Research Progress Report for 2004

Potato Breeding and Selection

Submitted by

David G. Holm and Patrick F. Naranjo

San Luis Valley Research Center

to the

Colorado Potato Administrative Committee (Area II)
Research Committee

and the

Colorado Potato Administrative Committee (Area III)

Dedication

We dedicate this report to the outgoing members of the San Luis Valley Research Center Committee. They willingly gave of their time, talents, and vision to further research in support of the San Luis Valley potato industry. For that, we thank you!

Mission Statement

"The mission of the Colorado Potato Breeding and Selection Program is to develop cultivars with characteristics that will help assure that the Colorado potato industry remains productive and competitive."

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Preface

We are pleased to provide this copy of the "Potato Breeding and Selection Research Progress Report for 2004." This report includes research funded by the ***Colorado potato industry (Area II and Area III), Colorado State University (Agricultural Experiment Station and the Department of Horticulture and Landscape Architecture), the Cooperative State Research, Education, and Extension Service (CSREES)***, and PVP royalties. These funds collectively have allowed us to expand and strengthen our overall collaborative research efforts in the areas of disease screening and nutritional characteristics/health attibutes. All of these efforts are aimed at developing improved potato cultivars for Colorado.

Ongoing support by the Colorado potato industry is key to maintaining funding received from CSREES and other potential sources. CSREES and PVP funding have allowed us to increase our breeding efforts to characterize germplasm for improved nutritional quality and other "consumer" characteristics. Similarly we have significantly expand our breeding efforts to include PVY immunity, resistance to late blight (foliar and tuber); resistance to storage rots [dry rot (*Fusarium* and early blight) and bacterial soft rot], and resistance to powdery scab. Unfortunately good sources of germplasm for powdery scab resistance have not been identified to date. We will expand collaborations to look at pink rot reaction of advanced selections.

The Colorado Potato Breeding and Selection Program relies on the invaluable cooperation of several growers, shippers, and research personnel to assess the production, adaptability, marketability, and other characteristics of advanced selections.

Primary areas of research collaboration are:

- Disease Screening and Evaluation - Robert D. Davidson and Richard T. Zink
- Cultivar Specific Management and Storage Studies - Samuel Y. C. Essah
- Nutritional Characteristics and Health Attributes - Cecil Stushnoff and Henry J. Thompson
- Molecular Studies - Jorge M. Vivanco

We continue to develop our collaborations with the Southwest Regional Potato Group which involves Colorado, Texas, and California. The overall objective of this Group is to develop and evaluate improved potato cultivars to meet the production, marketing, and producer/consumer needs of the Southwest U.S. Other "partners" throughout the United States are supportive in providing breeding material and opportunities to screen our germplasm under various growing conditions and disease pressures not usually available in Colorado.

Best wishes for the 2005 production season.

Sincerely,

Dave Holm and Patrick Naranjo

Acknowledgments

We would like to express appreciation to the following individuals, groups, and organizations for their efforts on behalf of the Colorado Potato Breeding and Selection Program in 2004.

✔ Financial Support from the following is gratefully acknowledged:
Colorado Potato Industry - Area II and III
Colorado State University - Colorado Agricultural Experiment Station & the Department of Horticulture and Landscape Architecture
Cooperative State Research, Education, and Extension Service

✔ San Luis Valley Research Center Committee

Jon Brownell	Greg Colbert	Terry Hillin	Art Holland
Mike Mitchell	Mark Peterson	Sheldon Rockey	Fran Strnad

✔ Collaborators - Colorado State University

Rob Davidson	Samuel Essah	Rick Zink	Cecil Stushnoff
Jorge Vivanco	Henry Thompson		

✔ Staff and Graduate Students* - Colorado State University

Juma'a Al-Obeidani*	Deanna Brown	Mekheld Mutiran al-Enazi*	
Ann McSay	Eva Price	Ron Price	Stan Price
Thomas Robison	Sharon Yust		

✔ Potato Certification Service

Teresa Dobson	Rick Haslar	Kent Sather	Rue Snell
Barb Spencer			

✔ Technical Support (including temporary support personnel)

Joe Branecky	Kathy Cain	Jacqueline Consaul	Juan Contreras
Betty Countz	Tatiana DeLaRosa	Savannah Fugok	Virginia Griffith
Santos Gutierrez	Tim Hodges	Lesley Meyer	Kahlejah Miller
Cassie Pleasant	Tim Poc	Paul Post	Teresa Rivera
Ansley Schweighofer	Kendra Stoeber	John Velasquez	Annie White

✔ The Colorado Potato Breeding and Selection Program relies on the cooperation of several growers, shippers, processors, and research personnel to assess the production, adaptability, marketability, and other characteristics of advanced selections from our program. We sincerely appreciate their support and the valuable feedback they provide. We thank many cooperating breeding and selection programs throughout the United States and Canada who have provided breeding material and opportunities to screen our germplasm under various growing conditions and disease pressures not available in Colorado.

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Introduction

The major objectives of the Colorado Potato Breeding and Selection Program are: (1) to develop new potato cultivars (russets, reds, chippers, and specialty) with increased yield, improved quality, improved nutritional characteristics, resistance to diseases and pests, and tolerance to environmental stresses; (2) to provide a basic seed source of selections to growers for seed increase and commercial testing; (3) to evaluate promising selections for potential seed export (interstate and international).

The primary emphasis is placed on the development of russet cultivars. The balance of the breeding effort is devoted to developing red, specialty, and chipping cultivars. This broad approach is important because it recognizes the diverse markets accessed by potato growers throughout Colorado. The development of "low input" cultivars, primarily for reduced nitrogen and fungicide input has always been emphasized.

Additional breeding emphasis is placed on identifying germplasm and developing cultivars that are: (1) immune to PVY; (2) resistant to late blight (foliar and tuber); (3) resistant to storage rots [dry rot (*Fusarium* and early blight) and bacterial soft rot]; (4) resistant to powdery scab; and (5) that have improved nutritional quality and other "consumer" characteristics such as improved red skin color retention and improved shelf life. Continued emphasis will be placed on breeding for improved postharvest and processing qualities such as lengthened dormancy and ability to process after cold storage. Cultivars with these characteristics will help assure that the potato industry in Colorado will remain productive and in a competitive position.

Cultivar development is a four-step process, encompassing first, the generation of segregating populations followed by evaluation for visual agronomic traits. Second, superior progeny are identified and these selections undergo additional evaluation for economically important characteristics. Third, a profile of cultivar specific management criteria - production and postharvest - are developed, which a grower, shipper, or processor, and/or marketer may fine tune for his/her operation. Finally, market development takes place to determine consumer acceptance and recognition in the market. Each of these integrated steps is critical in the development and commercialization of new cultivars and provides the base for a successful cultivar release. Without all components, fruition is difficult to attain.

The process of cultivar development takes 14+ years. Years 1 and 2 are the potato breeding phase of the development process. Parents are selected and crossed to produce true potato seed. Seedling tubers are then produced from the true seed in year 2. Subsequent years (3+) represent the selection phase of the development process. Each year represents another cycle of field selection. As each cycle is completed, fewer and fewer clones remain and the amount of seed per selection is increased. Clones remaining after eight cycles of field selection are released to growers for evaluations prior to official release as a named cultivar. Table 1 presents a detailed description of the steps involved in developing new potato cultivars.

Cultivar Trends/Statistics

Tables 2A-B and Figure 1 present statistics on the primary cultivars grown in the San Luis Valley during 1983-2004. Figure 2 presents a comparison of the production levels of the primary potato cultivars from 1997-2004.

The top five cultivars grown in the San Luis Valley in 2004, based on acreage planted, were Russet Norkotah, Yukon Gold, Russet Nugget, Centennial Russet, Rio Grande Russet, and Keystone Russet. Since 2001 total acreage of yellow fleshed cultivars has exceeded that combined for reds and white cultivars.

Russet Nugget, released by Colorado in 1988, was the primary cultivar grown on fall planted acreage in Colorado in 1997. Russet Nugget acreage has continued to decline since the occurrence of late blight in 1998. This decline has leveled off but continues slightly. Much of this acreage has been replaced by Russet Norkotah (including the clonal selections). Of the Russet Norkotah fall potato acreage in Colorado, 54% was planted to Colorado Russet Norkotah Selections 3 and 8. Figure 3 shows the breakdown of the Russet Norkotah acreage in the San Luis Valley.

Since 1975, there have been 14 potato cultivars and 5 clonal selections released by Colorado State University or in cooperation with other agencies. These materials accounted for 36% of the 12,345 acres of Colorado certified seed accepted for certification in 2004. Advanced Colorado selections accounted for another 20% of the seed acreage. Two of these selections (Rio Grande Russet and Colorado Rose) have recently been named. Two additional selections (CO94183-5P/P and CO94183-1R/R) are in the process of being named. Colorado State University releases accounted for 45% of the 65,000 acres of 2004 fall potatoes planted in Colorado. Of the Russet Norkotah fall potato acreage in Colorado, 46% was planted to Colorado Russet Norkotah Selections 3 and 8. Many of these cultivars and clonal selections have significantly reduced nitrogen and fungicide input requirements.

Potato Breeding

Germplasm Accession and Introgression. Germplasm is continually being acquired with late blight resistance and virus resistance (PXY, PVY, and leafroll) from various sources. Primary sources are the USDA-ARS in Aberdeen, Idaho; Prosser, Washington; and Madison, Wisconsin and Oregon State University. All of these materials have been incorporated into the breeding program.

Several North Korean cultivars with white flesh and reported to have high antioxidant levels were acquired. They will be evaluated with other material in the program and potentially used as parental material.

Crossing. One hundred parental clones were intercrossed in 2004 in two separate crossing blocks. The emphasis of the first crossing block was specialty cultivar development and the second emphasized russets, reds, specialty, and PVY immunity. Seed from 428 combinations was obtained.

Approximately 65,000 seedling tubers representing 235 families were produced from 2003 and 2004 crosses, for initial field selection in 2005. These seedlings represent crosses segregating primarily for russets, reds, chippers, specialty types, and disease resistance/immunity (late blight, PLRV, and PVY). Second through fourth size seedling tubers will be distributed to the USDA-ARS (Idaho), University of Minnesota, North Dakota State University, Texas A&M University, University of Wisconsin, and Agriculture Canada (Alberta, Canada) in 2005.

Additional seedling tubers for planting in 2005 will be obtained from Dr. Richard G. Novy, USDA-ARS, Aberdeen, Idaho; Agriculture Canada, Lethbridge, Alberta; Dr. J. Creighton Miller, Texas A&M University, College Station, Texas; and Dr. Asunta L. Thompson, North Dakotah State University, Fargo, North Dakota.

Seedling Selection and Clonal Development

Colorado grew 79,334 first-year seedlings in 2004, with 549 selected for subsequent planting, evaluation, and increase in future years. A portion of these seedlings were obtained from USDA-ARS, Agriculture Canada, North Dakota State University, and Texas A&M University. Another 878 clones were in 12-hill, preliminary, and intermediate stages of selection. At harvest, 268 were saved for further observation. Forty-three advanced selections were saved at harvest and will be increased in 2005 pending final evaluations. Another 200 selections and cultivars were maintained for germplasm development, breeding, other experimental purposes, or seed increases for the other programs.

Field trials conducted in 2004 included: Preliminary Trial, Intermediate Yield Trial, Advanced Yield Trial, Southwestern Regional Trial, Western Regional Main Trial, Western Regional Red Trial, Western Regional Specialty Trial, San Luis Valley Chipping Study, and Western Regional Chipping Trial. Tables 3-11 present the data for the various trials. Appendix 1 summarizes the cultural information for the trials conducted by the Potato Breeding and Selection Program at the San Luis Valley Research Center in 2004.

A total of 205 samples were evaluated for two or more of the following postharvest characteristics: blackspot susceptibility, storage weight loss, dormancy, enzymatic browning, specific gravity, french fry color, french fry texture, and chip color. Appendix 2 lists the procedures used for the postharvest evaluations for the trials. Appendices 3-10 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 3-10 are useful in understanding how a given selection compares with the population of clones being evaluated.

Screening studies for greening susceptibility of advanced selections and named cultivars is not complete as this time. Results will be reported at a later date.

Advanced selections evaluated in the Southwest Regional Trials, Western Regional Trials, or by producers, included 9 russets (AC87084-3RU, AC89536-5RU, AC92009-2RU, AC93026-9RU, CO93001-11RU, CO94035-15RU, CO95086-8RU, CO95172-3RU, and TC1675-1RU), 4 reds (CO89097-2R, CO93037-6R, NDC5281-2R, and VC1075-1R), 3 chippers (BC0894-2W, and CO95051-7W, and CO96141-4W), and 8 specialty selections (CO94157-2W/Y, CO94165-3P/P, CO94183-1R/R, VC0967-2R/Y, VC1002-3W/Y, VC1009-1W/Y, and VC1015-7R/Y, and VC1123-2W/Y).

Advanced selections that were discarded from further evaluation are AC93026-9RU and TC1675-1RU, and VC1075-1R. Based on initial San Luis Valley grower results in 2003 a decision was made to discard CO93037-6R. However, this selection had the highest merit score in the Western Regional Red Trials in both 2003 and 2004 and will be retained for further evaluation in other production areas.

Figure 4 includes photographs of advanced selections and recently named cultivars produced by growers in 2004 and that have not been discard. Included are four selections (CO95086-8RU, CO95172-3RU, VC1015-7R/Y, and CO95051-7W) scheduled for initial grower evaluations in 2004. Table 12 summarizes the performance of these selections and others currently undergoing grower evaluation.

Advanced selections/recent releases undergoing commercialization include AC89536-5RU (Rio Grande Russet) and CO89097-2R (Colorado Rose). Exclusive release or public release for BC0894-2W, CO85026-4RU (Fremont Russet), and CO86218-2R (Durango Red) is being evaluated. Two specialty selections to be named are CO94165-3P/P (Purple Majesty) and CO94183-1R/R. Both of these selections have colored flesh.

Collaborative Studies

The following collaborative studies were conducted in 2004:

- 65 selections and named cultivars from 2004 are being screened for antioxidant activity and vitamin C in cooperation with Cecil Stushnoff.
- Twenty-seven advanced selections were evaluated in cultural management trials in collaboration with Samuel Essah.
- Advanced selections were evaluated for disease symptom expression in cooperation with Rob Davidson and Rick Zink. Included were: bacterial ring rot (24), potato leafroll virus (15), PVY (21) and powdery scab (5) in Colorado.

- Thirty selections were screened for late blight resistance by Oregon State University in 2004 (Table 14). These selections have either been screened for two or three years in the field. Second year clones exhibiting significant levels of resistance will be retested in 2005. Resistant third year clones will continue to be evaluated as potential releases and/or used as parents for further crossing. Several new clones will also be evaluated in 2005.

- Several advanced selections were distributed to state collaborators in Michigan, Oregon, and Wisconsin for additional disease evaluations. These selections were screened for one or more of the following diseases: late blight, early blight, and PVY. In addition selections were provided to the National Trials for PVY, late blight, and scab (powdery and common) evaluations.

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

Year	Comments
1	Select parents for crossing and true seed production in the greenhouse.
2	Produce seedling tubers from true seed in the greenhouse.
3	70,000-80,000 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 Selections 1 (P1). Third cycle of field selection (48 plant tuber-unit seed increase). Initial evaluations for chipping qualities (chip color after various storage regimes and specific gravity) are conducted this year and subsequently.
6	Preliminary Selections 2 (P2). Fourth cycle of field selection (96 plant tuber-unit seed increase). 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 Selections. Fifth cycle of field selection. Initial data collected on yield, grade, and growth characteristics. Plant a 144 plant tuber-unit seed increase and a 2 rep x 25 plants intermediate yield trial (IYT).
8-9, 14+	Advanced Selections: Includes selections that have advanced from the IYT. Additionally selections are included that have graduated from the Southwest Regional and Western Regional Trials. The advanced yield trials for reds, specialty types, and chippers are planted with entries in the Western Regional Red, Specialty and Chip Trials. Selections are in the 6th-7th and 12+ cycles of field selection. All advanced yield trials (AYT) have 4 reps x 25 plants. Sixth- and seventh- year field selections respectively have a 400/1,600 plant tuber-unit seed increase. 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 7th cycle of field selection are entered into cultural management trials and postharvest disease reaction (dry rot and soft rot) evaluations.
10	All 8th year selections have a 1/2 acre tuber-unit seed increase planted. These selections are entered in the Southwestern Regional Trials (4 locations - CO, TX, two in CA). Cultural management trials and postharvest disease reaction evaluations continue as needed.
11-13	All 9th year or older selections generally have a 1 acre or greater seed increase. These selections are entered in the Western Regional Trials (4 trials): main (russets and long whites), red, specialty , and chip. The Western Coordinating Committee (WCC-27) directs these trials at 10+ locations in the Western United States each year. Cultural management trials and postharvest disease reaction evaluations continue as needed.
11+	Grower/industry evaluations. The Colorado Potato Breeding and Selection Project relies on the cooperation of several growers, shippers, and processors to evaluate advanced selections for adaptability and marketability.
14+	Release as a named cultivar.

Table 2A. Colorado fall potatoes: Production of primary potato cultivars, 1983-1990[1].

