RESEARCH PROGRESS REPORT FOR 1988

"Potato Breeding and Selection"

Submitted to the

SLV Research Center Committee

and the

Area II Potato Administrative Committee

by

David G. Holm

San Luis Valley Research Center

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Research was conducted in the following areas in 1988:

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) Sangre Selection Studies
D) Centennial Russet Mutation Studies

POTATO BREEDING

Thirty parental clones were intercrossed in 1988. Seeds from 207 combinations were obtained. Sixty seedling families were grown in the greenhouse, producing 14,444 tubers for initial selection in 1989. Surplus tubers were distributed to Idaho, Oregon, and Texas.

Seedling tubers were obtained from Dr. J. J. Pavek, Aberdeen, Idaho, Dr. J. Creighton Miller, Lubbock, Texas, and Dr. Kathleen Haynes, Beltsville, Maryland.

SEEDLING SELECTION AND CLONAL DEVELOPMENT

A total of 42,764 first-year seedlings were planted, with 484 being selected for further observation. Another 518 clones were in various stages of preliminary and intermediate testing. One hundred sixteen of these clones were saved for further evaluation. Nineteen advanced selections (15 russets, 2 chippers, 1 red, and 1 long white) were saved for increase and continued evaluation. Another 93 clones were maintained for breeding and other experimental purposes.

Advanced Yield Trial. Twenty-two clones, 18 advanced selections and four 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.

Several selections had greater total and US #1 yields than Centennial Russet and Russet Burbank. Top ranked clones for fresh market based on yield and grade were AC81198-11, AC82706-2, BC0169-12, and CO7918-11. BC0169-12 has been discarded due to high occurrence of pink pigmentation in the tuber flesh.

Clones with processing potential are AC7869-17, BC0224-3, CO7918-11, and CO8204-3.

Advanced yield trial clones entered in the 1989 Western Regional Trial are AC7869-17, AC81198-11, and CO7918-11.

Chipping Studies. Sixteen selections and two cultivars were compared for chipping potential at harvest and after various storage regimes. This information is shown in Table 3.

None of the selections produced acceptable chips after storage at 40°F or with reconditioning out of 40°F . Top selections were: A80559-2, AC80545-1, AC83305-2, AC83306-1, CO81103-1, CO84111-6, and W842. CO81103-1 has been discarded due to excessive glycoalkaloids. W842 is a Wisconsin selection that has always had good chip color but it has low yield potential.

Data collected by Borden, Inc. are presented in Table 4. Clones with color better than Atlantic after storage were: A80559-2, AC80545-1, AC83306-1, CO81103-1, CO84111-6 and W842.

Western Regional Trial. Ten selections and 8 cultivars were compared 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 clones.

Based on yield and grade, most selections performed better than the standard cultivars included in the trial. The top rated clones for fresh market based on yield and grade were AC79100-1, AC80369-1, and CO08014-1. Top rated clones for processing were AC80369-1, BC0038-1, and CO08014-1.

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

Top rated clones based on yield, grade, and chip color were A80559-2, AC80545-1, and BR7093-24. AC80545-1 has been rated as the overall best clone in this trial in 1987 and 1988.

Out-of-State Trials. Several clones are tested in other states each year in addition to states cooperating in regional trials. California is the primary out-of-state testing area. Selections are evaluated in both observational and yield trials.

Twenty-one clones (17 russets, 3 chippers, and 1 long white) and the Sangre selections were tested in California in 1988. Clones showing promise and being tested in 1989 in larger lots are: AC77101-1, AC80545-1, BC0038-1, CO8011-5, and BR7093-24.

The Sangre selections continue to perform well in California. Demand for seed stocks exceeds supply at this time.

Grower Tests. Grower evaluations were conducted on two russets (A74212-1 and AC79100-1) and two chippers (AC80545-1 and BR7093-24). AC79100-1 was discarded due to excessive shatter bruise. The other three selections will be retested in 1989. A74212-1 and BR7093-24 are to be named in 1989 by Oregon State University and Idaho respectively. Idaho recently announced that BR7093-24 will be named Gemchip. AC80545-1 will be retested by growers in 1989.

Grower response to the three Sangre selections remains favorable. Demand for seed stocks exceeds supply.

Seed of two russets (AC77101-1 and CO8011-5) and a long white (BC0038-1) will be released for grower tests in 1989. Data on these selections and AC80545-1 are summarized in Table 11.

