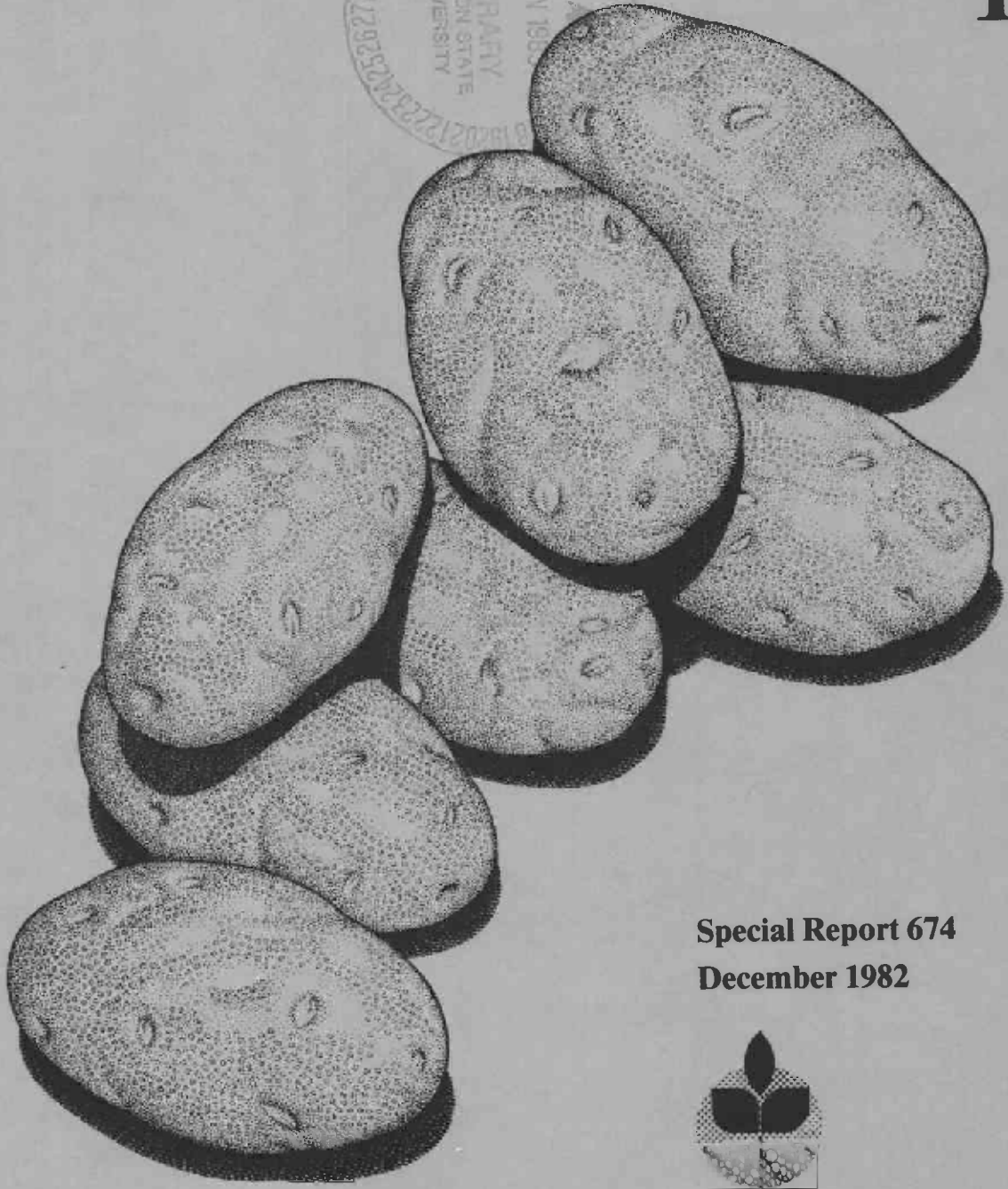


S 105
F 55
no. 674
p. 2

Oregon Potato Variety Trials 1981



**Special Report 674
December 1982**



**Agricultural Experiment Station
Oregon State University, Corvallis**

OREGON POTATO VARIETY TRIALS -- 1981

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

INTRODUCTION

Potato selections were compared in some 15 tests at four branch experiment stations, at the OSU main campus, and on three commercial farms in the Columbia Basin. Selections tested were obtained primarily from the USDA potato breeding program at Aberdeen, Idaho, but also from colleagues in Colorado, California, North Dakota, Washington, and elsewhere. Most of the seed used was produced at the Central Oregon Station and stored at Klamath Falls. Except for the Statewide Trial, Malheur tests used seed supplied by the Aberdeen program.

Virus diseases were severe in most tests in 1981 and doubtless biased results. The reader, therefore, should pay particular attention to disease readings when presented. Steps have been taken to reduce viral problems in future trials. Ninety-six entries were evaluated in 1981 (Table 1). Several of these showed promise in earlier tests in Oregon. Crops were grown using cultural and pest control procedures common to the areas. Standard statistical and data collection techniques were employed.

The 1981 Trials were a combined effort of the Central Oregon (Powell Butte), Hermiston, Klamath Falls, and Ontario branch stations, and the Crop Science Department at Oregon State University. Individual tests included: (1) the Oregon Statewide Trial which included some 50 entries at up to four locations; (2) the Western Regional Trial; (3) three on-farm trials in the Columbia Basin; (4) two tests at the Malheur (Ontario) Station; and (5) the Willamette Valley Trial at Corvallis.

TABLE 1. Potato Selections Tested in Oregon, 1978-81

Selection	Locations Tested ^{1/}				Maturity ^{2/}	Comments ^{3/}
	1978	1979	1980	1981		
A66102-12	--	--	HKMO	--	L	Lt. rus. Lge, rgh.
A66102-16	--	HO	O	O	L	Long, rgh. Deep eyes. Poor.
A66107-51	K	HKM	HKMO	--	M-L	Ob. rus. Dumbells. Poor.
A66122-3	--	HK	--	--	E	Long rus. Knobs. Int. disc.
A6789-7	K	HK	--	--	M	Long W. Purple flecks.
A67142-1	HK	K	--	--	M	
A68710-5	--	--	O	--	L	
A69173-2	--	--	--	HKOP		Long, lt. rus. Smooth.
A69327-5	HK	M	HKMO	--	M-L	O., med. rus. Rgh. Poor.
A69657-4	HKO	K	K	HKOP	E-M	White. Rgh. G. Deep Eyes. Scab.
A69827-5	--	--	--	O		
A69627-15	--	--	--	O	M-L	
A69868-2	HK	K	--	--	L	
A69870-3	--	--	HKMO	HKOP	M	R-0, rus. Flat. Thick skin.
A69870-6	--	--	HKMO	HKOP	L	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., lt. rus. OK.
A70283-24	--	--	HM	--	E-M	Rgh. Rots. IN.
A70319-11	HK	HK	--	--	E-M	Rgh skin. GC. Poor.
A70365-6	HKO	HKMO	--	--	M	Lge rus. HH.
A70365-27	HK	HKMO	--	KP	L	Dark rus. HH. Sugar end.
A70383-24	HK	HKM	HKMO	--	E	Long, rgh. rus.
A711076-19	--	--	--	O	M-L	
A7203-3	HK	K	--	--	M	
A72240-5	--	--	--	O	M-L	
A7248-13	O	O	--	--	M	
A7269-7	HKO	K	--	--	L	
A7273-3	HK	HKM	HKMO	--	M	R-0. lt. rus. Pointed. Deep 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	Rgh. GC.
A72331-10	O	K	--	--	M-L	R-0., coarse rus. Shatter.
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	HKOP	L	R-0. lt. rus. Smooth. Scab?
A72545-3	HK	K	--	--	L	
A72596-6	--	KM	--	--	E	
A72601-?	HK	H	--	--	E	Rgh skin. HH.
A72602-2	K	HKMO	HKMO	HKOP	E-M	O, rus. Thick skin. Fries?
A72605-2	HK	K	--	--	L	
A72619-7	HK	HKM	--	KOP	M-L	Lt. rus.
A72643-3	--	--	--	O	M-L	
A72665-22	--	--	--	O	M-L	
A72685-2	O	O	O	KOP	L	Blocky rus.