Cultivar	%/Acreage	Year										
		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Centennial Russet	%	62.7	68.0	66.9	66.0	67.3	68.8	55.3	61.2	47.5	44.4	38.3
	Acreage	29,469	36,380	37,799	37,620	41,053	41,280	34,286	40,086	32,300	29,304	27,768
Red McClure	%	3.7	1.6	1.9	1.0	1.0	---	---	---	---	---	---
	Acreage	1,739	856	1,074	570	610	---	---	---	---	---	---
Russet Burbank	%	23.9	22.9	24.3	23.7	21.7	16.0	13.2	7.1	8.3	8.7	---
	Acreage	11,233	12,252	13,730	13,509	13,237	9,600	8,184	4,651	5,644	5,742	---
Russet Norkotah	%	---	---	---	---	---	2.2	9.9	14.0	20.1	26.1	23.5
	Acreage	---	---	---	---	---	1,320	6,138	9,170	13,668	17,226	17,038
Russet Nugget	%	---	---	---	---	---	---	---	---	9.6	10.1	13.7
	Acreage	---	---	---	---	---	---	---	---	6,528	6,666	9,933
Sangre	%	5.7	3.1	5.1	7.2	6.3	6.3	7.9	7.6	---	5.9	7.5
	Acreage	2,679	1,659	2,882	4,104	3,843	3,780	4,898	4,978	---	3,894	5,438
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

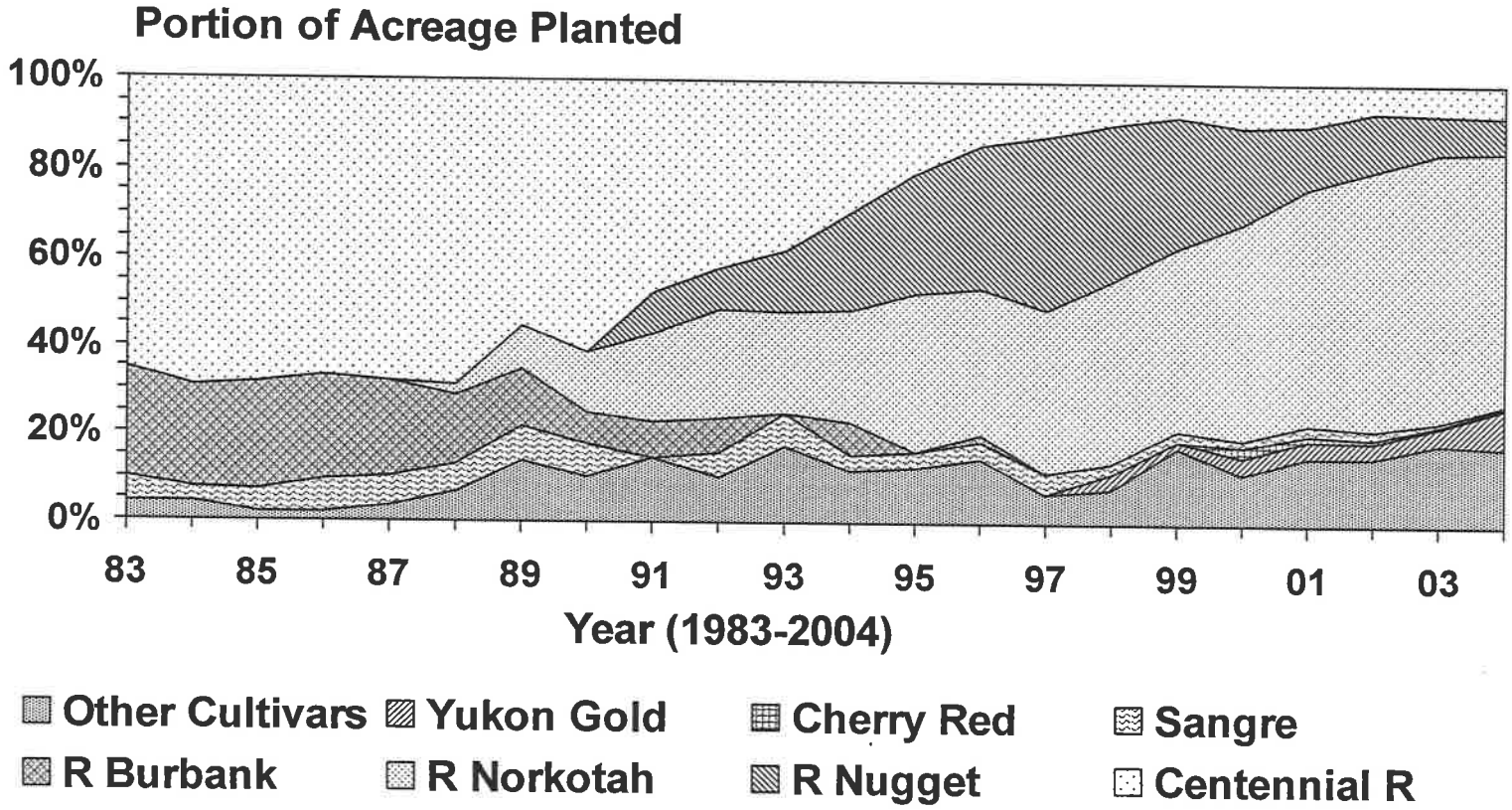
[1]Data provided by the Colorado Agricultural Statistics Service.

Table 2B. Colorado fall potatoes: Production of primary potato cultivars, 1994-2004[1].

Cultivar	%/Acreage	Year										
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Centennial Russet	%	30.3	20.5	15.0	12.3	9.3	7.6	9.9	9.6	6.5	6.6	7.1
	Acreage	22,422	15,785	11,700	9,471	7,049	5,687	7,484	6,538	4,654	4,376	4,615
Cherry Red	%	---	---	---	---	---	---	2.3	1.4	0.8	0.3	0.4
	Acreage	---	---	---	---	---	---	1,739	953	5,728	199	260
Durango Red	%	---	---	---	---	---	---	---	---	---	1.2	0.6
	Acreage	---	---	---	---	---	---	---	---	---	796	390
Keystone Russet	%	---	---	---	---	---	---	---	---	---	1.0	1.1
	Acreage	---	---	---	---	---	---	---	---	---	663	715
Rio Grande Russet	%	---	---	---	---	---	---	---	---	---	---	3.4
	Acreage	---	---	---	---	---	---	---	---	---	---	2,210
Russet Norkotah	%	26.6	36.2	35.6	37.6	41.6	42.0	49.3	53.8	59.1	60.7	57.6
	Acreage	19,684	27,874	27,768	28,952	31,533	32,424	37,271	36,638	42,316	40,244	37,440
Russet Nugget	%	23.1	27.0	34.0	38.8	35.1	29.0	21.4	13.8	12.7	9.0	7.8
	Acreage	17,094	20,790	26,520	29,876	26,606	22,388	16,178	9,398	9,093	5,967	5,070
Sangre	%	3.8	3.8	4.4	4.4	2.7	2.5	1.8	2.1	2.0	0.8	0.3
	Acreage	2,812	2,926	3,432	3,388	2,047	1,930	1,361	1,430	1,432	530	195
Silverton Russet	%	---	---	---	---	---	---	0.5	1.7	1.9	2.0	0.5
	Acreage	---	---	---	---	---	---	378	1,158	1,360	1,326	325
Yukon Gold	%	---	---	---	---	3.4	1.4	3.7	4.0	3.6	4.1	9.0
	Acreage	---	---	---	---	2,577	1,081	2,797	2,724	2,578	2,718	5,850
Total Fall Acreage Planted		74,000	77,000	78,000	77,000	75,800	77,200	75,600	68,100	71,600	66,300	65,000

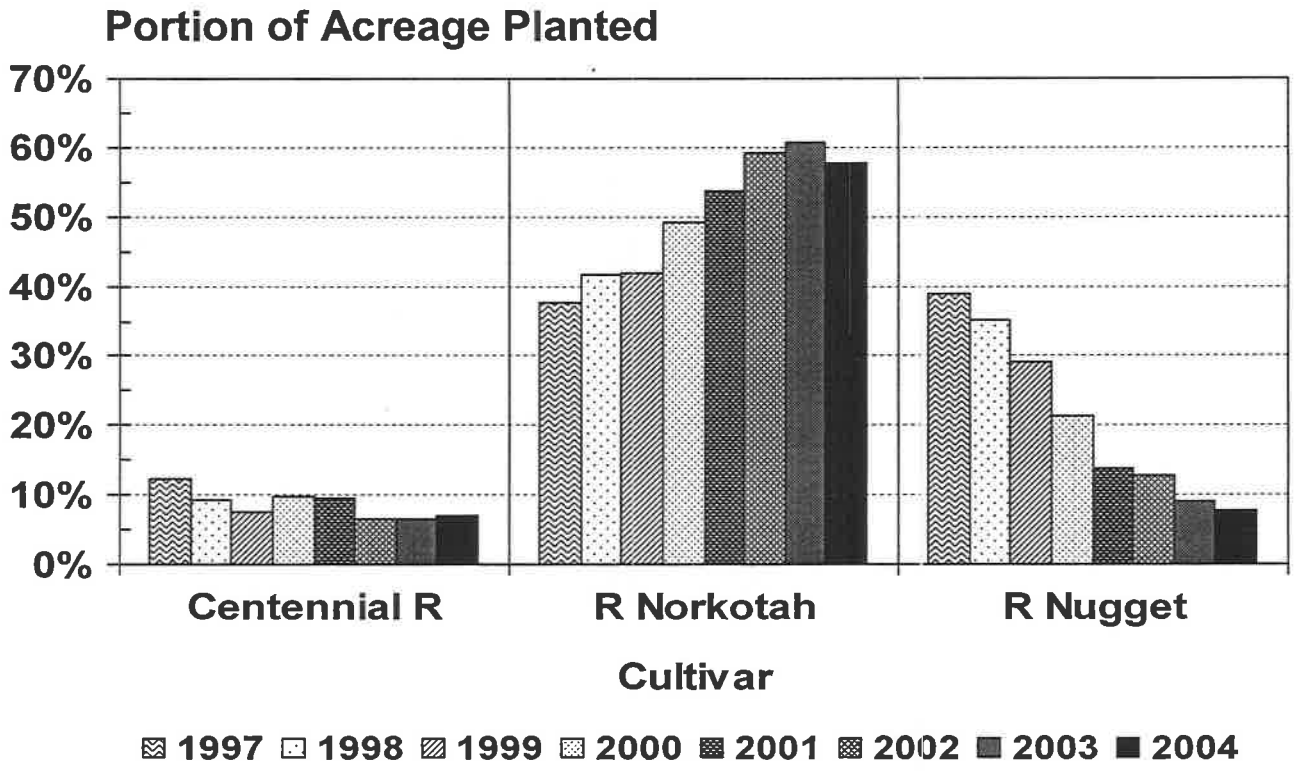
[1]Data provided by the Colorado Agricultural Statistics Service.

Figure 1. Primary SLV Potato Cultivars Planted 1983–2004



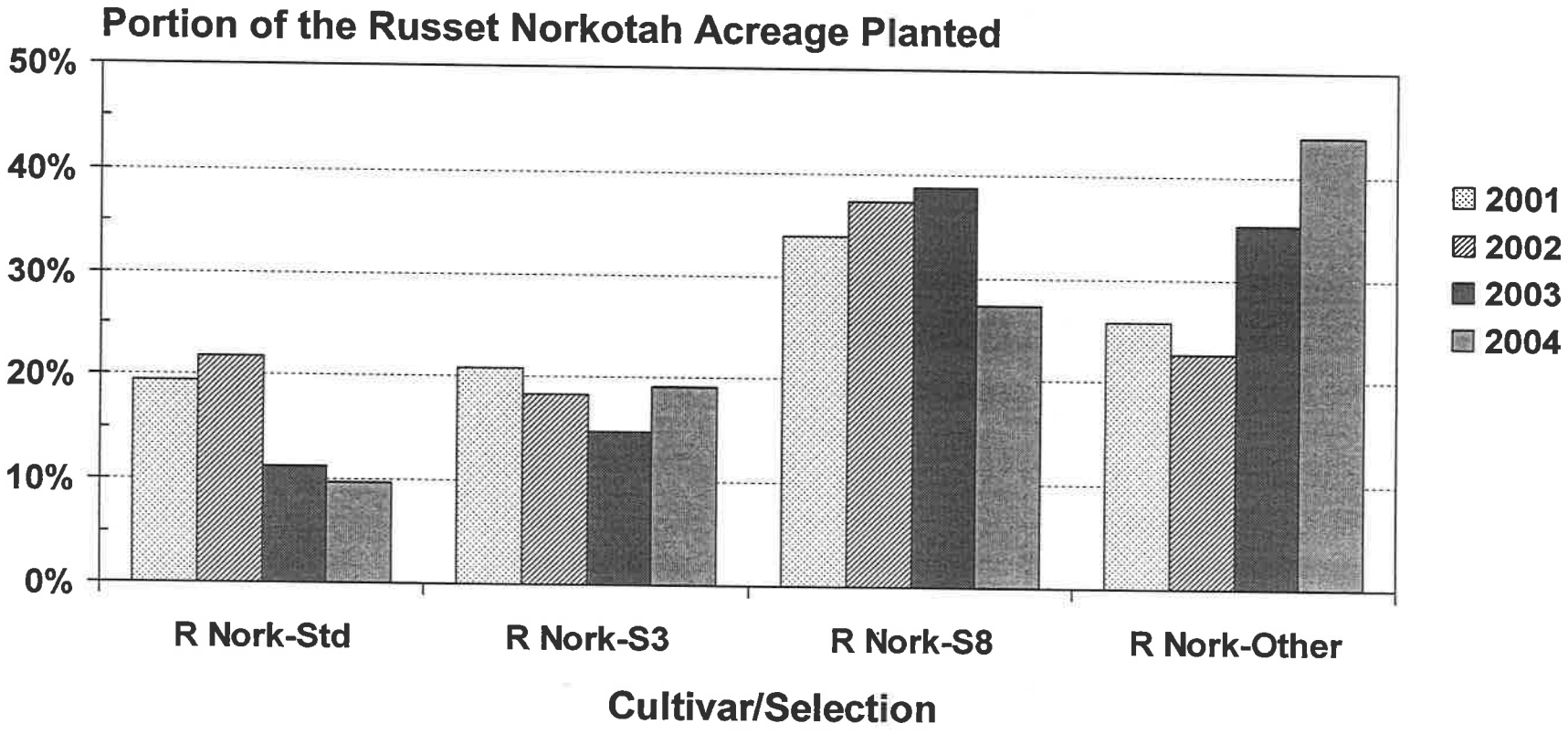
Data Source: Colorado Agricultural Statistics Service

Figure 2. Primary SLV Potato Cultivars 1997-2004 Comparison



Data Source: Colorado Agricultural Statistics Service

Figure 3. Colorado Russet Norkotah Acreage Breakdown (2001-2004)



Data Source: Colorado Agricultural Statistics Service

Table 3A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Preliminary Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC97044-4RU	4.8	3.2	4.0	1.8	62	4.6
AC99178-2RU	4.4	4.2	4.3	1.3	118	4.4
AC99329-7PW/Y	4.5	3.9	4.2	2.0	48	4.6
AC99330-1P/Y	4.0	4.0	4.0	1.4	62	3.6
AC99336-2RU	4.3	3.0	3.7	1.2	153	3.6
AC99375-1RU	5.0	3.7	4.4	1.4	132	3.4
AC99380-4RU	4.3	3.3	3.8	1.6	132	4.8
AC99438-2RU	3.9	2.5	3.2	1.2	111	3.8
CO99019-1RU	3.8	3.5	3.7	1.5	62	3.8
CO99028-2RU	4.8	4.9	4.9	1.3	132	4.2
CO99036-6RU	4.4	4.3	4.4	1.2	55	3.2
CO99043-7RU	5.0	5.0	5.0	3.0	97	3.6
CO99045-1W/Y	4.9	4.3	4.6	1.4	55	5.0
CO99053-3RU	5.0	4.8	4.9	1.2	132	4.4
CO99053-4RU	4.6	4.9	4.8	1.5	62	4.4
CO99076-6R	3.5	2.3	2.9	1.7	62	1.8
CO99100-1RU	4.4	4.5	4.5	1.4	62	3.4
CO99199-1RU	4.8	4.1	4.5	1.2	139	4.8
CO99256-2R	4.0	4.1	4.1	1.6	118	3.4
CO99256-3R	4.4	4.3	4.4	1.5	76	3.6
CO99338-3RU/Y	3.2	3.2	3.2	1.1	76	4.6
CO99364-3R/R	---	---	---	1.6	111	---
CO00047-3RU	3.2	3.4	3.3	1.0	132	3.2
VC1115-1RU	4.8	4.3	4.6	4.3	111	5.0
Centennial Russet	4.8	4.9	4.9	1.6	76	3.6
Russet Burbank	4.2	3.0	3.6	1.5	153	2.2
Russet Norkotah-S3	5.0	4.8	4.9	1.5	146	3.0
Russet Nugget	5.0	5.0	5.0	1.1	144	4.4
Sangre-S10	3.9	4.2	4.1	1.0	73	4.0
Shepody	4.5	3.1	3.8	1.3	90	3.6
Yukon Gold	4.5	3.7	4.1	1.1	84	4.2

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

[2]Tubers were stored at 45F for 115 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 - 2004.

Clone	Specific Gravity	Fry Color[1] At Harvest	Fry Color[1] 3 wks 55F+ 8 wks 45F	Fry Texture[2] At Harvest	Fry Texture[2] 3 wks 55F+ 8 wks 45F
AC97044-4RU	1.079	2	3	2	3
AC99178-2RU	1.084	3	3	3	3
AC99329-7PW/Y	1.081	3	3	3	4
AC99330-1P/Y	1.075	2	3	3	4
AC99336-2RU	1.094	1	4	4	4
AC99375-1RU	1.095	1	2	3	3
AC99380-4RU	1.102	0	1	4	4
AC99438-2RU	1.088	1	3	3	3
CO99019-1RU	1.084	0	1	3	4
CO99028-2RU	1.089	2	3	3	3
CO99036-6RU	1.085	3	3	2	3
CO99043-7RU	1.076	3	4	2	2
CO99045-1W/Y	1.080	3	4	3	2
CO99053-3RU	1.077	0	2	3	2
CO99053-4RU	1.083	1	3	2	2
CO99076-6R	1.089	2	3	3	2
CO99100-1RU	1.084	0	1	3	3
CO99199-1RU	1.095	0	1	4	4
CO99256-2R	1.080	1	2	3	3
CO99256-3R	1.083	1	1	3	3
CO99338-3RU/Y	1.076	1	2	2	2
CO99364-3R/R	1.079	---	---	3	3
CO00047-3RU	1.096	1	2	4	3
VC1115-1RU	1.075	0	1	3	3
Centennial Russet	1.081	3	4	3	3
Russet Burbank	1.087	2	3	3	3
Russet Norkotah-S3	1.078	2	4	2	2
Russet Nugget	1.077	1	3	3	3
Sangre-S10	1.069	4	4	1	2
Shepody	1.087	1	2	3	3
Yukon Gold	1.082	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 4A. Yield, grade and tuber shape for Intermediate Yield Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
		US #1					
	Total	Total	%	4-10 oz	>10 oz	<4 oz	
AC97019-1RU	729	693	95.1	226	467	21	Ob
AC97069-1W	597	496	83.1	367	129	75	L
AC98350-2RU	499	372	74.4	311	60	84	L
CO98009-3RU	521	438	84.2	245	194	49	Ob
CO98067-7RU	560	500	89.0	404	96	58	L
CO98368-2RU	426	335	78.6	254	81	83	L
Russet Norkotah	333	303	91.4	234	70	30	L
Russet Nugget	547	515	89.5	411	103	55	Ob
Mean	530	457	85.7	306	150	57	----
LSD[2] (0.05)	116	127	10.4	78	73	37	----

[1]Tuber shape: Ob=oblong; L=long.