New Potato Cultivar. Russet Nugget (TC582-1) was released by the Colorado and Texas Agricultural Experiment Stations in 1988. This cultivar is an oblong, smooth high yielding dual purpose potato with fresh market and processing qualities. The official release notice for Russet Nugget is attached to the back of this report.

SANGRE SELECTION STUDIES

The Sangre selections have been tested over a period of years with 1988 being the last year of evaluation. Results are presented in Table 10.

Several clones yielded as well as selections 10, 11, and 14. However, none of these selections have performed as consistently as selections 10, 11, and 14 over five years of testing.

As in 1986 and 1987, none of the Sangre selections or the standard were infected with PVX. PVS infections ranged from 21 to 100%. PVS has never been correlated with yield differences among the selections. Sangre-4 had generally had the lowest level of PVS infection. Additional studies need to be conducted to determine if this selection has some resistance to PVS.

CENTENNIAL RUSSET MUTATION STUDIES

This is the second year of testing to compare the performance of flat leaf and pebble leaf mutations with the standard Centennial Russet. Results are presented in Table 12.

Results were similar to those observed in 1987. Total and US #1 yield of the pebble leaf plants was less than the standard and the flat leaf mutations. The pebble leaf plants had 100% PVS infection compared to an average of 15% for standard and flat leaf plants. PVS infection level was negatively correlated with total, US #1, and >10 oz yield.

Table 1. Yield, grade, stand, vine maturity, specific gravity, stem number per plant and tuber shape and skin type for advanced yield trial clones - 1988.

Clone	Yield (Cwt/A)					% Stand	Vine Maturity[1]	Specific Gravity	Stems/ Plant	Tuber Shape & Skin Type[2]
	Total	US #1								
		Total	%	>10 oz	< 4 oz					
AC75430-1	360	330	91.7	66	27	98	2.8	1.085	4.2	Ob, R
AC7869-17	367	327	88.7	107	29	100	4.0	1.083	3.7	Ob, R
AC81138-1	317	195	61.6	19	119	98	4.0	1.076	4.4	L, R
AC81198-11	413	358	86.7	131	35	99	3.0	1.068	4.2	Ob, R
AC82263-1	295	246	82.8	66	42	96	3.2	1.078	3.6	Ob, R
AC82693-4	272	209	77.0	19	60	99	2.0	1.065	4.0	L, R
AC82706-2	452	351	77.7	85	64	99	4.0	1.070	3.0	Ov, Re
BC0169-12	422	385	90.9	143	30	97	4.0	1.078	4.1	L, R
BC0224-3	294	224	76.3	16	68	100	3.2	1.084	3.7	L, R
CO7918-11	380	337	88.6	117	32	98	4.0	1.073	2.5	Ob, R
CO8118-2	294	213	72.9	25	75	98	3.2	1.072	4.9	L, R
CO8138-6	248	190	76.4	24	57	97	1.8	1.074	4.6	Ob, R
CO8182-1	323	275	85.0	44	45	96	1.8	1.068	3.3	L, R
CO8190-1	319	268	84.0	79	45	98	2.0	1.070	3.8	Ob, R
CO8195-4	280	207	74.0	21	72	98	2.5	1.089	4.4	Ob, R
CO8204-3	339	253	74.9	18	80	98	3.2	1.090	5.1	Ob, R
CO82142-4	355	323	91.0	70	28	99	4.0	1.080	3.6	L, R
NDTX9-1069-4RU	272	198	73.4	28	70	98	1.0	1.072	3.7	Ob, R
Centennial Russet	282	223	79.1	18	57	99	3.0	1.075	3.4	Ob, R
Norgold Russet	302	217	71.9	16	85	96	1.0	1.069	5.2	Ob, R
Russet Burbank	331	201	61.5	21	105	99	2.5	1.074	4.1	L, R
Sangre	364	305	83.8	50	56	96	2.5	1.071	3.2	Ov, Re
Mean	331	265	79.5	54	58	98	2.9	1.076	3.9	-----
LSD (0.05)	67	57	5.9	29	24	NS[3]	0.5	-----	0.7	-----

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

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

[3]Not significant.