TABLE 1 (cont)

Selection	Locations Tested ^{1/}				Maturity ^{2/}	Comments ^{3/}
	1978	1979	1980	1981		
A72687-11	--	M	--	--	E-M	
A7302-1	--	K	--	--	L	
A7346-11	0	HKM	HKMO	--	E-M	O, lt. rus.
A7353-3	--	--	0	--	E	
A7353-16	--	HKM	--	--	M	Semi-rus. Smooth.
A7353-25	0	0	--	--	L	O-L. lt. rus. Int. flecking.
A7358-3	--	HKMO	--	--	L	Lt. rus. Small. HH.
A7393-2	0	HKM	--	--	E-M	Smooth.
A73143-4	0	0	--	--	E-M	Lge. Flat. Deep eyes.
A73175-6	--	HKMO	--	--	E-M	Lt. rus. Large.
A73373-6	--	--	0	--	E	
A73400-3	0	0	--	--	M-L	R. Deep eyes. GC. Poor.
A73414-15	0	0	--	--	L	Long, flat. Poor.
A7403-3	--	--	HKMO	HKOP	L	R-O. Dark rus. Lge. Poor.
A7411-2	--	--	0	0	M-L	
A7419-2	--	--	0	0	M-L	
A7444-3	--	--	--	0		
A7465-8	--	--	HKMO	--	?	No yield. Poor.
A7474-12	0	0	HKMO	KOP	M	Lt. rus. GC. Poor.
A7478-1	--	--	--	0		
A7487-3	--	--	0	HKOP	E	Lt. rus. Fair.
A7487-5	--	0	--	HKOP	M-L	R. W. Shatter. Lent. G.
A7497-3	--	--	HKMO	--		O. Dark rus. OK.
A74104-1	--	0	--	--	E	
A74104-8	--	--	0	HKOP	E	O. White. Ugly.
A74104-14	--	0	--	--	M-L	
A74104-18	--	--	HKMO	--	E	R-O. Lt. rus. Poor.
A74106-10	--	--	HKMO	--		O. Dark rus. Smooth.
A74108-1	--	0	--	--	M	
A74109-8	--	--	K	--		
A74112-1	--	0	--	--	M	
A74114-4	--	0	0	--	E-M	
A74117-9	--	0	0	--	M-L	
A74124-3	--	0	HKO	HKOP	L	R-O. White. Poor.
A74126-5	--	0	--	--	M-L	
A74127-2	--	0	HKMO	--	M-L	R-O. Flat rus. Light.
A74129-4	--	--	HKMO	--		R-O. White to lt. rus. Good.
A74143-9	--	--	--	0	M-L	
A74183-1	--	0	0	--	E-M	
A74195-2	--	--	HKMO	--		Crescent-shaped. Rgh. Poor.
A74204-4	--	--	0	--	E	
A74212-1	--	--	--	HKOP	L	Good long rus.
A74265-2	--	0	0	--	L	
A74341-4	--	--	--	0	M-L	
A74343-1	--	--	K	--		
A74389-1	--	0	0	--	L	
A74391-1	--	0	--	H	E	
A74393-1	--	--	--	KOP		R-O. Rus. Flat. Good.
A74393-7	--	0	0	--	E	
A74396-1	--	--	--	HKOP		R-O. Rus.

TABLE 1 (cont)

Selection	Locations Tested ^{1/}				Maturity ^{2/}	Comments ^{3/}
	1978	1979	1980	1981		
A74404-3	--	0	HKMO	HKOPW	L	R-O. Lt. rus. Good.
A74406-2	--	0	--	--	E-M	
A74416-8	--	0	--	--	E	
A74441-3	--	--	--	0	M-L	
A74541-1	--	--	--	0	M-L	
A74543-5	--	0	0	--	L	
A74544-1	--	--	--	0	M-L	
A74585-17	--	--	0	--	L	
A74595-11	--	0	0	--	M-L	
A74595-15	--	0	--	--	L	
A74595-17	--	0	0	--	E	
A74596-7	--	0	--	--	L	
A74626-1	--	--	--	OP		
A7518-8	--	--	--	HKOP		Small rough rus.
A7578-1	--	--	0	0	E-M	
A7578-5	--	--	--	HKOP	M-L	R-O. Rus. GC. Scab.
A7589-2	--	--	0	--	E-M	
A7596-1	--	--	0	HKOP	M	Dark rus. Blocky. Good.
A75182-1	--	--	0	--	M	
A75188-3	--	--	0	0	M	
A75195-2	--	--	0	--	L	
A75291-3	--	--	--	HKOP		Fair russet. Flat.
A75291-4	--	--	0	HKOP	M	Lt. rus. Flat.
A75383-1	--	--	0	--	M	
A7637-8	--	--	--	0	M-L	
A7637-12	--	--	--	0	M-L	
A76153-2	--	--	--	0	M-L	
AD7267-1	--	--	H	HKO	M	
AD7377-1	--	--	HO	HKOPW	M-L	Smooth. Ob. rus.
AD7386-1	--	--	--	KOP		
AD74135-1	--	--	HKMO	HKOP	L	O. rus. Fair. Fsh. mkt.?
AK28-8	--	--	W	--		
AK38-2	--	--	--	HKOP		R. W. Knobs. Poor.
ALR4-1	--	HKO	HKMO	HKOP	L	R-O. Lt. rus. Good. Scab?
ALR22-2	0	0	0	W	E	R-O. Lt. rus.
Allagash	--	--	HW	W	E	Rus. Fair. Low yields.
Atlantic	HK	HKMOW	HKW	KOW	M	R. rus. Chipper.
B6987-201	--	--	HW	--	M	
B7024-81	HO	HO	--	--	E	R-O. White. Scab.
BA9309-1	--	0	--	--	M-L	
BC9071-6	--	--	--	W		
Belchip	--	W	--	M		
Belrus	--	--	--	W		R. Lt. rus. G.
Bintje	--	--	W	W	M-L	R. White. Yellow flesh.
Bison	HK	HKMW	--	KOPW	E	Red. Smooth, small. Metribuzin.
Butte	HO	HKMOW	HKMO	HKOPW	M-L	O. Rus. Smooth.
Centennial	HK	HK	--	--	E	Dark rus. Low yields. HH.
Chieftan	HK	HKM	HKMO	HKOP	E	Oblong red.
Chipbelle	--	--	0	--	M	
Crystal	W	HW	W	W	M	R. White. Chipper.

TABLE 1 (cont)

