{0.05}	164	177	--	0.006	--	--	

¹HH = hollow heart (includes brown center); VD = vascular discoloration.

²Att = attractive; EL = elephant hide; Imm = immature; Lge = large; Lt = light color; O = oblong; R = round; Rgh = rough shaped; Rus = russet; VD = vascular discoloration.

KLAMATH FALLS

Forty-seven varieties and selections were compared at the Klamath Experiment Station (Table 3). Forty of these were also tested at the other three stations as noted previously.

Procedure -- Seedpieces were hand-cut on April 21 and planted on May 13. The soil had been fumigated with 30 gal/acre of Shell DD on April 17. Fertilizer was sidedressed at planting at the rate of 550 lbs/acre of 16-20-0. Temik was also sidedressed at planting as labelled. Weeds were controlled by an aerial application of metribuzin at 0.6 lbs ai/acre on July 1. The crop was irrigated as needed. Vines were killed on September 25 and plots were harvested on September 30.

Results -- Varieties appearing to have considerable yield potential in the Klamath test included 49 I 118, A69657-4, A69870-10, A72545-2, and A74124-3 (Table 3). Some of these, notably 49 I 118 and A72545-2, also performed well at Hermiston and elsewhere. Several entries performing well at Hermiston did poorly at Klamath Falls. This was expected since the Klamath Basin growing season is considerably shorter and cooler than that of the Columbia Basin. Late-maturing varieties, therefore, theoretically would be much better adapted to the Hermiston area.

MADRAS

Growing conditions in the Madras area are similar to those at Klamath Falls, that is, relatively short-season and cool. Yields

Table 3. Yield, Quality and Tuber Characteristics,
STATEWIDE TRIAL, Klamath Falls

Entry	Yield, cwt/A ¹		% No. 1	Specific Gravity
	No. 1	Total		
49 I 118	459	516	89	1.090
A66102-12	365	445	82	1.096
A69327-5	324	414	78	1.093
A69657-4	447	566	79	1.099
A69870-3	399	488	82	1.089
A69870-6	390	434	90	1.088
A69870-10	429	473	91	1.091
A70270-3	392	434	90	1.090
A70286-2	302	393	77	1.088
A70383-24	251	365	69	1.076
A7273-3	303	340	89	1.082
A72545-2	406	496	82	1.093
A72602-2	321	395	81	1.092
A7346-11	173	233	75	1.083
A7403-3	326	393	83	1.094
A7465-8	125	171	73	1.086
A7474-12	342	461	74	1.087
A7497-3	289	362	80	1.091
A74104-18	323	376	86	1.077
A74106-10	76	130	59	1.076
A74109-8	190	345	55	1.078
A74124-3	455	575	79	1.086
A74127-2	335	400	84	1.089
A74129-4	292	337	87	1.074
A74195-2	347	384	90	1.086
A74343-1	409	479	85	1.092
A74404-3	360	442	82	1.092
AC67560-1	325	363	90	1.077
ALR4-1	300	361	83	1.103
Atlantic	232	319	73	1.094
Butte	342	442	77	1.091
Chieftain	282	352	80	1.078
Lemhi	345	399	86	1.095
NDA8694-3	201	293	69	1.073
Nooksack	392	415	94	1.102
Norgold	193	240	80	1.074
R. BURBANK, FDN	285	424	67	1.092
R.B., Gen. 1978	318	439	72	1.092
R.B., Gen. 1976	299	432	69	1.093
Targhee	275	337	81	1.093

(Continued on next page)

Table 3 (cont)

Entry	Yield, cwt/A ¹		%	Specific Gravity
	No. 1	Total		
WC435-3	260	302	86	1.087
WC521-12	342	393	87	1.103
Wn541-2	328	376	87	1.068
Wn630-5	355	394	90	1.091
Wn641-11	229	265	87	1.089
Wn701-4	263	310	85	1.098
Wn720-2	250	299	84	--
Average	311	382	81	1.088
LSD _{0.05}	207	217	--	0.005

¹Metribuzin phytotoxicity may have reduced yields of A74106-10, Wn641-11, Wn720-2, and Atlantic.

have generally been lower at Madras than at Klamath Falls, however. This has probably been because of the heavy, tight soil at Madras.

Procedure -- Forty varieties and selections were evaluated at Madras in 1980 (Table 4). The crop was grown using spacing, fertilization, irrigation, and other cultural practices common to the central Oregon area. Insects were controlled as needed; fungicides were not necessary. After harvest, tubers were weighed and graded and a few tubers from each plot were stored for mid-winter fry tests.

Results -- Yields were quite low (Table 4), averaging only 228 cwt/acre of U.S. No. 1 potatoes. Russet Burbank produced only 197 cwt. Varieties yielding relatively well at Madras included A66102-12, A69870-3, A69870-6, A69870-10, A72602-2, A7403-3, A74404-3 and Butte. Most of these showed one or more potential weaknesses. A66102-12, A59870-6 and Butte, for example, produced fries noticeably darker than those of Russet Burbank. Others, including A7403-3, had low specific gravities.

Based on high specific gravity, good fry color, and moderately high yields, A72602-2 appeared to be perhaps the most promising selection in the 1980 Madras test. A74404-3 would also have to be rated high despite some hollow heart and low specific gravity. Promising entries listed above will be tested further in 1981.

ONTARIO

Those 40 selections and varieties included in the STATEWIDE TRIALS at Hermiston, Klamath Falls and Madras were also tested at Ontario by the Malheur Station.