Table 2. Grade defects for advanced yield trial clones - 1988.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC75430-1	0.6	GC*	0.6
AC7869-17	3.1	GC*, MS*	0.4
AC81138-1	1.0	GC, MS*	0.0
AC81198-11	4.9	GC*, MS	0.0
AC82263-1	2.5	MS*	0.0
AC82693-4	1.4	MS*	0.0
AC82706-2	8.1	GC*, MS, GR	0.0
BC0169-12	1.6	SG, MS*	0.0
BC0224-3	0.7	MS*	0.0
CO7918-11	2.9	GC*, MS	0.0
CO8118-2	1.9	GC, MS*	0.0
CO8138-6	0.2	GC*	0.0
CO8182-1	1.0	MS*	0.0
CO8190-1	1.9	MS*	0.0
CO8195-4	0.2	MS*	0.0
CO8204-3	1.7	GC, MS*	0.0
CO82142-4	1.3	GC*, MS*	0.0
NDTX9-1069-4RU	1.4	MS*	0.0
Centennial Russet	0.9	GC*, MS*	0.0
Norgold Russet	0.2	MS*	0.0
Russet Burbank	7.3	SG*, GC, MS	0.3
Sangre	0.9	GC*	0.0

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

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

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

Table 3. Chip color[1] and specific gravity of San Luis Valley chipping study entries - 1988.

Clone	At Harvest	3 wks 70°F	10 wks 40°F	10 wks 50°F	10 wks/40°F +3 wks/60°F	10 wks/50°F +3 wks/60°F	Specific Gravity
A80559-2	3.0	2.5	4.0	2.0	3.5	2.0	1.108
AC80545-1	2.0	1.5	5.0	2.0	4.0	2.0	1.083
AC81592-2	3.0	2.5	5.0	2.5	3.5	2.5	1.078
AC83305-2	3.0	1.5	5.0	2.0	4.0	2.0	1.071
AC83306-1	2.5	1.5	4.5	2.0	4.0	1.5	1.083
AC84562-1	3.5	2.0	4.0	2.5	3.5	2.5	1.101
AC84562-3	3.0	3.0	4.5	3.0	4.5	3.0	1.095
BC0038-1	1.0	1.5	5.0	3.0	4.0	3.0	1.079
BR7093-24	1.0	1.5	5.0	2.5	4.5	3.0	1.082
CO81103-1	1.5	2.5	4.5	2.5	4.0	2.0	1.091
CO84104-6	4.0	3.5	5.0	4.0	5.0	4.0	1.081
CO84105-7	4.0	4.0	5.0	4.0	4.5	3.5	1.081
CO84109-2	2.5	2.5	4.5	2.5	4.5	2.5	1.073
CO84111-6	2.5	3.0	4.5	2.5	3.0	2.0	1.086
TC1237-1	3.5	2.5	4.5	2.5	4.0	2.5	1.082
W842	1.5	2.0	4.0	2.0	3.0	1.0	1.094
Atlantic	2.5	2.0	4.5	2.5	4.5	2.5	1.092
Norchip	2.5	2.5	5.0	3.5	4.5	3.5	1.080

[1]Chip color was rated using the Potato Chip/Snack Food Association 1-5 scale. Ratings of 2.5 or less are acceptable.

Table 4. Chipping evaluations by Borden, Inc.[1] - 1988.

Clone	Specific Gravity	Color[2]	
		Sept. 26[3]	Jan. 20[4]
A80559-2	1.100	2.0	1.5
W842	1.094	2.0	1.5
AC80545-1	1.086	2.0	2.0
AC83306-1	1.088	2.5	2.0
CO81103-1	1.092	2.5	2.5
CO84111-6	1.089	3.0	2.5
Atlantic	1.090	2.5	3.0
BR7093-24	1.078	3.0	3.0
AC83305-2	1.072	3.0	3.0
AC84562-1	1.098	3.5	2.5
AC81592-2	1.079	3.5	3.5
CO84109-2	1.073	3.5	3.5
TC1237-1	1.082	4.0	3.0
BC0038-1	1.078	3.5	4.0
Norchip	1.074	4.5	4.0
AC84562-3	1.097	5.0	3.5
CO84105-7	1.080	6.0	5.0
CO84104-6	1.081	7.0	6.0

[1]Data collected by Mr. Larry Anderson.

[2]Color was rated using the PCII 1-10 scale. Ratings of 1-4 acceptable, 5 marginal.

[3]Potatoes were harvested August 29-September 7 and held at approximately 55-60°F prior to shipping and frying.

[3]Gradually cooled to 48-52°F by November 1.

Table 5. Yield, grade, stand, vine maturity, specific gravity, stem number per plant and tuber shape and skin type for Western Regional Trial Clones - 1988.

