Research Progress Report for 1997

Potato Breeding and Selection

Submitted to the

San Luis Valley Research Center Committee

and the

Colorado Potato Administrative Committee (Area II)

by

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RESEARCH PROGRESS REPORT FOR 1997

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Research was conducted in the following areas in 1997:

A) Potato Breeding
B) Seedling Selection and Clonal Development (includes data collected on field growth characteristics and postharvest evaluations if appropriate)
   - Preliminary Trial
   - Intermediate Trial
   - Advanced Yield Trial
   - Western Regional Main Trial
   - Chipping Study
   - Western Regional Chip Trial
   - Western Regional Red Trial
   - Specialty Trial
   - Out-of-State Trials
   - Grower Evaluations

Table 1 presents a detailed description of the steps involved in developing new potato cultivars. The reader may want to refer to these items while reviewing the "Potato Breeding" and "Seedling Selection and Clonal Development" sections of this report.

Table 2 and Figure 1 present statistics on the primary cultivars grown in the San Luis Valley during 1983-1997. Study of this information reveals trends in the popularity of the various cultivars. Figure 2 presents a comparison in the production of the primary potato cultivars during 1994-1997. Russet Nugget, released by Colorado in 1988, became the primary cultivar grown on fall planted acreage in Colorado in 1997. Russet Nugget was followed in acreage by Russet Norkotah, Centennial Russet, and Sangre. With the exception of Russet Norkotah, all of the other cultivars were released by CSU. They accounted for 56% of the potato acreage planted in the San Luis Valley. Centennial Russet acreage continued to decrease. Acreage of Russet Norkotah acreage increased slightly in 1997, while Russet Nugget acreage continued to increase significantly.

POTATO BREEDING

Fifty-one parental clones were intercrossed in 1997. Seeds from 193 combinations were obtained. Primary emphasis was on fresh and processing russets, chippers, and reds. Seedlings from selected families will be produced in 1998 for initial field selection in 1999.

Another thirty-six parental clones are currently being intercrossed. Primary emphasis of this crossing block was specialty types (yellow fleshed reds, whites, and russets, and colored fleshed chippers).

One hundred seventeen 1996 seedling families were grown in the greenhouse producing 41,300 seedling tubers for initial field selection in 1998. Surplus tubers (second thru forth sizes) will be distributed to Idaho, Minnesota, Oregon, Texas, and Alberta, Canada.

A second, smaller planting of seedlings representing 14 families was grown in the greenhouse. These families resulted from 1994 crosses emphasizing specialty types and will also be planted for initial field selection in 1998.

Additional seedling tubers were obtained from Dr. J. J. Pavek, USDA-ARS, Aberdeen, Idaho; ; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; and Dr. J. Creighton Miller, Texas A&M University, College Station, Texas.

SEEDLING SELECTION AND CLONAL DEVELOPMENT

A total of 73,324 first-year seedlings were planted with 820 being selected at harvest for further observation. Another 936 clones were in 12-hill, preliminary, and intermediate stages of selection. Of these, 262 were saved at harvest for further evaluation. Twenty-five advanced selections were saved and contingent on additional evaluations, will be increased in 1998. Another 153 selections were maintained for germplasm development, breeding, other experimental purposes, or seed increases for the Texas program.

Appendix 1 lists the procedures used for the postharvest evaluations for the trials summarized in this section of the report. Appendices 2-9 present additional information regarding the frequency distribution for the results of the postharvest evaluations for all selections and named cultivars included in the trials. Appendices 2-9 are useful in understanding how a given selection compares with the population of clones being evaluated. Remarks regarding the results of the postharvest evaluations will generally be limited except to highlight particular clones with certain strengths or weaknesses.

Preliminary Trial. The Preliminary Trials (P1 and P2) are composed of selections undergoing the third and fourth cycles (years) of selection in the field. Fourth year materials (P2) selected at harvest are evaluated for several postharvest characteristics before being advanced to the Intermediate Yield Trial (IYT) the following year. This allows us to start to characterize each clone for tuber quality and flag those with potentially serious quality defects.

Eleven selections and six cultivars were evaluated in the Preliminary Trial (P2). Results of the postharvest evaluations are presented in Tables 3A-B.

None of the selections evaluated are very susceptible to blackspot bruising. Selection AC92009-4 had an exceptionally long dormancy of 171 days. Selections AC92096-5, NDC5281-2, and 87TR2210-1 were all susceptible to enzymatic browning. The only selection with acceptable fry color was TC1675-1. This selection is a cross of Russet Nugget x Lemhi Russet.

Intermediate Trial. The Intermediate Yield Trial (IYT) is composed of selections undergoing the fifth cycle of selection in the field. Selected IYT clones are entered the Advanced Yield Trial (AYT) the following year.

Five selections and three cultivars were evaluated in the Intermediate Yield Trial. Results on yield, grade, growth characteristics, and postharvest evaluations are summarized in Tables 4A-E.

All selections had greater total and US #1 yields compared with Centennial Russet.

Selection AC91365-1 appeared to have some susceptibility to hollow heart but was free of external defects. Selections with susceptibility to blackspot bruising were AC91014-2 and AC91042-2.

Selections with acceptable fry color at harvest and after storage were AC91014-2 and AC91579-4.

Advanced Yield Trial. The Advanced Yield Trial (AYT) is composed of russet and long white selections advanced from the IYT the previous year besides those selected from previous AYT trials before and after graduation from the Western Regional Trials. This would generally include selections in the 6th-8th and 12+ cycles of selection in the field. Selections in the 8th cycle of field selection are also entered into cultural management trials and postharvest disease reaction evaluations conducted by Ms. Susie Thompson-Johns and Dr. Robert Davidson.

Twenty-two clones, 18 advanced selections and 4 cultivars, were evaluated in the Advanced Yield Trial. Results on yield, grade, growth characteristics, and postharvest evaluations are summarized in Tables 5A-E.

Several selections had yields greater than 400 cwt/A. Clones yielding greater than 500 cwt/A were AC87138-4, AC89536-5, and CO90052-1. Avalanche was the highest yielding cultivar with 707 cwt/A.

Advanced russet selections in this trial that have been extensively tested by growers and continue to show potential for naming are AC83064-1, AC83064-6, CO80011-5, and COO83008-1. Plans are to name CO80011-5 before the 1998 planting season. COO83008-1 is still on track to be named by Oregon. COO83008-1 has been evaluated extensively in the Western Regional Trials and by industry. It has excellent processing qualities. Two advanced selections, AC78069-17 and CO81082-1, have been discarded from further evaluation.

Selections producing acceptable fry colors were AC83064-6, AC87138-4, and COO83008-1.

Two russet selections, AC88042-1 and AC88165-3, will be entered in the 1998 Western Regional Main Trials. Seed of these selections will also be released fro grower trials in 1998.

Western Regional Main Trial. After selections have been evaluated for three years in the advanced yield trials, they are entered into one of four Western Regional Trials at several locations in the Western United States. The regional trials are designed to evaluate the adaptability of selections over a range of environments and production management systems.

Eleven selections and five cultivars were entered in the Colorado Western Regional Main Trial. Tables 8A-E present the data collected on these selections in the Colorado trial.

The number of entries in this trial has been significantly reduced since 1995. This is due to the exclusion all entries coming from areas where seed stocks potentially have been exposed too late blight. We are attempting to initiate tissue culture based increases of all potential entries from the various cooperating programs two years in advanced of entrance in the Western Regional Trials (Main, Chip, Red, and Specialty). This would allow our program to have suitable stocks ready for trials in the event they are entered in the Western Regional Trials.

Selections entered by Colorado in 1997 included AC87084-3, CO85026-4, CO87009-4 and Russet Norkotah S3 and S8. CO85026-4 graduated from the Western Regional Trial having completed three years of evaluation in 1997. Selection CO87009-4 was withdrawn and discarded from further evaluations because of poor performance overall.

The top yielding selection was A82360-7 (552 cwt/A). The 1997 production year was the best that we have ever had for Russet Norkotah in San Luis Valley trials. All of the line selections still had greater total and US #1 yields compared with the standard. Russet Norkotah S3 did better than any of the other clonal selections.

The Russet Norkotah clonal selections responded similarly in the postharvest evaluations. One notable exception was that Russet Norkotah S3 had a longer dormancy than any other selection in the trial. This observation should be validated in future studies.

Selections with acceptable fry scores were A82360-7, AC87084-3, CO87009-4, and TX1385-12RU.

Colorado will reenter AC87084-3 and Russet Norkotah S3 and S8. New entries from Colorado in 1998 are AC88042-1 and AC88165-3.

Chipping Studies. Forty-six clones, 43 selections and 3 cultivars, were tested for chipping potential after various storage regimes. Additional information on postharvest characteristics was collected on 23 of these selections. Data from this study are summarized in Tables 7A-B. Appendix 9 shows the percent of the samples producing acceptable chips after the various storage regimes. This figure also includes information for the Western Regional Chip Trial.

Of the selections and cultivars evaluated, 5% produced acceptable chips after 6 weeks of 40F storage. Only 9% produced acceptable chips after 6 weeks of 40F storage with reconditioning for three weeks at 60F. Selections with acceptable chip color ratings after cold storage were AC93377-5, CO90217-1, and CO90217-4. Selections CO90217-1 and CO90217-4 resulted from a cross of ND2008-2 x ND1995-1. Both of the North Dakota (ND) clones are "cold" chippers. The female parent of AC93377-5 is ND860-2 (another ND "cold" chipper).

Selections with potential blackspot susceptibility are BC1470-1, CO90217-1, and CO92059-8.

Selection AC87340-2 will be entered in the 1998 Western Regional Chip Trials.

Western Regional Chip Trial. The Colorado Western Regional Chip Trial also included intermediate and advanced chipping selections from the selection program that were not formally entered into the regional trials. Eighteen entries, 13 selections and 5 cultivars, were included in the Colorado Western Regional Chip Trial. Trial results are presented in Tables 8A-E.

Chipeta was one of the first cultivars to be named after the formalization of the Western Regional Chip Trial. Because of commercial success with Chipeta, it was included as a check cultivar starting in 1995.

Colorado entered AC88357-3 in the 1997 Western Regional Chip Trials. This selection was discarded from further evaluation because of poor performance overall.

The highest yielding selections were AC89653-3 and ATX85404-8. Chipeta had the overall highest total and US #1 yield of 514 and 429 cwt/A respectively.

Several selections showed susceptibility to blackspot bruising. Some of these selections have not shown a susceptibility in the past. Overall blackspot was more severe in our 1997 trials.

Two selections, CO90217-1 and CO90217-4, have "cold" chipping potential.

Colorado initially entered BC0894-2 into the Western Regional Chip Trials in 1994. This selection graduated from the trial in 1996. This selection is early maturing and continues to show potential for eventual naming. BC0894-2 was also entered into the Snack Food Association (SFA) Trials in 1995-1997. Another selection showing considerable potential is ATX85404-8. It will be entered in the SFA Trials for the third year in 1998.

Western Regional Red Trial. The Colorado Western Regional Red Trial also includes intermediate and advanced red selections from the selection program that were not formally entered into the regional trials. The Colorado trial included 13 entries, 10 selections and 3 cultivars. Trial results are summarized in Tables 9A-E.

Entries from Colorado in the Western Regional Red Trial included CO86142-3 (NDTX302-1 x Redsen), CO86218-2 (Sangre x NDTX9-1068-11R) and DT6063-1R. CO86142-3 and CO86218-2 were in the trial for a fourth year because of a lack of entries in 1997. These two selections will not be reentered in 1998. DT6063-1R completed two years of regional testing in 1997 and will be reentered in 1998. Selection CO86142-3 has been discarded due to tuber dry rot and susceptibility to PVY.

Several red selections are early maturing and have relatively high yields. Several red selections also showed susceptibility to blackspot bruising. As observed in the chip trial, blackspot bruising was more severe in 1997.

Selection CO89097-2 will be entered in the Western Regional Red Trials in 1998.

Specialty Trial. A Specialty Trial was initiated in 1997 to collect data on both intermediate and advanced specialty and novelty selections being developed in Colorado Potato Breeding and Selection Program. Five entries, 3 selections and 2 cultivars, were included. Trial results are presented in Tables 10A-E.

Selections NDC4069-4 (red/red flesh), RC92003-2 (purple/purple flesh), All Blue (blue/blue flesh) are considered novelty clones. Criteria employed in selecting novelty clones is subjective by nature. RC93007-2 and Crispin (white/yellow flesh) would be considered specialty clones. These selections merit further evaluation in 1998. NDC4069-4 was entered into the Western Regional Specialty Trial in 1997 and will be reentered in 1998.

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. Considerable testing is also conducted in Texas and Arizona. Generally selections are evaluated in both observational and yield trials in these areas. Our cooperators are: California - Dr. Ron Voss, University of California, Johnston Farms, and Moore Farms (chippers only); Texas - Dr. J. Creighton Miller, Jr., Texas A&M; and Arizona - Pinto Creek Management, Mr. David Layton.