Selection	Locations Tested ^{1/}				Maturity ^{2/}	Comments ^{3/}
	1978	1979	1980	1981		
Dakchip	--	HW	W	W	M	Round. White. Chipper
Delta Gold	--	--	W	W	M	R. White. Yellow flesh. Chipper.
Denali	W	HW	W	W	M	R. White. Chipper.
FL162	--	--	W	--	M	R. White. Chipper.
FL1168	--	--	W	--	M	R. White. Chipper.
Haig	--	W	--	--	E	R. White. Early chipper.
Haig (New)	--	W	--	--	E	Later than Haig.
Kennebec	W	HW	W	--	M	Oblong. White.
Lemhi	HKO	HKMOW	HKMOW	HKOPW	M	O-L. Rus. Good. Do not store.
Monona	--	W	W	--	M	R-O. White. Chipper.
Nampa	HK	HK	--	--	L	Long. Lge eyes.
ND55-7	--	--	--	W		
ND137-2	--	--	--	HKOP		R. Rus. Dark. GC. Poor.
ND258-1	--	--	--	W		
ND274-6	--	--	--	W		
ND467-3	--	--	--	W		Metribuzin.
ND541-2	--	--	--	KP		
ND561-1	--	--	--	HKOP	L	Oblong. Russet.
ND638-1	--	--	--	HKOP		Centennial type.
ND8850-2	--	--	--	W		
ND9474-6A	--	--	--	W		
NDA451-2	--	--	O	HOP	E-M	R. Blocky russet.
NDA514-2	--	--	O	--	E-M	
NDA8694-3	O	HKMOW	HKMO	--	E	R. Lt. rus. Rgh.
NDA9249-3	--	HKMOW	H	--	M	Hollow.
NDD47-1	--	--	W	--		
NDD110-4	--	--	--	W		
Nooksack	HKO	HKMW	KW	H	L	R-O. Lge. Lt. rus. Skin cracks.
Norchip	W	HW	W	HOW	M	R. W. Small. Deep eyes. Chipper.
Norgold	OW	HKMO	HKMO	HKOPW	E	Early. R. russet.
Norland	W	--	--	--	E	Early red.
Pioneer	HO	O	O	HKOP	E	Early oblong red.
R. Burbank	S T A N D A R D				L	Long rus.
Red LaSoda	--	W	--	--	M	Red.
Sangre	HO	HO	HKMO	HKOPW	E-M	Round red. Stores well.
Superior	--	W	--	--	E	Early round white.
Targhee	HK	HKM	HKMO	HKOP	M-L	R-O. Dark. Coarse net.
TND14-1	--	--	W	--	M	
TXA17-1	--	O	--	--	L	
TXA83-1	--	O	--	--	M-L	
TXA218-2	--	--	O	--	E-M	
TXA218-5	--	--	O	--	E-M	
TXA218-7	--	--	O	--	M	
TXA226-1	--	--	--	HKOP		Red. Rgh. Scab.
TXA331-1	--	--	O	--	M-L	
TXA549-1	--	--	--	O	M-L	
W541-2	--	--	HKMO	--		Dark. Rgh. Poor.
W630-5	--	--	HKMO	HKOP		Long, large white. Scab. OK.
W641-11	--	--	HKMO	--		R-O. Lt. rus.
W667-10	--	KM	--	--	E-M	

TABLE 1 (cont)

Selection	Locations Tested ^{1/}				Maturity ^{2/}	Comments ^{3/}
	1978	1979	1980	1981		
W670-3	--	H	--	--	L	Smooth. Oval. HH. GC.
W701-14	--	HKM	HKMO	--	L	R-0. Rgh. Dk rus. Poor.
W708-5	--	H	--	--	E	R. White. Smooth.
W720-2	--	KM	HKMO	--	M-L	R-0. Rus. Good?
W730-2	--	M	--	--	L	
WC435-3	--	--	HKMO	--		R-0. Dk rus. Attached stolons.
WC521-12	--	HO	HK	HKOPW	M-L	R. White.
WC612-13	--	HO	H	KOP	L	R. Lt. rus.
WC672-2	--	--	HO	HO	E-M	R. Flat. Rus.
WD 630-4	--	--	--	KOP		
WD641-10	--	--	H	KOP	M-L	R. Dark rus.

^{1/}H = Hermiston; K = Klamath Falls; M = Madras; O = Ontario; P = Powell Butte; W = Willamette Valley at Corvallis.

^{2/}E = early; M = midseason; L = late.

^{3/}IN = internal necrosis; G = sun green; GC = growth cracks; HH = hollow heart; L = long; Lt = light-colored; O = oblong; R = round; Rus = russet skin; W = white skin.

OREGON STATEWIDE TRIAL

Four similar plantings sharing approximately 40 selections in common were made at the Central Oregon (Powell Butte), Columbia Basin (Hermiston), Klamath (Klamath Falls) and Malheur (Ontario) branch experiment stations. Crops were grown using commercially accepted cultural practices which varied slightly depending on the location. Individual plots were single rows ranging from 20 to 30 feet (1 ft. = 0.3048 m) long. Entries were replicated four times in a randomized block design.

Selections in the Powell Butte trial were fried at 350°F (176.6°C) for four minutes on December 4 after four weeks of storage at 55°F (12.8°C), followed by three weeks at 50°F (10°C).

Seed for the 1981 Statewide Trial and most other Oregon varietal tests was less than satisfactory due to a high incidence of mosaic-type viruses, primarily PVX and PVY. High virus levels were caused primarily by virus-contaminated parent stock which was not detected in serological tests during the fall of 1980. This factor should be considered when interpreting results.

HERMISTON

Yields in the Hermiston (Columbia Basin) test were extremely high due in large part to the extremely long growing season and sandy soils. Commercial Russet Burbank fields in the Basin average about 25 tons per acre (1 T/a = 2.2432 metric T/ha), with new fields often yielding up to 35 tons.

Columbia Basin production is geared toward the frozen french fry market and relies primarily on Russet Burbank for late-season and out-

of-storage processing. Factors such as high specific gravity, good fry color, and long storage life are therefore crucial to the success of a new variety. Some 25 percent of Oregon's Columbia Basin production enters fresh market channels, however, particularly early Norgold Russets.

Procedure: Thirty-five selections and varieties were planted in loamy fine sand on the Hermiston (CBARC) station on April 7. Seedpieces were spaced nine inches (1 in = 2.54 cm) apart in 34-inch rows. Plots were single rows 25 feet (1 ft = 0.3048 m) long, replicated four times in a randomized block design.

The planting was fertilized by banding 100 pounds N, 150 P₂O₅, 150 K₂O, 50 S, and 1 pound B per acre (1 lb/a = 1.2 kg/ha) at planting. Additionally, 50 pounds of nitrogen were broadcast on June 2, again on June 17, and finally on July 18, for a total seasonal N rate of 250 pounds per acre.

Dyfonate for wireworms was banded over rows and incorporated by rototilling on March 24, approximately two weeks before planting. Foliar insects were controlled by a combination of Imidan on May 8, side-dressed Temik on May 12, and Monitor on July 8 and August 6. Metribuzin was used for weed control, and vines were killed with Dinitro on September 9. All chemicals were applied at commercial rates. Tubers were harvested on September 21.

Results: Large differences in yield and quality were evident among the 38 entries (Table 2). Based on yield and external appearance, A69870-3, A69870-6, A72545-2, A74212-1, A74393-1, A74404-3, A7596-1, Butte and Targhee appeared to be promising, A7596-1 was particularly impressive despite a tendency toward large tubers.

Virus infection levels ranged from extremely low to very high. Yields and grade-out were probably affected. Some entries, such as A72545-2, yielded well despite a high disease incidence (60%).