Clone	Yield (Cwt/A)					%	Vine	Specific	Stems/	Tuber Shape
		US #1								
	Total	Total	%	>10 oz	< 4 oz	Stand	Maturity[1]	Gravity	Plant	& Skin Type[2]
A7816-14	314	224	70.7	35	80	98	3.5	1.090	3.5	L, R
A7961-1	302	250	82.8	54	46	95	2.2	1.084	2.9	Ob, R
AC77101-1	294	250	84.8	40	41	99	1.0	1.076	4.1	Ob, R
AC77226-13	299	264	88.3	38	33	98	3.0	1.072	4.1	L, R
AC79100-1	320	285	89.0	56	32	96	1.0	1.075	3.8	L, R
AC80369-1	330	280	85.1	64	32	96	3.2	1.090	4.1	L, R
BC0038-1	306	249	81.2	32	47	99	2.8	1.082	4.4	L, W
CO8011-5	296	240	81.2	20	53	98	1.0	1.069	3.8	Ob, R
COO8014-1	321	271	84.5	33	46	97	2.0	1.086	3.6	Ob, R
NDTX9-1068-11R	270	227	84.0	45	38	98	1.8	1.066	2.8	R, Re
Centennial Russet	286	237	83.0	35	48	98	3.0	1.081	3.4	Ob, R
Lemhi Russet	315	236	74.8	27	68	98	2.0	1.090	5.5	L, R
Norgold Russet	212	160	75.5	4	51	97	1.0	1.080	5.6	Ob, R
Red LaSoda	398	345	87.0	78	38	99	1.8	1.077	3.2	Ob, Re
Russet Burbank	266	158	59.4	10	95	97	2.2	1.080	4.0	L, R
Russet Nugget	305	225	73.6	29	74	99	4.0	1.089	5.1	Ob, R
Sangre	370	311	83.8	41	55	98	2.0	1.067	3.2	Ov, Re
White Rose	373	294	78.5	71	63	99	2.2	1.070	4.2	L, W
Mean	310	250	80.4	40	52	98	2.2	1.079	4.0	-----
LSD (0.05)	55	47	5.5	18	16	NS[3]	0.5	-----	0.8	-----

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

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

[3]Not significant.

Table 6. Grade defects for Western Regional Trial clones - 1988.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A7816-14	3.4	MS*	0.0
A7961-1	2.1	SG, MS*	0.0
AC77101-1	1.0	MS*	0.0
AC77226-13	0.9	GC*, MS*	0.0
AC79100-1	0.9	GC, MS*	0.0
AC80369-1	5.4	SG, GC, MS*	0.0
BC0038-1	3.2	MS, GR*	0.0
CO8011-5	1.0	GC*, MS*	0.0
COO8014-1	1.1	MS*	0.0
NDTX9-1068-11R	2.0	GC*, MS, GR	0.0
Centennial Russet	0.2	GC*	0.8
Lemhi Russet	3.5	GC*, MS*	0.0
Norgold Russet	0.6	MS*	0.0
Red LaSoda	3.8	SG, GC*, MS, GR	0.0
Russet Burbank	4.7	SG*, MS	1.0
Russet Nugget	2.2	SG, MS*	0.0
Sangre	1.3	GC, MS*, GR	0.0
White Rose	4.3	SG*, MS*	0.4

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

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

[3]Percent 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 - 1988.

Clone	Yield (Cwt/A)					%	Vine	Specific	Stems/	Tuber Shape
		US #1								
	Total	Total	%	>10 oz	< 4 oz	Stand	Maturity[1]	Gravity	Plant	& Skin Type[2]
A80559-2	358	307	85.3	64	45	98	4.5	1.097	3.2	Ov, W
AC80545-1	441	390	88.1	99	42	95	4.0	1.081	3.8	Ov, W
AC81592-2	381	353	92.4	160	18	96	2.2	1.078	4.0	R, W
BR7093-24	391	343	87.3	131	47	97	3.8	1.080	3.4	Ov, W
CO81103-1	317	269	84.8	71	46	95	3.2	1.085	3.7	Ov, W
W842	270	201	74.5	38	66	100	2.5	1.089	3.3	Ov, W
Atlantic	307	265	86.5	67	41	98	3.8	1.092	2.9	R, W
Norchip	315	255	80.8	67	41	99	2.2	1.072	2.8	R, W
Mean	347	298	84.9	87	43	97	3.3	1.084	3.4	-----
LSD (0.05)	93	90	4.2	44	12	NS[3]	0.7	-----	0.5	-----

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

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

[3]NS=Not significant.

