

Research Progress Report for 1990

"Potato Breeding and Selection"

Submitted to the

SLV Research Center Committee

and the

**Colorado Potato Administrative
Committee (Area II)**

by

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San Luis Valley Research Center

RESEARCH PROGRESS REPORT FOR 1990

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Research was conducted in the following areas in 1990:

- A) Potato Breeding
- B) Seedling Selection and Clonal Development
 - Advanced Yield Trial
 - Chipping Studies
 - Western Regional Trial
 - Western Regional Chipping Trial
 - Out-of-State Trials
 - Grower Evaluations
- C) Russet Norkotah Selection Studies
- D) Centennial Russet Mutation Studies

POTATO BREEDING

Thirty-two parental clones were intercrossed in 1990. Seeds from 248 combinations were obtained. Sixty seedling families were grown in the greenhouse producing 14,628 tubers for initial field selection in 1991. Approximately 10% of the seedling tubers (representing six families) are reds. Surplus tubers will be distributed to Idaho, Oregon, Texas, and Alberta, Canada.

Seedling tubers were obtained from Dr. J. J. Pavek, USDA-ARS, Aberdeen, Idaho; Dr. J. Creighton Miller, Texas A&M, Lubbock, Texas; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; Dr. Robert Johansen, North Dakota State University, Fargo, North Dakota, and Dr. Kathleen Haynes, USDA-ARS, Beltsville, Maryland.

SEEDLING SELECTION AND CLONAL DEVELOPMENT

A total of 83,250 first-year seedlings were planted, with 840 being selected for further observation. Another 942 clones were in various stages of preliminary and intermediate testing. Two hundred sixteen of these clones were saved for further evaluation. Twenty-five advanced selections (21 russets, 1 red, 3 whites) were saved and will be increased. Another 137 clones were saved for breeding and other experimental purposes.

Advanced Yield Trial. Thirty-one clones, 26 advanced selections and five cultivars, were evaluated in the advanced yield trial. Results on yield, grade, and other characteristics are summarized in Table 1. Data on grade defects are presented in Table 2.

Overall yields were high in 1990. Specific gravities tended to be low however.

Several clones had acceptable yields (total and US #1) compared to the standard cultivars. Clone C081082-1 will be entered in the 1991 Western Regional Trials.

Chipping Studies. Forty-two clones, 39 selections and 3 cultivars, were tested for chipping potential after various storage regimes. This information is presented in Table 3.

Overall chip color was darker in 1990. This may have been due to later maturity.

None of the clones produced acceptable chips after 10 weeks of 40°F storage. However, some of these clones did produce acceptable chips after reconditioning. Twenty-one selections had color ratings equal to or better than Atlantic and Gemchip (≤ 2.5) after 7 weeks of 50°F storage and three weeks of 60°F reconditioning.

Results of chipping tests by Borden, Inc. are given in Table 4. Seven selections produced acceptable chips.

Western Regional Trial. Twelve selections and eight cultivars were grown in the Western Regional Trial. Seven clones were entered by Colorado in this cooperative trial conducted at 13 locations in the Western United States. Tables 5 and 6 present the data collected on these selections.

Most of the entries showed fresh market potential. Clones with good processing potential were AC78069-17, A082283-1, BC0038-1, and C079018-11. Both BC0038-1 and C079018-11 have been discarded from further evaluation due to grade factors.

Clones that were entered in these trials in previous years and/or are in the 1991 trials and in the process of commercial testing by growers in 1991 are A7411-2, A74212-1, A76147-2, AC78069-17, AC81198-11, C080011-5, C081082-1, C008014-1, ND671-4RU, ND1538-1RU, and NDTX9-1068-11R.

Western Regional Chipping Trial. Eight selections and two cultivars were compared in the Western Regional Chipping Trial at five locations in the Western United States. Results of this trial are presented in Tables 7, 8 and 9.

All selections produced acceptable chips after 7 weeks of 50°F storage and three weeks of 60°F reconditioning.

Clones that were in these trials in previous years and/or are entered in the 1991 trials and in the process of commercial testing by growers in 1991 are A80559-2, AC80545-1, and NDO1496-1.

Selection C084111-6 will be formally included in the 1991 Western Regional Chipping Trials.