Table 4. Yield, Quality, and Tuber Characteristics, STATEWIDE TRIAL, Madras

Entry	Yield, cwt/A		% No. 1	oz/Tuber	Spec. Grav.	% HH	Ave. ¹		Mat ²
	No. 1	Total					Fry	Color	
49 I 118	185	333	56	8.6	1.076	11.1	1.0	L	
A66102-12	327	391	84	8.9	1.085	0.0	1.5	M	
A66107-51	216	369	59	9.2	1.080	0.0	1.6	L	
A69327-5	198	326	61	7.4	1.081	0.0	1.1	M	
A69870-3	329	397	83	9.3	1.081	0.0	0.9	M	
A69870-6	323	398	81	9.2	1.081	1.0	1.1	L	
A69870-10	300	344	87	8.2	1.082	1.0	0.8	L	
A70270-3	189	297	64	8.0	1.082	6.7	1.7	M	
A70286-2	225	353	64	8.0	1.081	6.2	1.5	L	
A70383-24	192	294	65	7.4	1.082	0.0	0.7	E	
A7273-3	235	385	61	8.6	1.080	0.0	2.6	M	
A72545-2	284	349	81	8.3	1.082	1.6	0.7	L	
A72602-2	298	389	77	8.2	1.080	0.0	0.6	E-M	
A7346-11	135	195	69	5.6	1.081	0.0	0.5	E-M	
A7403-3	309	364	85	8.9	1.083	1.1	0.5	M	
A7465-8	155	217	71	6.2	1.088	0.0	0.9	E	
A7474-12	199	306	65	10.0	1.090	15.2	1.4	M	
A7497-3	145	245	59	6.1	1.087	5.4	0.7	L	
A74104-18	162	245	66	6.9	1.078	0.0	0.7	M-L	
A74106-10	191	247	77	5.8	1.077	0.0	1.6	M-L	
A74127-2	295	392	75	8.9	1.087	0.0	1.5	L	
A74129-4	233	284	82	7.4	1.077	7.6	0.8	E-M	
A74195-2	254	348	73	10.0	1.082	0.0	1.3	L	
A74404-3	320	399	80	7.7	1.084	4.9	0.6	M	
AC67560-1	145	203	71	7.7	1.073	3.5	3.2	M	
ALR4-1	229	319	72	7.7	1.093	0.0	1.0	L	
Butte	321	421	76	6.7	1.085	0.0	1.8	L	
Chieftain	301	365	82	7.4	1.075	0.0	1.3	E	
Lemhi	207	274	76	8.5	1.090	1.4	0.6	M	
NDA8694-3	146	184	79	5.4	1.080	0.0	0.8	E	
Norgold	104	253	68	5.1	1.079	0.0	1.2	E	
R. BURBANK	197	325	61	6.6	1.089	0.0	0.9	M	
R. Bur, Gen 3	174	320	54	6.3	1.086	9.3	0.6	M	
Targhee	276	370	75	7.7	1.082	3.0	1.7	M-L	
WC435-3	238	335	71	6.7	1.073	0.0	2.8	L	
Wn541-2	139	241	58	8.0	1.069	0.0	2.0	E	
Wn630-5	260	418	62	13.7	1.087	3.1	1.5	E-M	
Wn641-11	193	244	79	7.5	1.084	0.0	0.6	L	
Wn701-14	266	343	78	7.8	1.089	2.8	1.5	L	
Wn720-2	214	254	84	7.9	1.084	0.0	0.7	L	
Average	228	316	--	7.8	1.082	2.1	1.2	--	
LSD _{0.05}	91	108	--	1.7	0.005	--	0.6	--	

¹0 = light; 3.0 = relatively dark²Based solely on vine senescence; E = early; M = midseason; L = late

Procedure -- Seedpieces were planted on April 23 and 24 in Owhyee silt loam which had been amended with 100 lbs/acre of P_2O_5 and 60 lbs of N as ammonium nitrate broadcast and moldboard-plowed during the fall of 1979. Additional ammonium nitrate was sidedressed at planting to supply 150 pounds of actual nitrogen. Captan-treated seedpieces were spaced approximately nine (9) inches apart in 34-inch rows. Temik was sidedressed at planting at 3 lbs ai/acre. Individual plots were single rows approximately 20 feet long and were replicated four times in a randomized block design.

No special production problems were encountered during the growing season. Weather was generally slightly cooler and wetter than normal. The planting was furrow-irrigated as needed. Weeds were controlled by Roneet applied in the fall of 1979 at 5 lbs ai/acre. Vines were shredded on October 6 and tubers were harvested on October 13.

Results -- U.S. No. 1 yields averaged 415 cwt/acre (Table 5). Russet Burbank yielded unusually well with 587 cwt, U.S. No. 1. Other entries yielding well were A74124-3 (642 cwt), A69870-6, A66102-16, A7474-12, and Lemhi; of these, only Lemhi appeared to be a desirable long russet. A7474-12 produced large, light-skinned tubers extremely susceptible to growth cracks. It will probably be dropped from further tests. Tubers of A74124-3 were white-skinned.

SUMMARY

Several selections performed well at one or more locations but poorly at others (Table 6). A66102-12 fell into this category, yielding well at Hermiston and Madras but poorly at Klamath Falls and