[2]LSD=least significant difference.

Table 4B. Grade defects for Intermediate Yield Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC97019-1RU	1.1	SG*	0.0
AC97069-1W	4.4	SG*,GC,GR*	0.0
AC98350-2RU	8.7	SG,GC*	0.0
CO98009-3RU	5.8	MS, SG*,GC,GR	1.7
CO98067-7RU	0.3	GC*	0.0
CO98368-2RU	1.8	GC*, GR	0.0
Russet Norkotah	1.2	GC, GR*	0.0
Russet Nugget	0.7	GR*	0.9

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC97019-1RU	100	3.0	4.0	2.6	4.5	3.5	4.0
AC97069-1W	100	3.0	3.5	2.7	4.5	3.0	3.5
AC98350-2RU	100	2.5	2.5	2.6	2.5	3.0	2.5
CO98009-3RU	98	3.0	3.5	3.3	3.0	3.0	3.0
CO98067-7RU	96	3.0	3.0	3.2	3.0	3.0	2.5
CO98368-2RU	92	2.5	3.0	3.0	3.0	2.5	2.5
Russet Norkotah	100	3.0	1.0	4.3	1.5	3.0	1.5
Russet Nugget	98	3.5	4.0	3.3	4.0	3.0	4.0
Mean	98	2.9	3.1	3.1	3.3	3.0	2.9
LSD[6] (0.05)	6	1.1	0.9	1.3	1.2	0.9	1.4

[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 entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC97019-1RU	4.1	3.3	3.7	1.3	132	4.4
AC97069-1W	3.4	4.3	3.9	1.1	55	4.2
AC98350-2RU	4.8	5.0	4.9	1.2	118	4.4
CO98009-3RU	4.1	3.8	4.0	1.2	62	4.0
CO98067-7RU	5.0	5.0	5.0	1.4	62	4.8
CO98368-2RU	3.6	3.6	3.6	1.2	146	4.4
Russet Norkotah	3.6	3.3	3.5	1.7	132	3.6
Russet Nugget	5.0	4.2	4.6	1.2	118	3.6

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

[2]Tubers were stored at 45F for 115 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 - 2004.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AC97019-1RU	1.088	1	3	4	3
AC97069-1W	1.097	2	3	3	3
AC98350-2RU	1.087	3	3	3	3
CO98009-3RU	1.093	1	1	3	3
CO98067-7RU	1.080	1	2	3	3
CO98368-2RU	1.082	1	2	4	4
Russet Norkotah	1.084	2	3	2	3
Russet Nugget	1.100	0	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 and tuber shape for Advanced Yield Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
		US #1					
	Total	Total	%	4-10 oz	>10 oz	<4 oz	
AC89536-5RU	597	540	90.7	266	275	33	Ob
AC96010-3RU	449	371	82.6	295	75	62	L
AC96052-1RU	398	357	89.4	243	113	37	Ob
AC97068-2RU	552	495	89.8	304	191	45	Ob
CO96045-1RU	402	352	87.5	267	85	34	L
CO96047-7RU	435	408	93.8	242	166	21	L
CO96109-7RU	435	380	87.6	242	139	26	Ob
CO97087-2RU	446	384	86.3	236	149	50	Ob
CO97090-4RU	421	351	83.7	250	100	59	L
CO97137-1W	439	358	81.5	293	65	67	L
CO97138-3RU	521	494	94.8	229	265	16	L
CO97138-7RU	559	509	91.0	304	202	44	Ob
Russet Norkotah	431	373	86.6	271	102	47	L
Russet Nugget	545	478	87.5	359	119	61	Ob
Mean	474	418	88.1	272	146	43	----
LSD[2] (0.05)	53	49	4.4	43	51	14	----

[1]Tuber shape: Ob=oblong; L=long.

[2]LSD=least significant difference.

Table 5B. Grade defects for Advanced Yield Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AC89536-5RU	4.0	SG, GC, GR*	0.0
AC96010-3RU	3.6	MS, GR*	0.0
AC96052-1RU	1.2	GC, GR*	0.0
AC97068-2RU	2.1	SG, GC*, GR	2.3
CO96045-1RU	4.0	GC*, GR	0.0
CO96047-7RU	1.3	SG, GC, GR*	0.0
CO96109-7RU	6.6	MS, SG*, GC, GR	1.0
CO97087-2RU	2.6	GR*	0.0
CO97090-4RU	2.5	GC, GR*	0.0
CO97137-1W	3.1	GC*GR	0.0
CO97138-3RU	2.2	GR*	0.0
CO97138-7RU	1.0	GC, GR*	0.0
Russet Norkotah	2.3	GC, GR*	0.0
Russet Nugget	1.1	GC*, GR*	0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 entries- 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AC89536-5RU	96	3.0	4.0	2.7	4.0	3.5	3.3
AC96010-3RU	97	2.8	2.5	2.5	3.0	3.0	3.0
AC96052-1RU	68	1.5	3.0	2.4	3.8	3.0	3.8
AC97068-2RU	95	3.3	2.3	2.3	3.0	3.0	4.0
CO96045-1RU	97	3.3	2.5	3.1	2.5	3.0	2.0
CO96047-7RU	96	3.0	3.0	2.4	2.5	2.5	2.0
CO96109-7RU	97	3.3	3.0	2.6	3.0	3.0	2.5
CO97087-2RU	97	3.3	3.0	3.1	3.3	3.0	2.8
CO97090-4RU	98	3.0	2.0	2.7	2.3	3.0	2.3
CO97137-1W	99	3.0	3.0	3.4	2.5	2.5	1.5
CO97138-3RU	88	3.0	3.8	2.6	3.5	2.5	2.8
CO97138-7RU	94	3.3	3.0	3.6	2.5	2.0	2.5
Russet Norkotah	97	3.3	2.5	4.0	2.0	2.8	1.5
Russet Nugget	96	3.3	4.0	3.3	4.0	3.8	4.0
Mean	94	3.0	3.0	2.9	3.0	2.9	2.7
LSD[6] (0.05)	6	0.7	0.5	0.5	0.6	0.6	0.6

[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 entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC89536-5RU	4.1	4.2	4.2	1.5	73	4.2
AC96010-3RU	4.5	3.7	4.1	1.4	146	4.0
AC96052-1RU	2.7	1.4	2.1	1.0	104	3.8
AC97068-2RU	3.1	1.7	2.4	1.7	90	3.6
CO96045-1RU	4.7	2.9	3.8	1.2	83	3.8
CO96047-7RU	3.6	3.7	3.7	1.3	62	4.2
CO96109-7RU	4.0	4.2	4.1	1.1	62	4.6
CO97087-2RU	4.2	2.9	3.6	1.1	111	3.8
CO97090-4RU	3.2	2.6	2.9	1.4	153	4.0
CO97137-1W	2.1	1.8	2.0	1.5	62	3.4
CO97138-3RU	4.1	3.1	3.6	1.2	132	4.6
CO97138-7RU	4.2	3.6	3.9	1.4	146	4.0
Russet Norkotah	3.9	3.7	3.8	1.5	132	3.8
Russet Nugget	4.3	3.4	3.9	1.2	118	4.0

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

[2]Tubers were stored at 45F for 115 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 Entries - 2004.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AC89536-5RU	1.091	1	3	4	3
AC96010-3RU	1.091	1	1	4	4
AC96052-1RU	1.094	0	1	3	3
AC97068-2RU	1.097	1	2	4	4
CO96045-1RU	1.086	0	2	3	3
CO96047-7RU	1.088	2	4	3	3
CO96109-7RU	1.087	0	1	4	3
CO97087-2RU	1.100	0	1	4	4
CO97090-4RU	1.081	1	3	2	3
CO97137-1W	1.085	2	3	3	3
CO97138-3RU	1.086	2	2	2	2
CO97138-7RU	1.077	2	3	3	2
Russet Norkotah	1.085	1	3	3	2
Russet Nugget	1.101	0	1	5	5

[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 and tuber shape for Southwest Regional Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
	Total	US #1					
		Total	%	4-10 oz	>10 oz	<4 oz	
ATTX98465-1R/Y	614	485	79.0	381	104	121	R
ATX9332-8RU	430	407	94.5	225	182	22	Ob
CO94157-2W/Y	432	300	69.1	270	31	126	Ob
CO95086-8RU	369	314	85.2	270	44	51	Ob
CO95172-3RU	547	442	80.8	331	111	93	Ob
CO96141-4W	420	398	95.0	258	140	15	Ov
MWTX548-2RU	626	552	88.3	394	158	64	Ob
MWTX2609-2RU	620	562	90.7	350	212	45	Ob
MWTX2609-4RU	524	478	91.3	284	194	41	Ob
TXA549-1RU	554	461	83.0	292	169	75	Ob-Ov
VC1123-2W/Y	542	498	92.0	281	217	26	Ov
Atlantic	480	427	89.1	208	219	31	Ov
Chipeta	602	524	87.1	321	203	66	Ov
Russet Norkotah	395	336	84.9	244	92	55	L
Russet Nugget	546	459	84.1	349	110	84	Ob
Yukon Gold	411	373	90.7	196	176	31	Ov
Mean	507	438	86.5	291	148	59	----
LSD[2] (0.05)	61	56	4.3	45	42	17	----

[1]Tuber shape: R=round; Ov=oval; Ob=oblong; L=long.

[2]LSD=least significant difference.

Table 6B. Grade defects for Southwest Regional Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
ATTX98465-1R/Y	1.2	SG, GC*, GR	0.0
ATX9332-8RU	0.5	GC*, GR*	0.9
CO94157-2W/Y	1.3	GC, GR*	0.0
CO95086-8RU	1.1	GR*	0.0
CO95172-3RU	2.2	SG*, GC, GR	0.0
CO96141-4W	1.4	GC, GR*	0.0
MWTX548-2RU	1.6	MS*, GC, GR	0.2
MWTX2609-2RU	2.1	GC, GR*	0.0
MWTX2609-4RU	1.0	MS, GC*, GR*	0.0
TXA549-1RU	3.2	SG, GC, GR*	0.0
VC1123-2W/Y	3.3	MS, SG*, GC, GR*	3.6
Atlantic	4.5	SG*, GC, GR*	6.1
Chipeta	1.9	SG, GR*	0.0
Russet Norkotah	1.4	MS*, SG, GC, GR*	0.0
Russet Nugget	0.5	GC, GR*	0.3
Yukon Gold	1.6	SG, GR*	0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 Southwest Regional Trial entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
ATTX98465-1R/Y	98	3.3	3.5	4.7	3.5	3.0	3.0
ATX9332-8RU	100	3.5	3.0	2.0	3.0	3.5	3.0
CO94157-2W/Y	84	2.3	3.0	2.8	3.0	3.3	2.5
CO95086-8RU	96	3.0	3.0	2.8	3.0	3.3	1.8
CO95172-3RU	98	3.3	3.5	2.5	4.0	3.8	3.3
CO96141-4W	97	3.3	2.5	2.3	2.3	2.8	2.5
MWTX548-2RU	99	3.0	3.8	3.9	3.5	3.0	2.5
MWTX2609-2RU	95	3.3	3.5	3.6	3.5	3.0	2.8
MWTX2609-4RU	96	3.0	3.0	3.1	3.5	3.0	2.8
TXA549-1RU	99	3.0	4.0	3.9	3.0	2.8	2.8
VC1123-2W/Y	95	3.0	3.5	3.1	3.8	3.3	3.0
Atlantic	92	3.3	3.3	2.4	3.0	3.0	3.3
Chipeta	98	3.8	4.3	3.3	4.0	3.0	3.3
Russet Norkotah	99	3.5	2.0	3.7	1.8	2.5	1.0
Russet Nugget	98	3.0	4.0	3.3	4.0	4.0	3.5
Yukon Gold	95	3.0	3.8	2.1	3.0	2.8	1.0
Mean	96	3.1	3.3	3.1	3.2	3.1	2.6
LSD[6] (0.05)	8	0.6	0.6	0.5	0.5	0.5	0.6

[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.

Table 6D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
ATTX98465-1R/Y	3.6	3.0	3.3	1.9	48	4.6
ATX9332-8RU	2.5	1.5	2.0	0.9	139	3.2
CO94157-2W/Y	2.2	1.8	2.0	1.3	146	3.6
CO95086-8RU	3.1	3.8	3.5	1.4	97	4.6
CO95172-3RU	4.6	4.0	4.3	1.1	90	3.2
CO96141-4W	4.4	3.0	3.7	1.2	83	3.8
MWTX548-2RU	1.7	1.6	1.7	5.6	83	2.6
MWTX2609-2RU	2.4	1.7	2.1	1.0	76	2.2
MWTX2609-4RU	2.3	2.2	2.3	1.2	132	3.4
TXA549-1RU	2.7	2.5	2.6	1.2	132	3.2
VC1123-2W/Y	2.9	3.5	3.2	1.4	104	4.6
Atlantic	2.9	1.4	2.2	1.8	104	4.8
Chipeta	2.9	2.6	2.8	1.3	122	4.6
Russet Norkotah	4.0	4.0	4.0	1.7	118	3.6
Russet Nugget	4.2	3.1	3.7	1.1	118	4.2
Yukon Gold	4.0	3.7	3.9	1.0	104	4.0

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

[2]Tubers were stored at 45F for 115 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 Southwest Regional Trial Entries - 2004.

Clone	Specific Gravity	Fry Color[1] At Harvest	Fry Color[1] 3 wks 55F+ 8 wks 45F	Fry Texture[2] At Harvest	Fry Texture[2] 3 wks 55F+ 8 wks 45F
ATTX98465-1R/Y	1.087	1	3	2	2
ATX9332-8RU	1.106	2	1	3	4
CO94157-2W/Y	1.095	1	1	3	3
CO95086-8RU	1.089	0	1	3	4
CO95172-3RU	1.093	1	2	3	4
MWTX548-2RU	1.092	3	4	3	3
MWTX2609-2RU	1.092	3	3	3	3
MWTX2609-4RU	1.090	3	4	3	3
TXA549-1RU	1.100	2	2	4	4
VC1123-2W/Y	1.095	1	1	4	3
Russet Norkotah	1.083	3	3	2	3
Russet Nugget	1.106	1	1	5	5
Yukon Gold	1.090	1	2	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 6F. Chip color[1] after various storage regimes and specific gravity of Southwest Regional Trial entries - 2004.

Clone	Specific Gravity	5 wks 40F	5 wks/40F +3 wks/60F	5 wks 50F	5 wks/50F +3 wks/60F
CO96141-4W	1.090	2.5	2.5	3.0	2.0
Atlantic	1.104	3.5	3.0	2.5	2.5
Chipeta	1.101	4.5	2.5	2.0	2.5

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

Table 7A. Yield, grade and tuber shape for Western Regional Main Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
	Total	US #1				<4 oz	
		Total	%	4-10 oz	>10 oz		
A92030-5	509	439	86.4	191	249	34	L
A92294-6	599	487	81.4	392	95	74	L
A9304-3	540	502	92.9	212	289	24	L
A9305-10	543	474	87.2	368	105	43	Ob
A93157-6LS	507	412	81.1	339	73	87	Ob
A95074-6	528	423	80.1	327	96	87	Ob
A95109-1	490	461	94.0	247	214	21	Ob
AC92009-4RU	446	392	87.9	305	87	47	Ob
AC93026-9RU	554	482	86.9	275	206	40	L
AO96160-3	543	490	90.2	367	123	43	L
ATX91137-1RU	471	431	91.3	269	162	26	Ob
ATX92230-1RU	442	396	89.5	230	166	19	Ob
CO93001-11RU	434	385	88.6	309	76	40	Ob
CO94035-15RU	424	391	92.1	247	144	23	L
PA95A11-14	470	348	73.9	277	71	112	Ob
TC1675-1RU	560	480	85.7	292	187	58	Ob
Ranger Russet	467	417	89.4	251	166	28	L
Russet Burbank	563	457	81.2	326	131	65	L
Russet Norkotah	399	343	85.9	260	83	45	L
Russet Nugget	524	454	86.6	353	100	64	Ob
Mean	501	433	86.6	292	141	49	----
LSD[2] (0.05)	53	58	5.4	46	58	21	----

[1]Tuber shape: Ob=oblong; L=long.

[2]LSD=least significant difference.