Out-of-State Trials. Testing of advanced clones in other states is an ongoing part of the breeding and selection project. California is the primary out-of-state testing area. Increased testing emphasis is being developed in Texas and Arizona. Generally selections are evaluated in both observational and yield trials in these areas.

Twenty-one advanced selections (18 russets, 2 chippers, and 1 long white) were tested in California in 1990. Clones showing promise and being tested in 1991 in large lots in California are: AC80545-1 and C080011-5.

Grower Tests. Grower evaluations were conducted on two russets (AC77101-1 and C080011-5), one chipper (AC80545-1), and one long white (BC0038-1). Clones AC77101-1 and BC0038-1 were discarded from further testing. Grower testing will continue on C080011-5 in 1991.

Growers recommend naming AC80545-1 in 1991. This clone was selected in Colorado and will be jointly released by the Colorado and Idaho Agricultural Experiment Stations and the USDA-ARS.

Selections to be released for initial grower evaluation in 1991 are AC78069-17, AC81198-11, and C081082-1. All of these clones are russets. AC78069-17 is a dual purpose potato with fresh market and processing qualities. The other clones are for fresh market.

Data on these selections and recently named and standard cultivars are summarized in Table 10.

Cultivar Releases. Frontier Russet (A74114-4) was named in 1990 jointly by the Colorado, Idaho, Washington, and Oregon Experiment Stations and the USDA-ARS. Frontier Russet is an early maturing, dual purpose potato with fresh market and processing qualities.

Ranger Russet (A7411-2) will be named in 1991 by the same agencies as Frontier Russet. Ranger Russet is similar in appearance to Russet Burbank. A draft copy of the release notice for Ranger Russet is attached to the back of this report.

Century Russet (A74212-1) should also be named cooperatively with Oregon in 1991.

RUSSET NORKOTAH SELECTION STUDIES

Forty clonal selections of Russet Norkotah were selected from two tuber-united certified seed lots. These selections will be increased and evaluated for vine vigor and maturity in 1991. Yield comparisons will be initiated in 1992.

CENTENNIAL RUSSET MUTATION STUDIES

We are currently placing emphasis on generating virus tested seed stocks for further studies with the flat and pebble leaf mutations of Centennial Russet. Once these stocks are available, further studies will be conducted to determine if the supposed pebble leaf mutation is genetic or due to PVS infection. Also any potential differences in PVS susceptibility will be evaluated.

Table 1. Yield, grade, stand, vine maturity, specific gravity, stem number per plant and tuber shape and skin type for advanced yield trial clones - 1990.