Table 5. Yield and Quality, Malheur STATEWIDE TRIAL

Selection	Yield, cwt/A		Percent ¹				Comments
	No. 1	Total	No. 1	6-10 oz	4-6 oz	> 10 oz	
49 I 118	482	658	73	12	6	55	
A 66102-16	504	560	90	20	7	63	Lt. skin. Deep eyes. Rgh.
A 66107-51	395	500	79	19	7	52	
A 69327-5	411	512	80	11	3	66	Long, med. rus. Rgh. Deep eyes
A 69870-3	487	534	91	19	6	65	Flat, blocky, Cracks. Lge., med. rus.
A 69870-6	540	583	93	16	6	70	Lge, blocky. Some flat. Dark. Cracks
A 69870-10	441	474	93	32	14	46	
A 70270-3	330	438	76	19	13	43	Lge. Rgh. Deep eyes. Drop
A 70286-2	429	510	84	20	8	56	Smooth. Long, blocky. Brown OK
A 70383-24	389	525	74	24	12	38	Lge, rgh. Long. Knots
A 7273-3	483	579	83	24	6	52	Lt. color. Pointed. Drop
A 72545-2	387	411	94	21	7	65	Good, lt. skinned. Long, blocky
A 72602-2	369	403	91	23	8	60	Round to blocky. Smooth. Cracks. Fair
A 7346-11	270	422	78	27	27	14	Poor. Sm. Tubers. Early
A 7403-3	458	492	93	26	11	56	Heavy net. R-0. Like Targhee
A 7465-8	213	247	87	31	11	44	Poor yield. Died early
A 7474-12	551	638	86	18	4	64	Lge. Lt. net. L-B. Cracks. Drop
A 7497-3	283	465	61	19	1	50	
A 74104-18	403	477	84	18	6	60	Late. May be OK
A 74106-10	412	485	85	43	21	20	
A 74124-3	642	680	94	13	4	77	
A 74127-2	298	364	82	21	5	55	Lt. net. Early. Long, smooth
A 74129-4	451	496	91	23	10	58	
A 74195-2	424	478	89	10	9	69	Poor shape. Pointed. Dark. Drop
A 74404-3	429	529	81	34	19	28	Lt. net. Variable. Drop
AC 67560-1	289	330	88	28	11	48	
ALR 4-1	493	539	89	23	12	55	
Butte	425	528	80	30	8	42	Good shape. Lge
Chieftain	609	636	95	28	10	57	Red. Small, round. Smooth
Lemhi	551	570	97	15	6	76	Good. Lge, blocky. Good net
NDA 8694-3	382	467	82	41	22	18	

Table 5. Yield and Quality, Malheur STATEWIDE TRIAL (cont.)

Selection	Yield, cwt/A		Percent ¹				Comments
	No. 1	Total	No. 1	6-10 oz	4-6 oz	> 10 oz	
Norgold	288	339	85	32	26	25	Small, smooth, round to blocky
R. BURBANK (Gen. 1)	587	760	77	25	11	41	Good for R.B. Smooth, lge.
Targhee	250	484	93	19	4	70	Coarse, heavy net. Shatter. R-B
WC 435-3	428	463	93	25	16	51	R-B. Coarse, heavy net. Poor skin
Wn 541-2	359	433	83	13	5	64	Lge, rgh. Med. net
Wn 630-5	455	491	92	15	4	73	Lge. Light skin. OK
Wn 641-11	290	307	94	19	6	69	Lge, blocky. Good skin
Wn 701-14	336	413	82	29	9	43	Med. net. Pears. Deep eyes. Drop
Wn 720-2	394	441	89	19	6	64	L-B. Med net. Not good
Average	415	491	--	--	--	--	
LSD .05	--	40	--	--	--	--	

¹Size ranges based on U. S. No. 1 potatoes

Table 6. Yield, Quality and Tuber Characteristics, Oregon STATEWIDE Trial

Selection	Yield, cwt/A ¹				Specific Gravity			Avg Color ²	Comments ³
	H	KF	M	O	H	KF	M		
49 I 118	690	459	185	482	1.084	1.090	1.076	1.0	Long rus. Late.
A66102-12	663	365	327	270	1.091	1.096	1.085	1.5	Light rus. Late.
A66107-51	629	319	216	395	1.082	1.087	1.080	1.6	Long, rough. Discard.
A69327-5	564	324	198	411	1.086	1.093	1.081	1.1	Oblong rus. Knobs. Discard.
A69870-3	660	399	329	487	1.083	1.089	1.081	0.9	R-0 rus. OK. Thick skin.
A69870-6	666	390	323	540	1.076	1.088	1.081	1.1	Round rus. Rough. Deep eyes.
A69870-10	564	429	300	441	1.078	1.091	1.082	0.8	Huge! Rots. R-0 rus.
A70270-3	503	392	189	330	1.081	1.090	1.082	1.7	Oblong, good rus. Late?
A70286-2	532	302	225	429	1.078	1.088	1.081	1.5	Oblong. Light rus.
A70383-24	561	251	192	389	1.084	1.076	1.082	0.7	Long, rough, rus. Discard.
A7273-3	660	303	235	483	1.080	1.082	1.080	2.6	R-0 rus. Deep eyes. OK.
A72545-2	—	406	284	398	--	1.093	1.082	0.7	Oblong light rus. OK.
A72602-2	597	321	298	369	1.088	1.092	1.090	0.6	Oblong rus. Early? Good skin.
A7346-11	417	173	135	270	1.076	1.083	1.081	0.5	Oblong rus. Smooth.
A7403-3	692	326	309	458	1.087	1.094	1.083	0.5	R-0 rus. Large, dark.
A7465-8	223	125	155	213	1.084	1.086	1.088	0.9	AWFUL! Discard.
A7474-12	610	342	199	551	1.081	1.087	1.090	1.4	Light rus. Cracks. Discard.
A7497-3	547	289	145	283	1.083	1.091	1.087	0.7	Oblong, heavy rus. Keep.
A74104-18	541	323	162	403	1.075	1.077	1.078	0.7	R-0. Light rus. Good.
A74106-10	420	76	191	—	1.081	1.076	1.077	1.6	Oblong, heavy rus. Smooth.
A74124-3	450	455	—	642	1.075	1.086	--	—	White, late. Metribuzin inj.
A74127-2	537	335	295	298	1.084	1.089	1.087	1.5	Light rus. Late. Flat. R-0.
A74129-4	595	292	233	451	1.070	1.074	1.077	0.8	R-0. Light rus. Good.
A74195-2	573	347	254	424	1.084	1.086	1.082	1.3	Crescent-shaped. Discard.
A74404-3	844	360	320	429	1.084	1.092	1.084	0.6	R-0. Light rus. Good.
AC67560-1	537	325	145	289	1.071	1.077	1.073	3.2	Red. Large, round. Scab.
ALR4-1	537	300	229	493	1.087	1.103	1.093	1.0	R-0. Light rus. Smooth.
Butte	627	342	321	425	1.090	1.091	1.085	1.8	Oblong rus. Smooth.
Chieftain	681	282	301	609	1.066	1.078	1.075	1.3	Red. Scab. Bright color.
Lemhi	653	345	207	551	1.087	1.095	1.090	0.6	Oblong rus. Dark. OK.
NDA8694-3	421	201	146	382	1.072	1.073	1.080	0.8	Round, light rus. Rough.
Norgold	343	193	104	288	1.071	1.074	1.079	1.2	Small, round rus.
R. BURBANK	495	285	197	—	1.085	1.092	1.089	0.9	Long, rough rus.
R.B., Gen. 1	520	318	174	587	1.087	1.092	1.086	0.6	--
Targhee	732	275	276	250	1.086	1.093	1.082	1.7	R-0, heavy rus.
WC435-3	374	250	238	428	1.082	1.087	1.073	2.8	Dark rus. Attached stolons.
Wn541-2	219	328	139	359	1.067	1.068	1.069	2.0	Dark, rough. Rots. Discard.
Wn630-5	597	355	260	455	1.085	1.091	1.087	1.5	Large, long white.
Wn641-11	255	229	193	290	1.078	1.089	1.084	0.6	R-0, light rus.
Wn701-14	480	253	266	336	1.090	1.098	1.089	1.5	R-0. Rough. Discard
Wn720-2	524	250	214	394	1.089	--	1.084	0.7	R-0, rus. Good. Late?
LSD _{0.05}	164	207	91	—	0.006	0.005	0.005	0.6	
Average	544	311	228	415	1.081	1.088	1.082	1.2	