Table 7B. Grade defects for Western Regional Main Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A92030-5	7.0	SG, GC, GR*	0.0
A92294-6	6.2	MS, SG*, GC, GR*	0.0
A9304-3	2.6	MS, GC, GR*	0.0
A9305-10	4.8	MS, SG, GC, GR*	0.0
A93157-6LS	1.6	SG*, GC*, GR*	1.1
A95074-6	3.4	SG, GC, GR*	0.0
A95109-1	1.6	MS, SG*, GC, GR	0.8
AC92009-4RU	1.5	GC*, GR	0.0
AC93026-9RU	5.7	GC, GR*	0.0
AO96160-3	1.8	SG, GC*, GR	0.0
ATX91137-1RU	2.9	SG, GC*, GR	0.0
ATX92230-1RU	6.2	SG*,GC, GR	0.0
CO93001-11RU	2.2	MS, GC, GR*	0.0
CO94035-15RU	2.3	GC, GR*	2.0
PA95A11-14	2.0	MS, GC, GR*	0.0
TC1675-1RU	3.8	MS, SG, GC, GR*	0.0
Ranger Russet	4.6	MS, SG, GC*, GR*	0.0
Russet Burbank	7.4	MS*, SG, GR	1.8
Russet Norkotah	2.8	GC, GR*	0.0
Russet Nugget	1.2	GC*, GR	0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 7C. Growth characteristics of Western Regional Main Trial entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
A92030-5	100	3.0	3.3	2.0	4.0	3.0	3.0
A92294-6	97	3.3	3.8	3.4	4.0	3.0	3.5
A9304-3	98	3.3	3.8	2.2	3.8	3.3	3.0
A9305-10	97	4.0	4.0	2.5	4.0	3.3	3.5
A93157-6LS	97	3.3	3.8	3.2	4.0	3.0	2.8
A95074-6	94	3.5	4.0	2.8	4.0	3.0	3.0
A95109-1	96	3.3	3.3	2.8	3.3	3.0	3.5
AC92009-4RU	97	3.3	3.0	1.9	3.8	4.0	3.0
AC93026-9RU	92	3.0	3.0	2.4	3.3	3.0	3.0
AO96160-3	98	3.3	3.0	2.2	4.0	3.8	3.0
ATX91137-1RU	97	3.3	2.8	2.3	3.0	3.0	3.0
ATX92230-1RU	96	3.5	3.3	2.3	3.3	3.0	3.0
CO93001-11RU	99	3.3	2.3	3.1	3.0	3.0	2.0
CO94035-15RU	95	3.3	3.3	2.4	3.3	3.5	3.0
PA95A11-14	99	3.3	3.3	2.4	2.8	3.0	1.5
TC1675-1RU	98	3.0	3.8	3.1	4.0	3.3	3.0
Ranger Russet	99	3.0	3.0	2.5	3.5	3.0	3.0
Russet Burbank	98	3.0	3.5	2.4	4.0	3.0	2.8
Russet Norkotah	100	3.5	2.3	3.5	2.3	3.0	1.3
Russet Nugget	99	3.5	3.8	3.0	4.0	4.0	4.0
Mean	97	3.3	3.3	2.6	3.6	3.2	2.9
LSD[6] (0.05)	5	0.6	0.6	0.5	0.5	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 7D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Western Regional Main Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
A92030-5	4.0	4.3	4.2	1.3	132	4.6
A92294-6	4.9	2.2	3.6	1.3	146	4.8
A9304-3	4.4	3.4	3.9	1.3		4.2
A9305-10	4.2	2.0	3.1	1.4		4.6
A93157-6LS	2.2	1.5	1.9	1.6	97	4.2
A95074-6	3.3	3.3	3.3	1.4	153	4.4
A95109-1	2.1	1.5	1.8	1.4	73	3.6
AC92009-4RU	4.5	3.4	4.0	1.5		4.6
AC93026-9RU	2.7	2.1	2.4	1.4	146	4.6
AO96160-3	4.6	4.5	4.6	1.5	132	4.6
ATX91137-1RU	3.8	3.7	3.8	1.3		4.4
ATX92230-1RU	3.7	2.9	3.3	1.5		4.8
CO93001-11RU	4.0	2.8	3.4	0.9	55	3.4
CO94035-15RU	3.6	3.0	3.3	1.2	104	4.8
PA95A11-14	3.5	2.3	2.9	1.2	118	3.8
TC1675-1RU	2.8	2.7	2.8	1.1	153	3.6
Ranger Russet	3.1	3.1	3.1	1.3	73	3.4
Russet Burbank	3.2	2.1	2.7	1.1	160	3.2
Russet Norkotah	4.5	4.2	4.4	1.5	132	3.8
Russet Nugget	4.5	3.7	4.1	1.2	104	4.8

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

[2]Tubers were stored at 45F for 115 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 7E. Specific gravity, french fry color, and texture for Western Regional Main Trial entries - 2004.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
A92030-5	1.098	3	3	5	5
A92294-6	1.103	1	1	4	4
A9304-3	1.097	2	2	4	3
A9305-10	1.099	1	2	5	4
A93157-6LS	1.099	1	1	4	4
A95074-6	1.099	1	2	4	4
A95109-1	1.093	2	3	4	3
AC92009-4RU	1.101	3	3	3	4
AC93026-9RU	1.089	3	2	3	3
AO96160-3	1.094	1	1	4	4
ATX91137-1RU	1.083	3	3	2	3
ATX92230-1RU	1.092	3	3	1	2
CO93001-11RU	1.079	2	1	2	3
CO94035-15RU	1.085	1	1	3	3
PA95A11-14	1.086	1	3	3	3
TC1675-1RU	1.101	1	1	4	3
Ranger Russet	1.091	2	2	4	3
Russet Burbank	1.092	1	2	3	4
Russet Norkotah	1.081	2	2	2	2
Russet Nugget	1.102	1	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 8A. Yield, grade and tuber shape for Advanced and Western Regional Red Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
		US #1					
	Total	Total	%	4-10 oz	>10 oz	<4 oz	
AO93487-2R	484	404	83.6	334	71	78	R
CO89097-2R	539	457	84.8	292	165	64	Ov
CO93037-6R	631	548	86.8	395	253	64	R
CO97078-5R	440	393	89.1	284	109	46	R
CO98012-5R	494	426	86.3	322	105	65	R
NDC5281-2R	407	278	68.3	260	18	122	Ov
NDTX4304-1R	447	408	91.3	202	206	33	Ov
VC1075-1R	553	380	68.8	327	53	166	Ov
Norland (DR)	447	404	90.1	262	142	37	Ov
Red LaSoda	557	492	88.3	256	236	38	Ov
Sangre-S10	534	481	90.1	289	192	44	Ov
Mean	503	425	84.3	284	141	69	----
LSD[2] (0.05)	54	52	4.5	43	38	22	----

[1]Tuber shape: R=round; Ov=oval.

[2]LSD=least significant difference.

Table 8B. Grade defects for Advanced and Western Regional Red Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
AO93487-2R	0.3	GC*	0.6
CO89097-2R	3.5	GC*, GR	0.0
CO93037-6R	3.0	SG*, GC*, GR	0.0
CO97078-5R	0.3	GR*	0.0
CO98012-5R	0.5	SG, GR*	1.1
NDC5281-2R	1.8	MS, SG, GC*, GR	0.0
NDTX4304-1R	1.3	SG*, GC, GR	0.0
VC1075-1R	1.3	MS, GC*, GR	0.0
Norland (DR)	1.4	SG, GC*, GR	0.3
Red LaSoda	4.9	SG*, GC, GR	24.2
Sangre-S10	1.7	MS, SG*, GR	0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 Advanced and Western Regional Red Trial entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
AO93487-2R	96	3.8	3.3	3.4	2.8	2.0	1.3
CO89097-2R	92	3.0	3.0	2.9	3.3	3.0	2.0
CO93037-6R	98	3.0	4.0	3.1	4.3	3.3	3.0
CO97078-5R	99	3.3	3.0	2.6	3.0	3.8	1.8
CO98012-5R	97	3.3	3.3	2.9	3.0	3.0	3.0
NDC5281-2R	93	3.0	3.0	2.9	3.0	3.5	1.3
NDTX4304-1R	90	3.0	3.0	2.4	2.8	3.0	2.5
VC1075-1R	98	2.8	3.5	3.4	4.0	3.0	3.0
Norland (DR)	97	3.0	3.3	3.3	2.5	2.0	1.0
Red LaSoda	97	3.3	4.0	2.5	3.0	3.0	2.3
Sangre-S10	97	3.0	3.0	2.9	4.0	3.8	3.3
Mean	96	3.1	3.3	2.9	3.2	3.0	2.2
LSD[6] (0.05)	6	0.5	0.4	0.8	0.5	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.

Table 8D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Red Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AO93487-2R	2.4	2.0	2.2	1.8	62	3.4
CO89097-2R	3.2	3.4	3.3	1.4	55	4.6
CO93037-6R	3.0	2.5	2.8	1.5	62	3.4
CO97078-5R	3.5	2.4	3.0	1.9		2.0
CO98012-5R	3.4	2.4	2.9	1.6	62	2.0
NDC5281-2R	3.3	1.9	2.6	1.2	118	1.0
NDTX4304-1R	3.1	2.6	2.9	0.9	55	3.6
VC1075-1R	2.5	3.3	2.9	1.7	73	3.6
Norland (DR)	2.9	3.1	3.0	1.3	55	3.4
Red LaSoda	3.8	4.5	4.2	1.6	73	1.8
Sangre-S10	3.6	3.6	3.6	1.9	118	3.6

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

[2]Tubers were stored at 45F for 115 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. Specific gravity, french fry color, and texture for Advanced and Western Regional Red Trial entries - 2004.

Clone	Specific Gravity	Fry Color[1]		Fry Texture[2]	
		At Harvest	3 wks 55F+ 8 wks 45F	At Harvest	3 wks 55F+ 8 wks 45F
AO93487-2R	1.079	1	3	3	3
CO89097-2R	1.086	2	3	3	3
CO93037-6R	1.089	3	3	3	3
CO97078-5R	1.094	2	1	3	3
CO98012-5R	1.082	2	3	3	3
NDC5281-2R	1.089	1	1	3	3
NDTX4304-1R	1.072	4	3	3	2
VC1075-1R	1.084	2	2	3	2
Norland (DR)	1.072	3	2	2	2
Red LaSoda	1.081	2	3	2	2
Sangre-S10	1.086	3	3	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 9A. Yield, grade and tuber shape for Advanced and Western Regional Specialty Trial entries - 2004.

Clone	Yield (Cwt/A)						Tuber Shape[1]
		US #1					
	Total	Total	%	4-10 oz	>10 oz	<4 oz	
A95074-6	566	481	85.1	389	92	57	L
AC97521-R/Y	595	526	88.5	397	129	62	Ov
ATC98444-1R/Y	589	472	80.0	343	129	59	Ov
ATC98495-1W/Y	471	399	84.8	300	99	65	Ov
ATC98509-R/Y	556	498	89.7	227	270	35	Ov
ATC98515-1R/Y	674	477	70.7	408	68	179	Ov
BTX1544-2W/Y	496	444	89.5	325	118	39	Ov
CO94165-3P/P	497	354	71.2	331	23	138	Ov
CO94183-1R/R	386	247	63.9	224	23	134	Ov
CO97215-2P/P	506	392	77.2	306	85	104	R
CO97216-P/PW	331	294	88.7	233	61	36	Ov
CO97222-1R/R	427	272	63.2	249	23	149	Ov
CO97226-2R/R	336	90	26.8	90	0	246	R
CO97227-P/PW	561	115	20.5	115	0	434	R
CO97232-1R/Y	481	366	75.3	332	33	115	Ob
CO97232-2R/Y	445	395	88.7	278	117	49	Ov
CO97233-3R/Y	502	414	82.4	281	133	67	L
CO97274-2W/Y	441	404	91.7	246	158	35	Ov
NDA5507-3YF	523	477	91.1	269	207	35	Ov
VC0967-2R/Y	454	407	89.5	320	87	44	Ov
VC1002-3W/Y	494	273	55.3	257	15	217	Ov
VC1009-1W/Y	622	489	78.3	367	121	121	Ob
VC1015-7R/Y	416	379	90.9	281	98	37	Ov
All Blue	566	397	70.5	324	73	159	Ob
Yukon Gold	419	381	91.1	217	164	34	Ov
Mean	494	378	76.2	285	93	106	----
LSD[2] (0.05)	60	58	5.3	52	38	25	----

[1]Tuber shape: R=round; Ov=oval; Ob=oblong; L=long.

[2]LSD=least significant difference.

Table 9B. Grade defects for Advanced and Western Regional Specialty Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A95074-6	4.8	MS*, SG*, GC, GR*	0.2
AC97521-R/Y	1.2	GC, GR*	1.9
ATC98444-1R/Y	9.9	SG*, GC, GR	0.0
ATC98495-1W/Y	1.4	GC, GR*	0.0
ATC98509-R/Y	4.1	SG, GR*	1.3
ATC98515-1R/Y	2.6	SG*, GR	2.3
BTX1544-2W/Y	2.7	SG*, GC, GR	3.0
CO94165-3P/P	0.7	GC, GR*	0.5
CO94183-1R/R	1.2	SG*, GR	0.0
CO97215-2P/P	2.2	SG*, GC, GR	1.5
CO97216-P/PW	0.3	SG*	10.6
CO97222-1R/R	1.5	SG*,GC*, GR*	0.0
CO97226-2R/R	0.0		0.0
CO97227-P/PW	2.4	SG*, GR*	0.0
CO97232-1R/Y	0.1	GC*	0.0
CO97232-2R/Y	0.3	GR*	0.8
CO97233-3R/Y	4.3	SG, GC*, GR	4.4
CO97274-2W/Y	0.4	SG, GR*	0.7
NDA5507-3YF	1.9	MS, SG*, GR	1.8
VC0967-2R/Y	0.7	SG, GC*	0.0
VC1002-3W/Y	0.9	SG, GC, GR*	0.0
VC1009-1W/Y	1.9	MS, SG, GC* GR	0.7
VC1015-7R/Y	0.0		0.0
All Blue	1.8	SG, GC, GR*	0.3
Yukon Gold	0.8	SG*, GR*	0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 Advanced and Western Regional Specialty Trial entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
A95074-6	91	3.0	4.0	3.2	4.0	3.0	3.0
AC97521-R/Y	93	3.0	4.0	3.5	4.0	3.5	3.0
ATC98444-1R/Y	90	3.0	3.8	3.0	4.3	4.0	3.5
ATC98495-1W/Y	94	3.5	4.0	4.4	3.0	2.0	3.0
ATC98509-R/Y	83	2.8	3.5	2.8	3.8	3.5	3.3
ATC98515-1R/Y	90	3.0	3.8	3.4	4.0	3.0	3.0
BTX1544-2W/Y	96	3.0	3.5	1.9	3.0	3.0	2.3
CO94165-3P/P	99	3.3	3.3	3.5	3.0	2.5	1.8
CO94183-1R/R	94	3.0	2.5	3.2	2.5	3.0	1.8
CO97215-2P/P	96	3.0	3.3	2.9	3.8	3.0	3.3
CO97216-P/PW	91	3.0	2.3	2.1	3.0	3.0	4.0
CO97222-1R/R	97	3.5	2.8	3.2	3.0	3.0	2.5
CO97226-2R/R	96	3.0	3.0	3.0	3.0	3.3	1.3
CO97227-P/PW	96	4.0	4.0	4.1	4.0	3.0	3.0
CO97232-1R/Y	91	3.0	3.3	2.9	3.0	3.0	2.0
CO97232-2R/Y	90	3.0	3.0	2.6	2.8	2.0	2.8
CO97233-3R/Y	84	3.0	3.3	2.6	3.0	2.0	4.0
CO97274-2W/Y	88	3.5	3.0	3.0	3.0	2.5	1.5
NDA5507-3YF	81	3.0	3.8	3.1	3.5	3.0	2.5
VC0967-2R/Y	85	3.5	3.0	2.9	3.0	2.8	2.3
VC1002-3W/Y	94	3.3	4.0	3.3	3.8	3.8	3.0
VC1009-1W/Y	96	3.5	4.0	3.1	4.5	3.3	3.3
VC1015-7R/Y	96	3.8	2.8	2.6	2.3	3.0	2.0
All Blue	98	3.3	3.8	3.7	4.0	3.0	3.3
Yukon Gold	95	3.3	3.0	2.1	3.0	3.5	1.0
Mean	92	3.2	3.4	3.0	3.4	3.0	2.6
LSD[6] (0.05)	8	0.6	0.6	0.6	0.4	0.5	0.6

[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.

Table 9D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Specialty Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
A95074-6	3.4	3.8	3.6	1.4	153	4.8
AC97521-R/Y	3.8	2.3	3.1	1.5	62	3.4
ATC98444-1R/Y	3.9	2.7	3.3	2.2	69	4.2
ATC98495-1W/Y	2.9	2.6	2.8	1.4	55	3.6
ATC98509-R/Y	3.7	3.5	3.6	1.7	62	4.2
ATC98515-1R/Y	2.2	1.9	2.1	1.0	48	3.0
BTX1544-2W/Y	2.6	2.5	2.6	1.3	62	4.8
CO94165-3P/P	---	---	---	1.1	48	---
CO94183-1R/R	---	---	---	1.3	153	---
CO97215-2P/P	---	---	---	1.5	139	---
CO97216-3P/PW	---	---	---	1.8	146	---
CO97222-1R/R	---	---	---	1.8	73	---
CO97226-2R/R	---	---	---	1.9	48	---
CO97227-2P/PW	---	---	---	2.2	111	---
CO97232-1R/Y	4.0	3.1	3.6	1.6	55	3.8
CO97232-2R/Y	4.1	3.5	3.8	1.5	55	4.2
CO97233-3R/Y	4.6	3.2	3.9	1.6	62	4.2
CO97274-2W/Y	3.2	3.6	3.4	1.5	62	4.4
NDA5507-3YF	4.1	3.9	4.0	1.2	73	4.8
VC0967-2R/Y	4.0	2.8	3.4	1.2	69	4.4
VC1002-3W/Y	4.3	4.3	4.3	1.0	118	5.0
VC1009-1W/Y	3.6	3.7	3.7	1.0	132	3.6
VC1015-7R/Y	4.1	4.3	4.2	1.3	118	5.0
All Blue	---	---	---	1.1	153	---
Yukon Gold	3.8	3.7	3.8	1.0	132	4.6

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

[2]Tubers were stored at 45F for 115 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 Advanced and Western Regional Speciality Trial entries - 2004.

Clone	Specific Gravity	Fry Color[1] At Harvest	Fry Color[1] 3 wks 55F+ 8 wks 45F	Fry Texture[2] At Harvest	Fry Texture[2] 3 wks 55F+ 8 wks 45F
A95074-6	1.097	1	1	3	4
AC97521-R/Y	1.091	4	4	3	3
ATC98444-1R/Y	1.091	2	3	3	2
ATC98495-1W/Y	1.088	2	3	4	3
ATC98509-R/Y	1.090	3	3	2	3
ATC98515-1R/Y	1.084	3	2	3	2
BTX1544-2W/Y	1.083	2	1	4	3
CO94165-3P/P	1.087	---	---	1	2
CO94183-1R/R	1.083	---	---	3	3
CO97215-2P/P	1.091	---	---	1	1
CO97216-3P/PW	1.096	---	---	3	3
CO97222-1R/R	1.076	---	---	1	1
CO97226-2R/R	1.084	---	---	3	3
CO97227-2P/PW	1.090	---	---	4	3
CO97232-1R/Y	1.082	---	2	3	3
CO97232-2R/Y	1.070	2	2	3	3
CO97233-3R/Y	1.081	2	2	3	3
CO97274-2W/Y	1.079	1	2	2	3
NDA5507-3YF	1.079	0	1	3	3
VC0967-2R/Y	1.077	1	2	3	3
VC1002-3W/Y	1.093	1	1	4	4
VC1009-1W/Y	1.089	1	2	3	3
VC1015-7R/Y	1.077	1	3	2	3
All Blue	1.090	---	---	3	3
Yukon Gold	1.086	1	1	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. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley chipping study entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
AC97097-14W	5.0	4.1	4.6	1.1	73	3.8
AC99213-8W	3.5	3.2	3.4	1.2	62	4.2
ATDC9801-3P	2.9	2.9	2.9	1.3	62	4.6
BC0894-2W	4.1	3.8	4.0	1.9	55	3.8
CO95051-7W	4.5	3.3	3.9	1.7	90	4.4
CO96141-4W	4.6	3.1	3.9	1.4	104	4.0
CO97043-14W	4.6	3.7	4.2	1.3	118	4.4
CO97065-7W	4.7	3.9	4.3	1.3	160	4.4
CO97215-2P/P	---	---	---	1.4	132	---
CO97216-3P/PW	---	---	---	1.5	153	---
CO97222-1R/R	---	---	---	1.4	132	---
CO97227-2P/PW	---	---	---	2.0	153	---
CO98277-4W	4.4	3.4	3.9	1.2	118	4.8
CO98303-8W	3.5	2.5	3.0	1.0	62	3.4
CO99305-1RU	3.5	3.2	3.4	1.5	118	4.8
Atlantic	3.5	2.6	3.1	1.1	76	4.4
Chipeta	5.0	4.8	4.9	1.0	152	4.8
Snowden	3.4	2.4	2.9	0.6	125	2.4

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

[2]Tubers were stored at 45F for 115 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 10B. Chip color[1] after various storage regimes and specific gravity of San Luis Valley chipping study entries - 2003.