Table 8. Grade defects for Western Regional Chipping Trial clones - 1988.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A80559-2	1.8	GC*, MS*, GR*	0.6
AC80545-1	2.1	SG, GC*, MS, GR	0.4
AC81592-2	2.5	GC, MS*, GR	0.7
BR7093-24	0.2	GC*	0.0
CO81103-1	0.6	MS*	0.0
W842	1.0	GC*, MS*	0.0
Atlantic	0.2	GR*	0.7
Norchip	6.2	GC*, MS, GR	0.0

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

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

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

Table 9. Chip color[1] and specific gravity of Western Regional Chipping Trial entries - 1988.

Clone	6 wks 40°F	6 wks 50°F	6 wks/40°F +3 wks/60°F	6 wks/50°F +3 wks/60°F	Specific Gravity
A80559-2	3.5	1.5	2.0	1.0	1.097
AC80545-1	4.5	2.5	2.5	1.5	1.081
AC81592-2	4.5	2.5	5.0	1.5	1.078
BR7093-24	4.0	2.5	4.0	3.0	1.080
CO81103-1	4.0	2.0	2.5	2.0	1.085
W842	3.5	1.5	2.0	1.5	1.089
Atlantic	3.5	2.0	3.0	1.5	1.092
Norchip	5.0	2.0	4.0	2.0	1.072

[1]Chip color was rated using the Potato Chip/Snack Food Assoc. 1-5 scale. Ratings of 2.5 or less are acceptable.

Table 10. Yield, grade, stand, vine maturity, PVS content, and stem number per plant for 17 Sangre selections and the standard - 1988.

Clone	Yield (Cwt/A) Total	US #1 Total	US #1 %	>10 oz	< 4 oz	% Stand	Vine Maturity[1]	% Virus S	Stems/ Plant
1	361	329	91.4	61	28	98	2.8	21	2.6
2	389	352	90.7	82	36	96	2.5	21	2.6
3	359	309	86.1	52	45	98	2.0	100	2.6
4	385	344	89.1	68	39	98	2.5	25	2.4
5	359	318	88.6	90	34	94	2.2	50	2.0
6	312	274	87.8	105	34	99	5.0	62	2.0
7	399	359	90.1	139	36	97	4.2	60	2.5
8	354	312	88.2	86	40	98	3.2	95	2.5
9	412	355	85.8	141	44	96	4.2	29	2.2
10	453	394	86.9	153	54	96	3.2	64	2.3
11	390	338	86.6	129	51	98	3.2	49	2.6
12	408	355	87.0	141	53	97	3.2	100	2.7
13	417	360	86.4	179	39	99	5.0	55	2.2
14	404	342	84.5	107	58	98	3.0	84	2.8
15	397	335	84.4	65	60	99	3.8	100	2.8
16	389	321	82.5	67	65	99	2.5	66	3.1
17	379	329	86.8	92	48	94	2.2	28	2.2
S[2]	404	339	83.7	92	65	100	2.5	44	3.0
Mean	387	337	87.0	103	46	97	3.2	58	2.5
LSD[3]	56+	NS	3.8*	37*	15*	NS	0.5*	32*	0.4*

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

[2]Standard Sangre grown at the San Luis Valley Research Center.

[3]NS=not significant, +P=0.10, *P=0.05.

Table 11. Comparison of advanced numbered selections with standard cultivars for yield, grade, specific gravity, and grade defects.

Clone	Usage	Total Yield (Cwt/A)	% US #1	Specific Gravity	% External Defects[1]	% Hollow Heart[2]
Russets						
AC77101-1	FM	370	85.8	1.084	2.4	0.2
CO8011-5	FM	347	83.2	1.073	2.3	0.0
Centennial Russet	FM	282	79.1	1.082	1.1	0.2
Russet Burbank	FM/FRY	330	63.3	1.086	10.1	1.0
Whites						
AC80545-1	CHIP	439	84.5	1.090	6.0	0.0
BC0038-1	FM/FRY/CHIP	343	73.7	1.090	10.5	0.0
Atlantic	CHIP	351	89.5	1.099	1.0	0.8
Norchip	CHIP	304	78.3	1.081	6.3	0.0

[1]Includes defects such as growth crack, second growth, misshapen, and green.