¹U.S. No. 1 potatoes. H = Hermiston; KF = Klamath Falls; M = Madras; O = Ontario.

²Madras location only. 0 = light; 3 = relatively dark.

³Observations based on Hermiston planting. R-0 = round to oblong; rus = russet.

Ontario. Among varieties yielding well at all locations, A74404-3, A69870-6, and A69870-3 were noteworthy. Based on yield, tuber conformation and fry color, A74404-3 may have been the most promising selection statewide in 1980. It did have faults, however, in that skins were light-colored and specific gravity was only slightly higher than average and lower than Russet Burbank.

Lemhi produced good yields of attractive, long, well-russeted tubers at most locations. Storage and shelf-life were quite poor in some instances, however. Shatter bruise and resultant internal darkening were very noticeable in Lemhi at several instances. Methods of reducing these disorders will be investigated at Hermiston in 1981.

HERMISTON TRIALS

Five variety trials in addition to the STATEWIDE TRIAL were conducted by the Hermiston station in 1980. Three of these were located in commercial fields under center-pivot irrigation. The remaining two tests, the Western Regional and Early Harvest trials, were situated at the station headquarters.

WESTERN REGIONAL TRIAL

Thirteen varieties and selections were evaluated in the Western Regional trial in 1980 (Table 7). Several of these were also tested in one or more trials at the Malheur station.

Procedure -- The crop was grown using procedures outlined previously for the Hermiston STATEWIDE TRIAL. As noted, the crop was planted on April 9. Seedpieces were spaced about nine (9) inches apart. Plots were single rows 25 feet long, replicated four times. Vines were sprayed with dinitro plus oil on September 11 and tubers were harvested on September 30.

Results -- U.S. No. 1 yields averaged only 459 cwt/acre (Table 7) compared to 544 for the Hermiston STATEWIDE TRIAL (Table 2). Lemhi appeared to be the most promising selection based on yield, tuber conformation and skin and specific gravity. A72545-2, AD7267-1, WC612-13, WC672-2, and WC521-12 also appeared to have some promise. The WC selections resembled chipping varieties in that tubers were round. Long tubers are considered best for producing french fries. The early-maturing WC672-2 appeared to have considerable potential despite a slight tendency toward hollow heart. WC672-2 and WC521-12 will be compared to Norchip for chipping in 1981 tests.

Table 7. Yield and Performance of Western Regional Entries, Hermiston

Selection	Yield, cwt/A		Percent		Ave. wt oz	Spec. Grav.	Percent ¹		Mat. ²	Comments
	No. 1	Total	No. 1	No. 2			HH	BC		
A72545-2	533	582	92	3	11.2	1.083	0	0	3.0	Oval-shaped. Semi-rus. Smooth. Netted skin. Susc. scab.
AC67560-1	392	440	89	4	10.4	1.071	0	0	3.0	Red, round. Susc. scab. Rough. Dull color.
AD7267-1	537	623	86	9	14.3	1.074	4	0	3.0	Oblong-long rus. Good skin. Late. Shatters. Large!
AD7377-1	474	552	86	7	14.2	1.072	6	0	4.0	Large, oblong rus. Smooth. Late?
Atlantic	463	496	93	2	9.3	1.092	5	7	3.0	Round, light rus. Shatters.
B6987-201	378	453	83	7	9.1	1.099	1	0	3.0	Round wh. to rus. Flat. Late or extremely susc. mech. inj.
Lemhi	567	645	88	8	13.9	1.087	0	0	3.0	Oblong, att. rus. Smooth.
Norgold	343	407	84	0	7.9	1.071	-	-	2.0	
R. Burbank	378	563	67	21	9.6	1.091	5	23	4.0	Better than usual.
WC521-12	613	714	86	7	15.5	1.099	3	2	3.0	Round, semi-rus. Large. Susc. mech. inj! Chipper?
WC612-13	558	613	91	5	12.3	1.091	0	1	4.0	Large, round white. Late? Scab.
WC672-2	553	593	93	2	11.9	1.086	6	20	2.5	Round, flat rus. Good skin. Slight scab.
WD641-10	184	228	81	2	8.3	1.080	1	0	3.5	Small, round rus. Late? Susc. fusarium rot?
Average	459	531	86	5.9	11.4	1.084	2.6	4.4	3.1	
LSD _{0.05}	119	135	--	--	--	0.003	--	--	--	