Clone	Yield (Cwt/A)					% Stand	Vine Maturity ¹	Specific Gravity	Stems/ Plant	Tuber Shape & Skin Type ²
	Total	US #1			<4 oz					
		Total	%	>10 oz						
AC75430-1	474	408	86.1	108	66	97	3.5	1.087	4.0	Ob, R
AC83044-1	413	325	78.8	73	68	98	3.5	1.087	2.6	Ob, R
AC83044-2	426	289	68.5	27	135	99	2.8	1.083	4.3	Ob, R
AC83064-1	518	452	87.3	156	57	98	3.5	1.079	3.7	L, R
AC83064-6	351	269	76.6	35	78	98	3.2	1.082	3.6	L, R
AC83068-1	520	415	79.8	78	90	100	3.2	1.083	4.5	Ob, R
AC83172-1	443	349	78.8	76	89	96	3.0	1.082	4.3	L, R
AC83330-4	500	374	74.5	63	124	98	3.0	1.081	3.2	R, Re
AC84017-3	439	376	85.6	148	39	95	3.0	1.080	3.9	L, R
AC84028-4	402	304	75.6	41	94	99	2.0	1.085	3.6	L, R
AC84069-3	416	294	70.7	40	119	100	3.0	1.086	4.3	L, R
AC84209-8	468	389	83.2	122	54	95	3.5	1.079	3.5	Ob, R
AC84413-4	396	200	50.4	7	192	100	2.8	1.082	8.4	Ob, R
AC84472-1	383	275	71.9	36	63	98	2.0	1.069	4.3	Ob, R
AC84487-1	390	350	89.7	110	38	99	2.5	1.074	4.7	L, R
AC84509-2	474	374	79.1	77	86	98	3.0	1.089	4.6	Ob, R
AC84638-1	476	364	75.7	98	94	98	3.0	1.076	4.2	R, Re
CO81082-1	426	384	90.2	114	40	94	3.0	1.074	2.6	L, R
CO81095-4	308	229	74.2	29	76	99	3.0	1.098	4.2	Ob, R
CO83027-2	492	457	92.8	181	31	99	3.0	1.089	4.5	Ob, R
CO84074-2	429	355	82.6	48	89	95	3.0	1.074	3.0	Ob, R
CO84205-3	321	288	89.8	117	30	99	3.5	1.086	3.7	Ob, R
CO84205-5	416	359	86.2	110	47	100	3.0	1.070	3.9	Ob, R
CO84N6-12	409	302	74.0	84	43	95	3.5	1.084	1.9	R, Re
MN10874	448	377	84.2	89	64	100	3.0	1.080	3.4	Ob, R
NDTX9-1069-4RU	420	351	83.6	87	62	95	3.0	1.072	3.3	Ob, R
Centennial Russet	383	320	83.6	35	63	94	3.2	1.078	2.9	Ob, R
Norgold Russet	396	317	80.3	71	78	100	1.5	1.075	5.3	Ob, R
Russet Burbank	368	191	51.7	15	133	96	3.2	1.082	3.2	L, R
Russet Nugget	424	344	81.0	91	80	100	3.8	1.098	3.9	Ob, R
Sangre	483	408	84.5	99	75	99	3.0	1.074	3.9	Ov, Re
Mean	426	338	79.1	79	77	98	3.0	1.082	3.9	-----
LSD ³ (0.05)	67	54	4.8	37	27	4	0.6	-----	0.8	-----

¹Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

²Tuber shape: R=round; Ov=oval; Ob=oblong; L=long. Skin type: R=russet; Re=red.

³Least significant difference.

Table 2. Grade defects for advanced yield trial clones - 1990.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC75430-1	0.0		0.0
AC83044-1	4.9	GC*,MS	0.6
AC83044-2	0.4	SG*,MS	0.3
AC83064-1	1.8	SG,GC*	0.0
AC83064-6	1.0	GC*	0.0
AC83068-1	2.9	GC*,MS	0.0
AC83172-1	1.1	GC,MS*	0.0
AC83330-4	0.5	GC*	1.8
AC84017-3	5.7	GC*,MS	2.9
AC84028-4	1.1	GC,MS*	0.0
AC84069-3	0.7	GC,MS*	0.4
AC84209-8	5.5	GC*	0.0
AC84413-4	1.1	MS*	0.0
AC84472-1	11.8	GC*	0.0
AC84487-1	0.5	MS*	0.8
AC84509-2	2.9	SG,GC*,MS	0.2
AC84638-1	3.9	GC*	3.6
CO81082-1	0.3	MS*	1.6
CO81095-4	1.0	GC,MS*	0.9
CO83027-2	0.8	GC*,MS	1.4
CO84074-2	1.1	GC*,MS	0.0
CO84205-3	0.9	GC*,MS	0.0
CO84205-5	2.5	GC*,MS*	1.1
CO84N6-12	15.5	GC*,MS,GR	0.0
MN10874	1.5	GC,MS*,GR	0.0
NDTX9-1069-4RU	1.7	SG*,GC*,MS*	0.0
Centennial Russet	0.0		0.6
Norgold Russet	0.4	MS*	0.4
Russet Burbank	12.1	SG*,GC,MS	2.9
Russet Nugget	0.1	MS*	0.0
Sangre	0.0		0.4

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²SG=second growth; GC=growth crack; MS=misshapen; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 3. Chip color¹ and specific gravity of San Luis Valley chipping study entries - 1990.