[2]Based on tubers greater than 10 ounces.

Table 12. Yield, grade, stand, vine maturity, PVS content of Centennial Russet mutations and the standard - 1988.

Clone	Yield (Cwt/A) Total	US #1 Total	US #1 %	US #1 >10 oz	US #1 < 4 oz	% Stand	Vine Maturity[1]	% Virus S
Standard	314	251	80.0	43	61	95	3.0	19
Flat Leaf	358	280	78.2	46	71	97	3.0	12
Pebble Leaf	273	203	74.7	20	68	100	2.8	100
LSD[2]	52+	50*	NS	21*	NS	NS	NS	10*

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

[2]NS=not significant, +P=0.10, *P=0.05.

COLORADO AGRICULTURAL EXPERIMENT STATION
COLORADO STATE UNIVERSITY
FORT COLLINS, COLORADO

and

TEXAS AGRICULTURAL EXPERIMENT STATION
TEXAS A&M UNIVERSITY
COLLEGE STATION, TEXAS

NOTICE OF THE RELEASE OF THE POTATO CULTIVAR RUSSET NUGGET

The Colorado and Texas Agricultural Experiment Stations announce the release of the potato cultivar Russet Nugget. Russet Nugget is an oblong, smooth, high yielding dual purpose potato with fresh market and processing qualities.

Russet Nugget, tested under pedigree number TC582-1, was selected in 1979 at the San Luis Valley Research Center, Center, Colorado from a cross of Krantz and AND71609-1RU made at the Texas A&M University Agricultural Research and Extension Center, Lubbock, Texas in 1977. Norgold Russet and Nooksack are in the ancestry on the paternal side.

Russet Nugget was tested in the Western Regional Trials in 1984-86. Seed was released in Colorado for increase and grower trials in 1985. In 1988, 290 acres of certified seed were produced.

Russet Nugget emerges quickly, produces an erect, large-sized vine with many white flowers, and is later maturing than Russet Burbank. No sensitivity to metribuzin has been observed. Tests have shown Russet Nugget to be resistant to common scab, and moderately resistant to leafroll net necrosis, Verticillium wilt, and early blight (tuber and foliage). It is moderately susceptible to bacterial soft rot and potato leafroll virus.

Field tests in the San Luis Valley have shown that foliar ring rot expression is comparable to that of Centennial Russet, but milder and two to four weeks later than in Russet Burbank. Symptoms observed in the foliage and tubers are similar to both Russet Burbank and Centennial Russet.

Leafroll expression is good. However, there is a narrow window of time available for roguing infected plants due to the vigorous, large vines.

Tubers have a creamy white flesh color with a high solids content. Processing characteristics are equal to or better than those of Russet Burbank. Tests performed as part of the Western Regional Trial over a three-year period, showed that french fry flavor and texture of Russet Nugget were better than Russet Burbank. External fry color and

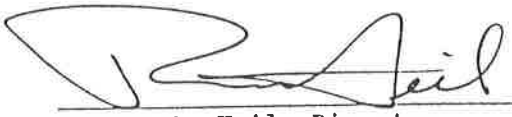
percent acceptable fries were better two out of three years. Other tests have shown that baked tubers of Russet Nugget have better color, flavor and texture than Russet Burbank.

Tubers have a medium dormancy with good storability. Tubers are resistant to blackspot, shatter bruise, hollow heart, and second growth. Total glycoalkaloid content is moderately low, averaging 10.0 mg/100 g fresh weight. Purple pigmentation occasionally occurs in the tuber flesh. This is usually associated with sunburn.

Production characteristics of Russet Nugget compared to other cultivars for the four-year period 1984-87 are presented in the following table.

Location/Cultivar	Total Yield (t/ha)	% US #1	Specific Gravity
Colorado			
Russet Nugget	37.2	78	1.100
Centennial Russet	30.2	77	1.087
Russet Burbank	38.8	65	1.090
Texas			
Russet Nugget	36.2	74	1.073
Norgold 40	36.1	80	1.061
Norgold Russet	31.0	68	1.062

Seed inquiries should be directed to: Potato Certification Service, San Luis Valley Research Center, Center, CO 81125.



12/22/88

Robert D. Heil, Director
Colorado Agricultural Experiment Station

Date

2/24/89

Neville P. Clarke, Director
Texas Agricultural Experiment Station

Date