TABLE 2. Yield and Quality Characteristics, Statewide Trial, Hermiston, 1981

Selection	Yield, Cwt/A ^{1/}		Percent		Oz. Tuber	Specific Gravity	Comments ^{2/}
	No.1	Total	No.1	No.2			
A69173-2	407	469	87	3	8.4	1.084	Good O-L, Lt. rus. 6% Mo.
A69657-4	624	806	77	6	9.8	1.087	White. Scab. G. Poor.
A69870-3	666	709	94	1	8.6	1.082	Good. Blocky rus.
A69870-6	621	670	93	1	10.0	1.080	R-O. Rus. Late.
A72545-2	655	715	92	2	11.8	1.075	R-O. Lt. rus. 60% Mo.
A72602-2	533	608	88	3	10.6	1.087	Fair. Dk. Rus. 30% Mo.
A7403-3	672	806	83	7	10.9	1.078	Poor. R-O. Dk. rus. 18% Mo.
A7487-3	294	386	76	3	7.2	1.081	Early Lt. rus. Fair.
A7487-5	357	430	83	3	9.2	1.079	RW. Shatter. Lent. G.
A74104-8	581	699	83	5	10.7	1.072	O. White. Ugly. 40% Mo.
A74124-3	635	869	73	12	10.9	1.075	R-O. White. Poor. 6% Mo.
A74212-1	684	768	89	3	9.5	1.078	Good Long Rus. Late.
A74393-1	635	683	93	2	9.1	1.083	Good. R-O. Rus. Flat.
A74396-1	138	183	76	6	9.7	1.074	R-O. Rus. 90% Mo.
A74404-3	704	803	88	4	8.5	1.081	R-O. Rus. Late. Scab.
A7518-8	252	311	81	5	7.1	1.078	Small. Rgh. Rus. 79% Mo.
A7578-5	291	326	89	3	7.7	1.080	R-O. Rus. Scab. GC.
A7596-1	744	841	88	7	12.7	1.084	Good Blocky. Dk. rus.
A75291-3	481	546	88	4	9.8	1.079	Fair rus. Flat.
A75291-4	543	590	92	3	10.9	1.079	Flat. Lt. rus. 9% Mo.
AC67560-1	557	610	91	3	10.2	1.074	Red. Scab.
AD74135-1	518	640	81	7	8.3	1.079	O-L. Rus. Fair.
AK38-2	338	552	61	22	7.6	1.078	Knobs. Poor. 27% Mo.
ALR4-1	446	530	84	1	7.7	1.092	Good Lt. rus. Scab.
Butte	703	767	92	1	7.4	1.086	Fair-Good. O. Rus.
Chieftain	586	632	93	3	9.4	1.071	Red. Oblong. 12% Mo.
Lemhi	469	568	83	8	11.3	1.079	Good blocky rus. 51% Mo.
ND137-2	220	322	68	5	5.4	1.068	R. Rus. Dk. Poor. G.C. 18% Mo.
ND451-2	404	439	92	1	11.2	1.072	R., Blocky rus. 21% Mo.
ND561-1	540	619	87	4	11.1	1.078	O. Rus. Late. 36% Mo.
ND638-1	180	211	85	3	6.9	1.073	Cent. Type. 45% Mo.
Norgold	369	417	88	1	8.2	1.077	R-O. Rus. Good. 27% Mo.
Pioneer	297	347	85	2	7.7	1.074	Good. Oblong. Red.
R. Burbank	420	576	73	16	8.8	1.086	Long rus. Knobs. 100% Mo.
R.B., 1978 Gen. 1	457	754	61	21	9.4	1.083	Long rus.
T226-1	421	567	74	6	10.1	1.064	Red. Scab. Rgh.
Targhee	710	810	88	5	9.5	1.084	Dark rus. Oblong. OK.
WN630-5	577	670	86	5	13.1	1.081	Long White. Scab.
LSD, .05	147	155	--	--	--	0.005	

^{1/}CWT/A x 0.112 = T/ha.

^{2/}Dk = dark-colored; G = green; GC = growth cracks; L = long; Lt = light-colored; Mo = mosaic; O = oblong; R = round; Rgh = rough; Rus = russet; W = white.

CENTRAL OREGON (Powell Butte)

The Central Oregon growing season is short and cool. Therefore, late-maturing selections tend to perform poorly. The Central Oregon crop is marketed mainly as seed, but a substantial portion enters fresh market channels.

Procedure: Fifty selections, including those tested at Hermiston, were planted in Deschutes Sandy Loam. Seedpieces treated with Captan were spaced 9 inches (1 in = 2.54 cm) apart in 36-inch rows. Plots were single rows 15 feet (1 ft = .3048 m) long. Each entry was replicated four times in a randomized block design.

Fertilizer, 1000 lbs/acre (1 lb/a = 1.12 kg/ha) of 16-16-16, was banded at planting. Weeds were controlled by Eptam pre-plant and cultivation. Monitor was used for insects. Tubers were harvested on October 12.

Fry tests were performed on December 4, using tubers stored 4 weeks at 55°F (12.8°C) followed by three weeks at 50°F (10°C). Slices were fried 4 minutes at 350°F (176°C).

Results: Virus mosaics confounded results (Table 2), as was the case at Hermiston. The same seed lots were used at all four Statewide test sites.

Entries showing promise included A69657-4, A70365-27, A69870-6, A69870-3, A72545-2, A72602-2, A72685-2, A74393-1, and A74404-3; several of these also performed well at Hermiston. A69657-4 yields were high and fry quality was good, but tubers were too rough and scabby.

Several selections showed better French fry color than Russet Burbank. A69657-4, A69870-3, A72545-2, A7403-1, and A74404-3 all produced light-colored fries. Low specific gravity could eliminate A74404-3 and A72545-2 as processors, however.

TABLE 3. Yield and Quality Characteristics of Fifty Selections and Varieties, Powell Butte Statewide Trial, 1981

Selection	Rank	Yield, Cwt/A ^{1/2}		% No.1	Oz. Tuber	Specific Gravity	% H.H.	Ave. Fry Color
		Total	No.1					
Local Russet	14	496	308	62	4.7	1.086	4.8	2.4
Bison	47	296	201	75	6.3	1.066	0	2.5
Butte	21	466	349	75	5.5	1.085	0	3.8
Chieftan	10	507	416	82	6.3	1.065	0	3.3
Lemhi	15	493	403	82	8.7	1.088	0	3.1
Norgold	40	326	253	78	5.9	1.070	0	3.5
79 VTSC	23	454	323	66	4.9	1.086	5.4	2.0
Pioneer	41	325	266	82	8.5	1.069	0	3.3
Targhee	27	438	344	79	5.4	1.079	0	3.3
A69173-2	38	336	253	75	5.5	1.078	0	3.3
A69657-4	1	722	526	73	7.5	1.085	0.8	1.9
A69870-3	11	506	416	82	7.1	1.079	0	1.7
A69870-6	18	479	419	88	8.5	1.083	0.8	2.5
A70365-27	13	497	427	86	6.9	1.091	1.2	2.9
A72545-2	12	501	403	81	7.4	1.078	0	1.9
A72602-2	19	476	417	88	6.5	1.090	1.4	2.8
A72619-7	36	375	284	76	5.6	1.077	0	2.8
A72685-2	9	510	414	81	7.8	1.086	0	3.7
A7403-3	29	430	375	87	7.6	1.081	2.1	1.4
A7474-12	2	602	405	67	8.6	1.079	1.8	3.1
A7487-3	28	433	305	71	6.0	1.082	0	3.7
A7487-5	32	415	318	77	8.4	1.087	1.5	3.9
A74104-8	24	444	345	78	7.7	1.082	0	3.3
A74124-3	8	513	373	73	9.0	1.072	0	4.0
A74212-1	4	538	415	77	5.9	1.073	0	3.6
A74393-1	6	527	466	88	7.0	1.083	0	3.3
A74396-1	48	268	178	66	7.6	1.080	1.2	3.9
A74404-3	7	525	416	79	8.0	1.077	3.2	1.0
A74626-1	35	397	303	77	7.8	1.082	0	2.6
A7518-8	43	318	205	65	5.1	1.084	9.9	3.6
A7578-5	44	310	222	72	6.9	1.084	4.3	3.6
A7596-1	16	481	355	74	5.8	1.087	1.0	2.8
A75291-3	39	329	271	83	9.1	1.073	0	4.0
A75291-4	26	439	373	85	8.7	1.073	0	3.1
AC67560-1 (Sangre)	17	480	388	81	6.0	1.065	0	3.9
AD7377-1	22	462	383	83	8.3	1.071	0	3.3
AD7386-1	37	358	227	63	8.9	1.072	0	3.4
AD74135-1	3	572	403	70	8.9	1.077	0	4.0
AK38-2	31	418	285	68	5.5	1.089	0	0.8
ALR4-1	20	474	369	78	6.2	1.086	0	2.0
ND137-2	42	323	164	51	4.7	1.069	0	3.6
ND451-2	25	442	361	82	8.4	1.071	0	4.0
ND561-1	30	425	347	82	7.2	1.079	0	2.9
ND638-1	46	279	206	74	4.7	1.074	0	2.6
T226-1	5	534	387	73	9.3	1.063	1.5	3.9

TABLE 3 (cont)

Selection	Rank	Yield, Cwt/A ^{1/}		% No.1	Oz. Tuber	Specific Gravity	% H.H.	Ave. Fry Color ^{2/}
		Total	No.1					
WC521-12	50	224	123	55	5.7	1.087	0	1.5
WC612-13	34	411	299	73	6.6	1.088	1.2	1.3
WD630-4	49	236	149	63	6.9	1.084	6.0	2.2
WD641-10	45	292	230	79	7.5	1.082	0	3.3
WN630-5	33	413	315	76	12.1	1.085	0	3.9
Average	--	430	328	76	7.1	1.079	1.0	3.0
LSD, 0.05	--	108	108	--	1.5	.004	4.4	0.9

^{1/}Cwt/A x 0.112 = T/ha.