Twenty-two selections (including Russet Norkotah S3 and S8) were evaluated at Johnston Farms in California in 1997. Many of these selections have promise and will be retested in 1998. Sixty selections ((including Russet Norkotah S3 and S8) were sent to Dr. Ron Voss for evaluation in the Bakersfield and Tulelake areas of California.

Six advanced selections and Russet Norkotah S3 and S8 were tested in Arizona. The most promising will be reevaluated in 1998.

Overall, the advanced selections showing the most potential in out-of-state seed markets include AC83064-6, ATX85404-8, and BC0894-2. Russet Norkotah S3 and S8 are in demand also for University and commercial trials.

Grower Tests. Grower evaluations were conducted on eight russets (AC78069-17, AC83064-1, AC83064-6, AC87084-3, CO80011-5, CO81082-1, CO86026-4, and CO87009-4), two chipping selections (ATX85404-8 and BC0894-2), and two reds (CO86218-2 and DT6063-1R).

Selections AC78069-17 and CO81082-1 were discarded after several years of grower evaluation. CO87009-4 was also discarded because several lots had mediocre yields due to a lack of tuber sizing. Comparative data for the remaining selections and standard cultivars is presented in Table 11.

Selections to be named in 1998 included CO80011-5 (Crestone Russet) and AC83064-6. DT6063-1R will be named after another year of evaluation in the Western Regional Red Trial. Selections that will continue undergoing grower evaluation are AC83064-1, CO85026-4, AC87084-3, ATX85404-8, BC0894-2, and CO86218-2.

Two new russet selections to be evaluated by growers in 1998 are AC88042-1 and AC88165-3. AC88042-1 is a medium maturing dual purpose clone with processing and fresh market potential. It was selected from a cross of Norking Russet x A81286-1. AC88165-3 is also a medium maturing fresh market clone selected from a cross of A81323-38 x Ranger Russet.

Cultivar Releases. Growers recommended naming CO80011-5 (Crestone Russet), and AC83064-6. Despite some production problems observed with CO80011-5, growers are generally pleased with the performance of CO80011-5. CO80011-5 will be released by the Colorado Agricultural Experiment Station as a high yielding, medium-early maturing, fresh market potato. AC83064-6 is a high yielding, medium maturing, dual purpose potato with excellent tuber type.

COO83008-1 will likely be named in 1998. This will be a joint release by Oregon, Colorado, Idaho, and Washington Agricultural Experiment Stations. The cross for this selection was made in Colorado and selected in Oregon. This selection has excellent processing qualities.

Table 1. Potato breeding and selection scheme used at the SLV Research Center.

Year	Comments
1	Select parents, crossing, and true seed production in the greenhouse.
2	Produce seedling tubers from true seed in the greenhouse.
3	60,000-80,000 seedling tubers planted in the field as single hills. Several thousand tubers are obtained from other breeding programs. Initial selection of this material takes place at harvest. First cycle of field selection.
4	Twelve-hills of each single-hill selection are planted. Second cycle of field selection.
5	Preliminary Trial 1 (P1). Third cycle of field selection. Initial evaluations for chipping qualities (chip color after various storage regimes and specific gravity) are conducted this year and subsequently.
6	Preliminary Trial 2 (P2). Fourth cycle of field selection. Initial evaluations to characterize selections for blackspot bruise potential, storage weight loss, dormancy, and enzymatic browning. Initial evaluations for french fry potential (french fry color and specific gravity) are conducted this year and subsequently. Evaluations for chipping qualities are continued.
7	Intermediate Yield Trial (IYT). Fifth cycle of field selection. Initial data collected on yield, grade, and growth characteristics.
8-10, 14+	Advanced Yield Trials (AYT): Includes selections that have advanced from the IYT and graduated from the Western Regional Trials. The advanced yield trials for chippers and reds are combined with the Western Regional Chip and Red Trials. Selection are in the 6th-8th and 12+ cycles of field selection. Selections in the sixth cycle of selection are indexed for viruses and cleanup/micropropagation is initiated. Testing for ring rot and PLRV reaction is also initiated at this stage and continues as needed. Selections in the 8th cycle of field selection are entered into cultural management trials and postharvest disease reaction (dry rot and soft rot) evaluations.
11-13	Western Regional Trials (4 trials): main trial (russets and long whites), chip trial, red trial, and specialty trial. The WRCC-27 coordinates these trials at 10+ locations each year. Cultural management trials and postharvest disease reaction evaluations continued as needed.
11+	Grower/industry trials. The Colorado Potato Breeding and Selection Project relies on the cooperation of several growers, shippers, and processors (in-state and out-of-state) to evaluate advanced selections for adaptability and marketability.
14+	Released as a named cultivar.

Table 2. Colorado fall potatoes: Production of primary potato cultivars, 1983-1997[1].

Cultivar	%/Acreage	Year														
		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Russet Burbank	%	23.9	22.9	24.3	23.7	21.7	16.0	13.2	7.1	8.3	8.7	—	7.6	—	1.6	—
	Acreage	11,233	12,252	13,730	13,509	13,237	9,600	8,184	4,651	5,644	5,742	—	5,624	—	1,248	—
Centennial Russet	%	62.7	68.0	66.9	66.0	67.3	68.8	55.3	61.2	47.5	44.4	38.3	30.3	20.5	15.0	12.3
	Acreage	29,469	36,380	37,799	37,620	41,053	41,280	34,286	40,086	32,300	29,304	27,768	22,422	15,785	11,700	9,471
Russet Norkotah	%	—	—	—	—	—	2.2	9.9	14.0	20.1	26.1	23.5	26.6	36.2	35.6	37.6
	Acreage	—	—	—	—	—	1,320	6,138	9,170	13,668	17,226	17,038	19,684	27,874	27,768	28,952
Russet Nugget	%	—	—	—	—	—	—	—	—	9.6	10.1	13.7	23.1	27.0	34.0	38.8
	Acreage	—	—	—	—	—	—	—	—	6,528	6,666	9,933	17,094	20,790	26,520	29,876
Ranger Russet	%	—	—	—	—	—	—	—	—	—	—	—	2.8	2.8	0.7	—
	Acreage	—	—	—	—	—	—	—	—	—	—	—	2,072	2,156	546	—
Century Russet	%	—	—	—	—	—	—	—	—	—	—	—	2.5	—	—	—
	Acreage	—	—	—	—	—	—	—	—	—	—	—	1,850	—	—	—
Red McClure	%	3.7	1.6	1.9	1.0	1.0	—	—	—	—	—	—	—	—	—	—
	Acreage	1,739	856	1,074	570	610	—	—	—	—	—	—	—	—	—	—
Sangre	%	5.7	3.1	5.1	7.2	6.3	6.3	7.9	7.6	—	5.9	7.5	3.8	3.8	4.4	4.4
	Acreage	2,679	1,659	2,882	4,104	3,843	3,780	4,898	4,978	—	3,894	5,438	2,812	2,926	3,432	3,388
Total Fall Acreage Planted		47,000	53,500	56,500	57,000	61,000	60,000	62,000	65,000	68,000	66,000	72,500	74,000	77,000	78,000	77,000

[1]Data provided by the Colorado Agricultural Statistics Service.