Clone	7 wks 40°F	7 wks 50°F	7 wks/40°F +3 wks/60°F	7 wks/50°F +3 wks/60°F	Specific Gravity
A80559-2	4.0	4.0	3.5	2.0	1.093
AC80545-1	5.0	2.5	4.0	2.5	1.082
AC83306-1	4.0	4.0	4.0	2.0	1.078
AC83311-1	5.0	5.0	5.0	5.0	1.072
AC83311-2	5.0	4.0	4.0	2.5	1.081
AC83311-5	4.5	4.0	5.0	2.5	1.071
AC83368-3	5.0	3.0	4.5	4.0	1.077
AC84601-1	4.0	3.0	3.5	2.5	1.080
AC84610-2	4.0	2.5	4.0	1.0	1.079
AC84610-5	4.5	3.5	1.5	1.5	1.091
AC85438-4	4.0	4.0	2.5	2.5	1.083
AC86385-1	5.0	5.0	5.0	5.0	1.085
AC86395-2	4.0	4.0	4.0	3.0	1.094
AC86421-1	4.5	4.5	4.0	4.0	1.097
AC86422-1	4.0	4.0	2.5	3.0	1.091
AC86433-3	4.5	2.5	2.5	3.0	1.080
AC86444-5	4.5	2.5	3.5	1.5	1.083
AC86449-1	4.0	3.5	2.5	2.0	1.092
AC86449-2	3.5	3.0	1.5	1.0	1.083
AC86452-2	4.5	4.5	5.0	3.5	1.072
AC86452-3	4.5	4.0	4.5	3.0	1.083
AC86452-4	5.0	4.0	4.5	3.0	1.070
AC86458-1	4.5	4.0	4.0	3.5	1.079
AC86463-3	5.0	4.0	3.5	3.5	1.073
AC86489-3	4.5	4.0	4.0	3.5	1.089
BC0894-2	4.0	3.0	3.0	1.5	1.082
CO84111-6	5.0	5.0	4.0	4.0	1.093
CO86081-1	5.0	5.0	5.0	5.0	1.075
CO86106-1	5.0	4.5	5.0	3.0	1.083
CO86106-3	5.0	4.5	4.0	2.5	1.078
CO86106-4	4.5	4.0	3.5	2.5	1.088
CO86125-1	4.0	2.0	4.0	2.5	1.080
CO86224-1	4.0	4.0	4.0	3.0	1.083
CO86224-4	5.0	5.0	5.0	5.0	1.079
ND651-9	5.0	3.0	4.0	1.0	1.084
ND1995-1	4.0	2.0	2.0	1.0	1.095
ND2008-2	4.0	3.5	1.5	1.0	1.088
ND2109-7	5.0	4.0	3.5	1.0	1.093
NDO1496-1	4.5	4.0	3.5	1.5	1.094
Atlantic	4.5	4.0	4.0	2.5	1.093
Gemchip	5.0	4.0	4.5	2.5	1.072
Norchip	4.0	4.0	4.0	1.0	1.078

¹Chip color was rated using the Snack Food Association 1-5 scale. Ratings ≤ 2.5 are acceptable.

Table 4. Chip color¹ and specific gravity evaluations - Borden, Inc.² - 1990.

Clone	Specific Gravity	Nov. 5 ³	Jan. 31 ³
A80559-2	1.092	2.5	2.0
AC80545-1	1.082	3.0	3.0
AC83306-1	1.076	3.5	4.0
AC83311-1	1.074	6.0	7.0
AC83311-2	1.085	4.5	5.0
AC83311-5	1.074	4.5	2.5
AC83368-3	1.076	5.0	7.0
AC84601-1	1.083	3.5	4.5
AC84610-2	1.078	3.0	6.0
AC84610-5	1.090	2.0	1.5
AC85438-4	1.083	3.5	4.0
CO84111-6	1.092	2.5	2.5
NDO1496-1	1.096	2.5	2.0
Atlantic	1.093	3.5	3.0
Norchip	1.081	3.0	2.5

¹Chip color was rated using the PCII 1-10 scale. Ratings of 1-4 acceptable, 5 marginal.

²Data collected by Mr. Larry Anderson.

³Potatoes were harvested September 3-4 and held at approximately 55-60°F prior to chipping on November 5. Tubers were then cooled to 50°F by November 10 for storage.

Table 5. Yield, grade, stand, vine maturity, specific gravity, stem number per plant and tuber shape and skin type for Western Regional Trial clones - 1990.