^{2/}Values based on the USDA Color Standards for Frocon French Fried Potatoes, 3rd Edition. Low values = light-colored fries.

KLAMATH FALLS

Procedure: Fifty entries were compared in the Klamath Falls State-wide Trial in 1981. The crop was grown using production and pest control procedures commercially accepted in the Klamath Basin.

Results: Yields were unusually low for the Klamath Falls area (Table 4). Low productivity was probably due in part to virus-infected seed, but other factors must have also been involved. For example, metribuzin phytotoxicity caused considerable damage to TX226-1, Bison, Chieftan, Pioneer, Sangre, and probably others. Entries showing some yield potential included A696577-4, A72685-2, A7403-3, A74104-8, A74212-1, and AD74135-1. Since Klamath Basin potatoes are grown primarily for fresh market, A74104-8, A69657-4, A7403-3, and 74104-8 would be of little value since tuber shape and skin color were unacceptable (Table 6). A74212-1 probably has more potential than any of the other new selections since it not only yielded well but also produced attractive, long, russet tubers.

Specific gravities of some entries were extremely low, possibly because those selections were not mature at harvest. Extremely late varieties cannot be grown profitably in the Klamath Basin due to the short growing season.

ONTARIO

Malheur County potatoes are used for frozen French fries and, to a lesser extent, for tablestock. Length of season is intermediate between the Columbia Basin and Central Oregon. Commercial yields average about 18 tons per acre.

Procedure: Forty-five selections were compared at the Malheur experiment station in 1981. Seedpieces were planted nine inches apart in 36-inch

rows on April 23. Plots were single rows 18.5 feet long, replicated three times.

The silt loam soil (pH 7.3, O.M. 1.2%) was amended with 100 pounds P_2O_5 and 60 pounds N per acre (1 lb/a = 1.12 kg/ha), broadcast and plowed down in the fall of 1980; 150 pounds per acre of N as ammonium nitrate was sidedressed at planting. Weeds were controlled by Roneet (cycloate) broadcast in the fall of 1980 at 4 pounds ai/a and disc-incorporated before bedding. Temik (aldicarb) was sidedressed at 3 pounds ai/a at planting. Plots were furrow-irrigated as needed. Vines were removed by rotobating on October 6. Harvest was on October 16.

Results: Mosaic viruses were readily evident in many of the selections, with percent infection ranging from 0 for several entries to 88 percent for WC521-12 and ND638-1 (Table 5).

Selections showing good US No. 1 yields included A7474-2, A74212-1, A69870-3, AC6750-1 (Sangre), A72602-2, A75291-3, A74404-3, A69870-6, ND451-2, WN630-5, Russet Burbank, and ALR4-1.

SUMMARY

Fifty-one selections and varieties were grown at one or more sites in the 1981 Statewide Trial. Seed of some of the entries was severely infected with virus. Yields were probably affected by differences in virus levels.

Several selections appeared to have promise (Table 6). A69870-6, A72602-2, A74212-1, A74393-1, A74404-3, Butte, Sangre, and Targhee produced good yields of tubers sufficiently attractive for fresh market use. Most of these entries fried too dark or had specific gravities too low for processing purposes. A69657-4, A69870-3, A72545-2, A7403-3, and

TABLE 5. Yield and Grade of 45 Potato Selections and Varieties,
Malheur Statewide Trial, 1981

Selection	US No. 1 ^{1/2}		% 2's	% Culls	Total Cwt/A	% Mosaic
	Cwt/A	Percent				
A69173-2	320	89	0	11	358	6
A69657-4	396	92	2	6	432	14
A69870-3	512	92	3	5	556	0
A69870-6	428	88	0	12	484	0
A72602-2	462	91	4	5	510	18
A72619-7	140	77	0	23	182	40
A7403-3	400	93	0	7	430	20
A7474-12	650	93	1	6	698	0
A7487-3	176	84	2	14	210	0
A7487-5	346	94	0	6	370	0
A74104-8	406	93	0	6	432	36
A74124-3	416	86	1	13	486	28
A74212-1	504	92	2	6	546	0
A74393-1	376	87	3	20	430	16
A74396-1	406	90	4	6	450	72
A74404-3	432	85	4	12	510	4
A74626-1	304	82	11	7	372	?
A7518-8	162	75	6	19	216	64
A7596-1	300	90	2	9	334	0
A75291-3	448	91	4	5	492	4
A75291-4	360	92	2	7	392	8
AD7386-1	396	84	11	5	472	18
AK38-2	318	85	12	4	376	20
ALR4-1	450	90	0	10	302	0
Atlantic	316	95	1	4	546	0
Bison	232	90	3	7	258	20
Butte	460	85	3	13	544	0
Chieftan	286	83	9	8	344	6
Lemhi	248	84	1	14	294	38
ND137-2	242	56	28	16	430	18
ND451-2	478	94	1	5	508	10
ND561-1	300	91	0	9	330	58
ND638-1	238	89	2	9	268	88
Norgold	234	89	0	11	262	22
Pioneer	330	86	9	5	384	42
R. Burbank 1979 Gen 1.	460	83	8	9	556	2
R. Burbank 1978 Gen 1.	296	83	6	12	358	8
Sangre	494	93	2	6	534	6
Targhee	308	81	0	19	380	0
TX226-1	404	83	12	5	488	2
W630-5	452	97	0	3	468	8
WC521-12	218	86	6	8	254	88
WC612-13	200	86	2	12	232	8
WD630-4	176	86	0	14	204	60
WD641-10	358	92	2	6	388	2

^{1/2}Cwt/A x 0.112 = T/ha.

74404-3 produced acceptable fries but had various shape or skin deficiencies. None of the selections **was** outstanding in 1981. Many will be entered in 1982 trials.

TABLE 6. Average Performance of 51 Selections and Varieties at Four Locations, Statewide Trial, 1981