Figure 1. Primary SLV Cultivars Planted 1983-1997

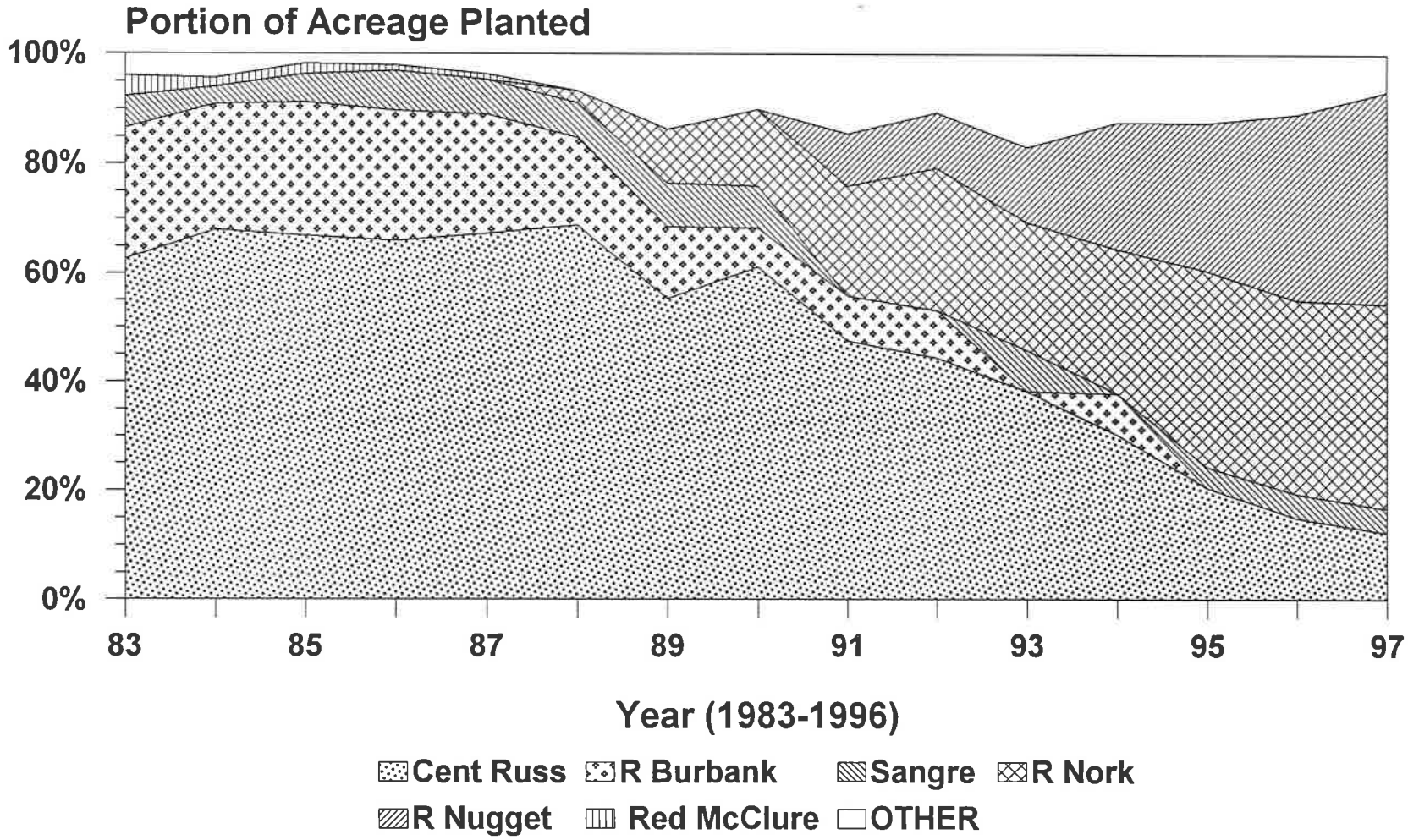


Figure 2. Primary SLV Potato Cultivars 1994-1997 Comparison

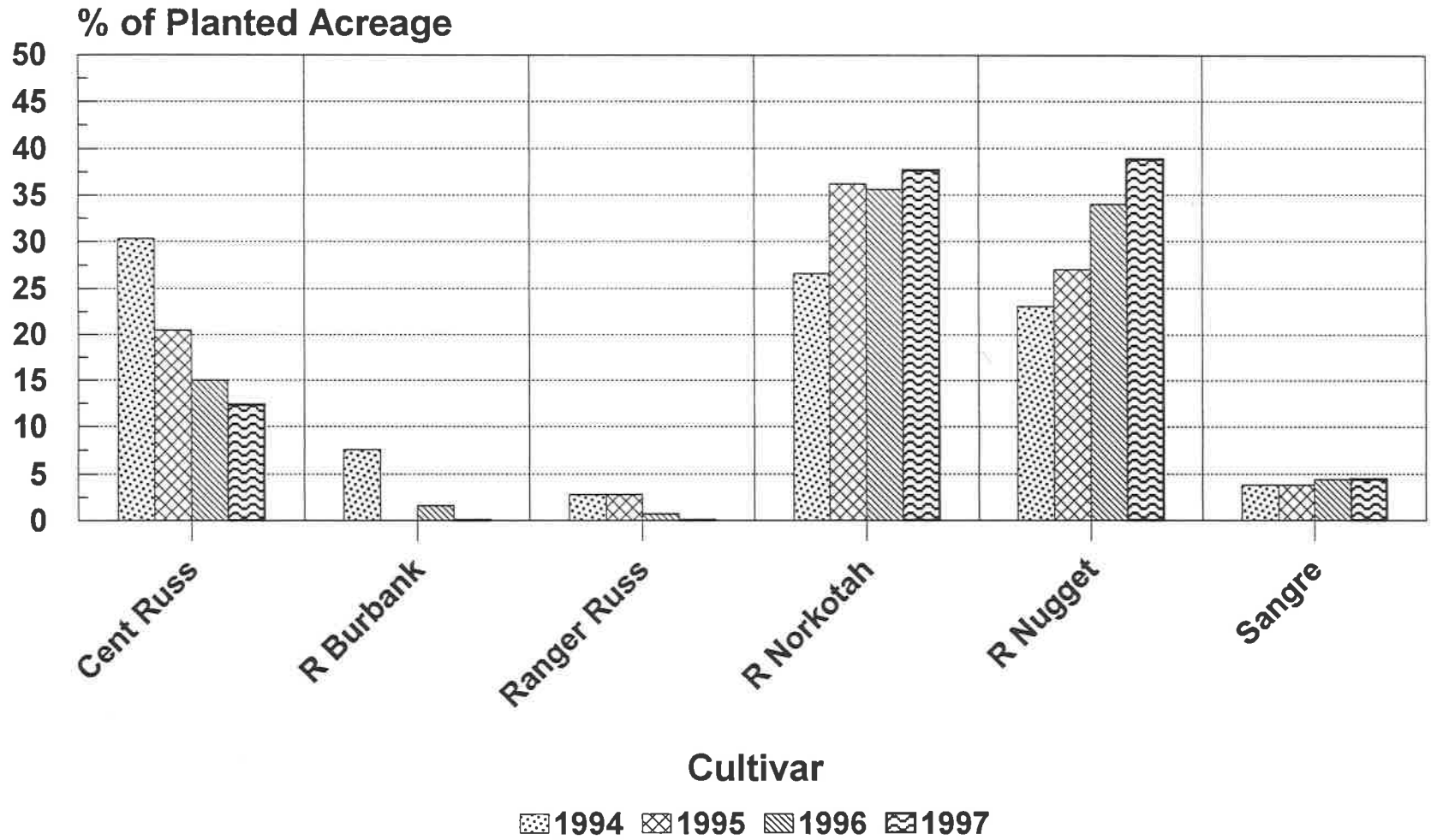


Table 3A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Preliminary Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC92009-4	5.0	5.0	5.0	4.7	171	4.8
AC92096-5	4.6	4.1	4.4	4.6	115	2.4
AC92225-4	4.8	3.8	4.3	4.2	101	4.4
CO92027-2	4.9	4.5	4.7	6.4	87	4.4
CO92077-2	4.9	5.0	5.0	4.9	101	3.6
COO83008-1	5.0	4.8	4.9	5.3	87	3.6
NDC5281-2	3.6	3.4	3.5	9.7	101	2.4
NDC5372-1	5.0	4.8	4.9	6.6	115	4.0
TC1675-1	4.9	4.9	4.9	3.2	115	3.4
TC1682-1	5.0	5.0	5.0	3.6	115	4.6
87TR2210-1	4.9	4.7	4.8	4.6	115	1.8
Centennial Russet	4.9	4.8	4.9	7.7	91	4.2
Ranger Russet	5.0	4.3	4.7	4.5	87	3.2
Russet Norkotah	5.0	4.2	4.6	4.1	108	2.2
Russet Nugget	5.0	4.9	5.0	4.6	101	4.2
Sangre-S10	5.0	4.7	4.9	4.1	89	3.6
Shepody	4.4	5.0	4.7	3.4	108	4.6

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 3B. Specific gravity, french fry color, and texture for Preliminary Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	7 wks 50F+ 8 wks 45F	At Harvest	7 wks 50F+ 8 wks 45F
AC92009-4	1.081	3	3	3	3
AC92096-5	1.077	3	2	3	3
AC92225-4	1.072	4	4	2	2
CO92027-2	1.080	3	4	2	2
CO92077-2	1.071	3	4	3	2
COO83008-1	1.074	2	4	3	3
NDC5281-2	1.082	3	4	2	2
NDC5372-1	1.076	2	3	2	2
TC1675-1	1.080	1	2	4	4
TC1682-1	1.070	4	4	2	2
87TR2210-1	1.081	3	3	3	3
Centennial Russet	1.069	4	4	2	2
Ranger Russet	1.073	3	3	3	3
Russet Norkotah	1.079	3	4	2	2
Russet Nugget	1.073	2	3	3	3
Sangre-S10	1.060	4	4	2	3
Shepody	1.075	4	4	3	2

[1]Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

[2]Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 4A. Yield, grade, tuber shape, and skin type for Intermediate Yield Trial clones - 1997.

Clone	Yield (Cwt/A) Total	US #1 Total	US #1 %	US #1 >10 oz	US #1 <4 oz	Tuber Shape & Skin Type[1]
AC90636-3	383	335	87.4	23	45	Ob,Ru
AC91014-2	416	322	77.5	22	84	Ob,Ru
AC91042-2	427	281	65.7	30	140	Ob,Ru
AC91365-1	459	390	84.7	50	69	Ob,Ru
AC91579-4	411	291	71.0	13	116	L,Ru
Centennial Russet	344	253	73.0	9	91	Ob,Ru
Russet Norkotah	431	368	85.6	71	55	L,Ru
Russet Nugget	447	340	76.1	38	103	Ob,Ru
Mean	415	322	77.6	32	88	-----
LSD[2] (0.05)	NS	78	7.8	20	32	-----

[1]Tuber shape & skin type: Ob=oblong; L=long; Ru=russet.

[2]LSD=least significant difference.

Table 4B. Grade defects for Intermediate Yield Trial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC90636-3	0.9	MS*	0.0
AC91014-2	2.3	MS*	1.0
AC91042-2	1.5	MS*	0.0
AC91365-1	0.0		4.6
AC91579-4	1.1	GC*,MS*	0.0
Centennial Russet	0.3	GC*	0.0
Russet Norkotah	1.9	MS*	0.7
Russet Nugget	0.9	MS*	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 4C. Growth characteristics of Intermediate Yield Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC90636-3	100	3.5	3.0	3.0	3.0	3.0	2.5
AC91014-2	98	3.5	3.0	4.5	3.0	2.5	2.5
AC91042-2	100	3.0	2.0	3.8	4.0	3.0	4.0
AC91365-1	94	3.0	3.0	4.2	3.0	2.5	3.5
AC91579-4	96	3.5	2.5	4.8	2.5	2.0	2.0
Centennial Russet	92	3.0	2.5	3.2	3.0	3.0	3.0
Russet Norkotah	98	4.0	3.0	4.6	2.0	3.0	1.0
Russet Nugget	100	3.5	3.0	4.1	4.5	3.0	4.0
Mean	97	3.4	2.8	4.0	3.1	2.8	2.8
LSD[6] (0.05)	NS	NS	NS	0.9	0.8	NS	0.9

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 4D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Yield Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC90636-3	4.5	4.6	4.6	5.4	89	4.4
AC91014-2	3.1	2.7	2.9	6.3	89	3.6
AC91042-2	2.1	1.5	1.8	3.6	75	1.2
AC91365-1	4.5	3.0	3.8	7.5	89	1.4
AC91579-4	4.6	3.5	4.1	3.7	89	4.4
Centennial Russet	4.4	4.5	4.5	6.1	68	3.8
Russet Norkotah	5.0	4.2	4.6	5.0	82	2.8
Russet Nugget	5.0	4.5	4.8	3.3	89	3.4

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 4E. Specific gravity, french fry color, and texture for Intermediate Yield Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
AC90636-3	1.079	2	3	3	3
AC91014-2	1.092	1	2	4	4
AC91042-2	1.093	2	3	3	3
AC91365-1	1.086	3	3	4	4
AC91579-4	1.082	1	2	3	3
Centennial Russet	1.081	4	4	4	3
Russet Norkotah	1.082	4	3	2	2
Russet Nugget	1.098	2	2	4	4

[1] Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

[2] Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 5A. Yield, grade, tuber shape, and skin type for Advanced Yield Trial clones - 1997.

Clone	Yield (Cwt/A) Total	US #1 Total	US #1 %	US #1 >10 oz	US #1 <4 oz	Tuber Shape & Skin Type[1]
AC78069-17	409	374	91.5	123	23	Ob,Ru
AC83064-1	463	403	87.1	83	55	L,Ru
AC83064-6	402	322	80.4	37	79	L,Ru
AC87079-3	428	338	78.7	57	87	Ob,Ru
AC87138-4	523	411	78.9	102	99	L,Ru
AC88042-1	357	223	62.3	2	129	L,Ru
AC88162-4	382	268	69.9	43	84	L,Ru
AC88165-3	437	355	81.2	48	73	L,Ru
AC89536-5	515	461	89.5	106	50	Ob,Ru
AC90017-2	422	353	83.6	29	61	Ob,Ru
CO80011-5	391	320	81.7	48	66	Ob,Ru
CO81082-1	415	381	91.7	136	31	L,Ru
CO89036-10	445	339	75.7	36	102	Ob,Ru
CO89037-7	360	320	88.8	60	38	Ob,Ru
CO90045-4	309	239	77.0	14	60	L,Ru
CO90052-1	543	462	85.1	111	67	L,Ru
COO83008-1	407	367	90.2	110	28	L,Ru
UCR1-18	371	333	89.8	89	34	L,Ru
Avalanche	707	576	81.6	136	111	Ob,W
Centennial Russet	390	304	77.8	12	86	Ob,Ru
Russet Norkotah	405	335	82.3	49	61	L,Ru
Russet Nugget	430	343	79.8	70	83	Ob,Ru
Mean	432	356	82.0	68	68	-----
LSD[2] (0.05)	54	53	4.5	36	17	-----

[1]Tuber shape & skin type: Ob=oblong; L=long; Ru=russet; W=white.

[2]LSD=least significant difference.

Table 5B. Grade defects for Advanced Yield Trial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC78069-17	2.9	GC,MS*,GR	0.0
AC83064-1	1.0	MS*,GR	0.0
AC83064-6	0.2	GC*,MS*	0.3
AC87079-3	0.6	MS*	0.4
AC87138-4	2.5	SG,GC,MS*,GR	0.3
AC88042-1	1.6	MS*	0.0
AC88162-4	7.3	GC*,MS	0.7
AC88165-3	2.2	SG,GC,MS*,GR	0.0
AC89536-5	0.7	SG*,GC*,GR*	0.0
AC90017-2	1.9	GC,MS*	0.0
CO80011-5	1.3	GC,MS*	0.3
CO81082-1	0.9	GC,MS,GR*	1.1
CO89036-10	0.9	GC*,GR*	0.0
CO89037-7	0.6	MS*	0.0
CO90045-4	3.3	GC*,MS	0.0
CO90052-1	2.6	GC*,GR	0.0
COO83008-1	2.9	SG,GC,MS*,GR	0.4
UCR1-18	1.2	MS*,GR	0.7
Avalanche	2.8	SG,GC*,MS*,GR	0.0
Centennial Russet	0.0		0.0
Russet Norkotah	2.4	MS*,GR	0.0
Russet Nugget	1.0	SG,MS*	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 5C. Growth characteristics of Advanced Yield Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC78069-17	100	3.0	2.8	3.2	3.5	3.2	3.0
AC83064-1	97	3.5	2.0	2.7	3.5	2.8	3.5
AC83064-6	98	3.5	3.2	3.0	3.5	3.8	3.0
AC87079-3	97	3.0	4.2	3.8	3.2	2.5	3.0
AC87138-4	100	2.8	3.0	5.0	3.5	2.0	3.5
AC88042-1	100	3.2	3.0	3.3	3.8	3.0	3.0
AC88162-4	100	3.5	2.0	3.3	4.0	3.0	3.8
AC88165-3	97	4.0	3.0	3.5	3.0	2.5	3.5
AC89536-5	98	4.0	3.8	3.6	4.0	3.0	3.2
AC90017-2	98	2.5	2.2	2.4	3.5	2.8	4.0
CO80011-5	95	2.8	2.2	3.5	3.0	2.2	3.0
CO81082-1	95	2.8	2.5	2.8	3.0	2.8	3.0
CO89036-10	97	3.0	3.5	4.2	3.2	2.8	3.2
CO89037-7	97	2.8	3.0	2.8	3.0	2.0	2.2
CO90045-4	95	3.0	2.0	3.0	3.0	2.2	2.5
CO90052-1	99	3.2	3.0	3.0	3.0	2.8	2.5
COO83008-1	99	2.8	3.2	3.8	3.2	3.0	3.5
UCR1-18	96	3.2	2.8	4.3	2.0	2.8	1.2
Avalanche	97	3.8	4.0	4.0	4.8	3.5	3.8
Centennial Russet	99	3.2	3.0	3.6	3.0	3.0	3.0
Russet Norkotah	99	2.8	3.0	3.8	2.0	2.2	1.8
Russet Nugget	98	3.0	3.0	3.8	4.0	3.5	4.0
Mean	98	3.1	2.9	3.5	3.3	2.8	3.1
LSD[6] (0.05)	NS	0.7	0.5	0.7	0.5	0.6	0.5