¹HH = hollow heart; BC = brown center

²Estimates based on vine senescence: 1 = extremely early; 5 = extremely late.

EARLY HARVEST TRIAL

Procedure -- Ten varieties and selections presumed to have some potential for early fresh market in the Columbia Basin were compared to the standard early russet Norgold at the Hermiston station (Table 8). The crop was planted, cultured, and otherwise handled as described for the STATEWIDE and Western Regional tests. Seedpieces were planted on March 27 and tubers were harvested on August 7.

Results -- Lemhi was by far the most promising entry, with high yields of long, well-russeted and relatively mature tubers (Table 8). The red-skinned Chieftain also yielded well but tubers softened quickly in storage. It would appear from these tests that Lemhi may be markedly better for early fresh market than the standard variety Norgold. Further comparisons of Norgold and Lemhi will be made in 1981.

OFF-STATION TRIALS

Procedure -- Three plantings were made in commercial fields under center-pivot irrigation. One planting was accidentally harvested by the grower and harvest information was therefore lost. Plantings were located near pivot roads for easy access. The crops were grown using the grower's normal procedures.

Results -- Large differences in yield were observed between the two locations (Tables 9 and 10). Soil-borne diseases such as verticillium probably accounted in part for these differences. A72545-2 and WC612-13 yielded well at both locations. A72545-2 tubers were oblong with light russet skins; some tendency toward scabbiness and

Table 8. Yield and Performance, Early Harvest Trial¹, Hermiston

Selection	Yield, cwt/A		Percent		Ave. wt. oz	Specific Gravity	Skin ² Feathering	Comments ³
	No. 1	Total	No. 1	No. 2				
A 69870-6	334	403	83	9	7.6	1.066	1.4	Soft. Alligator skin
A 70383-24	260	373	70	16	7.6	1.068	1.6	Rots. Int. necrosis. Rough
A 72602-2	454	526	86	8	7.4	1.084	1.2	Att. rus. Soft, skinning
A 7465-8	203	270	75	11	7.6	1.085	0.4	Good. Long rus. Mature
Chieftain	513	569	90	5	7.6	1.066	2.5	Red. Soft
Lemhi	506	621	81	10	7.5	1.080	0.4	Beautiful; firm; thick skin
NDA 8694-3	363	461	79	11	6.4	1.075	1.0	Shrivelled. Light rus. Scab
NDA 9249-3	363	469	77	16	7.9	1.077	1.6	Severe skinning scab. Light color
Norgold	267	348	77	9	6.4	1.076	0.4	Thumbnail crack. Firm
Targhee	298	375	80	11	6.7	1.074	0.8	Some skinning
Wn 630-5	229	351	65	21	11.3	1.078	1.5	Rots! Long white. Skins!
Average	344	433	78	11	7.6	1.075	1.1	
LSD .05	100	101	--	--	--	0.003	--	

¹ Planted March 27; harvested August 7.

² 0 = none; 3 = severe.

³ Observations made on August 21, 17 days after harvest and storage at 45°F.

Table 9. Yield, Quality, and Performance of Eight Potato Selections Under Commercial Conditions, Eagle Ranch, Hermiston

Selection	Yield, cwt/A		Percent		Avg. wt. oz	Specific Gravity	Comments
	No. 1	Total	No. 1	No. 2			
A 72545-2	810	898	90.2	2.2	11.2	1.086	Mild shatter
B 6987-201	435	526	82.6	7.5	12.2	1.094	Mild scab, feathering
Butte	779	840	92.7	4.5	12.0	1.088	Some scab, shatter
Lemhi	785	816	96.2	1.6	14.1	1.092	Minor scab
R. BURBANK	687	811	84.7	8.5	12.2	1.084	--
Targhee	693	746	92.9	1.9	11.1	1.086	Elephant hide
WC 521-12	742	843	88.0	4.8	12.2	1.092	Mod. shatter. Green
WC 612-13	795	841	94.6	2.0	13.2	1.092	Severe scab. Shatter
Average	716	790	90.2	4.1	12.3	1.089	--
LSD .05	113	120	--	--	--	0.004	--

Table 10. Yield, Quality, and Performance of Eight Potato Selections Under Commercial Conditions, Royal Farms, Hermiston

Selection	Yield, cwt/A		Percent		Avg. wt. oz	Specific Gravity	Skin ¹ set	Comments ²
	No. 1	Total	No. 1	No. 2				
A 72545-2	658	744	88.4	6.8	10.0	1.089	2.5	S.B.
Atlantic	408	489	83.4	12.8	9.2	1.095	1.0	--
Butte	365	474	77.0	9.9	9.7	1.087	1.3	--
Lemhi	564	749	75.3	20.4	11.5	1.089	0.7	G.C.
R. BURBANK	355	557	63.7	25.6	9.7	1.089	0.5	--
R. Burbank (Grower)	332	506	65.6	25.8	7.9	1.084	0.8	--
Targhee	465	575	81.0	11.6	10.5	1.087	0.8	S.B., E.H.
WC 521-12	496	676	73.3	22.5	11.8	1.104	2.0	S.B., scab
WC 612-13	652	784	83.1	12.6	11.1	1.098	2.5	S.B., scab
Average	477	617	76.7	16.4	10.1	1.091	1.3	--
LSD .05	120	147	--	--	--	0.007	--	--

¹1 = good; 3 = poor

²E.H. = elephant hide; G.C. = growth cracks; S.B. = shatter bruise

shatter bruise was noted. WC612-13 produced predominantly round, russeted tubers with severe scab and some shattering. Lemhi performed better than Russet Burbank and Butte at both locations.