Clone	Yield (Cwt/A)					% Stand	Vine Maturity ¹	Specific Gravity	Stems/ Plant	Tuber Shape & Skin Type ²
	Total	US #1			<4 oz					
		Total	%	>10 oz						
AC77101-1	455	353	77.8	75	91	100	2.0	1.080	4.2	Ob, R
AC78069-17	431	375	87.0	101	42	99	3.5	1.085	3.9	Ob, R
AC81198-11	489	406	83.2	163	53	97	3.5	1.086	3.5	Ob, R
AO82283-1	490	356	72.8	49	124	99	3.2	1.095	4.4	L, R
AO82611-7	482	340	70.2	57	119	97	3.0	1.090	2.8	L, R
BC0038-1	502	387	76.8	145	95	98	3.2	1.089	4.7	L, W
CO79018-11	390	334	85.8	147	21	94	4.0	1.081	2.4	Ob, R
CO80011-5	447	363	80.5	74	72	96	3.0	1.072	3.8	Ob, R
CO82142-4	422	384	90.9	173	33	93	3.8	1.093	3.2	L, R
ND671-4	261	143	54.8	7	117	85	3.0	1.076	3.7	L, R
ND1538-1	426	363	85.3	89	56	98	2.5	1.079	3.8	Ob, R
NDTX8-731-1R	349	272	78.3	62	64	99	2.3	1.068	2.6	R, Re
Centennial Russet	293	219	74.2	27	72	98	3.2	1.079	3.5	Ob, R
Leah's Russet	533	403	75.4	74	115	99	2.8	1.093	5.9	L, R
Norgold Russet	414	321	77.1	62	91	97	1.0	1.077	5.4	Ob, R
Red LaSoda	471	391	82.9	119	58	94	2.5	1.074	3.0	R, Re
Russet Burbank	390	208	53.2	17	126	99	3.5	1.086	3.1	L, R
Russet Norkotah	351	281	80.0	58	63	96	2.5	1.074	2.7	L, R
Sangre	497	434	87.4	109	58	97	3.0	1.079	3.8	R, Re
Shepody	467	380	81.6	124	65	97	3.0	1.082	3.2	L, W
Mean	428	336	77.8	87	77	97	2.9	1.082	3.7	-----
LSD ³ (0.05)	80	71	6.2	37	25	5	0.6	-----	0.6	-----

¹Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

²Tuber shape: R=round; Ob=oblong; L=long. Skin type: R=russet; W=white; Re=red.

³Least significant difference.

Table 6. Grade defects for Western Regional Trial clones - 1990.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC77101-1	2.9	GC*,MS	3.3
AC78069-17	3.4	GC*,MS*	1.5
AC81198-11	6.1	GC*,MS	0.0
AO82283-1	1.9	GC,MS*	0.0
AO82611-7	4.7	SG*,MS	0.7
BC0038-1	3.8	SG,GC,MS*,GR*	1.3
CO79018-11	8.9	SG,GC*,MS,GR	0.0
CO80011-5	2.8	GC*,MS*	0.0
CO82142-4	1.3	GC,MS*	0.4
ND671-4	0.2	MS*	0.0
ND1538-1	1.7	MS*	0.0
NDTX8-731-1R	3.6	GC*,MS*,GR	3.1
Centennial Russet	0.5	GC*,MS*	0.0
Lemhi Russet	2.5	GC*,MS,GR	0.0
Norgold Russet	0.5	MS*	0.8
Red LaSoda	4.7	GC*,MS,GR	9.6
Russet Burbank	14.3	SG*,MS	3.1
Russet Norkotah	0.9	GC*,MS*,GR*	0.0
Sangre	0.8	GC*,MS	1.0
Shepody	4.8	SG*,MS,GR	0.0

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²SG=second growth; GC=growth crack; MS=misshapen; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 7. Yield, grade, stand, vine maturity, specific gravity, stem number per plant and tuber shape and skin type for Western Regional Chipping Trial clones - 1990.