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 5D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Yield Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC78069-17	4.5	4.0	4.3	5.0	96	3.2
AC83064-1	4.9	5.0	5.0	4.2	68	4.8
AC83064-6	4.3	4.8	4.6	5.3	61	3.4
AC87079-3	3.2	2.8	3.0	5.9	75	4.0
AC87138-4	3.2	2.6	2.9	5.8	89	2.6
AC88042-1	3.5	4.5	4.0	4.7	89	1.8
AC88162-4	4.3	3.1	3.7	4.7	96	3.4
AC88165-3	2.8	3.6	3.2	4.2	68	3.8
AC89536-5	4.2	4.8	4.5	5.5	82	3.2
AC90017-2	4.8	4.4	4.6	4.5	82	3.4
CO80011-5	3.6	3.7	3.7	6.4	75	4.0
CO81082-1	4.6	4.9	4.8	5.5	61	1.8
CO89036-10	4.9	4.7	4.8	3.8	96	3.0
CO89037-7	4.3	4.6	4.5	5.1	82	4.4
CO90045-4	4.9	4.0	4.5	5.0	89	1.6
CO90052-1	1.9	4.3	3.1	4.3	89	4.4
COO83008-1	1.4	2.3	1.9	5.3	89	1.4
UCR1-18	5.0	4.8	4.9	5.7	75	3.2
Avalanche	4.6	4.3	4.5	4.1	68	4.6
Centennial Russet	4.5	4.4	4.5	7.1	89	4.4
Russet Norkotah	4.8	4.1	4.5	5.7	82	3.0
Russet Nugget	4.5	4.5	4.5	4.0	61	4.6

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 5E. Specific gravity, french fry color, and texture for Advanced Yield Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
AC78069-17	1.083	2	3	3	3
AC83064-1	1.077	4	4	2	3
AC83064-6	1.080	2	2	3	3
AC87079-3	1.091	2	3	4	4
AC87138-4	1.093	2	2	3	3
AC88042-1	1.077	3	3	2	2
AC88162-4	1.102	4	4	2	3
AC88165-3	1.088	3	3	3	3
AC89536-5	1.086	2	3	2	2
AC90017-2	1.081	4	4	2	2
CO80011-5	1.074	4	3	2	2
CO81082-1	1.070	4	4	2	2
CO89036-10	1.089	4	4	2	3
CO89037-7	1.077	3	3	3	3
CO90045-4	1.080	3	2	4	4
CO90052-1	1.078	3	3	4	3
COO83008-1	1.093	2	2	3	4
UCR1-18	1.075	3	3	3	3
Avalanche	1.084	4	4	2	2
Centennial Russet	1.082	4	4	2	1
Russet Norkotah	1.080	3	3	2	2
Russet Nugget	1.092	2	2	5	4

[1] Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

[2] Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 6A. Yield, grade, tuber shape, and skin type for Western Regional Main Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type[1]
		US #1				
	Total	Total	%	>10 oz	<4 oz	
A82360-7	552	429	77.8	66	116	Ob,Ru
AC87084-3	494	438	88.6	106	53	Ob,Ru
CO85026-4	402	366	91.1	99	33	L,Ru
CO87009-4	420	245	58.6	10	174	L,Ru
CORN-3	473	438	92.4	234	27	L,Ru
CORN-8	416	388	93.2	163	24	L,Ru
TX1385-12RU	369	313	85.0	83	39	Ob,Ru
TXAV657-27	466	346	74.0	67	109	Ob,Ru
TXNS112	433	395	91.2	132	36	L,Ru
TXNS223	417	367	88.0	135	40	L,Ru
TXNS278	393	357	91.1	145	31	L,Ru
Centennial Russet	349	247	70.4	14	102	Ob,Ru
Russet Burbank	468	338	72.3	53	125	L,Ru
Russet Norkotah	385	321	83.4	41	60	L,Ru
Russet Nugget	441	324	73.2	41	111	Ob,Ru
Shepody	445	389	87.4	147	32	L,W
Mean	433	356	82.4	96	70	----
LSD[2] (0.05)	43	40	4.8	35	20	----

[1]Tuber shape & skin type: Ob=oblong; L=long; Ru=russet; W=white.

[2]LSD=least significant difference.

Table 6B. Grade defects for Western Regional MainTrial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A82360-7	1.3	GC*,MS*,GR*	0.0
AC87084-3	0.5	GC*,MS*	0.0
CO85026-4	0.7	MS*	0.0
CO87009-4	0.1	GC*	0.0
CORN-3	1.7	SG,MS*,GR	0.0
CORN-8	1.0	SG,MS*,GR	0.0
TX1385-12RU	4.4	GC,MS*,GR	0.0
TXAV657-27	2.5	GC,MS*,GR	0.0
TXNS112	0.5	SG*,MS*	0.0
TXNS223	2.3	MS*,GR	0.0
TXNS278	1.1	MS*,GR	0.0
Centennial Russet	0.0		0.0
Russet Burbank	0.9	SG*,GC*,GR	2.6
Russet Norkotah	1.0	SG,MS*	0.0
Russet Nugget	1.3	SG*,MS*,GR	0.0
Shepody	5.4	SG,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 6C. Growth characteristics of Western Regional Main Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
A82360-7	98	3.8	3.8	4.0	4.2	3.2	4.0
AC87084-3	97	3.2	4.0	5.2	4.0	3.0	3.0
CO85026-4	100	3.2	2.0	2.9	3.0	2.8	3.2
CO87009-4	98	3.5	4.2	5.7	3.2	3.0	2.2
CORN-3	99	3.5	2.8	3.6	3.2	3.0	3.0
CORN-8	99	3.2	2.5	3.3	3.0	3.0	2.0
TX1385-12RU	97	3.2	3.2	3.5	3.0	2.5	2.0
TXAV657-27	99	3.0	4.2	5.3	3.0	2.0	2.8
TXNS112	97	3.2	3.0	4.3	2.5	2.5	1.5
TXNS223	100	3.2	2.5	4.4	2.8	3.0	1.8
TXNS278	99	2.8	2.8	4.1	2.2	3.0	1.8
Centennial Russet	92	3.2	2.5	3.5	3.0	3.0	3.0
Russet Burbank	99	3.5	4.2	3.2	3.5	2.2	3.0
Russet Norkotah	96	3.2	3.0	4.1	2.2	2.5	1.2
Russet Nugget	97	3.2	3.0	3.6	4.0	3.2	4.0
Shepody	98	3.8	3.2	2.5	3.2	2.8	2.2
Mean	98	3.3	3.2	3.9	3.1	2.8	2.5
LSD[6] (0.05)	NS	NS	0.6	0.7	0.5	0.6	0.5

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 6D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Main Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
A82360-7	3.2	2.6	2.9	4.6	61	4.0
AC87084-3	2.3	1.9	2.1	6.4	68	1.2
CO85026-4	2.5	2.8	2.7	3.8	75	4.2
CO87009-4	3.8	4.3	4.1	4.2	82	4.4
CORN-3	4.7	4.6	4.7	4.8	117	2.6
CORN-8	5.0	4.7	4.9	5.2	89	2.8
TX1385-12RU	2.4	2.5	2.5	5.8	54	3.2
TXAV657-27	3.5	2.9	3.2	4.7	75	2.6
TXNS112	4.6	4.8	4.7	4.8	89	2.0
TXNS223	4.9	4.9	4.9	5.4	96	3.0
TXNS278	4.8	4.9	4.9	5.2	89	3.2
Centennial Russet	4.7	4.6	4.7	7.2	75	3.2
Russet Burbank	4.4	3.1	3.8	3.7	131	2.2
Russet Norkotah	5.0	4.8	4.9	5.9	89	2.6
Russet Nugget	4.8	4.7	4.8	3.5	89	3.4
Shepody	3.6	4.2	3.9	4.1	82	4.4

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 6E. Specific gravity, french fry color, and texture for Western Regional Main Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
A82360-7	1.103	1	2	4	4
AC87084-3	1.101	2	2	4	4
CO85026-4	1.085	4	4	3	3
CO87009-4	1.093	1	1	5	4
CORN-3	1.085	4	3	2	3
CORN-8	1.081	4	3	2	3
TX1385-12RU	1.089	1	2	4	3
TXAV657-27	1.092	1	3	3	3
TXNS112	1.077	4	4	2	2
TXNS223	1.080	4	4	2	3
TXNS278	1.079	3	4	2	3
Centennial Russet	1.081	4	4	2	2
Russet Burbank	1.088	2	2	4	4
Russet Norkotah	1.079	4	3	3	2
Russet Nugget	1.098	2	2	4	4
Shepody	1.082	3	3	4	3

[1]Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤2 are acceptable.

[2]Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 7A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley chipping study clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC87340-2	3.5	4.3	3.9	5.8	81	3.8
AC88357-3	4.1	2.7	3.4	12.0	70	4.8
AC89653-3	4.7	4.8	4.8	5.6	75	4.4
AC91698-3	4.0	4.4	4.2	4.4	101	2.6
AC91817-5	4.6	1.9	3.3	6.5	101	3.4
AC92513-3	3.6	3.9	3.8	4.9	115	4.2
AC92525-3	4.3	3.8	4.1	5.4	115	4.6
AC92541-4	4.4	4.2	4.3	6.1	122	4.2
ATX85404-8	4.7	4.2	4.5	7.6	73	4.0
BC0894-2	5.0	4.7	4.9	5.0	86	4.4
BC1447-1	4.1	4.3	4.2	5.3	101	4.2
BC1470-1	3.0	2.6	2.8	4.6	101	4.8
CO90217-1	2.8	2.5	2.7	6.0	73	4.2
CO90217-4	4.6	3.2	3.9	6.4	87	4.2
CO92059-1	4.7	3.9	4.3	4.5	101	3.4
CO92059-8	2.8	1.8	2.3	5.9	94	4.4
CO92060-1	5.0	4.2	4.6	7.5	108	4.2
NDC5118-1	5.0	5.0	5.0	5.3	73	3.0
NDC5433-5	3.8	4.0	3.9	5.7	87	3.6
NDO1496-1	4.9	4.8	4.9	5.7	86	4.6
Atlantic	3.0	3.9	3.5	5.3	101	4.6
Chipeta	3.6	4.3	4.0	4.7	95	3.8
Snowden	3.1	3.3	3.2	5.5	108	4.2

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 108 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 7B. Chip color[1] after various storage regimes and specific gravity of San Luis Valley chipping study clones - 1997.

Clone	Specific Gravity	6 wks 40F	6 wks/40F +3 wks/60F	6 wks 50F	6 wks/50F +3 wks/60F
AC80697-7	1.085	5.0	4.0	3.5	3.0
AC87340-2	1.081	4.0	4.0	2.5	1.0
AC88357-3	1.088	4.0	3.5	2.5	2.0
AC89653-3	1.079	4.5	5.0	3.5	3.5
AC91698-3	1.087	4.0	3.0	1.5	2.5
AC91817-5	1.094	4.0	3.5	2.0	2.5
AC92513-3	1.080	4.5	4.5	2.5	2.5
AC92525-3	1.089	4.0	4.0	1.0	2.0
AC92541-5	1.080	4.0	3.5	2.5	2.0
AC93365-5	1.077	5.0	5.0	3.0	3.0
AC93377-5	1.087	2.5	2.0	1.0	2.0
AC93388-2	1.085	5.0	5.0	3.5	3.5
AC93388-4	1.082	4.5	4.0	3.5	3.0
AC93395-4	1.078	5.0	4.5	3.0	1.5
AC93395-5	1.082	3.5	2.5	1.0	2.0
AC93400-2	1.083	5.0	4.0	2.5	1.5
AC93401-3	1.091	4.0	3.0	1.0	1.5
AC93402-3	1.077	4.0	3.5	2.0	3.5
AC93403-1	1.072	5.0	5.0	3.5	3.0
AC93405-1	1.074	5.0	4.5	1.5	2.0
AC93618-3	1.077	5.0	4.5	3.5	3.0
AC93701-1	1.090	4.5	4.5	3.5	3.5
ATDC93007-1	1.088	4.5	3.5	2.5	2.0
ATDC93007-3	1.094	4.0	2.5	2.0	1.5
ATDC93007-6	1.088	5.0	5.0	3.0	2.0
ATDC93036-1	1.087	4.5	5.0	3.0	3.0
ATDC93036-5	1.082	4.0	3.0	3.0	2.5
ATX85404-8	1.089	4.0	3.5	2.0	2.0
BC0894-2	1.075	4.0	3.5	2.0	1.0
BC1447-1	1.080	3.5	3.0	1.5	1.5
BC1470-1	1.097	4.0	3.5	3.0	2.0
CO90217-1	1.079	2.0	1.0	1.5	1.5
CO90217-4	1.094	2.0	2.0	1.5	1.5
CO92059-1	1.095	4.0	3.5	2.5	1.5
CO92059-8	1.086	4.5	4.5	2.5	2.0
CO92060-1	1.077	4.0	4.5	3.0	2.0
NDC5118-1	1.090	4.0	4.0	3.5	2.5
NDC5433-5	1.077	4.5	4.0	2.5	2.0
NDC5678-1	1.080	3.0	2.5	2.0	2.0

Table 7B continued on the next page.