Selection	No. 1 Yield, Cwt/A ^{1/}					Specific Gravity				% ^{2/} Fry ^{2/} % ^{3/}			Comments ^{4/}
	H	KF	O	PB	Avg.	H	KF	PB	Avg.	HH	Color	Mosaic	
A69173-2	407	216	320	253	299	1.084	1.076	1.078	1.079	0	3.3	6	Good O-L, Lt. Rus.
A69657-4	624	348	396	526	473	1.087	1.084	1.085	1.085	0.8	1.9	14	White. Scab. G. Poor.
A69870-3	666	219	512	416	453	1.082	1.067	1.079	1.076	0	1.7	0	Good. Blocky. Rus.
A69870-6	621	256	428	419	431	1.080	1.061	1.083	1.075	0.8	2.5	0	R-O. Rus. Late.
A70365-27	--	240	--	427	--	--	1.086	1.091	--	1.2	2.9	--	----
A72545-2	655	240	--	403	--	1.075	1.080	1.078	1.078	0	1.9	60	R-O. Lt. Rus.
A72602-2	533	293	462	417	426	1.087	1.089	1.090	1.089	1.4	2.8	30	Dark rus. Fair.
A72619-7	--	157	140	284	--	--	1.081	1.077	--	0	2.8	40	----
A72685-2	--	376	--	414	--	--	1.081	1.086	--	0	3.7	--	Oblong. Rus.
A7403-3	672	319	400	375	441	1.078	1.068	1.081	1.076	2.1	1.4	20	R-O. Dark. Rus. Poor.
A7474-1	--	173	650	405	--	--	1.086	1.079	--	1.8	3.1	0	----
A7487-3	294	175	176	305	237	1.081	1.080	1.082	1.081	0	3.7	0	Lt. Rus. Fair. Early.
A7487-5	357	179	346	318	300	1.079	1.087	1.087	1.084	1.5	3.9	0	R W. Shatter. Lent. G.
A74104-8	581	365	406	345	424	1.072	1.080	1.082	1.078	0	3.3	40	O.W. Ugly.
A74124-3	635	249	416	373	418	1.075	1.074	1.072	1.074	0	4.0	28	R-O. White. Poor.
A74212-1	684	398	504	415	500	1.078	1.081	1.073	1.077	0	3.6	0	Good long rus. Late.
A74393-1	635	259	376	466	434	1.083	1.073	1.083	1.080	0	3.3	16	Good. R-O. Rus. Flat.
A74396-1	138	159	406	178	220	1.074	1.068	1.080	1.074	1.2	3.9	90	R-O. Rus.
A74404-3	704	232	423	416	446	1.081	1.066	1.077	1.075	3.2	1.0	4	R-O. Rus. Late. Scab!
A74626-1	--	--	304	303	--	--	--	1.082	--	0	2.6	?	----
A7518-8	252	70	162	205	172	1.078	1.084	1.084	1.082	9.9	3.6	80	Small. Rgh. Rus.
A7578-5	291	90	--	222	--	1.080	1.081	1.084	1.082	4.3	3.6	--	R-O. Rus. Scab. GC.
A7596-1	744	278	300	355	419	1.184	1.083	1.087	1.085	1.0	2.8	0	Good blocky, dark rus.
A75291-3	481	221	448	271	355	1.079	1.076	1.073	1.076	0	4.0	4	Fair rus. Flat.
A75291-4	543	259	360	373	384	1.079	1.077	1.073	1.076	0	3.1	9	Lt. Rus. Flat.
AD7267-1	--	235	--	--	--	--	1.070	--	--	-	--	--	Oblong. Rus. Shatter.
AD7377-1	--	279	--	383	--	--	1.074	1.071	--	0	3.3	--	O. Dark Rus. Flat. OK. Shatter.
AD7386-1	--	293	396	227	--	--	1.078	1.072	--	0	3.4	18	----
AD74135-1	518	339	--	403	--	1.079	1.080	1.077	1.079	0	4.0	--	O-L. Rus. Fair.
AK38-2	338	146	318	285	272	1.078	1.083	1.089	1.083	0	0.8	27	Round. W. Poor.
ALR4-1	446	153	450	369	354	1.092	1.079	1.086	1.086	0	2.0	0	Good. Lt. Rus. Scab.
Atlantic	--	209	316	--	--	--	1.085	--	--	-	--	0	----
Bison	--	201	232	260	--	--	--	1.066	--	0	2.5	20	----
Butte	703	222	460	349	433	1.086	1.072	1.085	1.081	0	3.8	0	Fair-good. O. Rus.
Chieftan	586	172	286	416	365	1.071	1.064	1.065	1.067	0	3.3	12	O. Red.
Lemhi	469	153	248	403	318	1.079	1.078	1.088	1.082	0	3.1	51	Good, blocky rus.
ND137-2	220	134	242	164	190	1.068	1.068	1.069	1.068	0	3.6	18	R. Rus. Dark. GC. Poor
ND451-2	404	107	478	361	337	1.072	1.074	1.071	1.072	0	4.0	21	R. Blocky. Rus.
ND561-1	540	180	300	347	342	1.078	1.081	1.079	1.079	0	2.9	58	O. Rus. Late.
ND638-1	180	14	238	206	159	1.073	--	1.074	--	0	2.6	88	Cent. type.
Norgold	369	144	234	253	250	1.077	1.072	1.070	1.073	0	3.5	27	R-O. Rus. Early.
Pioneer	297	101	330	266	248	1.074	1.075	1.069	1.073	0	3.3	42	Good. Oblong. Red.
R. Burbank	457	187	460	323	357	1.083	1.088	1.086	1.086	5.4	2.0	2	Long. Rus. Knobs.
Sangre	557	241	494	388	420	1.074	1.076	1.065	1.072	0	3.9	6	Red. Long dormancy. Scab.
Targhee	710	298	308	344	415	1.084	1.065	1.079	1.076	0	3.3	0	Dark. Rus. Oblong. OK.
TX226-1	421	198	404	387	352	1.064	1.068	1.063	1.065	1.5	3.9	2	Red. Scab. Rough.
W630-5	577	299	452	315	411	1.081	1.070	1.085	1.079	0	3.9	8	Long white. Scab.
WC521-12	--	73	218	123	--	--	1.094	1.087	--	0	1.5	88	R. W-Lt. Rus. Shatter.
WC612-13	--	253	200	299	--	--	1.089	1.088	--	1.2	1.3	8	----
WD630-4	--	28	176	149	--	--	1.090	1.084	--	6.0	2.2	60	----
WD641-10	--	154	358	230	--	--	1.084	1.082	--	0	3.3	2	----

^{1/}H = Columbia Basin Ag. Res. Center (CBARC) at Hermiston; KF = Klamath Falls Experiment Station at Klamath Falls; O = Malheur Experiment Station at Ontario; PB = Central Oregon Experiment Station at Powell Butte. Cwt/A x 0.112 = t/ha.

^{2/}Powell Butte site only.

^{3/}Based on visual symptoms at Ontario and Hermiston.

^{4/}Based on Hermiston Trial. Shape: L = long; O = oblong; W = white; G = greening; GC = growth cracks.

COLUMBIA BASIN (Hermiston) TRIALS

Five varietal trials were conducted by the Hermiston station in 1981. Results of the Statewide Trial were presented earlier. The Western Regional and three on-farm trials will be discussed in this section.

ON-FARM-TRIALS

Procedure: Seven selections and varieties were compared under center-pivot irrigation in commercial fields. The test site(s) received the same soil preparation, production, and pest control practices used on the remainder of the field(s). Soils were sandy. Irrigation and fertilization levels were adequate to high. Rows were marked as the fields were being planted. An assisted-feed planter was then used to plant in the pre-marked rows. Plots were single 25-foot rows, replicated three times in a randomized block design. Tubers were dug by level-bed digger and picked up by hand.

Results: Only Lemhi produced lower yields than Russet Burbank (Table 7). Lemhi typically yields much higher than these results indicate. Based on US No. 1 yields, specific gravities, and known French fry potential, Nooksack appeared to be the best selection. A74404-3 yielded well and produced light-colored fries (Table 6) but specific gravity was low, and tubers tended to be scabby at one site. A74404-3 will be tested further in 1982, especially for processing. AD7377-1 is probably not suited to the Columbia Basin since tubers were flat and prone to shatter bruise, and French fry color was unacceptable.

TABLE 7. Yield and Quality Characteristics of Potato Selections Under Commercial Center-Pivot Conditions in the Columbia Basin, 1981

Selection ^{1/}	No. 1 Cwt/A ^{2/}				Total Cwt/A				Specific Gravity	Oz. Tuber	Comments
	ER	MC	RF	Avg.	ER	MC	RF	Avg.			
A74404-3	761	435	586	594	902	546	688	712	1.078	8.5	Oblong Rus. Late. Scab.
AD7377-1	599	383	578	520	688	472	616	592	1.076	9.9	Oblong dark rus. Flat. Shatter.
Butte	430	361	461	417	538	443	558	513	1.084	8.4	Fair-good oblong rus.
Lemhi	437	264	426	376	526	397	564	495	1.087	8.4	Good blocky rus. Won't store.
Nooksack	689	428	480	532	723	487	510	573	1.091	12.7	Round, large rus. tubers.
RB, 1978	330	256	373	320	505	449	490	481	1.082	8.9	Typical Burbank.
Gen 1.											
RB, 1980	506	305	484	432	622	519	645	595	1.082	8.0	Better than 1978 seed.
Gen 1.											
RB, cut	--	277	418	347	--	460	599	529	1.081	6.8	-----
RB, whole	--	238	457	347	--	458	604	531	1.081	5.9	Tubers smaller than above.
Targhee	654	334	457	482	705	401	526	544	1.081	9.3	Dark, rough-skinned. Tablestock.
LSD, .05	101	63	71	--	121	57	83	--	--	--	-----

^{1/}RB = Russet Burbank. Gen 1 indicates first year seed source was increased by seed growers. Cut = typical cut seedpieces; whole = single-drop tubers.