Clone	Specific Gravity	5 wks 40F	5 wks/40F +3 wks/60F	5 wks 50F	5 wks/50F +3 wks/60F
AC97097-14W	1.095	3.5	2.5	3.5	1.5
AC99213-8W	1.090	3.0	1.5	2.0	2.0
AC99405-5W	1.089	4.5	4.0	4.5	4.5
AC99405-7RY	1.094	4.0	3.5	4.0	4.0
AC99406-4RU	1.087	4.5	4.0	4.5	4.0
AC00170-2W	1.085	3.0	2.5	4.0	3.0
AC00172-2W	1.090	3.5	3.5	3.5	3.5
AC00188-3W	1.076	3.5	4.0	4.0	3.5
AC00188-4W	1.075	4.5	3.5	3.5	3.0
AC00200-1RU	1.084	4.0	4.0	3.5	3.5
AC00226-1RU	1.086	4.5	4.0	4.0	3.0
AC00256-2W	1.096	3.0	3.0	2.5	2.5
ATDC9801-3P	1.098	3.0	3.0	3.0	3.0
BC0894-2W	1.086	3.5	3.0	3.5	2.5
CO95051-7W	1.099	3.0	3.0	2.5	2.0
CO96141-4W	1.089	4.0	3.5	3.0	2.5
CO97043-14W	1.093	4.5	3.0	2.0	2.0
CO97065-7W	1.095	4.5	3.0	2.5	2.0
CO97215-2P/P	1.085	---	---	---	---
CO97216-3P/PW	1.083	---	---	---	---
CO97222-1R/R	1.073	---	---	---	---
CO97227-2P/PW	1.082	---	---	---	---
CO98277-4W	1.071	4.5	2.5	2.5	3.5
CO98303-8W	1.080	3.5	2.5	2.0	2.5
CO99305-1RU	1.079	3.0	2.5	2.5	2.5
CO00074-2W	1.081	4.5	3.5	4.0	4.0
CO00078-1W	1.081	4.5	3.0	3.5	3.0
CO00185-1W	1.096	3.5	4.0	3.0	2.5
CO00187-1W	1.088	4.0	4.0	4.0	4.0
CO00187-2W	1.073	4.0	4.0	3.5	3.5
CO00188-4W	1.089	3.0	3.0	1.5	2.5
CO00188-7RU	1.083	4.5	3.5	3.0	2.5
CO00189-2W	1.073	3.0	2.0	2.0	2.5
CO00190-2W	1.089	4.0	3.0	2.5	3.0
CO00192-2W	1.078	5.0	4.0	4.0	3.5

Table 10B continued on the next page.

Table 10B (cont'd). Chip color[1] after various storage regimes and specific gravity of San Luis Valley chipping study clones - 2003.

Clone	Specific Gravity	5 wks 40F	5 wks/40F +3 wks/60F	5 wks 50F	5 wks/50F +3 wks/60F
CO00196-2W	1.104	4.5	1.5	2.5	1.0
CO00197-3W	1.087	3.5	3.5	3.0	2.5
CO00198-2RU	1.094	3.5	3.0	3.5	1.5
CO00204-3W	1.091	4.5	2.5	3.5	2.5
CO00204-6W	1.090	4.5	3.0	3.5	2.5
CO00270-7W	1.092	4.0	3.0	3.0	1.5
CO00270-13W	1.093	4.0	2.5	2.0	1.5
CO00271-11W	1.090	3.0	3.0	2.5	2.0
CO00303-10W	1.086	3.5	3.5	3.0	2.0
CO00305-23W	1.089	4.0	2.5	1.5	2.0
CO00306-4W	1.095	4.0	3.0	2.5	2.5
CO00353-4W	1.087	4.0	3.5	2.5	1.5
CO00365-4W	1.091	3.5	2.5	2.5	2.0
CO00394-4W	1.083	4.5	4.5	4.0	4.0
CO00399-4W/Y	1.090	4.5	4.0	2.5	3.5
Atlantic	1.097	4.5	3.5	3.5	3.5
Chipeta	1.073	5.0	4.0	4.0	4.0
Snowden	1.097	3.5	3.0	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 11A. Yield, grade and tuber shape for Advanced and Western Regional Chipping Trial entries - 2004.

Clone	Yield (Cwt/A) Total	US #1 Total	%	4-10 oz	>10 oz	<4 oz	Tuber Shape[1]
A91814-5	672	446	66.3	357	89	188	Ov
AC97097-14W	444	359	81.0	273	86	79	Ov
ATDC9801-3P	509	377	73.8	302	75	129	R
CO95051-7W	402	352	87.5	246	105	45	Ov
CO97043-14W	457	385	84.4	281	103	64	R
CO97065-7W	440	386	87.8	307	78	49	R
CO98277-4W	487	409	83.8	287	122	71	Ov
CO98303-8W	423	317	74.9	260	57	97	Ov
Atlantic	518	469	90.6	235	234	35	Ov
Chipeta	579	515	88.9	328	187	55	Ov
Ivory Crisp	416	343	82.4	324	93	73	R
Mean	493	401	81.9	288	114	81	----
LSD[2] (0.05)	64	56	5.2	44	38	20	----

[1]Tuber shape: R=round; Ov=oval.

[2]LSD=least significant difference.

Table 11B. Grade defects for Advanced and Western Regional Chipping Trial entries - 2004.

Clone	% External Defects[1]	External Defects Observed[2]	% Hollow Heart[3]
A91814-5	5.8	MS, SG, GC, GR*	0.0
AC97097-14W	1.4	GC, GR*	0.9
ATDC9801-3P	0.6	MS, GR*	0.0
CO95051-7W	1.2	SG*, GC, GR*	0.0
CO97043-14W	1.8	GR*	0.4
CO97065-7W	1.5	MS*, SG, GC*, GR	0.0
CO98277-4W	1.5	SG*, GC, GR*	0.0
CO98303-8W	2.3	SG, GC, GR*	0.0
Atlantic	2.8	MS, SG, GC, GR*	5.9
Chipeta	1.5	SG*, GC, GR	0.0
Ivory Crisp	0.0		0.0

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

[2]MS=misshapen; SG=second growth; GC=growth crack; 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 11C. Growth characteristics of Advanced and Western Regional Chip Trial entries - 2004.

Clone	% Stand	Emergence Uniformity[1]	Vine Vigor[2]	Stems/ Plant	Vine Size[3]	Vine Type[4]	Vine Maturity[5]
A91814-5	98	3.8	4.0	4.2	3.8	3.0	3.3
AC97097-14W	79	2.5	3.5	2.8	3.0	3.0	3.0
ATDC9801-3P	97	3.0	3.8	2.6	3.3	3.0	2.8
CO95051-7W	82	3.0	3.0	2.6	4.0	3.0	4.0
CO97043-14W	94	3.3	3.0	2.9	2.8	2.5	2.5
CO97065-7W	95	3.0	3.3	3.1	3.0	3.0	2.5
CO98277-4W	97	2.5	2.8	3.1	1.8	2.8	1.3
CO98303-8W	87	3.3	2.0	3.9	1.5	2.3	1.5
Atlantic	88	3.3	3.5	2.8	3.3	3.5	3.8
Chipeta	98	3.5	4.0	2.7	4.0	3.0	3.0
Ivory Crisp	96	3.0	4.0	2.7	3.0	3.0	2.0
Mean	92	3.1	3.3	3.1	3.0	2.9	2.8
LSD[6] (0.05)	7	0.7	0.5	0.7	0.5	0.5	0.6

[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 11D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Chip Trial entries - 2004.

Clone	Blackspot Index[1]			% Weight Loss[2]	Dormancy (Days)[3]	Enzymatic Browning[4]
	Bud End	Stem End	Average			
A91814-5	3.8	2.4	3.1	1.3	118	3.8
AC97097-14W	3.9	2.6	3.3	1.2	73	3.8
ATDC9801-3P	2.7	2.3	2.5	1.6	62	4.0
CO95051-7W	4.7	2.9	3.8	2.3	62	4.0
CO97043-14W	4.0	3.2	3.6	1.5	160	4.2
CO97065-7W	4.4	3.1	3.8	1.5	146	4.4
CO98277-4W	4.4	2.8	3.6	1.8	48	4.4
CO98303-8W	3.1	1.6	2.4	1.4	45	3.0
Atlantic	3.9	3.5	3.7	1.1	73	4.6
Chipeta	2.7	2.8	2.8	1.2	153	4.2
Ivory Crisp	3.5	3.3	3.4	2.7	55	3.0

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

[2]Tubers were stored at 45F for 115 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 11E. Chip color[1] after various storage regimes and specific gravity of Advanced and Western Regional Chip Trial entries - 2004.

Clone	Specific Gravity	5 wks 40F	5 wks/40F +3 wks/60F	5 wks 50F	5 wks/50F +3 wks/60F
A91814-5	1.096	4.0	3.5	3.5	4.0
AC97097-14W	1.103	3.0	2.5	1.5	2.5
ATDC9801-3P	1.102	3.5	2.5	2.5	2.5
CO95051-7W	1.110	3.5	2.0	4.0	3.0
CO97043-14W	1.089	4.0	2.5	1.5	2.5
CO97065-7W	1.103	4.5	3.0	2.5	2.5
CO98277-4W	1.072	3.0	3.5	2.5	3.0
CO98303-8W	1.076	4.0	2.0	3.0	3.0
Atlantic	1.101	4.0	2.5	3.5	2.5
Chipeta	1.102	4.0	2.5	3.0	2.0
Ivory Crisp	1.102	3.5	2.0	2.5	2.5

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

Table 12. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 2004. Advanced selections that may be released for grower evaluation in 2005 are highlighted.

Clone	Usage[1]	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity[2]	Specific Gravity	% External Defects[3]	% Hollow Heart[4]
Russets								
AC92009-4RU	FM	8	374	89.2	3.1	1.094	1.2	0.0
CO93001-11RU	Dual	6	425	82.6	2.3	1.077	3.5	0.4
CO94035-15RU	Dual	5	430	86.4	3.0	1.081	2.1	2.9
CO95086-8RU	**Dual**	**4**	**376**	**80.1**	**2.1**	**1.086**	**1.2**	**0.0**
CO95172-3RU	**FM**	**4**	**510**	**81.5**	**3.3**	**1.086**	**1.2**	**0.8**
Centennial Russet	FM	35	294	77.4	3.0	1.080	0.8	0.3
Rio Grande Russet	FM	11	525	82.5	3.1	1.086	3.5	0.5
Russet Norkotah	FM	54	373	83.9	1.8	1.078	2.2	0.5
Russet Nugget	Dual	52	433	80.9	3.8	1.092	1.5	0.2
Reds								
NDC5281-2R	FM	8	398	53.8	1.7	1.086	0.8	0.0
CO93037-6R	FM	6	599	73.9	3.1	1.082	2.8	0.1
Colorado Rose	FM	12	518	83.7	2.8	1.082	3.0	0.3
Sangre	FM	26	480	86.3	2.9	1.073	1.6	1.3
Specialties								
CO94165-3P/P	Spec	6	498	65.5	2.0	1.083	0.9	2.0
CO94183-1R/R	Spec	6	398	71.1	2.1	1.081	1.4	0.0
VC0967-2R/Y	Spec	5	452	84.8	2.5	1.075	0.8	0.1
VC1002-3W/Y	Spec	5	476	50.4	2.8	1.090	0.8	0.2
VC1015-7R/Y	**Spec**	**4**	**444**	**84.5**	**2.3**	**1.078**	**0.8**	**0.0**
All Blue	Spec	6	533	63.9	2.9	1.083	0.9	0.0
Yukon Gold	Spec	14	406	88.1	1.8	1.085	2.0	0.9

Table 1 continued on next page

Table 12 (cont'd). Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 2004. Advanced selections that may be released for grower evaluation in 2005 are highlighted.

Clone	Usage[1]	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity[2]	Specific Gravity	% External Defects[3]	% Hollow Heart[4]
Chippers								
CO95051-7W	**Chip**	**4**	**416**	**85.9**	**3.4**	**1.098**	**1.2**	**0.1**
Atlantic	Chip	27	453	86.8	3.2	1.097	2.9	5.4
Chipeta	Chip	25	522	83.2	3.3	1.089	5.7	0.6

[1]FM=fresh market; Dual= fresh market and processing potential; SPEC=specialty.

[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.

Figure 4. Photographs of advanced selections - 2004.

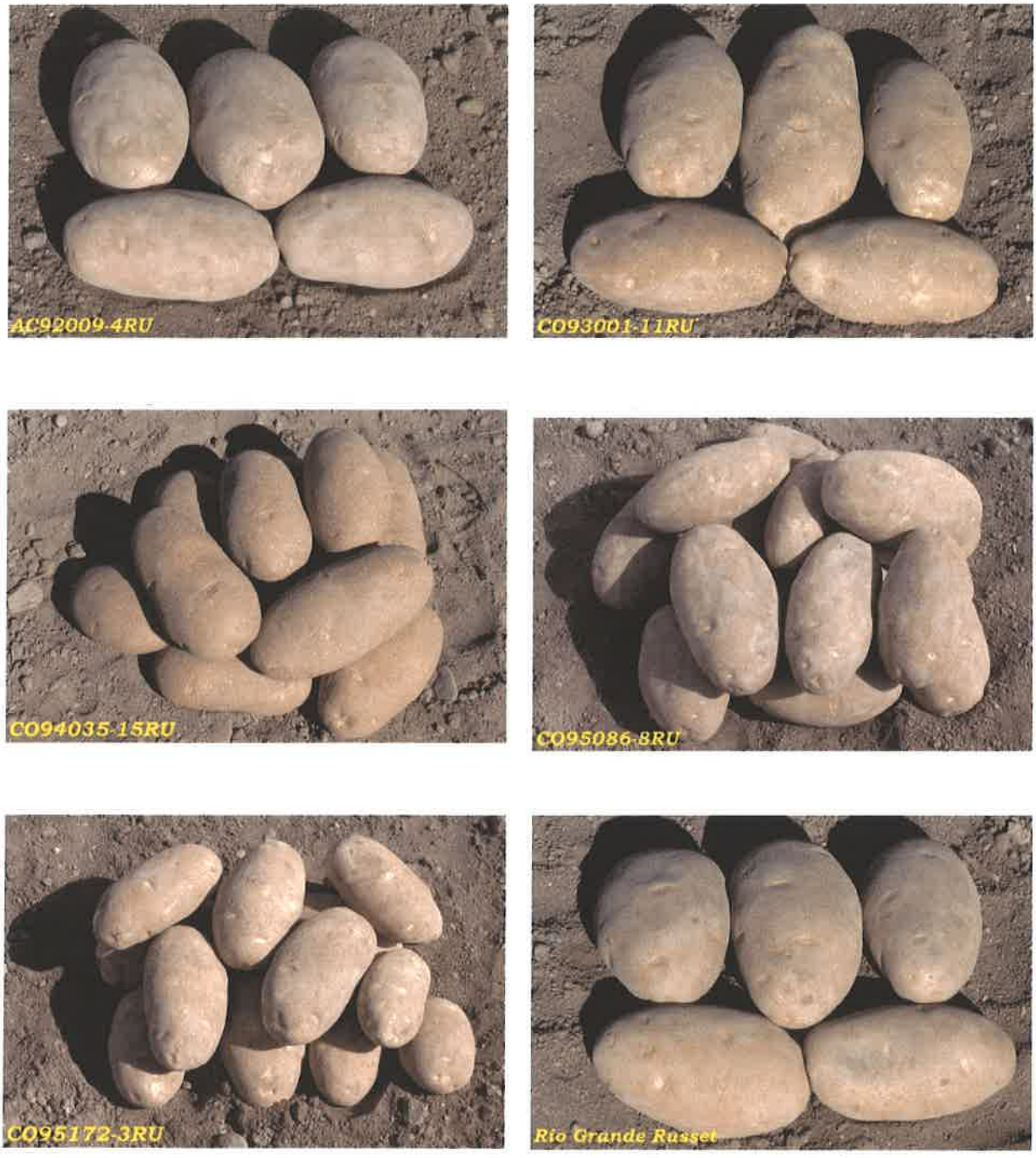


Figure 4 (cont'd). Photographs of advanced selections - 2004.

Figure 4 (cont'd). Photographs of advanced selections - 2004.

Table 13A. Detailed data summary for AC92009-4RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		8	374	332-468
Yield US #1 (Cwt/A)		8	334	290-421
% US #1		8	89.2	86.4-93.3
Yield >10 oz (Cwt/A)		8	103	63-156
Yield <4 oz (Cwt/A)		8	36	23-47
% External Defects[1]		8	1.2	0.0-2.4
% Hollow Heart[2]		8	0.0	0.0-0.0
% Stand		8	98	96-99
Emergence Uniformity		8	3.1	2.5-3.5
Vine Vigor[3]		8	2.4	2.0-3.0
Stems/Plant		8	1.8	1.4-2.4
Vine Size[4]		8	3.7	3.0-4.3
Vine Maturity5		8	3.1	2.8-3.5
Blackspot[6]	Bud End	7	4.4	3.7-5.0
	Stem End	7	3.8	2.5-5.0
	Average	7	4.1	
Weight Loss[7]		9	4.2	1.3-7.0
Dormancy[8]		7	137	113-171
Enzymatic Browning[9]		9	4.2	3.4-5.0
Specific Gravity		9	1.094	1.081-1.102
Fry Color[10]	Harvest	9	2.0	1.0-3.0
	Storage	9	2.3	1.0-3.0
Fry Texture[11]	Harvest	9	3.6	3.0-5.0
	Storage	9	3.7	3.0-5.0

Refer to footnotes on page 81.