[1]Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤2.0 are acceptable.

Table 7B (cont'd). Chip color[1] after various storage regimes and specific gravity of San Luis Valley chipping study clones - 1997.

Clone	Specific Gravity	6 wks 40F	6 wks/40F +3 wks/60F	6 wks 50F	6 wks/50F +3 wks/60F
NDC7777-2	1.080	2.5	2.5	1.5	3.0
NDC5959C-3	1.082	5.0	5.0	4.0	4.0
NDO1496-1	1.088	4.5	4.0	3.0	2.0
VC937-3	1.095	4.5	4.5	3.5	2.5
Atlantic	1.093	4.0	4.0	3.0	2.5
Chipeta	1.076	5.0	4.5	3.0	1.5
Snowden	1.093	5.0	2.0	2.0	1.5

[1]Chip color was rated using the Snack Food Association 1-5 scale. Ratings of $\leq$2.0 are acceptable.

Table 8A. Yield, grade, tuber shape, and skin type for Western Regional Chip Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type[1]
	Total	US #1				
		Total	%	>10 oz	<4 oz	
AC87340-2	445	308	69.3	29	137	R,W
AC88357-3	364	289	79.4	25	71	R,W
AC89653-3	476	364	76.3	21	111	R,W
AC91698-3	376	258	68.4	29	110	R,W
AC91817-5	334	206	61.7	8	126	R,W
ATX85404-8	456	358	78.4	53	94	R,W
B0717-1	442	356	80.4	18	84	R,W
BC0894-2	383	327	85.6	39	50	R,W
BC1447-1	337	307	91.0	62	29	R,W
BC1470-1	370	283	76.3	16	86	R,W
CO90217-1	384	271	70.4	25	108	R,W
CO90217-4	324	226	69.7	15	93	R,W
ND2471-8	405	328	80.9	46	75	R,W
Atlantic	390	364	93.2	143	25	R,W
Chipeta	514	429	83.7	82	59	R,W
NorValley	388	256	65.9	21	129	R,W
Snowden	456	341	75.0	34	112	R,W
Superchip	343	302	88.1	133	34	R,W
Mean	399	310	77.4	44	85	---
LSD[2] (0.05)	38	42	5.5	22	20	---

[1]Tuber shape & skin type: R=round; W=white.

[2]LSD=least significant difference.

Table 8B. Grade defects for Western Regional Chip Trial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC87340-2	0.1	GR*	0.0
AC88357-3	0.9	MS*,GR	0.0
AC89653-3	0.3	MS*	0.0
AC91698-3	2.1	GC,MS,GR*	0.8
AC91817-5	0.7	GC*,MS,GR	0.0
ATX85404-8	0.8	GC*,MS*	0.0
B0717-1	0.4	MS*	0.3
BC0894-2	1.4	MS,GR*	0.0
BC1447-1	0.3	GR*	0.0
BC1470-1	0.3	MS*	0.3
CO90217-1	1.3	GC,MS*,GR	0.8
CO90217-4	1.4	GC,MS*,GR	1.5
ND2471-8	0.5	GC*	0.0
Atlantic	0.3	GR*	7.8
Chipeta	5.0	SG,GC*,MS,GR	0.0
NorValley	0.8	GC,GR*	1.2
Snowden	0.5	GC,MS*	0.3
Superchip	1.7	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 8C. Growth characteristics of Western Regional Chip Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC87340-2	99	3.2	3.0	3.8	3.0	2.0	3.2
AC88357-3	97	3.5	3.0	5.4	3.0	2.2	2.5
AC89653-3	100	3.5	4.0	5.0	4.0	3.0	2.8
AC91698-3	99	3.2	3.0	5.4	3.0	2.5	2.5
AC91817-5	99	3.8	4.0	4.6	3.0	2.2	2.0
ATX85404-8	96	3.8	4.0	5.5	4.0	3.0	3.0
B0717-1	98	3.8	3.2	3.4	4.0	3.2	3.5
BC0894-2	97	2.8	3.0	3.2	3.0	2.8	2.8
BC1447-1	100	3.8	3.0	3.6	1.2	3.0	1.5
BC1470-1	98	3.5	3.0	4.4	3.0	2.2	3.0
CO90217-1	99	3.0	3.0	6.1	2.5	3.0	1.0
CO90217-4	96	3.0	3.2	5.4	2.0	3.0	1.0
ND2471-8	98	3.8	3.8	6.1	2.0	2.0	1.2
Atlantic	98	3.5	3.0	3.4	3.0	3.0	3.0
Chipeta	100	3.2	4.0	4.4	4.2	3.0	3.0
NorValley	96	3.2	3.0	4.5	3.0	3.0	1.5
Snowden	99	3.5	3.2	5.1	4.2	3.0	3.0
Superchip	96	3.5	2.8	3.4	1.2	2.8	2.0
Mean	98	3.4	3.3	4.6	3.0	2.7	2.4
LSD[6] (0.05)	NS	NS	0.4	0.8	0.4	0.5	0.5

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 8D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Chip Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC87340-2	2.8	3.6	3.2	5.4	61	1.8
AC88357-3	3.4	1.7	2.6	10.5	68	3.4
AC89653-3	4.3	3.9	4.1	5.7	54	3.4
AC91698-3	3.3	2.2	2.8	4.8	61	1.0
AC91817-5	3.9	1.0	2.5	6.8	75	2.0
ATX85404-8	3.9	3.1	3.5	8.2	61	3.4
B0717-1	2.5	1.5	2.0	7.6	68	2.4
BC0894-2	4.6	3.1	3.9	5.1	82	1.4
BC1447-1	5.0	2.6	3.8	7.4	61	3.2
BC1470-1	2.0	1.4	1.7	5.5	61	3.0
CO90217-1	2.3	2.2	2.3	8.2	54	3.4
CO90217-4	4.2	2.1	3.2	11.2	54	3.0
ND2471-8	2.5	1.8	2.2	7.3	68	3.8
Atlantic	2.4	1.7	2.1	5.5	75	4.6
Chipeta	2.7	3.0	2.9	5.3	96	2.8
NorValley	4.8	3.4	4.1	6.4	61	2.0
Snowden	2.9	1.9	2.4	6.9	82	2.4
Superchip	3.9	4.5	4.2	7.7	54	4.4

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 8E. Chip color[1] after various storage regimes and specific gravity of Western Regional Chip Trial clones - 1997.

Clone	Specific Gravity	6 wks 40F	6 wks/40F +3 wks/60F	6 wks 50F	6 wks/50F +3 wks/60F
AC87340-2	1.090	3.0	3.0	1.0	1.0
AC88357-3	1.099	3.5	2.5	3.0	1.5
AC89653-3	1.094	4.0	3.5	1.5	2.0
AC91698-3	1.091	4.0	2.5	1.5	1.5
AC91817-5	1.109	2.5	3.0	2.0	1.5
ATX85404-8	1.101	4.0	2.5	2.0	1.5
B0717-1	1.095	5.0	3.0	2.0	2.5
BC0894-2	1.087	4.0	3.0	2.0	1.5
BC1447-1	1.080	4.0	3.0	2.0	1.5
BC1470-1	1.115	4.0	2.5	2.5	2.0
CO90217-1	1.084	1.5	1.5	2.0	1.5
CO90217-4	1.096	2.5	2.0	1.0	1.5
ND2471-8	1.093	4.0	4.0	2.5	2.0
Atlantic	1.105	4.5	3.0	3.0	2.0
Chipeta	1.100	4.5	3.0	2.5	1.5
NorValley	1.088	3.5	3.5	2.5	2.0
Snowden	1.106	4.5	2.5	2.0	1.0
Superchip	1.085	3.0	2.5	2.0	1.0

[1]Chip color was rated using the Snack Food Association 1-5 scale. Ratings of $\leq$2.0 are acceptable.

Table 9A. Yield, grade, tuber shape, and skin type for Western Regional Red Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type[1]
		US #1				
	Total	Total	%	>10 oz	<4 oz	
AC91844-2	394	280	70.9	20	113	R,R
AC91848-1	410	361	87.8	66	48	R,R
AC91848-2	388	287	74.0	36	98	Ov,R
CO86142-3	380	295	77.6	8	80	R,R
CO86218-2	398	319	80.3	52	77	R,R
CO89097-2	499	415	83.3	69	83	R,R
COO86107-2R	379	328	86.4	42	52	R,R
DT6063-1R	449	400	89.0	98	39	Ob,R
NDC4655-1	397	280	70.2	24	111	R,R
NDO2438-6	418	340	81.2	71	71	R,R
Norland (Dark Red)	536	455	84.7	60	74	R,R
Red LaSoda	490	413	84.2	112	41	R,R
Sangre-S10	532	475	89.4	177	49	Ov,R
Mean	436	358	81.5	64	72	----
LSD[2] (0.05)	41	45	4.8	37	16	----

[1]Tuber shape & skin type: R=round; Ov=oval; Ob=oblong; R=red.

[2]LSD=least significant difference.

Table 9B. Grade defects for Western Regional Red Trial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC91844-2	0.5	MS*	0.2
AC91848-1	0.4	GC*,GR	0.0
AC91848-2	0.8	GC,MS*	0.0
CO86142-3	1.1	GC*	0.0
CO86218-2	0.3	MS*,GR*	0.0
CO89097-2	0.2	GR*	0.0
COO86107-2R	0.0		0.0
DT6063-1R	2.3	SG,GC,MS*	0.0
NDC4655-1	1.6	GC*,MS*	0.0
NDO2438-6	1.8	MS*	0.0
Norland (Dark Red)	1.3	GC*,MS*	0.0
Red LaSoda	7.4	GC*,MS,GR	7.2
Sangre-S10	1.5	GC*,GR	0.6

[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 9C. Growth characteristics of Western Regional Red Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC91844-2	98	4.0	3.5	5.9	2.0	2.2	1.5
AC91848-1	99	3.5	3.0	3.4	3.0	2.8	2.5
AC91848-2	98	3.2	2.0	4.1	3.2	3.0	3.0
CO86142-3	93	3.2	3.2	3.5	3.2	2.8	1.5
CO86218-2	97	3.8	2.0	3.3	3.0	3.0	3.0
CO89097-2	100	3.5	3.0	3.8	4.0	3.0	2.2
COO86107-2R	100	4.0	3.5	3.8	2.8	2.0	1.5
DT6063-1R	99	2.8	3.2	3.4	3.8	3.0	2.8
NDC4655-1	100	3.2	2.8	3.8	2.8	2.2	1.2
NDO2438-6	100	3.2	2.8	2.8	3.2	3.0	1.8
Norland (Dark Red)	98	4.0	3.8	5.4	3.0	2.8	1.8
Red LaSoda	100	3.8	3.5	3.0	3.0	2.2	1.5
Sangre-S10	99	3.2	3.0	3.8	4.0	3.0	3.0
Mean	99	3.5	3.0	3.8	3.2	2.7	2.1
LSD[6] (0.05)	3	0.7	0.6	0.7	0.5	0.5	0.7

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 9D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Red Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC91844-2	2.3	2.7	2.5	12.1	68	1.8
AC91848-1	3.5	2.8	3.2	7.8	54	1.4
AC91848-2	4.5	3.3	3.9	8.5	61	1.4
CO86142-3	2.3	2.4	2.4	8.3	96	2.5
CO86218-2	2.9	3.1	3.0	4.8	68	2.2
CO89097-2	2.1	2.4	2.3	8.2	54	4.6
COO86107-2R	3.4	2.2	2.8	8.4	96	2.8
DT6063-1R	4.7	4.7	4.7	5.7	75	4.4
NDC4655-1	4.3	3.2	3.8	7.0	61	2.3
NDO2438-6	3.5	3.7	3.6	6.5	61	4.0
Norland (Dark Red)	3.7	4.0	3.9	7.3	75	2.8
Red LaSoda	3.0	3.8	3.4	6.7	75	1.2
Sangre-S10	2.4	2.5	2.5	3.9	82	3.0

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 107 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 9E. Specific gravity, french fry color, and texture for Western Regional Red Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
AC91844-2	1.083	3	3	3	3
AC91848-1	1.089	3	4	2	2
AC91848-2	1.089	4	4	2	2
CO86142-3	1.088	2	3	2	2
CO86218-2	1.082	3	4	2	2
CO89097-2	1.085	3	3	3	3
COO86107-2R	1.090	2	3	3	3
DT6063-1R	1.086	3	3	3	3
NDC4655-1	1.087	3	4	4	3
NDO2438-6	1.075	3	4	2	2
Norland (Dark Red)	1.077	4	4	2	2
Red LaSoda	1.077	3	4	2	2
Sangre-S10	1.081	4	4	3	3

[1] Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

[2] Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 10A. Yield, grade, tuber shape, and skin type for Specialty Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type[1]
	Total	US #1			<4 oz	
		Total	%	>10 oz		
NDC4069-4	450	243	53.6	17	206	R,R
RC92003-2	336	211	62.4	7	123	Ob,P
RC93007-2	363	315	87.0	64	43	R,W
All Blue	460	248	54.0	23	209	Ob,P
Crispin	460	379	82.4	40	78	R,W
Mean	413	279	67.9	30	132	----
LSD[2] (0.05)	72	73	10.1	13	34	----

[1]Tuber shape & skin type: R=round; Ob=oblong; R=red; P=purple, W=white.