^{2/}ER = Eagle Ranch; MC = Merle Carlson Farm; RF = Royal Farms. Cwt/A x 0.112 = T/ha.

WESTERN REGIONAL TRIAL

Procedure: Ten entries were compared at the Columbia Basin Agricultural Research Center (CBARC) at Hermiston; these were also included in one or more of the Ontario trials. Individual plots were single rows 25 feet long, replicated four times in a randomized block design. Seed-pieces were planted nine inches apart in 34-inch rows on April 7. Metribuzin was applied at the rate of 0.5 pounds ai/a on June 4.

Results: None of the selections was outstanding (Table 8), but A72685-2 did appear to have some potential for fresh market. Others showing some promise included WC521-12, AD7377-1, A72545-2, and Lemhi.

Most of the selections were severely infected with mosaic viruses.

TABLE 8. Yield and Quality Characteristics of Western Regional Trials, Hermiston

Entry	Yield, Cwt/A ^{1/}		Percent		Oz. Tuber	Specific Gravity	Comments ^{2/}
	No.1	Total	no.1	no.2			
A72545-2	630	697	90	1	11.8	1.078	O., Lt. Rus. Scab. IN.
A72685-2	669	743	90	3	11.6	1.082	O. Rus.
AD7267-1	392	501	78	10	10.6	1.070	O. Rus. Shatter.
AD7377-1	564	669	84	10	10.7	1.075	O. Dk. Rus. G.C. Eyes
AD74135-1	406	492	82	6	8.7	1.079	O. Rus. Shatter
WC521-12	526	564	93	2	8.8	1.096	R, Lt. Rus. Shatter.
WC672-2	640	716	89	7	8.8	1.083	R, Rus. Scab. Ugly.
Lemhi	513	561	91	4	10.9	1.085	O. Rus.
Norchip	403	502	80	6	6.6	1.081	R. W. Scab. Cracks.
R. Burbank	321	489	66	14	8.6	1.084	L., Rus. Cracks. Knobs.
LSD, .05	133	147	--	--	--	0.005	----

^{1/}Cwt/A x 0.112 = T/ha.

^{2/}Shape, skin type: O = oblong; R = round; L = long; R = Russet; W = white; IN = internal necrosis; GC = growth cracks.

MALHEUR TRIALS

Two tests in addition to the Statewide Trial were conducted by the Malheur station in 1981. Entries were primarily selections from the Aberdeen, Idaho, breeding program which also supplied the seed.

Procedure: The potatoes were planted on April 23 and 25 in silt loam soil which had been partially fertilized, herbicide-treated, and bedded during the fall of 1980. Fertilizer consisted of 100 pounds of P_2O_5 and 80 pounds of N per acre plowed under in the fall and 120 pounds of additional N sidedressed at planting. Roneet (cycloate) was disc-incorporated before bedding in 1980. Temik was banded at planting. Pesticides were applied according to label directions.

The plots were furrow-irrigated on May 24 and as needed thereafter. During midseason, water was applied every four days in each furrow for 12 hours.

Vines were rated for maturity during the first week of October. Vines were then removed by rotobating on October 6, and tubers were harvested on October 12 and graded on October 13 and 14. Cooking and specific gravity tests were performed at Aberdeen, Idaho.

The preliminary trial consisted of 19 entries replicated three times in single-row plots 25 hills long. Fifteen selections were evaluated in the advanced trial in single row plots 35 hills long, replicated four times.

Results: Yields were lower than normal for the Ontario area due to excessive water rot. Early-maturing lines were particularly prone to rots.

Only three selections -- A72665-22, A7637-12, and A76153-2 -- out-yielded Russet Burbank in the Preliminary Trial (Table 9). Further testing is necessary before these selections can be fully assessed.

None of the entries in the Advanced Trial appeared to be an improvement on Russet Burbank (Table 10). Although WC521-12 yielded well, it is basically a round, white potato not suited to the Malheur area.

TABLE 9. Yield and Quality, Preliminary Late Harvest Trial, Malheur Experiment Station, 1981

Selection	Yield, Cwt/A ^{1/}		US no. 1, %			Percent			Boiled Color ^{2/}			Specific Gravity
	No. 1	Total	≥10 oz.	6-10 oz.	4-6 oz.	No.1	No.2	Culls	Color	Yellow	Dulling	
A69827-15	120	199	5	32	23	60	3	37	3.7	.09	.15	1.094
A711076-19	108	177	12	21	28	61	9	30	3.4	.11	.11	1.097
A72240-5	155	292	3	23	27	53	6	40	4.2	.08	.14	1.092
A72643-3	105	220	2	24	22	48	4	48	2.5	.15	.09	1.119
A72665-22	209	343	12	20	29	61	3	36	3.0	.02	.06	1.080
A74143-9	91	172	10	24	19	53	15	32	2.7	.03	.07	1.080
A74341-4	153	298	2	20	30	51	0	49	0.8	.02	.04	1.086
A74441-3	79	130	3	19	38	61	4	35	1.6	.11	.10	1.094
A74541-1	110	265	4	15	22	42	1	58	4.4	.18	.13	1.103
A74544-1	159	305	6	17	28	52	3	45	2.2	.07	.09	1.099
A7637-8	155	218	6	33	32	71	1	28	1.1	-.02	.10	1.092
A7637-12	218	341	6	19	39	64	1	35	3.4	-.01	.14	1.098
A76153-2	261	336	24	34	19	78	2	20	2.7	-.01	.12	1.089
Lemhi	130	191	20	26	22	68	15	17	4.2	.01	.12	1.092
RB 1979	158	303	17	17	18	52	25	23	4.1	.03	.14	1.087
Gen 1												
TXA549-1	119	285	5	22	15	42	18	40	1.4	-.01	.07	1.098
LSD, .05	--	63	--	--	--	--	--	--	--	--	--	--

^{1/}Cwt/A x 0.112 = T/ha.

^{2/}Photovolt determination. Color: 1 = white, 6 = dark. Yellowness: higher values indicate more yellowing. Dulling indicates dulling due to cooking; higher values indicate more dulling.

TABLE 10. Yield and Quality, Advanced Late Harvest Trial, Malheur Experiment Station, 1981

Selection	Yield, Cwt/A ^{1/}		US no. 1, %			Percent			Boiled Color ^{2/}			Specific Gravity
	No.1	Total	>10 oz.	6-10 oz.	4-6 oz.	No.1	No.2	Culls	Color	Yellow	Dulling	
A66102-16	214	303	13	32	25	71	7	22	3.2	.09	.13	1.107
A72545-2	236	317	14	36	24	74	0	25	4.0	.06	.11	1.093
A72685-2	189	258	18	31	23	73	1	26	3.5	.13	.09	1.100
A7411-2	214	273	23	37	19	78	7	14	4.2	.10	.10	1.101
A7419-2	259	323	35	29	16	80	3	16	2.4	.06	.11	1.094
A7578-1	174	260	14	27	25	67	6	27	3.8	.02	.16	1.104
A75188-3	182	237	14	35	27	77	3	19	1.9	.03	.08	1.089
AD7267-1	129	169	34	28	14	76	6	18	4.5	.01	.17	1.075
AD7377-1	140	226	9	26	26	62	4	33	1.5	.04	.05	1.081
AD74135-1	176	275	7	27	30	64	3	33	2.4	-.003	.17	1.094
Lemhi	211	322	12	29	24	65	8	26	4.0	-.003	.16	1.103
Norchip	189	285	6	30	30	66	14	20	4.1	.09	.11	1.088
R. Burbank	230	316	25	32	16	72	12	15	3.9	.04	.13	1.087
WC521-12	310	376	39	28	15	82	3	14	2.6	.08	.09	1.108
WC672-2	223	290	22	33	22	77	2	21	1.8	.10	.03	1.098
LSD, .05	--	57	--	--	--	--	--	--	--	--	--	--

^{1/}Cwt/A x 0.112 = T/ha.