Clone	Total	Yield (Cwt/A)			% Stand	Vine Maturity ¹	Specific Gravity	Stems/ Plant	Tuber Shape & Skin Type ²	
		Total	US #1	>10 oz						
AC80545-1	471	345	72.4	52	119	100	3.5	1.098	4.0	R, W
AC83306-1	517	357	68.5	40	148	100	3.0	1.093	4.4	R, W
COB4111-6	392	291	74.1	20	99	98	3.0	1.098	3.2	R, W
ND2008-2	301	145	48.0	16	139	96	1.0	1.076	3.2	Ov, W
Atlantic	482	397	81.7	84	70	98	3.0	1.100	3.1	R, W
Geochip	473	388	81.4	85	83	97	3.2	1.092	4.0	Ov, W
Norchip	388	269	69.0	10	76	93	2.0	1.079	3.7	R, W
Mean	432	313	70.7	44	105	97	2.7	1.091	3.7	-----
LSD ³ (0.05)	93	98	8.3	26	27	NS	0.4	-----	0.6	-----

¹Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

²Tuber shape: R=round; Ov=oval. Skin type: W=white.

³Least significant difference. NS=not significant.

Table 8. Grade defects for Western Regional Chipping Trial clones - 1990.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC80545-1	1.2	SG,GC*,MS	0.0
AC83306-1	2.4	GC*,MS	0.0
CO84111-6	0.4	GC*,MS*	1.0
ND2008-2	5.9	MS*,GR	0.8
Atlantic	3.1	GC*,MS,GR	2.6
Gemchip	0.4	GC*	1.1
Norchip	10.7	GC*,MS	0.4

¹Percent external defects based on the proportion of the total sample weight with significant defects.

²SG=second growth; GC=growth crack; MS=misshapen; GR=green. Most prevalent defects for each clone are asterisked.

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.

Table 9. Chip color and specific gravity for Western Regional Chipping Trial clones - 1990.

Clone	7 wks 40°F	7 wks 50°F	7 wks/40°F +3 wks/60°F	7 wks/50°F +3 wks/60°F	Specific Gravity
AC80545-1	4.5	2.5	2.5	1.0	1.098
AC83306-1	4.0	1.5	2.0	1.5	1.093
CO84111-6	4.5	2.0	3.0	2.0	1.098
ND2008-2	4.0	1.5	2.0	1.0	1.076
Atlantic	4.0	1.0	2.5	2.5	1.100
Gemchip	4.0	3.0	3.5	2.5	1.092
Norchip	4.5	3.5	4.0	2.5	1.079

¹Chip color was rated using the Snack Food Association 1-5 scale. Ratings \leq 2.5 are acceptable.

Table 10. Comparison of advanced selections with recently named and standard cultivars for yield, grade, specific gravity, and grade defects.

Clone	Usage ¹	Location Years	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
*** Russets ***								
A7411-2	FM/FRY	3	371	86.0	3.4	1.095	5.1	1.2
AC78069-17	FM/FRY	4	381	87.8	3.4	1.084	4.4	0.5
AC81198-11	FM	4	444	79.9	3.1	1.079	10.2	0.0
CO80011-5	FM	5	363	82.3	2.4	1.074	2.9	0.1
CO81082-1	FM	4	352	86.0	2.2	1.075	0.8	0.7
Centennial Russet	FM	16	292	77.5	3.1	1.085	1.2	0.6
Century Russet	FM	4	399	83.9	3.2	1.085	3.3	0.0
Frontier Russet	FM/FRY	3	271	84.2	2.0	1.094	2.8	0.3
Norgold Russet	FM	9	320	76.2	1.2	1.079	0.4	0.8
Russet Burbank	FM/FRY	17	357	63.6	2.8	1.087	9.1	1.1
Russet Norkotah	FM	5	267	82.6	1.6	1.079	2.3	0.7
Russet Nugget	FM/FRY	8	356	78.6	4.0	1.098	1.8	0.4
*** Chippers ***								
AC80545-1	CHIP	5	442	82.7	3.6	1.091	3.3	0.1
Atlantic	CHIP	4	396	85.5	3.7	1.100	1.5	2.4
Gemchip	CHIP	6	397	82.1	3.4	1.090	1.7	0.7
Norchip	CHIP	10	328	74.1	1.9	1.083	6.0	0.5

¹FM=fresh market, FRY=french fry.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as growth crack, second growth, misshapen, and green.

⁴Based on tubers greater than 10 ounces.