[2]LSD=least significant difference.

Table 10B. Grade defects for Specialty Trial clones - 1997.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
NDC4069-4	0.1	MS*	0.0
RC92003-2	0.3	MS*	0.0
RC93007-2	1.1	MS*	0.0
All Blue	0.7	GC*	0.0
Crispin	0.6	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 10C. Growth characteristics of Specialty Trial clones - 1997.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
NDC4069-4	100	3.5	3.0	6.4	4.0	3.0	2.8
RC92003-2	99	4.0	3.2	3.8	2.2	2.0	1.0
RC93007-2	99	3.0	3.0	2.8	2.8	2.0	2.0
All Blue	98	3.5	3.2	4.1	3.2	2.5	2.2
Crispin	98	3.2	3.0	3.5	4.0	3.0	3.5
Mean	99	3.4	3.1	4.1	3.2	2.5	2.3
LSD[6] (0.05)	NS	NS	NS	1.3	0.6	0.4	0.5

[1]Emergence uniformity is rated on a 1 to 5 scale, with 5 indicating very uniform emergence.

[2]Vine vigor is rated on a 1 to 5 scale, with 5 indicating very vigorous vines.

[3]Vine size is rated on a 1 to 5 scale, with 5 indicating very large vines.

[4]Vine type is rated on a 1 to 5 scale, with 5 indicating very upright vines.

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

[6]LSD=least significant difference; NS=not significant.

Table 10D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Specialty Trial clones - 1997.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
NDC4069-4	---	---	---	13.7	68	---
RC92003-2	---	---	---	5.0	68	---
RC93007-2	3.1	3.6	3.4	3.0	75	3.8
All Blue	---	---	---	4.8	82	---
Crispin	3.3	3.5	3.4	4.0	68	3.4

[1]Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

[2]Tubers were stored at 45F for 10 days.

[3]Days from harvest to first visible growth. Tubers were stored at 45F.

[4]Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

Table 10E. Specific gravity, french fry color, and texture for Specialty Trial clones - 1997.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
NDC4069-4	1.096	---	---	2	3
RC92003-2	1.082	---	---	2	2
RC93007-2	1.089	3	4	4	3
All Blue	1.076	---	---	4	3
Crispin	1.093	2	3	3	3

[1]Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤2 are acceptable.

[2]Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Table 11. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1997. Advanced selections to be released in 1998 are highlighted.

Clone	Usage[1]	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity[2]	Specific Gravity	% External Defects[3]	% Hollow Heart[4]
Russets								
CO80011-5	FM	12	392	84.0	2.5	1.072	2.7	0.1
AC83064-1	FM	9	470	88.4	3.2	1.078	1.4	0.0
AC83064-6	FM/Fry	9	391	86.0	3.0	1.079	0.9	0.1
CO85026-4	FM	7	370	89.8	3.6	1.082	2.7	0.0
AC87084-3	FM/Fry	5	512	90.9	3.4	1.094	1.7	0.0
AC88042-1	FM/Fry	4	362	73.1	3.0	1.076	1.5	0.0
AC88165-3	FM	4	424	80.7	2.9	1.080	1.4	0.0
Centennial Russet	FM	35	294	77.4	3.0	1.081	0.8	0.3
Russet Norkotah	FM	22	315	83.6	1.4	1.076	1.7	0.2
Russet Nugget	FM/Fry	25	416	81.6	3.9	1.095	1.5	0.1
Chippers								
ATX85404-8	Chip	6	472	75.9	3.0	1.091	1.0	0.1
BC0894-2	Chip	6	393	85.1	1.9	1.080	0.8	0.0
Atlantic	Chip	11	411	87.8	3.3	1.097	1.4	2.4
Chipeta	Chip	12	484	84.4	3.4	1.092	3.3	0.3
Reds								
CO86218-2	FM	6	390	81.8	2.9	1.076	0.9	0.0
DT6063-1R	FM	4	442	88.3	2.7	1.081	2.3	0.5
Sangre	FM	15	438	85.6	2.8	1.075	0.9	0.3

[1]FM=fresh market; Fry=french fry; FM/Fry indicates a dual purpose clone.

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

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

[4]Based on tubers greater than 10 ounces.

APPENDIX 1. General procedures used for postharvest evaluations.

Blackspot. Ten randomly selected tubers for each clone tested are bruised on the stem and bud ends with a 150 g weight dropped from a height of 60 cm. Tubers are stored at 40F prior to bruising. After bruising, tubers are stored at room temperature for two-three days prior to evaluation. Blackspot susceptibility is evaluated by cutting the tubers in half longitudinally and rating the extent of damage. Blackspot is rated on a 1 to 5 scale, with 5 indicating no discoloration.

Storage Weight Loss and Dormancy. Ten randomly selected tubers are weighed into storage and held at 45F for approximately a three month period under low relative humidity conditions to evaluate storage weight loss potential. These tubers are also observed weekly for sprout growth. Dormancy is reported as days after harvest to first visible sprout growth.

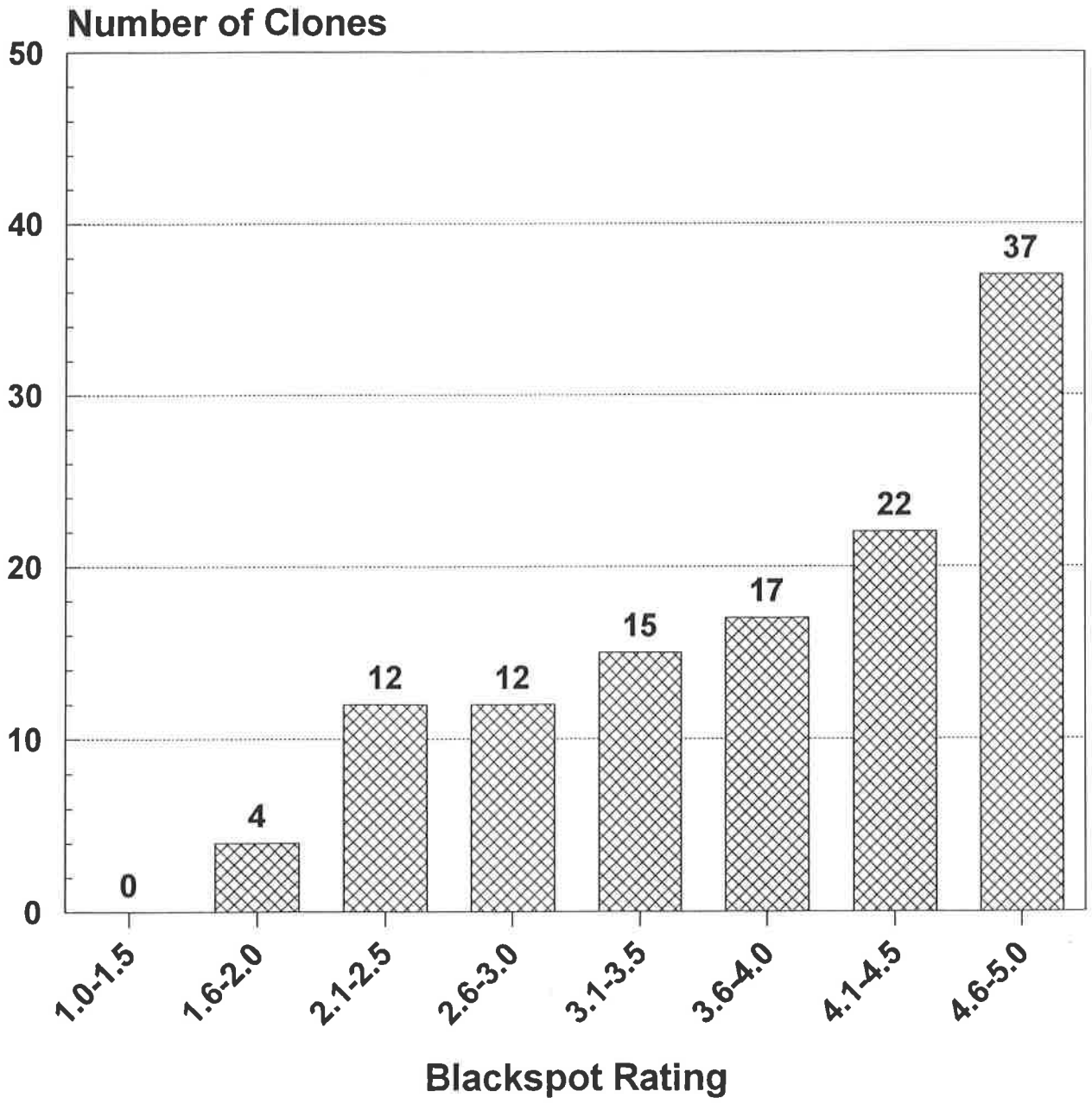
Enzymatic Browning. Five tubers of each clone are cut in half lengthwise and rated for degree of darkening at 60 minutes after cutting. Degree of darkening is rated on a 1 to 5 scale, with 5 indicating no discoloration.

Specific Gravity. Specific gravity is determined using the air/water method.

Fry Color and Texture. Fry color and texture is determined at or shortly after harvest and after a minimum of eight weeks of storage at 45F. Fries are cooked for 3 ½ minutes at 375F. Fry color is rated on a 0-4 scale using the USDA color standards. Color ratings $\leq$2 are acceptable. Fry texture is rated on a 1 to 5 scale, with 5 indicating that the cooked flesh was dry and mealy, with 1 representing a soggy, wet texture.

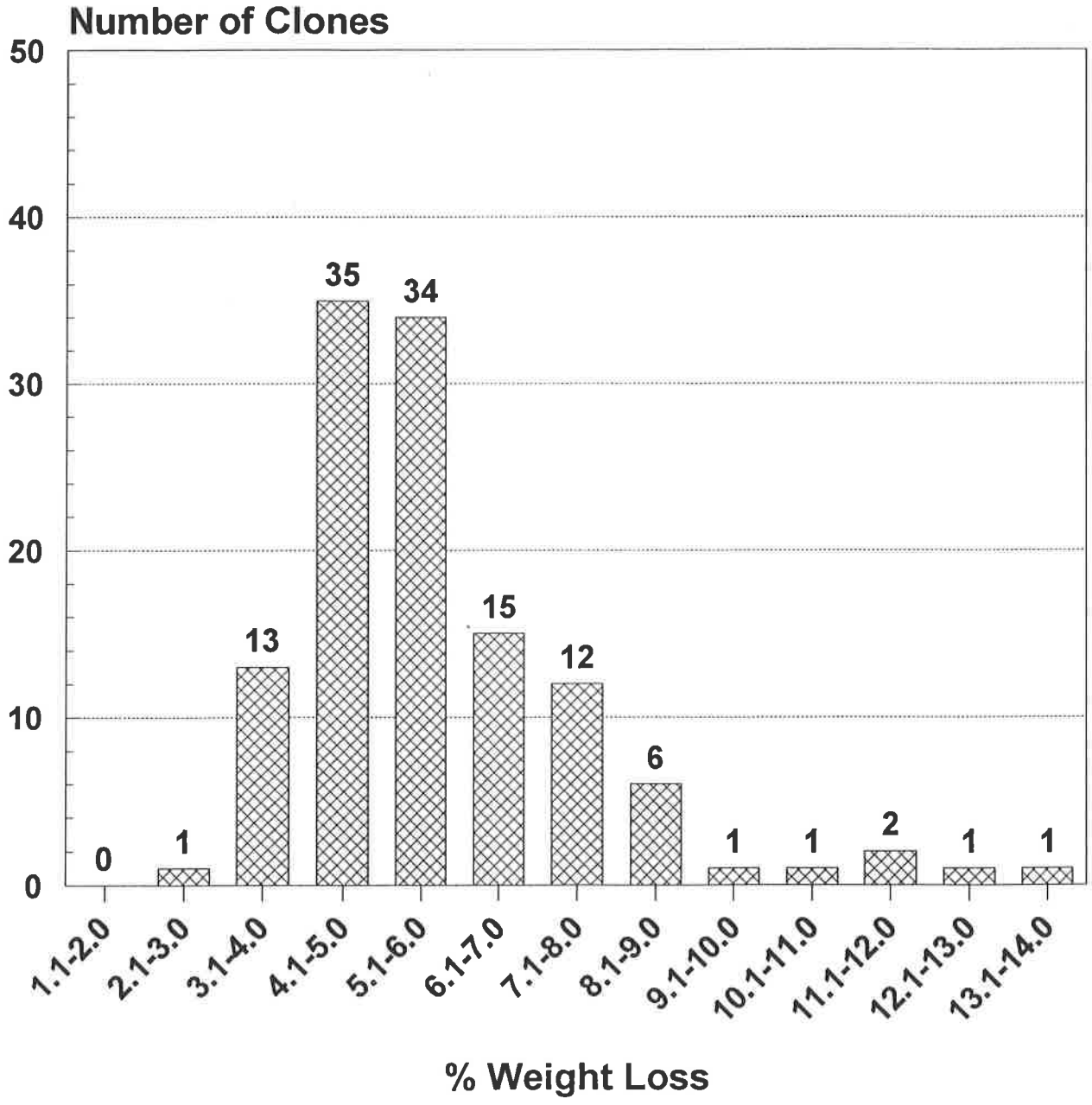
Chip Color. Chip color is determined after an interval of storage at 40 and 50F and after reconditioning for three weeks at 60F. Chips are cooked at 365F until bubbling slows. Chip color is rating using the Snack Food Association 1-5 scale. Ratings $\leq$2.0 are acceptable.