^{2/}Photovolt determination. Color: 1 = white, 6 = dark. Yellowness: higher values indicate more yellowing. Dulling indicates dulling due to cooking; higher values indicate more dulling.

WILLAMETTE VALLEY TRIAL

Procedure: Twenty-nine varieties or selections were compared at Corvallis in 1981. The crop was grown using conventional production practices. Fertilizer was applied by broadcasting 300 lbs/a of 8-24-8 before disking and banding 680 lbs/a of 16-16-16 at planting. Seedpieces were dusted with Dithane fungicide at approximately one pound per 100 pounds of seed as recommended. Insect and disease pressures were minimal during the season. However, extremely hot weather during the first two weeks of August caused severe plant stress and a general reduction in tuber size despite a weekly sprinkler application of two inches of water. Seed-borne mosaic viruses were severe for some entries, causing yield losses.

Chipping tests were performed in early March, 1982 after the tubers had been conditioned for two weeks at 50-60°F preceded by four weeks at 45°F. Slices were fried 2.5 minutes at 375°F.

Results: U.S. No. 1 yields were lower than normal due to a high percentage of small tubers for most varieties. Extremely hot weather during the first two weeks of August was largely responsible for yield losses. Metribuzin at 1 lb ai/a also reduced yields for Bison, Belrus, ND467-3, and possibly others.

AD7377-1 produced good yields of attractive, oblong, russet-skinned tubers (Table 11) and appeared to be worth further testing for fresh market; but chips were bitter-tasting and dark (Table 12). A74404-3 likewise seemed to have tablestock potential but also chipped well. Atlantic yielded slightly better than Norchip and produced better-flavored, lighter-colored chips. Delta Gold outyielded all other entries and chipped as light as Norchip. It is a yellow-fleshed variety and appears to have good chipping potential in the Willamette Valley.

TABLE 11. Yield, Grade and Quality Characteristics of 29 Potato Varieties and Selections, Corvallis, 1981

Entry	Yield ^{1/} , Cwt/A		Percent ^{2/}		Specific Gravity	Comments
	Total	No. 1	No. 1	<4 oz.		
A 74404-3	503	298	59.3	39.6	1.087	Oblong light rus.
AC 67560-1	460	201	43.6	56.0	1.072	Red
AD 7377-1	446	332	74.4	23.0	1.076	Smooth oblong rus.
Allagash	371	209	56.3	41.8	1.075	Fair. Rus.
ALR 22-2	441	205	57.8	35.0	1.079	Round-oblong light rus.
Atlantic	357	233	65.3	32.3	1.087	Smooth. Round rus.
BC 9071-6	513	303	59.2	31.7	1.081	-
Belrus	209	43	20.8	75.9	1.082	Round white. Green.
Bintje	524	253	48.4	48.7	1.083	Large, Green, Yellow
Bison	119	42	35.4	39.3	1.081	Red. Sencor inj.
Butte	354	194	54.7	36.5	1.085	Oblong rus.
Crystal	413	234	56.7	36.0	1.074	Round white
Dakchip	455	266	58.3	34.6	1.072	Round white. Skinning
Delta Gold	570	372	65.2	26.4	1.091	Yellow flesh
Denali	422	271	64.2	19.3	1.094	Round white
Lemhi	434	204	47.0	51.0	1.090	Oblong rus.
ND 55-7	404	177	43.8	54.4	1.073	-
ND 258-1	392	246	62.9	33.3	1.077	-
ND 274-6	286	139	39.2	48.3	1.074	-
ND 467-3	355	90	25.3	66.2	1.068	- Sencor injury.
ND 8850-2	384	165	43.0	54.7	1.073	-
ND 9474-6A	474	300	63.3	28.9	1.070	-
NDD 110-4	401	207	51.7	42.1	1.073	-
Norchip (Neb.)	389	147	37.9	58.8	1.083	Typical
Norchip (N. Rus.)	440	180	40.9	55.9	1.078	Russet norchip?
Norchip (Or.)	451	205	45.4	50.5	1.078	Typical
Norgold	341	163	48.0	43.9	1.076	Some decay
R. Burbank	521	308	59.2	31.4	1.084	Long russet
WC 521-12	290	176	60.6	32.2	1.090	90% virus
LSD., .05	108	85	--	--	0.004	

^{1/}Cwt/A x 0.112 = T/ha.

^{2/}Tubers tended to be unusually small in 1981 causing poor grades.

TABLE 12. Chipping Characteristics of 29 Potato Varieties and Selections

Entry	Color ^{1/}			Flavor	Firmness ^{2/}	Tuber Appearance ^{3/}	Sprout Length ^{4/}
	Avg.	Vas.	Pith				
A 74404-3	5.7	4.3	5.7	Ok	1.3	N	1.7
AC 67560-1	9.5	8.0	9.5	Bitter	1.2	N	1.7
AD 7377-1	9.7	7.5	9.7	Bitter	1.7	N	2.2
Allagash	6.5	5.5	6.5	Ok	1.7	N	2.0
ALR 22-2	9.0	6.0	9.0	Bitter	2.5	N-S	3.5
Atlantic	4.7	3.7	4.7	Ok	2.0	N	2.3
BC 9071-6	8.2	6.7	8.2	Bitter	2.5	N	2.5
Belrus	9.3	6.7	9.3	Bitter	2.0	N	2.3
Bintje	6.7	5.2	6.7	Ok	1.5	N	2.5
Bison	Insufficient Sample Size						
Butte	10.0	8.0	10.0	Bitter	1.0	N	1.5
Crystal	7.2	5.5	7.2	Ok-Bitter	2.0	N	2.0
Dakchip	8.5	6.7	8.5	Bitter	3.0	S	4.0
Delta Gold	7.2	5.2	7.2	Ok	1.7	N	2.0
Denali	7.5	5.5	7.5	Ok	2.0	N	2.0
Lemhi	5.3	3.3	5.7	Ok	1.0	N	1.3
ND 55-7	10.0	9.2	10.0	Bitter	2.0	N	2.5
ND 258-1	9.3	7.0	9.7	Bitter	2.0	N	2.3
ND 274-6	9.0	6.0	9.2	Bitter	1.7	N	2.0
ND 467-3	10.0	9.2	10.0	Bitter	2.5	N	3.0
ND 8850-2	7.0	6.0	7.2	Ok-Bitter	2.0	N	2.2
ND 9474-6A	9.7	6.5	9.7	Bitter	2.5	N	2.2
ND 110-4	6.3	4.3	6.7	Ok-Bitter	2.0	N	2.0
Norchip (Neb)	7.5	5.2	7.7	Ok-Bitter	2.7	N	2.25
Norchip (Rus.)	7.5	6.0	7.7	Bitter	2.2	N-S	3.0
Norchip (Or.)	7.7	6.7	8.3	Ok-Bitter	2.3	N-S	2.7
Norgold	8.0	6.0	8.0	Ok-Bitter	2.0	N	2.5
R. Burbank	7.0	5.7	7.0	Ok	1.0	N	1.3
WC 521-12	5.7	5.0	5.7	Ok	1.0	N	2.0

^{1/} Readings based on USDA Color Standards for Chipping Potatoes. Low numbers = light-colored chips.

^{2/} 1 = firm; 3 = soft

^{3/} N = normal; S = shrivelled

^{4/} 1 = none; 2 = less than 0.5 in.; 3 = 0.5-1.0 in.; 4 = over 1.0 in.