Based on tuber conformation and overall performance at both locations, A72545-2 and Lemhi appeared to be the most promising entries. WC521-12 seemed to have some potential for chipping but tubers were too round for french fries.

MALHEUR TRIALS

Approximately 50 selections and varieties were compared at the Malheur station in 1980 in addition to those in the STATEWIDE test. Entries were selected primarily from the Aberdeen, Idaho, breeding program and, to a lesser extent, from other Western regional potato programs. Newly obtained selections were tested in a preliminary trial with early and late harvest dates while previously tested and/or selections known to be promising were compared in an advanced test with early and late harvest dates.

Procedure -- These trials were planted and cultured as described earlier for the Ontario STATEWIDE trial. However, plots for the preliminary trials were only about 15 feet long and replicated three times compared to almost 20 feet and 4 replicates for the advanced trials. Further, early-harvest plots were vine-shredded on August 4 and tubers were harvested on August 12 as compared to October 6 and October 13, respectively, for late-harvested plots.

Results (Advanced Trials) -- Seven varieties and selections were compared to Norgold in the Advanced Early Harvest Trial (Table 11). Several outyielded Norgold and seemed to be of equal quality and appearance. Lemhi and NDA8694-3 appeared to be most promising. Both have been planted fairly extensively in the Ontario area but with variable results. Lemhi yields and quality at harvest have been satisfactory but serious questions have arisen concerning harvest injury (shatter bruise), storage and shelf-life. NDA8694-3, on the other hand, has been susceptible to early dying associated with premature seedpiece decay and possibly other factors.

Table 11. Yield and Quality, Advanced Early Harvest Trial,¹ Malheur

Selection	Yield, cwt/A		Percent		Percent		Comments
	No. 1	Total	No. 1	No. 1 6-10 oz	Red. Sugar	Solids	
A7487-3	264	391	68	30	--	20.97	Good net and color. Too small.
A74114-4	377	483	78	33	--	20.83	--
ALR22-2	473	582	81	36	0.11	20.33	Mostly small, round. Light net and color. Small.
Lemhi	481	581	82	33	0.11	23.13	Good type, size and yield.
NDA8694-3	456	559	81	32	0.06	19.57	Looks good. Med. net and color. Better than Norgold.
Norgold	342	439	78	35	0.12	19.07	Good skin. Smooth, good size.
Pioneer	487	570	85	32	0.12	20.07	Looks good. Red.
R. Burbank	336	522	64	29	0.11	20.40	Variable shape and size.
Average	402	516	77	32	0.10	20.55	
LSD _{0.05}	--	99	--	--	--	--	

¹Planted April 23 and 24; harvested August 12.

Thirteen selections and varieties were compared in the Advanced Late Harvest Trial (Table 12). Several produced higher U.S. No. 1 yields than Russet Burbank. A66102-16, A72685-2, A74585-17, Butte, and Lemhi appeared to have considerable potential and will be included in subsequent tests.

Russet Burbank seed from Tetonia appeared to be superior to Aberdeen seed in both yield and quality.

Results (Preliminary Trials) -- Eleven selections were compared to Norgold in the Preliminary Early Harvest Trial (Table 13). The most promising entries included A7589-2, A75195-2, NDA8694-3, Pioneer, and TXA218-7. TXA218-7 appeared to be promising red compared to Pioneer.

Twenty-two entries were compared in the Preliminary Late Harvest Trial (Table 14). Among the entries worth further study, A7419-2, A75188, TXA218-2, and TXA218-5 were prominent.

Table 12. Yield and Quality, Advanced Late Harvest Trial¹, Malheur

Selection	Yield, cwt/A		Percent		Percent ²		Comments
	No. 1	Total	No. 1	No. 1 6-10 oz	Red. Sugar	Solids	
A 66102-16	688	790	87	23	0.11	24.56	Smaller than usual; good shape & skin
A 68710-5	477	723	65	15	--	--	Rough! Discard
A 72685-2	707	793	89	25	0.17	26.50	Blocky, smooth. Too short?
A 74127-2	497	605	82	27	0.17	24.56	Light net & color. Long, large. Early?
A 74265-2	412	505	81	31	--	--	Dark. Smooth, small
A 74389-1	554	598	92	22	--	--	Med. net & color. Rough. Blocky
A 74585-17	602	719	84	16	0.07	24.52	Light net & color. Large. Smooth
A 74595-11	533	592	90	41	--	--	Dark. Short. Cracks
Butte	612	729	84	25	0.19	24.02	Large, good size & yield for Butte
Chipbelle ³	457	553	82	29	--	--	Variable. Flat, round. Light net & color. Not impressive
Lemhi	672	756	89	26	0.07	25.32	Good. Large. Blocky. Dark
R. Burbank (AB) ⁴	382	641	60	19	0.10	23.45	Not as good as Tetonia
R. Burbank (Tet.) ⁵	448	724	62	20	0.08	24.81	Good Burbanks
WC 672-2	607	699	87	27	--	--	
Average	546	673	81	25	0.12	24.72	
LSD .05	--	127	--	--	--	--	

¹Planted April 23 and 24; harvested August 12.