Appendix 2. Blackspot Distribution (119 Clones) - 1997

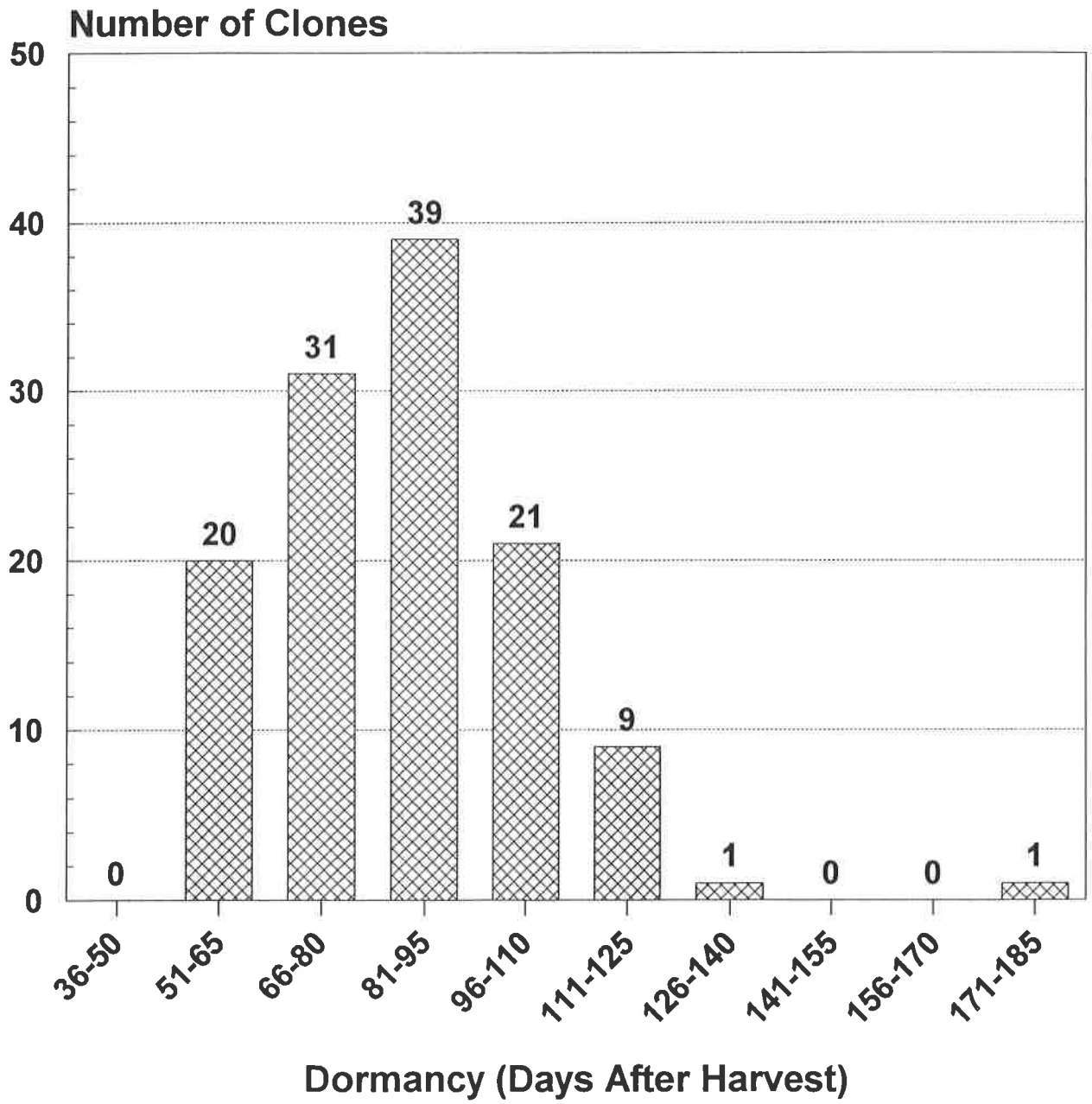


5=No Discoloration

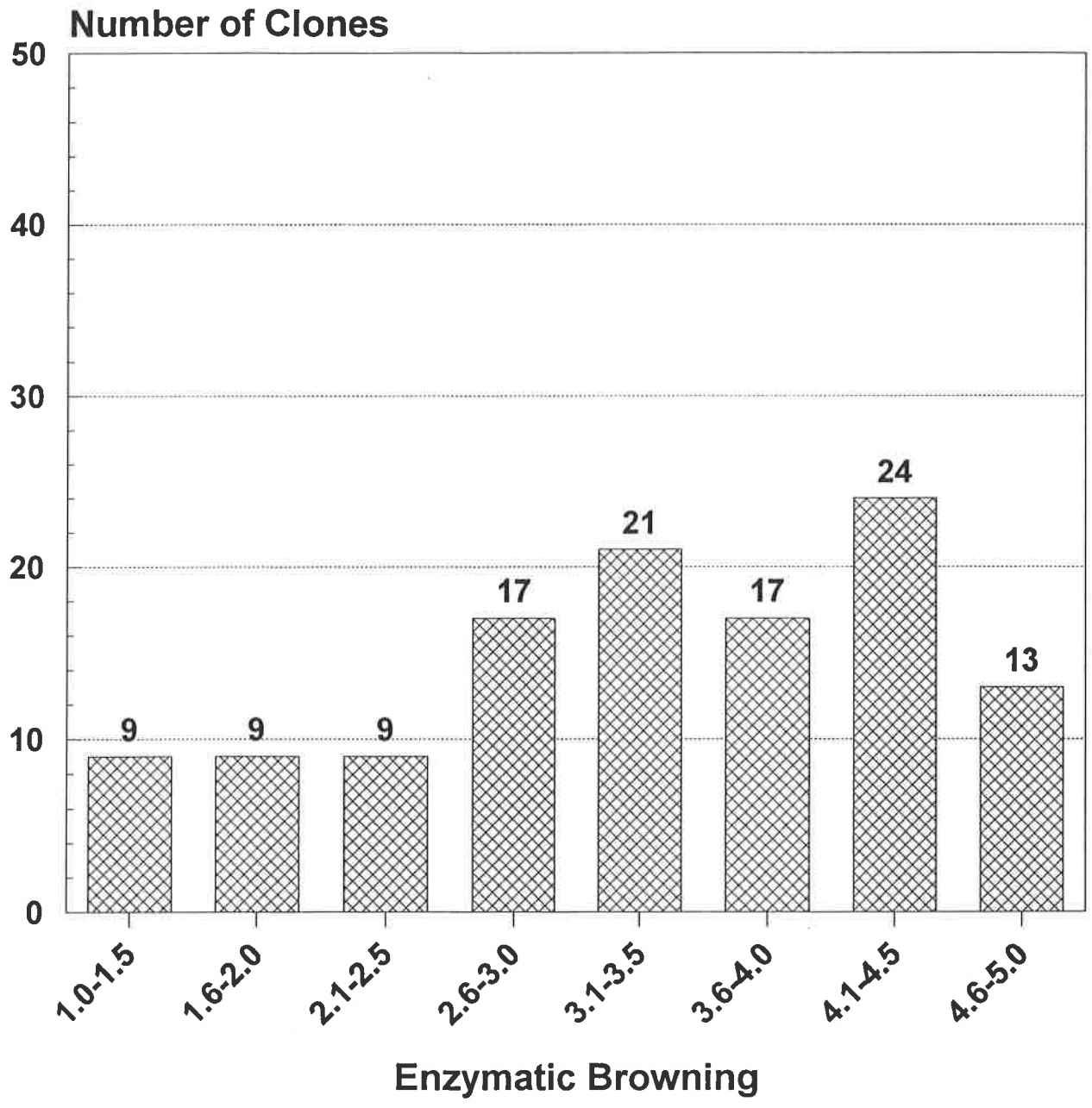
Appendix 3. % Weight Loss Distribution (122 Clones) - 1997