Table 13B. Detailed data summary for CO93001-11RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	425	373-518
Yield US #1 (Cwt/A)		6	352	283-436
% US #1		6	82.6	75.7-88.6
Yield >10 oz (Cwt/A)		6	78	59-104
Yield <4 oz (Cwt/A)		6	59	40-76
% External Defects[1]		6	3.5	2.0-6.1
% Hollow Heart[2]		6	0.4	0.0-1.3
% Stand		6	99	97-100
Emergence Uniformity		6	3.6	3.0-4.3
Vine Vigor[3]		6	3.2	2.3-3.8
Stems/Plant		6	3.6	2.8-5.7
Vine Size[4]		6	3.0	2.3-4.0
Vine Maturity5		6	2.3	2.0-3.0
Blackspot[6]	Bud End	7	4.3	3.3-5.0
	Stem End	7	3.8	2.8-4.8
	Average	7	4.1	
Weight Loss[7]		7	5.3	0.9-8.1
Dormancy[8]		7	62	51-71
Enzymatic Browning[9]		7	2.9	1.6-4.4
Specific Gravity		7	1.077	1.071-1.086
Fry Color[10]	Harvest	7	1.1	1.0-1.0
	Storage	7	1.1	1.0-2.0
Fry Texture[11]	Harvest	7	2.6	2.0-3.0
	Storage	7	3.1	3.0-4.0

Refer to footnotes on page 81.

Table 13C. Detailed data summary for CO94035-15RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	430	398-478
Yield US #1 (Cwt/A)		5	372	345-406
% US #1		5	86.4	84.1-92.1
Yield >10 oz (Cwt/A)		5	120	98-144
Yield <4 oz (Cwt/A)		5	49	23-61
% External Defects[1]		5	2.1	1.9-2.3
% Hollow Heart[2]		5	2.9	1.4-5.4
% Stand		5	97	94-98
Emergence Uniformity		5	3.4	3.0-3.8
Vine Vigor[3]		5	3.8	3.3-4.0
Stems/Plant		5	2.8	2.2-3.4
Vine Size[4]		5	3.3	3.0-3.5
Vine Maturity5		5	3.0	2.8-3.0
Blackspot[6]	Bud End	6	3.6	2.9-4.2
	Stem End	6	3.3	2.7-4.4
	Average	6	3.4	
Weight Loss[7]		6	4.3	1.2-6.8
Dormancy[8]		6	92	83-105
Enzymatic Browning[9]		6	4.6	4.0-5.0
Specific Gravity		6	1.081	1.074-1.090
Fry Color[10]	Harvest	6	1.5	1.0-2.0
	Storage	6	1.7	1.0-3.0
Fry Texture[11]	Harvest	6	2.8	2.0-3.0
	Storage	6	3.0	3.0-3.0

Refer to footnotes on page 81.

Table 13D. Detailed data summary for CO95086-8RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	376	355-394
Yield US #1 (Cwt/A)		4	301	290-314
% US #1		4	80.1	73.5-86.2
Yield >10 oz (Cwt/A)		4	54	30-87
Yield <4 oz (Cwt/A)		4	71	47-94
% External Defects[1]		4	1.2	0.2-2.5
% Hollow Heart[2]		4	0.0	0.0-0.0
% Stand		4	97	96-98
Emergence Uniformity		4	3.4	3.0-4.0
Vine Vigor[3]		4	3.2	2.8-3.5
Stems/Plant		4	3.0	2.8-3.6
Vine Size[4]		4	2.9	2.8-3.0
Vine Maturity5		4	2.1	1.8-2.5
Blackspot[6]	Bud End	5	3.9	3.1-4.5
	Stem End	5	4.2	3.8-4.6
	Average	5	4.1	
Weight Loss[7]		5	3.3	1.4-5.1
Dormancy[8]		5	85.4	77-97
Enzymatic Browning[9]		5	4.4	4.2-4.8
Specific Gravity		5	1.086	1.082-1.091
Fry Color[10]	Harvest	5	1.0	0.0-2.0
	Storage	5	1.2	1.0-2.0
Fry Texture[11]	Harvest	5	3.0	2.0-4.0
	Storage	5	3.2	3.0-4.0

Refer to footnotes on page 81.

Table 13E. Detailed data summary for CO95172-3RU.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	510	415-547
Yield US #1 (Cwt/A)		4	416	327-450
% US #1		4	81.5	78.8-84.2
Yield >10 oz (Cwt/A)		4	107	61-138
Yield <4 oz (Cwt/A)		4	86	80-93
% External Defects[1]		4	1.2	0.2-2.2
% Hollow Heart[2]		4	0.8	0.0-2.1
% Stand		4	97	94-100
Emergence Uniformity		4	3.4	3.3-3.8
Vine Vigor[3]		4	3.1	2.5-3.5
Stems/Plant		4	2.8	2.5-3.1
Vine Size[4]		4	3.8	3.5-4.0
Vine Maturity5		4	3.3	3.0-3.5
Blackspot[6]	Bud End	5	4.6	4.3-5.0
	Stem End	5	4.2	3.7-4.7
	Average	5	4.4	
Weight Loss[7]		5	3.9	1.1-6.2
Dormancy[8]		5	82.6	76-90
Enzymatic Browning[9]		5	3.1	2.4-4.2
Specific Gravity		5	1.086	1.075-1.093
Fry Color[10]	Harvest	5	2.4	1.0-4.0
	Storage	5	2.4	1.0-4.0
Fry Texture[11]	Harvest	5	2.4	1.0-3.0
	Storage	5	2.6	1.0-4.0

Refer to footnotes on page 81.

Table 13F. Detailed data summary for Centennial Russet.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		35	294	177-392
Yield US #1 (Cwt/A)		35	229	129-320
% US #1		35	77.4	61.9-89.0
Yield >10 oz (Cwt/A)		35	26	4-72
Yield <4 oz (Cwt/A)		35	62	32-102
% External Defects[1]		35	0.8	0.0-3.3
% Hollow Heart[2]		35	0.3	0.0-3.3
% Stand		35	97	90-99
Emergence Uniformity		15	3.2	3.0-3.5
Vine Vigor[3]		15	2.2	1.0-3.0
Stems/Plant		27	3.0	2.2-3.6
Vine Size[4]		15	2.6	2.0-3.0
Vine Maturity5		27	3.0	2.5-3.5
Blackspot[6]	Bud End	37	4.8	3.7-5.0
	Stem End	37	4.8	4.2-5.0
	Average	40	4.8	
Weight Loss[7]		40	6.5	1.6-9.0
Dormancy[8]		33	87	57-123
Enzymatic Browning[9]		35	4.0	3.2-5.0
Specific Gravity		47	1.080	1.069-1.092
Fry Color[10]	Harvest	39	3.7	3.0-4.0
	Storage	39	3.9	3.0-5.0
Fry Texture[11]	Harvest	39	2.4	1.0-4.0
	Storage	39	2.2	1.0-3.0

Refer to footnotes on page 81.

Table 13G. Detailed data summary for Rio Grande Russet.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		11	525	367-683
Yield US #1 (Cwt/A)		11	436	255-603
% US #1		11	82.5	69.2-90.7
Yield >10 oz (Cwt/A)		11	147	14-275
Yield <4 oz (Cwt/A)		11	71	33-111
% External Defects[1]		11	3.5	0.7-8.7
% Hollow Heart[2]		11	0.5	0.0-1.6
% Stand		11	98	96-100
Emergence Uniformity		11	3.6	3.0-4.0
Vine Vigor[3]		11	3.5	2.0-4.5
Stems/Plant		11	3.0	2.0-3.6
Vine Size[4]		11	3.9	3.5-4.5
Vine Maturity5		11	3.1	2.5 -3.5
Blackspot[6]	Bud End	12	4.6	4.1-5.0
	Stem End	12	4.4	3.0-5.0
	Average	12	4.5	
Weight Loss[7]		12	5.1	1.5-7.1
Dormancy[8]		12	84	73-106
Enzymatic Browning[9]		12	4.0	3.2-5.0
Specific Gravity		12	1.086	1.079-1.094
Fry Color[10]	Harvest	12	2.3	1.0-4.0
	Storage	12	3.2	3.0-4.0
Fry Texture[11]	Harvest	12	3.2	2.0-4.0
	Storage	12	2.9	2.0-4.0

Refer to footnotes on page 81.

Table 13H. Detailed data summary for Russet Norkotah.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		54	373	174-557
Yield US #1 (Cwt/A)		54	314	144-444
% US #1		54	83.9	77.8-92.2
Yield >10 oz (Cwt/A)		54	101	23-212
Yield <4 oz (Cwt/A)		54	52	22-88
% External Defects[1]		54	2.2	0.4-5.3
% Hollow Heart[2]		54	0.5	0.0-2.8
% Stand		54	98	88-100
Emergence Uniformity		45	3.3	1.0-4.0
Vine Vigor[3]		45	2.9	1.0-4.0
Stems/Plant		50	3.6	2.5-4.8
Vine Size[4]		45	2.3	1.0-3.3
Vine Maturity5		54	1.8	1.0-3.0
Blackspot[6]	Bud End	53	4.6	2.9-5.0
	Stem End	53	4.4	3.1-5.0
	Average	54	4.5	
Weight Loss		54	4.2	1.0-7.1
Dormancy[8]		53	98	78-132
Enzymatic Browning[9]		53	3.3	2.2-4.8
Specific Gravity		57	1.078	1.066-1.091
Fry Color[10]	Harvest	54	2.2	1.0-4.0
	Storage	54	2.6	1.0-4.0
Fry Texture[11]	Harvest	54	2.6	2.0-4.0
	Storage	54	2.6	1.0-4.0

Refer to footnotes on page 81.

Table 13I. Detailed data summary for Russet Nugget.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		52	433	284-585
Yield US #1 (Cwt/A)		52	353	225-518
% US #1		52	80.9	68.0-93.0
Yield >10 oz (Cwt/A)		52	90	11-258
Yield <4 oz (Cwt/A)		52	74	30-133
% External Defects[1]		52	1.5	0.1-4.3
% Hollow Heart[2]		52	0.2	0.0-1.9
% Stand		52	98	96-100
Emergence Uniformity		42	3.3	3.0-4.0
Vine Vigor[3]		42	3.4	3.0-4.0
Stems/Plant		48	3.3	2.1-5.1
Vine Size[4]		42	4.2	3.8-5.0
Vine Maturity5		52	3.8	3.0-4.3
Blackspot[6]	Bud End	59	4.6	3.0-5.0
	Stem End	59	4.4	2.1-5.0
	Average	62	4.5	
Weight Loss[7]		62	3.4	1.7-5.5
Dormancy[8]		57	95	57-144
Enzymatic Browning[9]		58	4.0	3.2-4.8
Specific Gravity		64	1.092	1.072-1.110
Fry Color[10]	Harvest	62	1.6	0.0-3.0
	Storage	62	2.1	1.0-3.0
Fry Texture[11]	Harvest	62	4.0	2.0-5.0
	Storage	62	3.8	2.0-5.0

Refer to footnotes on page 81.

Table 13J. Detailed data summary for NDC5281-2R.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		8	398	321-474
Yield US #1 (Cwt/A)		8	214	115-285
% US #1		8	53.8	28.4-70.8
Yield >10 oz (Cwt/A)		8	8	0-18
Yield <4 oz (Cwt/A)		8	181	117-289
% External Defects[1]		8	0.8	0.0-1.8
% Hollow Heart[2]		8	0.0	0.0-0.0
% Stand		8	96	92-99
Emergence Uniformity		8	3.4	3.0-4.0
Vine Vigor[3]		8	3.1	2.8-3.5
Stems/Plant		8	4.2	2.9-6.4
Vine Size[4]		8	3.1	2.5-3.8
Vine Maturity5		8	1.7	1.0-3.0
Blackspot[6]	Bud End	9	3.2	2.1-4.7
	Stem End	9	2.8	1.8-4.2
	Average	9	3.0	
Weight Loss[7]		9	6.7	1.2-10.2
Dormancy[8]		9	89	70-118
Enzymatic Browning[9]		9	1.4	1.0-2.4
Specific Gravity		9	1.086	1.080-1.096
Fry Color[10]	Harvest	9	1.6	1.0-3.0
	Storage	9	1.9	1.0-4.0
Fry Texture[11]	Harvest	9	2.9	2.0-4.0
	Storage	9	2.7	1.0-3.0

Refer to footnotes on page 81.

Table 13K. Detailed data summary for CO93037-6R.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	599	512-728
Yield US #1 (Cwt/A)		6	446	344-559
% US #1		6	73.9	59.9-87.2
Yield >10 oz (Cwt/A)		6	133	30-253
Yield <4 oz (Cwt/A)		6	135	64-208
% External Defects[1]		6	2.8	1.1-6.6
% Hollow Heart[2]		6	0.1	0.0-0.3
% Stand		6	96	93-100
Emergence Uniformity		6	3.3	3.0-3.5
Vine Vigor[3]		6	3.6	3.3-4.0
Stems/Plant		6	4.4	3.1-6.7
Vine Size[4]		6	4.2	4.0-4.5
Vine Maturity5		6	3.1	3.0-3.3
Blackspot[6]	Bud End	7	2.9	1.8-3.9
	Stem End	7	2.5	1.3-3.8
	Average	7	2.7	
Weight Loss[7]		7	4.9	1.5-8.3
Dormancy[8]		7	103	62-128
Enzymatic Browning[9]		7	3.3	2.4-4.2
Specific Gravity		7	1.082	1.075-1.088
Fry Color[10]	Harvest	7	2.7	2.0-3.0
	Storage	7	3.7	3.0-4.0
Fry Texture[11]	Harvest	7	2.1	1.0-3.0
	Storage	7	2.1	2.0-3.0

Refer to footnotes on page 81.

Table 13L. Detailed data summary for Colorado Rose.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		12	518	390-641
Yield US #1 (Cwt/A)		12	435	310-530
% US #1		12	83.7	75.6-90.7
Yield >10 oz (Cwt/A)		12	151	69-249
Yield <4 oz (Cwt/A)		12	66	43-98
% External Defects[1]		12	3.0	0.2-6.5
% Hollow Heart[2]		12	0.3	0.0-0.8
% Stand		12	96	92-100
Emergence Uniformity		12	3.0	2.5-3.5
Vine Vigor[3]		12	3.0	2.2-3.8
Stems/Plant		12	3.5	2.3-4.5
Vine Size[4]		12	3.4	3.0-4.0
Vine Maturity5		12	2.8	2.0-3.8
Blackspot[6]	Bud End	13	3.7	2.1-4.8
	Stem End	13	3.7	2.4-5.0
	Average	13	3.7	
Weight Loss[7]		13	6.1	1.4-8.2
Dormancy[8]		13	63	54-78
Enzymatic Browning[9]		13	4.2	3.4-4.8
Specific Gravity		13	1.082	1.071-1.086
Fry Color[10]	Harvest	13	2.3	1.0-3.0
	Storage	12	2.8	2.0-3.0
Fry Texture[11]	Harvest	13	2.8	2.0-4.0
	Storage	12	2.8	2.0-3.0

Refer to footnotes on page 81.

Table 13M. Detailed data summary for Sangre.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		26	480	364-616
Yield US #1 (Cwt/A)		26	415	305-548
% US #1		26	86.3	72.2-92.8
Yield >10 oz (Cwt/A)		26	146	35-319
Yield <4 oz (Cwt/A)		26	57	30-117
% External Defects[1]		26	1.6	0.0-5.7
% Hollow Heart[2]		26	1.3	0.0-8.2
% Stand		26	97	92-100
Emergence Uniformity		16	3.2	2.5-4.8
Vine Vigor[3]		16	2.8	1.8-4.3
Stems/Plant		26	3.1	1.9-4.7
Vine Size[4]		16	3.8	3.0-4.0
Vine Maturity5		26	2.9	1.5-4.0
Blackspot[6]	Bud End	37	3.9	2.0-5.0
	Stem End	37	4.2	2.5-5.0
	Average	38	4.1	
Weight Loss[7]		38	3.5	1.0-5.1
Dormancy[8]		34	91	69-118
Enzymatic Browning[9]		35	3.3	1.8-4.8
Specific Gravity		38	1.072	1.059-1.086
Fry Color[10]	Harvest	37	3.3	1.0-4.0
	Storage	37	3.4	1.0-4.0
Fry Texture[11]	Harvest	37	2.5	1.0-4.0
	Storage	37	2.4	1.0-3.0

Refer to footnotes on page 81.

Table 13N. Detailed data summary for CO94165-3P/P.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	498	427-606
Yield US #1 (Cwt/A)		6	329	203-401
% US #1		6	65.5	43.6-72.3
Yield >10 oz (Cwt/A)		6	34	15-61
Yield <4 oz (Cwt/A)		6	165	122-244
% External Defects[1]		6	0.9	0.0-1.7
% Hollow Heart[2]		6	2.0	0.5-3.4
% Stand		6	98	94-99
Emergence Uniformity		6	3.5	3.0-4.0
Vine Vigor[3]		6	3.6	3.0-4.0
Stems/Plant		6	4.0	3.5-4.7
Vine Size[4]		6	2.8	2.3-3.0
Vine Maturity5		6	2.0	1.5-2.8
Blackspot[6]	Bud End	---	---	--- ---
	Stem End	---	---	--- ---
	Average	---	---	
Weight Loss[7]		9	3.6	1.1-6.8
Dormancy[8]		9	69	48-85
Enzymatic Browning[9]		---	---	--- ---
Specific Gravity		9	1.083	1.076-1.088
Fry Color[10]	Harvest	---	---	--- ---
	Storage	---	---	--- ---
Fry Texture[11]	Harvest	4	1.8	1.0-3.0
	Storage	4	2.3	2.0 3.0

Refer to footnotes on page 81.