²Data courtesy of Ore-Ida, Ontario. Percent solids determined by oven-dry method. Percent reducing sugar determined as percent of fresh weight.

³Tested as B 6987-184.

⁴Seed grown at Aberdeen, Idaho.

⁵Seed grown at Tetonia, Idaho.

Table 13. Yield and Quality, Preliminary Early Harvest Trial, Malheur.

Selection	Yield, cwt/A		Percent ¹					Maturity ²	Comments
	No. 1	Total	No. 1	6-10 oz	4-6 oz	> 10 oz	< 4 oz		
A 7589-2	482	534	91	18	67	6	3	2.7	Med. net & color. Excellent. Good size
A 75182-1	385	478	80	38	25	18	15	3.3	Med. net. Good Shape. OK
A 75195-2	494	591	84	41	22	20	13	4.7	Med. size & net. Blocky. OK
NDA 451-2	345	444	78	31	27	19	18	2.3	Good net, color & size. Smooth. Some pears.
NDA 514-2	247	281	65	23	22	20	25	2.7	Good net & color. Smooth
NDA 8694-3	480	603	80	31	28	20	16	2.3	Var. size. Better than Norgold
Norgold (Ore.)	348	416	94	36	26	21	14	2.0	Excellent net & color
Pioneer (Ab.)	458	538	85	37	32	16	12	3.3	OK. Good size & shape
R. Burbank (Ab.)	286	475	60	29	11	20	20	5.0	Good set. Fair size
TXA 218-7	481	527	91	23	60	8	4	3.3	Red. Nice. Good yield & size
TXA 331-1	337	459	73	24	38	12	14	4.0	Good size. Only fair
Average	394	495	80	30	32	16	14	3.2	----
LSD .05	--	88	--	--	--	--	--	---	----

¹Tuber size ranges based on U.S. No. 1 potatoes planted April 23 and 24, harvested August 12.

²1 = very early; 5 = very late

Table 14. Yield and Quality, Preliminary Late Harvest Trial, Malheur

Selection	Yield, cwt/A		Percent ¹				Comments
	No. 1	Total	No. 1	6-10 oz	4-6 oz	> 10 oz	
A 7353-3	340	464	73	26	18	29	Flat. Good net & color
A 73373-6	321	409	78	27	16	36	Poor yield & size. var. drop
A 7411-2	447	547	82	20	12	50	Good net. Too long, thin
A 7419-2	519	641	81	8	5	68	
A 7474-12	436	636	68	19	7	43	Lge, rgh. Cracks. Drop
A 74104-8	457	583	78	15	4	59	
A 74104-18	354	461	76	19	8	49	
A 74117-9	431	535	80	31	16	33	Lt. net. Blocky. Small
A 74135-2	318	402	79	19	7	53	Flat. Cracks. Drop
A 74183-1	366	438	84	32	22	29	Mediocre. Drop
A 74204-4	407	484	84	30	22	31	Small. Yield? Drop?
A 74393-7	258	349	74	26	27	21	No yield. Drop
A 74543-5	490	586	83	11	3	69	Red. Lge, rgh
A 7578-1	440	529	83	17	10	56	Early. Not att. Poor
A 7596-1	470	561	84	39	13	34	Dark. Cracks. Deep eyes
A 75188-3	606	725	84	15	8	61	Good yield & size. Rgh. Lt. color
A 75291-4	417	526	79	28	14	38	Var. size. Poor
A 75383-1	428	497	86	26	15	45	Med. net & color. R., flat
A 75596-7	438	611	86	36	17	32	Small. Short. Discard
R. Burbank (Aberdeen)	269	491	55	16	5	33	
TXA 218-2	555	636	87	17	7	63	Blocky. Uniform. Med. net
TXA 218-5	585	666	88	21	6	61	
Average	425	535	80	23	12	45	
LSD .05	--	116	--	--	--	--	

¹Size ranges based on U. S. No. 1 potatoes

WILLAMETTE VALLEY CHIPPING TRIAL

The Willamette Valley is characterized by prolonged winter rains which sometimes start in late September or early October and may continue through early May. Late blight is often severe because of light rains and heavy morning fogs in August and September. Soils tend to be somewhat heavy and, therefore, increase wet weather problems. Because of these restrictions, potato production is geared primarily toward chipping and local fresh market potatoes.

Procedure -- Nineteen varieties and selections were evaluated for chipping and fresh market at Corvallis in 1980. All entries were replicated four times in a randomized block design except as noted. Seed was obtained from various sources -- a factor which may have had considerable bearing on performance.

Several entries showed moderate to severe metribuzin injury. TND 14-1 and B6987-201, for example, were almost destroyed; others, including Atlantic, Kennebec, Denali, FL 162, and Ak 28-8, were moderately injured. Russet Burbank showed mild bronzing of the leaves.

Chips were fried on January 13 after 2 to 3 weeks reconditioning at approximately 55°F preceded by prolonged storage at 35 to 40°F. Chips were fried for 2.5 minutes at 375°F in "Fri-All" oil.