Appendix 4. Dormancy Distribution (122 Clones) - 1997

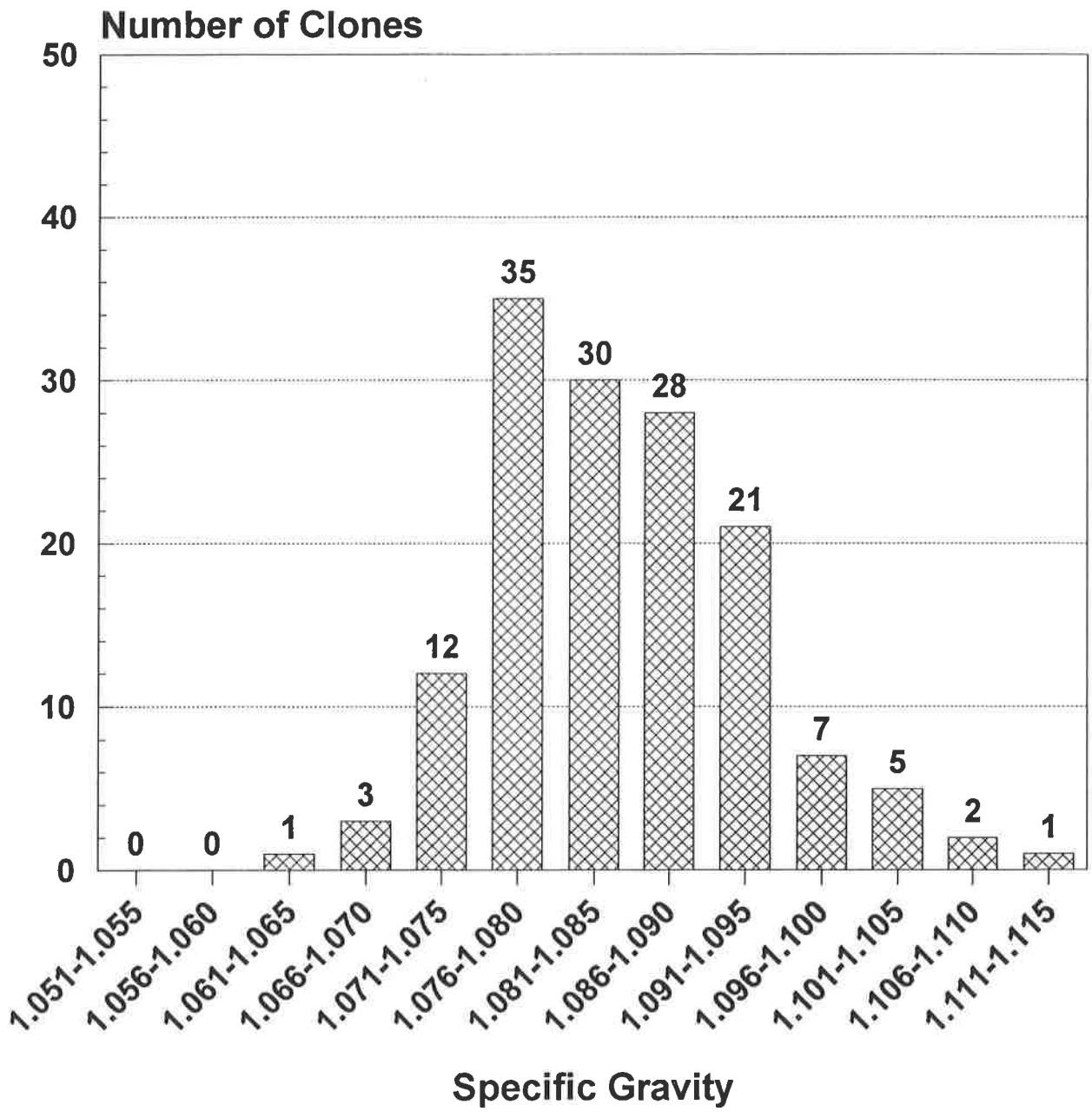


Appendix 5. Enzymatic Browning (60 min) Distribution (119 Clones) - 1997

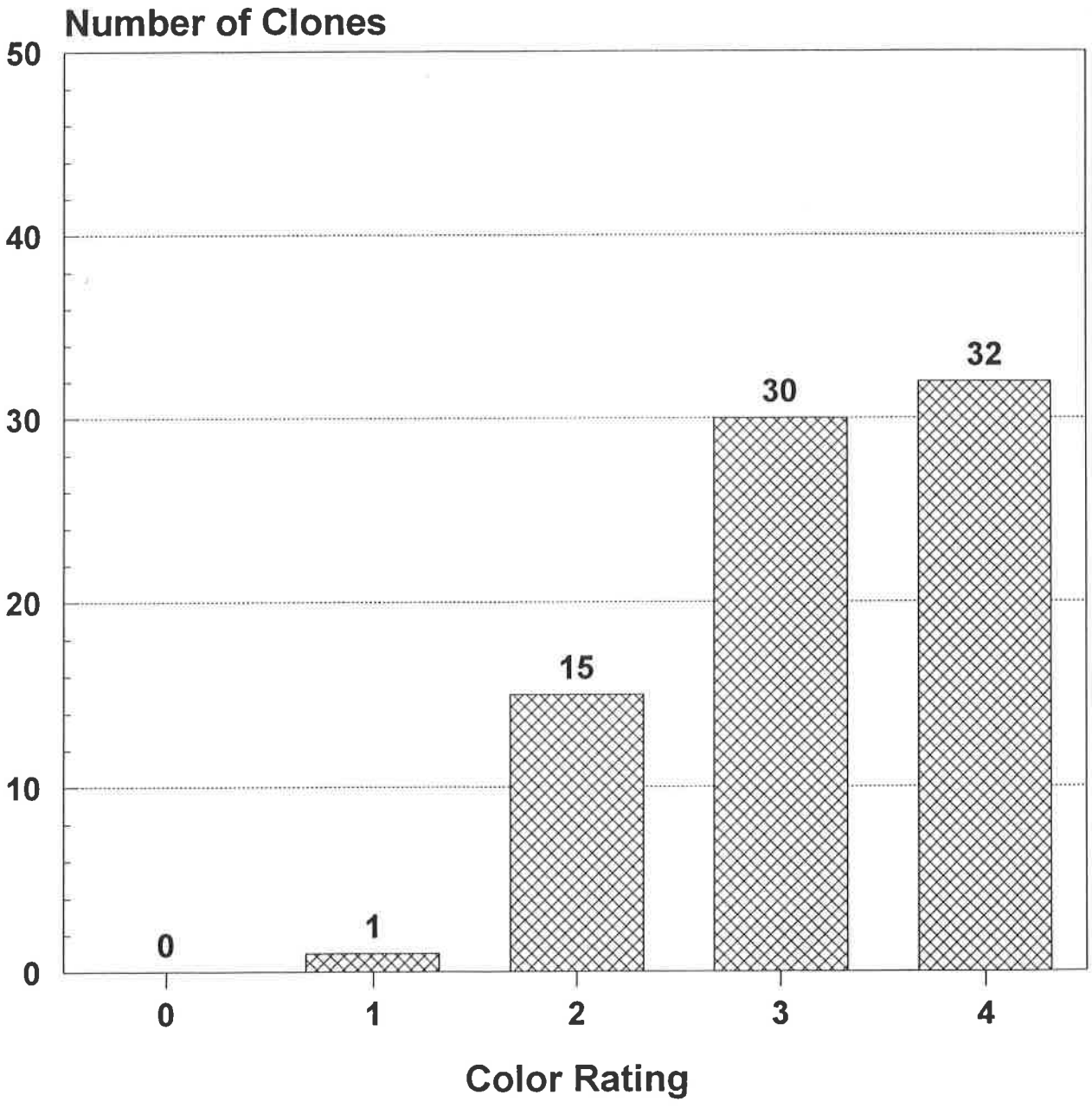


5=No Discoloration

Appendix 6. Specific Gravity Distribution (145 Clones) - 1997

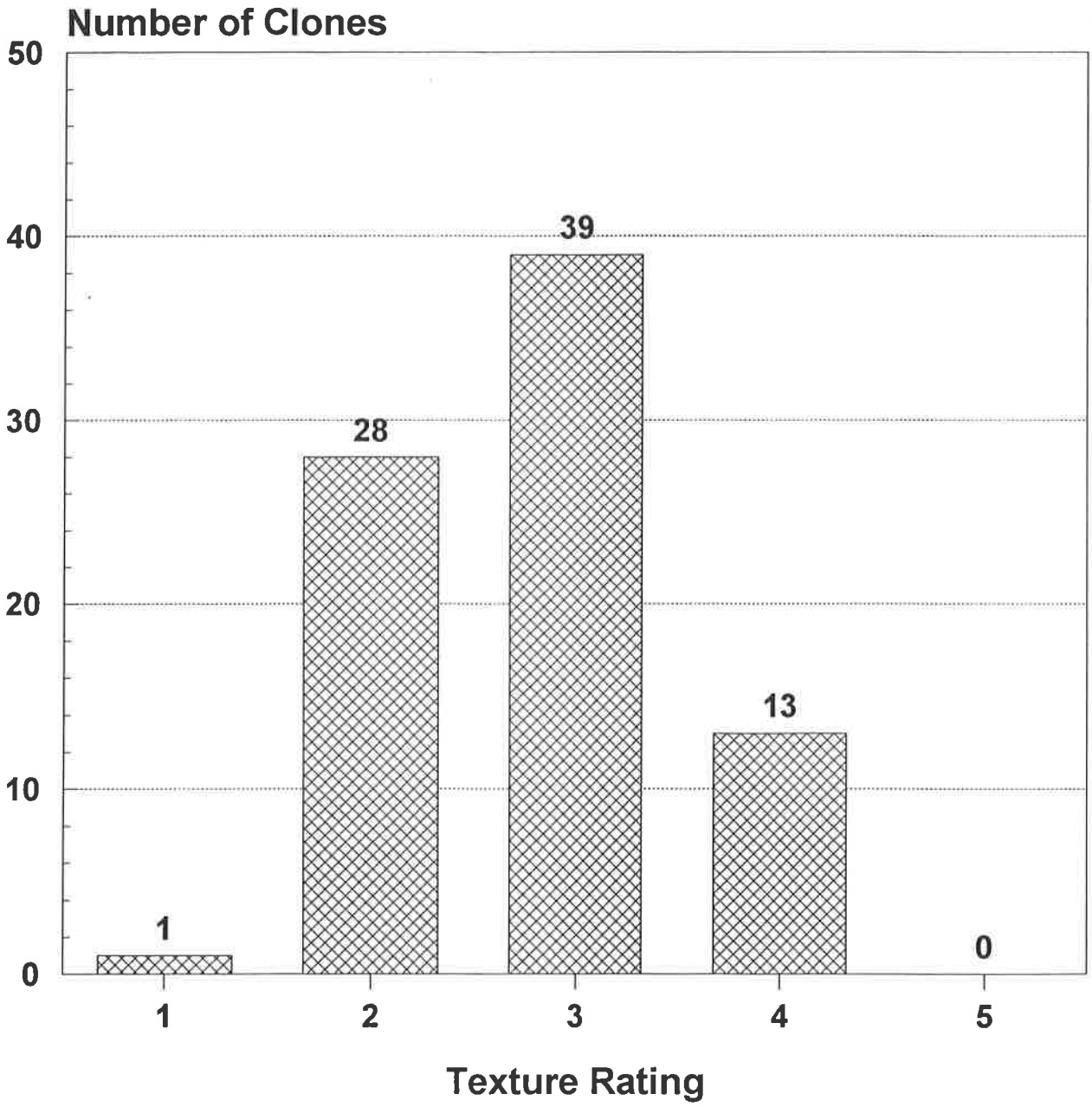


Appendix 7. Fry Color (45F Storage) Distribution (78 Clones) - 1997



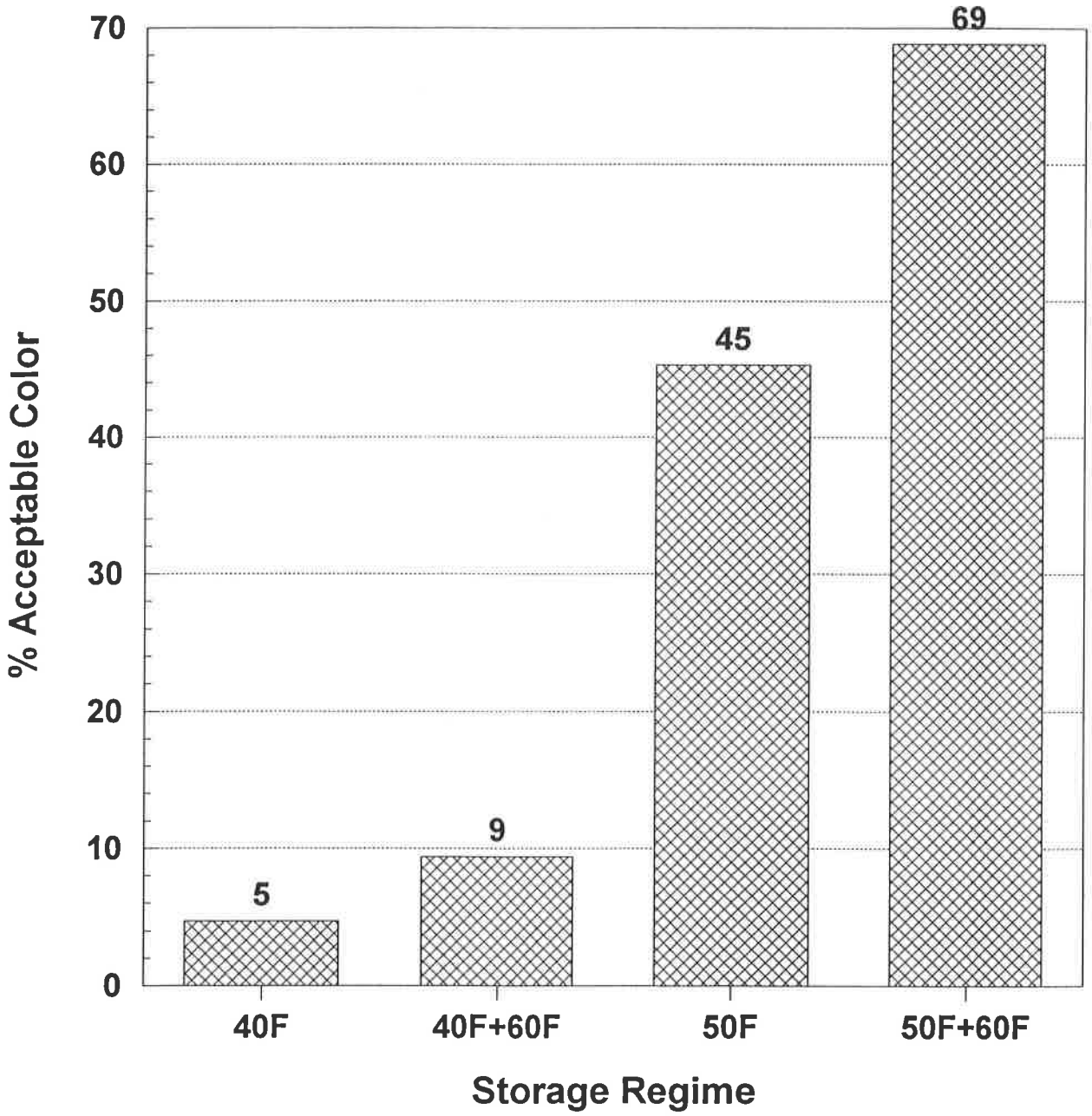
0=Lightest (values of 2 or less acceptable)

Appendix 8. Fry Texture (45F Storage) Distribution (81 Clones) - 1997



5=Dry Texture

Appendix 9. % Acceptable Chip Color (64 Clones) - 1997



Values of 2 or less acceptable based on the SFA 1-5 scale