Table 13O. Detailed data summary for CO94183-1R/R.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	398	371-449
Yield US #1 (Cwt/A)		6	284	247-354
% US #1		6	71.1	63.9-78.8
Yield >10 oz (Cwt/A)		6	28	9-63
Yield <4 oz (Cwt/A)		6	108	91-134
% External Defects[1]		6	1.4	0.9-2.4
% Hollow Heart[2]		6	0.0	0.0-0.0
% Stand		6	98	94-100
Emergence Uniformity		6	3.6	3.0-4.3
Vine Vigor[3]		6	2.8	2.5-3.0
Stems/Plant		6	3.4	2.9-4.2
Vine Size[4]		6	2.7	2.5-3.0
Vine Maturity5		6	2.1	1.5-3.0
Blackspot[6]	Bud End	---	---	--- ---
	Stem End	---	---	--- ---
	Average	---	---	
Weight Loss[7]		9	4.2	1.3-6.3
Dormancy[8]		9	89	70-118
Enzymatic Browning[9]		---	---	--- ---
Specific Gravity		9	1.081	1.074-1.086
Fry Color[10]	Harvest	---	---	--- ---
	Storage	---	---	--- ---
Fry Texture[11]	Harvest	4	2.3	1.0-3.0
	Storage	4	2.5	2.0 3.0

Refer to footnotes on page 81.

Table 13P. Detailed data summary for VC0967-2R/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	452	355-527
Yield US #1 (Cwt/A)		5	385	288-466
% US #1		5	84.8	71.1-93.4
Yield >10 oz (Cwt/A)		5	87.6	22-140
Yield <4 oz (Cwt/A)		5	63	31-119
% External Defects[1]		5	0.8	0.3-2.0
% Hollow Heart[2]		5	0.1	0.0-0.5
% Stand		5	89	76-99
Emergence Uniformity		5	3.3	2.8-3.5
Vine Vigor[3]		5	3.3	3.0-3.8
Stems/Plant		5	3.0	2.5-3.8
Vine Size[4]		5	2.9	2.8-3.0
Vine Maturity5		5	2.5	2.3-3.0
Blackspot[6]	Bud End	7	3.5	2.4-4.0
	Stem End	7	3.3	2.4-4.2
	Average	7	3.4	
Weight Loss[7]		7	3.8	1.2-6.3
Dormancy[8]		7	78	62-105
Enzymatic Browning[9]		7	4.1	3.8 4.4
Specific Gravity		7	1.075	1.071-1.079
Fry Color[10]	Harvest	7	1.0	1.0-1.0
	Storage	7	1.6	1.0-2.0
Fry Texture[11]	Harvest	7	2.6	2.0-3.0
	Storage	7	2.4	2.0-3.0

Refer to footnotes on page 81.

Table 13Q. Detailed data summary for VC1002-3W/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		5	476	416-522
Yield US #1 (Cwt/A)		5	242	163-355
% US #1		5	50.4	39.0-68.0
Yield >10 oz (Cwt/A)		5	21	10-33
Yield <4 oz (Cwt/A)		5	230	164-297
% External Defects[1]		5	0.8	0.0-2.2
% Hollow Heart[2]		5	0.2	0.0-0.7
% Stand		5	96	94-98
Emergence Uniformity		5	3.5	3.3-4.3
Vine Vigor[3]		5	4.1	3.5-4.8
Stems/Plant		5	3.8	3.3-4.6
Vine Size[4]		5	4.0	3.8-4.0
Vine Maturity5		4	2.8	2.5-3.0
Blackspot[6]	Bud End	10	4.4	4.1-4.9
	Stem End	10	4.4	3.7-4.9
	Average	10	4.4	
Weight Loss[7]		10	3.3	1.0-5.6
Dormancy[8]		10	97	83-118
Enzymatic Browning[9]		10	4.5	3.8 5.0
Specific Gravity		11	1.090	1.080-1.098
Fry Color[10]	Harvest	4	1.0	1.0-1.0
	Storage	4	1.0	1.0-1.0
Fry Texture[11]	Harvest	4	3.0	3.0-4.0
	Storage	4	3.0	3.0-4.0

Refer to footnotes on page 81.

Table 13R. Detailed data summary for VC1015-7R/Y.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	444	385-543
Yield US #1 (Cwt/A)		4	375	335-443
% US #1		4	84.5	79.0-90.9
Yield >10 oz (Cwt/A)		4	72	40-98
Yield <4 oz (Cwt/A)		4	66	37-94
% External Defects[1]		4	0.8	0.0-1.7
% Hollow Heart[2]		4	0.0	0.0-0.0
% Stand		4	97	95-99
Emergence Uniformity		4	3.5	3.3-3.8
Vine Vigor[3]		4	3.2	2.8-3.8
Stems/Plant		4	3.2	2.6-3.7
Vine Size[4]		4	2.8	2.3-3.3
Vine Maturity5		4	2.3	2.0-2.5
Blackspot[6]	Bud End	5	3.7	3.3-4.1
	Stem End	5	3.8	2.7-4.7
	Average	5	3.8	
Weight Loss[7]		5	4.0	1.3-6.9
Dormancy[8]		5	91	76-118
Enzymatic Browning[9]		5	4.8	4.6 5.0
Specific Gravity		5	1.078	1.073-1.087
Fry Color[10]	Harvest	5	2.2	1.0-3.0
	Storage	5	3.0	3.0-3.0
Fry Texture[11]	Harvest	5	1.8	1.0 3.0
	Storage	5	2.4	2.0 3.0

Refer to footnotes on page 81.

Table 13S. Detailed data summary for All Blue.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	533	460-639
Yield US #1 (Cwt/A)		6	342	248-418
% US #1		6	63.9	54.0-72.8
Yield >10 oz (Cwt/A)		6	58	23-81
Yield <4 oz (Cwt/A)		6	187	149-280
% External Defects[1]		6	0.9	0.1-1.8
% Hollow Heart[2]		6	0.0	0.0-0.0
% Stand		6	98	97-100
Emergence Uniformity		6	3.3	2.8-3.8
Vine Vigor[3]		6	3.7	3.2-4.0
Stems/Plant		6	4.0	3.0-5.2
Vine Size[4]		6	3.6	3.0-4.0
Vine Maturity5		6	2.9	2.2-3.3
Blackspot[6]	Bud End	---	---	--- ---
	Stem End	---	---	--- ---
	Average	---	---	--- ---
Weight Loss[7]		6	2.7	1.1-4.8
Dormancy[8]		5	100	82-153
Enzymatic Browning[9]		---	---	--- ---
Specific Gravity		4	1.083	1.076-1.090
Fry Color[10]	Harvest	---	---	--- ---
	Storage	---	---	--- ---
Fry Texture[11]	Harvest	6	2.8	2.0-4.0
	Storage	6	2.8	2.0-3.0

Refer to footnotes on page 81.

Table 13T. Detailed data summary for Yukon Gold.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		14	406	321-513
Yield US #1 (Cwt/A)		14	358	293-439
% US #1		14	88.1	81.6-94.3
Yield >10 oz (Cwt/A)		14	162	93-248
Yield <4 oz (Cwt/A)		14	40	22-66
% External Defects[1]		14	2.0	0.6-4.4
% Hollow Heart[2]		14	0.9	0.0-2.2
% Stand		14	96	94-100
Emergence Uniformity		14	3.3	2.5-3.8
Vine Vigor[3]		14	3.7	3.0-4.0
Stems/Plant		14	2.2	1.6-2.9
Vine Size[4]		14	3.0	2.8-3.3
Vine Maturity5		14	1.8	1.0-2.5
Blackspot[6]	Bud End	19	3.7	2.0-5.0
	Stem End	19	3.5	2.4-5.0
	Average	19	3.6	
Weight Loss[7]		19	2.7	1.0-4.3
Dormancy[8]		19	93	69-132
Enzymatic Browning[9]		19	4.4	3.8 5.0
Specific Gravity		19	1.085	1.079-1.090
Fry Color[10]	Harvest	19	1.7	1.0-2.0
	Storage	19	2.7	1.0-4.0
Fry Texture[11]	Harvest	19	2.9	1.0-4.0
	Storage	19	2.8	1.0-4.0

Refer to footnotes on page 81.

Table 13U. Detailed data summary for CO95051-7W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	416	372-466
Yield US #1 (Cwt/A)		4	358	295-406
% US #1		4	85.9	79.1-90.0
Yield >10 oz (Cwt/A)		4	79	28-105
Yield <4 oz (Cwt/A)		4	52	37-75
% External Defects[1]		4	1.2	0.8-1.6
% Hollow Heart[2]		4	0.1	0.0-0.4
% Stand		4	93	82-98
Emergence Uniformity		4	3.2	3.0-3.5
Vine Vigor[3]		4	3.1	3.0-3.3
Stems/Plant		4	2.9	2.6-3.2
Vine Size[4]		4	3.4	3.0-4.0
Vine Maturity5		4	3.4	3.0 4.0
Blackspot[6]	Bud End	9	4.0	3.1-4.9
	Stem End	9	2.7	1.6-4.0
	Average	9	3.4	
Weight Loss[7]		9	5.5	1.7-11.0
Dormancy[8]		9	76	62-99
Enzymatic Browning[9]		9	3.6	1.8-4.4
Specific Gravity		10	1.098	1.089-1.101
Chip Color[10]	40	10	3.4	2.5-4.5
	40R	10	2.7	1.5-4.0
	50	10	2.2	1.0-4.0
	50R	10	2.2	1.0-3.5

Refer to footnotes on page 81.

Table 13V. Detailed data summary for Atlantic.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		27	453	307-597
Yield US #1 (Cwt/A)		27	392	265-512
% US #1		27	86.8	79.0-93.2
Yield >10 oz (Cwt/A)		27	153	58-290
Yield <4 oz (Cwt/A)		27	46	19-96
% External Defects[1]		27	2.9	0.1-9.1
% Hollow Heart[2]		27	5.4	0.3-16.4
% Stand		27	96	88-99
Emergence Uniformity		21	3.6	3.0-4.3
Vine Vigor[3]		21	3.5	2.8-4.3
Stems/Plant		27	3.0	2.2-4.2
Vine Size[4]		21	3.1	2.2-4.0
Vine Maturity5		27	3.2	2.8-4.0
Blackspot[6]	Bud End	38	3.1	1.8-5.0
	Stem End	38	2.6	1.4-4.3
	Average	39	2.9	
Weight Loss[7]		39	5.0	1.1-7.9
Dormancy[8]		36	85	62-116
Enzymatic Browning[9]		37	4.5	3.8-5.0
Specific Gravity		40	1.097	1.083-1.120
Chip Color[10]	40	40	3.8	2.0-5.0
	40R	40	3.3	1.5-4.5
	50	40	2.5	1.0-4.0
	50R	40	2.5	1.0-4.0

Refer to footnotes on page 81.

Table 13W. Detailed data summary for Chipeta.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		25	522	399-757
Yield US #1 (Cwt/A)		25	436	306-606
% US #1		25	83.2	70.6-90.4
Yield >10 oz (Cwt/A)		25	165	52-388
Yield <4 oz (Cwt/A)		25	56	22-119
% External Defects[1]		25	5.7	1.2-13.0
% Hollow Heart[2]		25	0.6	0.0-4.0
% Stand		25	98	95-100
Emergence Uniformity		18	3.5	3.0-4.3
Vine Vigor[3]		18	3.9	3.2-5.0
Stems/Plant		24	3.5	2.5-4.9
Vine Size[4]		18	4.1	4.0-4.5
Vine Maturity5		25	3.3	3.0-4.0
Blackspot[6]	Bud End	35	3.8	2.2-5.0
	Stem End	35	3.5	1.4-4.9
	Average	37	3.7	
Weight Loss[7]		37	3.7	1.9-8.0
Dormancy[8]		33	102	77-153
Enzymatic Browning[9]		34	3.9	2.8-5.0
Specific Gravity		37	1.089	1.073-1.102
Chip Color[10]	40	37	4.4	3.0-5.0
	40R	37	3.6	1.5-5.0
	50	37	2.5	1.0-4.0
	50R	37	2.3	1.0-4.0

Refer to footnotes on page 81.

Footnotes for Tables 13A-13W:

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

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

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

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

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

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

[7]Tubers were stored at 45F for approximately 3 months.

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

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

[10]Chip color was rated using the Snack Food Association 1-5 scale. Ratings of <2.0 are acceptable. Reconditioned samples were stored at 60F for three weeks. Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of <2.0 are acceptable.

[11]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 14. Late blight foliar and tuber infection levels for Colorado selections planted in fifteen-hills plots replicated twice in Corvallis, Oregon - 2004.

Clone	Foliar Infection Rating[1] 9/16/04	9/30/04	% Tuber Infection[2]	Parentage Female	Male
Second Year Entries					
AC97044-4RU	1.0	6.0	0	A95053-61	A91194-4
AC99336-2RU	3.0	9.0	20	A90586-11	A93152-1
AC99375-1RU	2.5	6.5	0	AWN86514-2	A89384-10
AC99380-4RU	2.0	6.5	0	AWN86514-2	A9324-4
AC99438-2RU	2.0	6.0	5	Torridon	A88431-1
CO00047-3RU/Y	3.5	8.0	55	AWN86514-2	Silverton Russet
CO00051-1RU/Y	---	---	---	AWN86514-2	Russet Nugget
CO00074-2W	1.5	6.0	5	B0718-3	Chipeta
CO00084-2R	2.5	7.5	45	CO86218-2	Tollocan
Third Year Entries					
AC96848-2RU	1.5	8.5	0	COA90064-6	B0718-3
AC96897-3W/Y	2.0	6.5	5	PI583331	A91746-8
AC96897-4W/Y	2.5	3.5	10	PI583331	A91746-8
AC96897-5W/Y	2.0	7.5	0	PI583331	A91746-8
AC97019-1RU[3]	1.0	7.0	0	A90621-4	B0718-3
AC97069-1W	2.0	6.0	5	AWN86514-2	A90609-6
AC98002-4RU	1.0	6.0	10	A90586-11	A9308-5
AC98002-5RU	2.0	5.5	0	A90586-11	A9308-5
AC98016-6W	1.5	6.0	15	A9553-55	NDA5698-8
AC98019-1RU	1.5	4.0	0	A9553-61	A90603-3
AC98029-2RU	2.5	8.0	0	A9553-61	NDA5698-8
AC98029-4W	1.5	4.5	10	A9553-61	NDA5698-8
AC98030-1W	2.0	6.0	15	A9553-61	NDO1496-1
AC98043-2RU	2.0	2.5	20	B0767-2	A9308-5
AC98049-1W	1.5	5.5	10	G6582-3	A91790-13
AC98051-2W	1.0	7.5	10	G6582-3	NDO1496-1
AC98056-1RU	2.0	5.5	5	J138A4	A9308-5
AC98059-2R	1.5	7.0	0	J138A4	A93456-6R
AC98059-4P	1.5	5.5	5	J138A4	A93456-6R
AC98059-6R	1.5	3.5	0	J138A4	A93456-6R
PAC99N15-1RU	1.0	6.5	0	A90586-11	A77715-6

[1]Ratings: 1 = no foliar injury; 2 = 1-5% injury; 3 = 5-10% injury; 4 = 10-20%; 5 = 25-40%; 6 = 40-60%; 7 = 60-75%; 8 = 75-90%; 9 = 90-100% injury. Readings were taken on 9/16 and 9/30.

[2]Percent of late blight infected tubers based on 10 randomly selected tubers.

[3]This entry was only tested in one replication.

APPENDIX 1. Cultural management information for the Potato Breeding and Selection Program's trials at the San Luis Valley Research Center - 2004.

LOCATION: San Luis Valley Research Center

SOIL TYPE: Sandy Loam (Dunul cobbly sandy loam)

DATE:
Planted - 5/06/04
Hilled - 5/25/04
Vines Killed - 9/02/04 (sulfuric acid - 28 gal/A)
Harvested - 9/20/04

PLOT INFORMATION:
Size of Plots - 1 row x 25'
Spacing Between Hills - 12"
Spacing Between Rows - 34"
Hills Per Plot - 25
Number of Reps - 4

METHOD OF HARVEST:
Machine (Grimme 1-row)

FERTILIZER:
5/06/04 - 80 lbs N + 70 lbs P_2O_5 + 40 lbs K_20 +18lbs S + 1 lb Zn/A (liquid-applied in-row)
7/05/04 - 20 lbs N (fertigated)
7/20/04 - 20 lbs N (fertigated)
Total fertilizer applied: 120 lbs N + 70 lbs P_2O_5 + 40 lbs K_20 +18lbs S + 1 lb Zn/A

IRRIGATION:
Center Pivot - 20.0" gross application (application frequency and amount based on ET)
Rainfall - 1.79" (5/1/04-9/18/04)

INSECTICIDES APPLIED:
7/30/04 - Waylay 3.2 ag [=Permethrin 3.2 EC] (0.16 lb a.i./A)
8/17/02- Endosulfan 3 EC (1.0 lb a.i./A)

FUNGICIDES APPLIED:
7/15/04- Polyram 80 DF (1.6 lb a.i./A)

HERBICIDES APPLIED:
5/27/04 - Dual Magnum (1.4 lb a.i./A)

APPENDIX 2. 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 or 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 and stored 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. Because of facility construction in late 2004 and early 2005, samples for storage weight loss and dormancy evaluations were held in the seed potato storage. The temperature is set at 38F rather than the normal 45F used for these evaluations. This resulted in longer dormancy and lower weight loss results compared to prior years.