Results -- Several entries yielded fairly well (Table 15) but failed to perform otherwise. Crystal, for example, yielded extremely well with 363 cwt/A of U.S. No. 1 potatoes, but tubers were somewhat large and rough with enlarged lenticels. Further, Crystal

Table 15. Yield and Quality Characteristics of 19 Potato Varieties and Selections, Corvallis

Entry	Yield, Cwt/A		Percent			Specific Gravity	Avg. Chip Color	Comments
	No. 1	Total	No. 1	<4 oz.	Culls			
AK 28-8*	310	417	74.3	14.3	11.3	1.090	3.0	---
Allagash	231	297	77.3	11.4	11.3	1.079	3.0	Oblong, smooth russet
Atlantic	210	316	66.1	14.9	18.9	1.090	2.3	Smooth, round, semi-rus
B 6987-201*	42	82	50.7	26.1	23.1	--	3.0	Severe Sencor injury
Bintje	299	425	69.6	18.9	11.3	1.085	3.5	Yellow flesh, creamy tan skin, netted
Crystal	363	487	75.0	11.1	13.9	1.083	4.0	Round, white, some enlarged lenticels; GOOD
Dakchip	248	346	70.7	19.1	10.2	1.078	3.5	Round, white, small; skins feathered badly
Delta Gold	302	446	70.5	7.0	22.4	1.090	4.0	Large, white; yellow flesh; green; thick skins
Denali	368	442	83.2	8.3	8.3	1.099	3.2	Large, round; tan-skinned tubers; smooth; GOOD
FL 162	263	378	69.9	10.7	19.4	1.088	3.0	White; large, rough; cracks, greening
FL 1168	294	403	75.2	14.5	10.2	1.078	3.2	Attractive round semi-rus.; resembles Atlantic
Kennebec	346	491	70.6	3.5	25.6	1.090	3.5	Large, rough; green
Lemhi	356	453	76.5	8.1	15.3	1.089	3.0	Attractive long rus.; darker than Burbank
Monona	343	439	78.1	7.7	12.2	1.077	2.7	White; deep eyes; rough, large
NDD 47-1*	332	380	87.2	12.8	24.9	1.065	5.0	---
Nooksack	357	426	83.4	6.9	9.6	1.099	4.7	Oblong rus.; attractive
Norchip	196	314	62.3	24.0	13.6	1.086	2.2	Small, creamy white; round
R. Burbank	364	588	61.4	16.6	21.9	1.086	3.5	Very smooth for Burbank
TND 14-1	68	105	67.5	23.4	9.2	1.088	3.2	Oblong rus.; severe Sencor injury
Average	278	381	72.9	13.6	15.4	1.086	3.3	---
LSD .05	108	126	13.0	7.9	13.1	0.004	---	---

*unreplicated

produced darker than average chips and specific gravity was somewhat low compared to Denali, for instance (Table 16). Denali appeared to be a promising chipping variety in that yields were good, chips were light-colored, and specific gravity was quite high at 1.099. Tubers of Denali were still firm when chipped while those of Crystal, Kennebec, and Norchip were noticeably shrivelled and Monona tubers were soft. Monona yielded and fried well but specific gravity was poor, tubers were dehydrated, and chip flavor was slightly bitter at frying. Norchip yielded poorly but produced light-colored chips.

Atlantic yielded unusually poorly, possibly because of excessive metribuzin injury. Atlantic will be tested further in 1981. The chipping entries Dakchip, Delta Gold, FL 162, and FL 1168 did not appear to be promising; B6987-201 and TND 14-1 may have yielded poorly because of excess metribuzin injury.

Lemhi has been considered primarily for fresh market and french fry processing. However, it chipped fairly light and flavor was generally good but sometimes bland. Russet Burbank graded and yielded extremely well in 1980. In past years, it has performed poorly compared to Lemhi in the Willamette Valley. Nooksack performed moderately well despite a tendency to emerge late. Nooksack seed should be warmed for 2 to 3 weeks at 55° before planting. Allagash produced low yields of oblong, smoothly russeted tubers. It may have some potential as an early-maturing fresh market russet and will be tested further along with AK 28-8, Atlantic, B6987-201, Denali, Kennebec, Lemhi, Monona, Nooksack, Norchip, and Russet Burbank. Several new entries, including two to three reds, will be introduced in 1981.

Table 16. Chipping and Storage Performance, Willamette Valley Trial

Selection*	Color ¹			Flavor	Tuber ² Firmness	Tuber app.	Sprout lgth., in.	Comments
	Avg.	V. Ring	Pith					
AK 28-8*	3.0	3.0	3.0	Bland	2	Nor.	---	Dark vas. ring
Allagash	3.0	2.2	3.0	Good	2-3	Nor.	0.5	--
Atlantic	2.3	2.3	2.3	Bland	2	Nor.	0.7	--
B 6987-201*	3.0	3.0	3.0	Good	2	Nor.	---	Dark ring
Bintje	3.5	3.0	4.2	Bland-Bitter	2	Nor.	0.5	--
Crystal	4.0	3.2	4.2	Good	1	Shriv.	0.5	Dark ring
Dakchip	3.5	3.2	3.2	Bitter-Good	1	Shriv.	1.0	--
Delta Gold	4.0	3.0	5.0	Bitter	1-2	Soft	0.5	--
Denali	3.2	3.0	3.5	Good	2	Nor.	0.5	--
FL 162	3.0	3.0	3.0	Bland-Bitter	2	Nor.	0.5	--
FL 1168	3.2	2.7	3.2	Bland	2	Nor.	---	--
Kennebec	3.5	2.7	3.7	Good-Bland	1	Shriv.	0.5	--
Lemhi	3.0	2.7	3.0	Good-Bland	2	Nor.	0.5	--
Monona	2.7	2.7	3.0	Good-Bitter	1	Soft	0.5	--
NDD 47-1*	5.0	3.0	6.0	Bitter	3	Nor.	---	--
Nooksack	4.7	3.7	5.0	Bitter	3	Nor.	---	Dark ring
Norchip	2.2	2.2	3.0	Good	1	Shriv.	0.5	--
R. Burbank	3.5	3.2	4.2	Bland	3	Nor.	---	Dark ring
TND 14-1	3.2	3.0	4.2	Good	3	Nor.	0.7	Dark vas. ring

*One replicate only
¹1 = light; 10 = dark
²1 = soft; 3 = firm