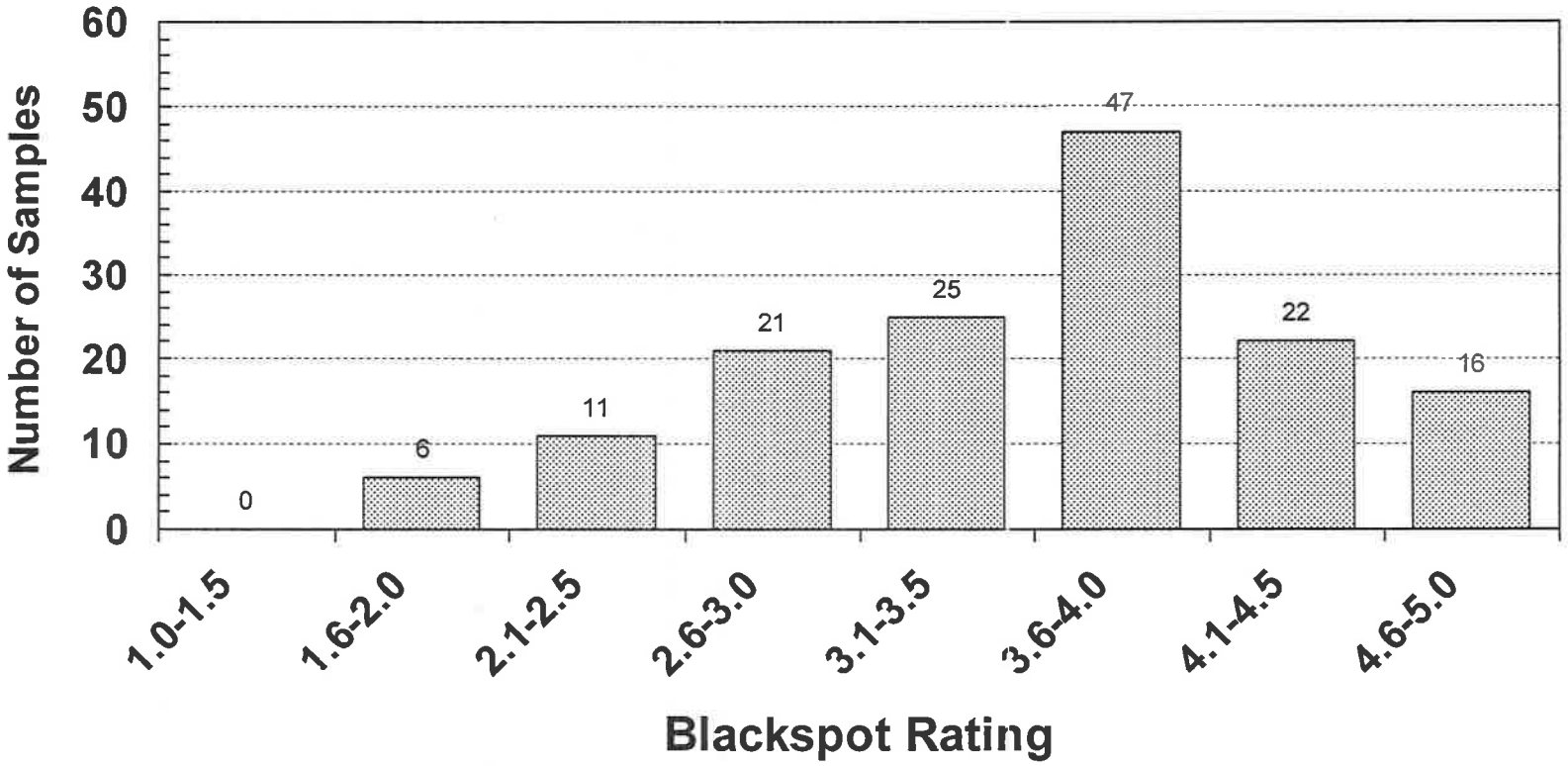
Enzymatic Browning. Five tubers of each clone are cut in half lengthwise and rated for degree of darkening 60 minutes later. Degree of darkening is rated on a 1 to 5 scale, with 5 indicating no discoloration.

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.

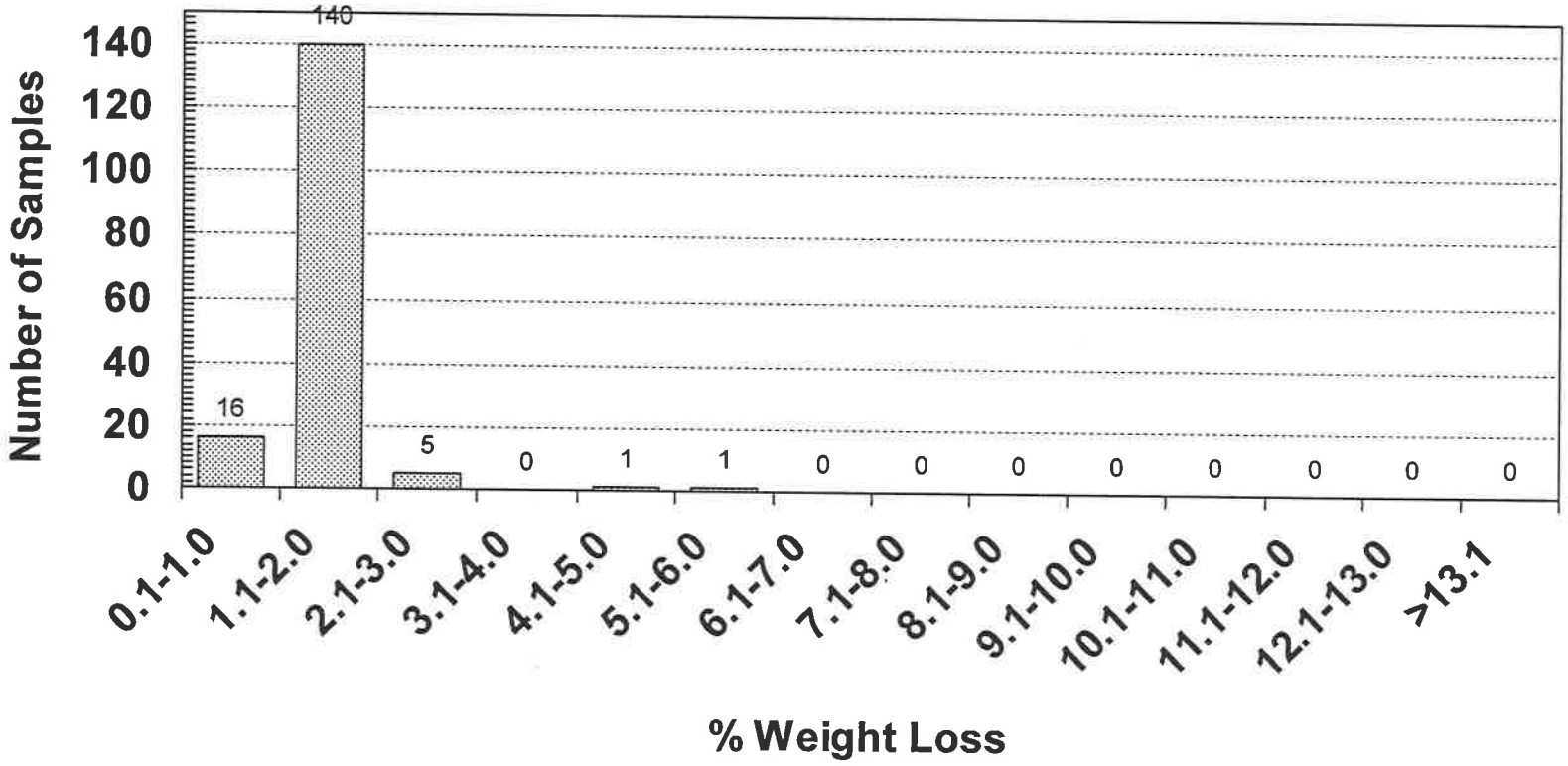
Chip Color. Chip color is determined after an interval of storage at 40 and 50F and after reconditioning for three weeks at 60F. Chips are cooked at 365F until bubbling slows. Chip color is rated using the Snack Food Association 1-5 scale. Ratings $\leq$2.0 are acceptable.

Appendix 3. Blackspot Distribution (148 Samples) - 2004

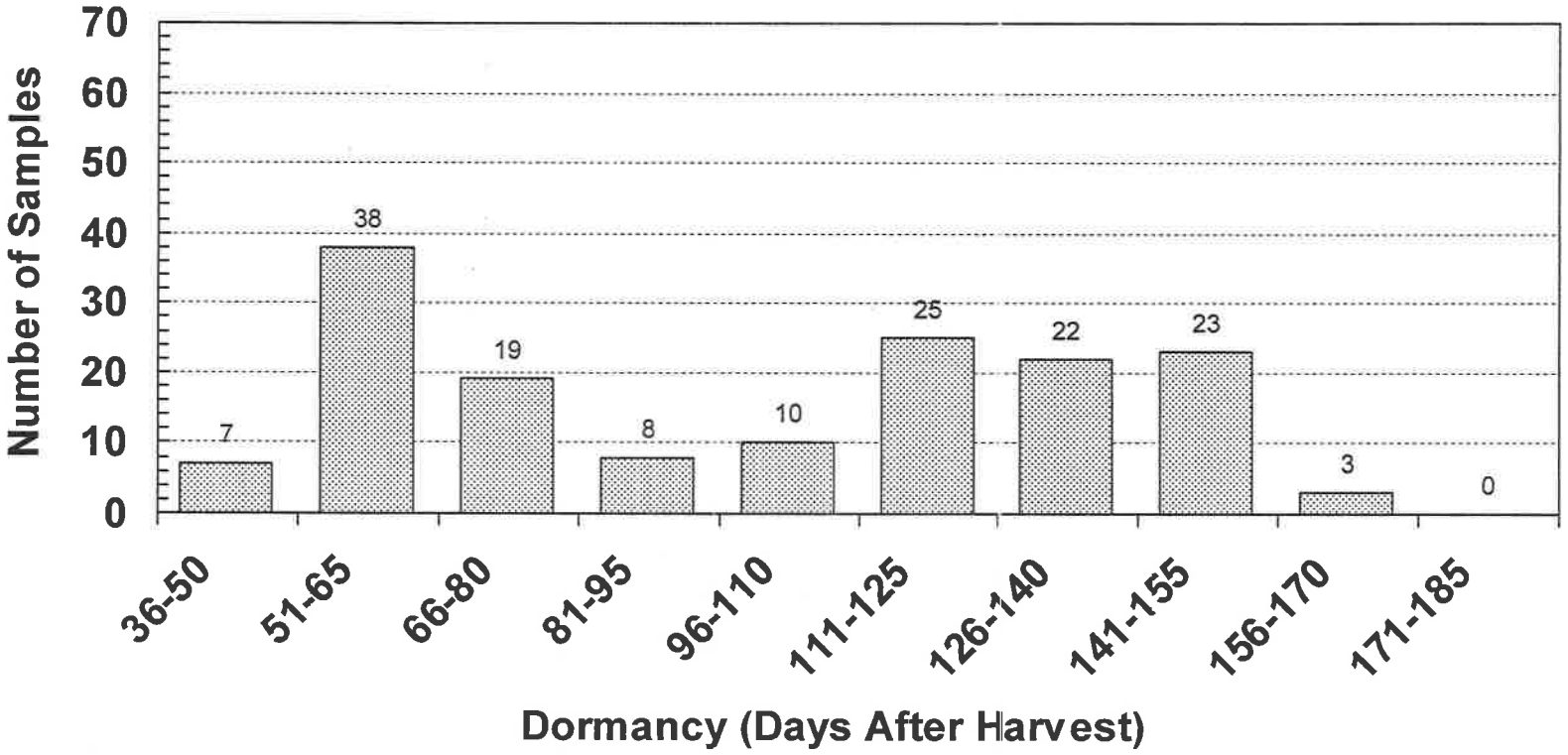


5=No Discoloration

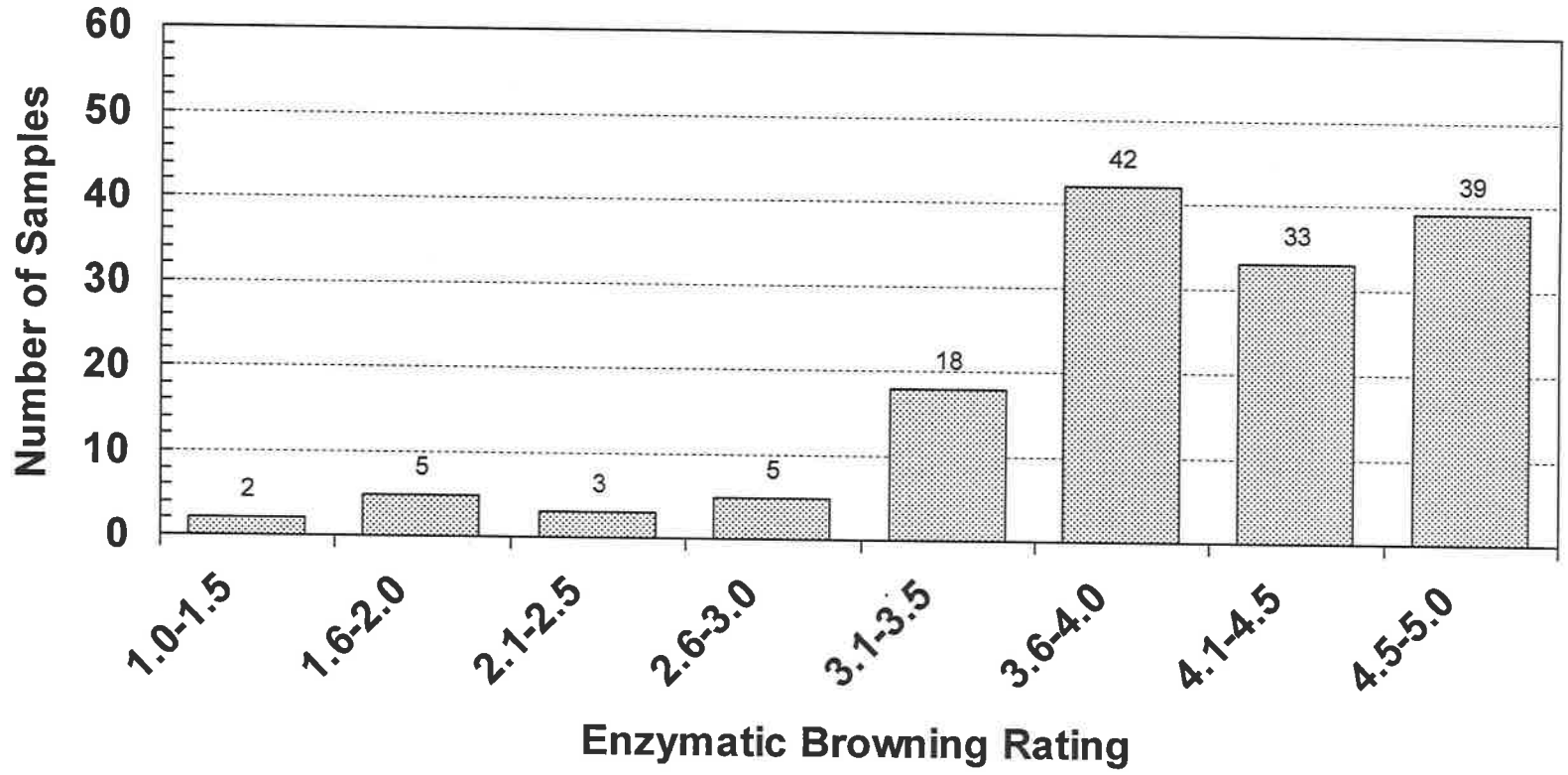
Appendix 4. % Weight Loss Distribution (163 Samples) - 2004



Appendix 5. Dormancy Distribution (155 Samples) - 2004

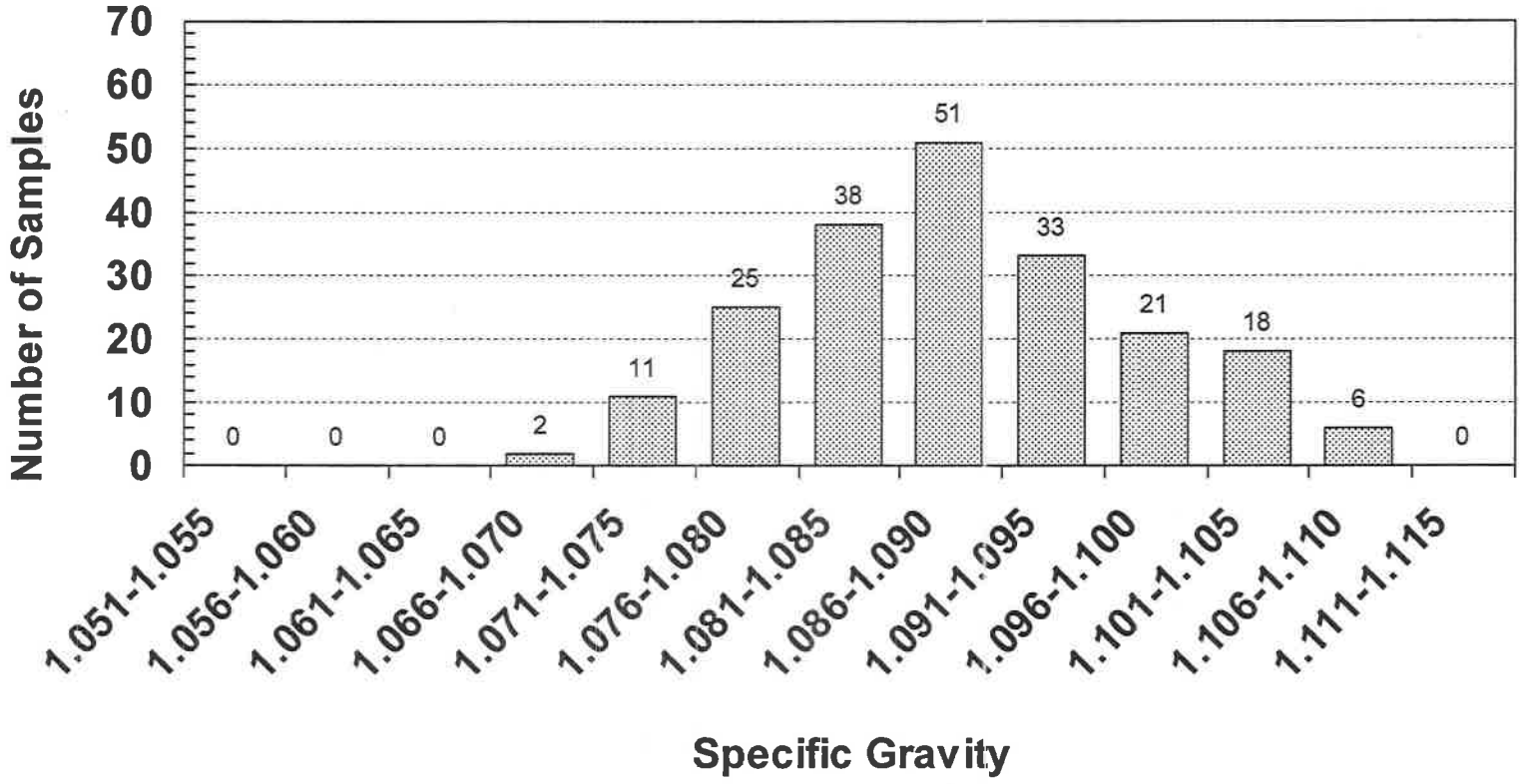


Appendix 6. Enzymatic Browning Distribution (147 Samples) - 2004

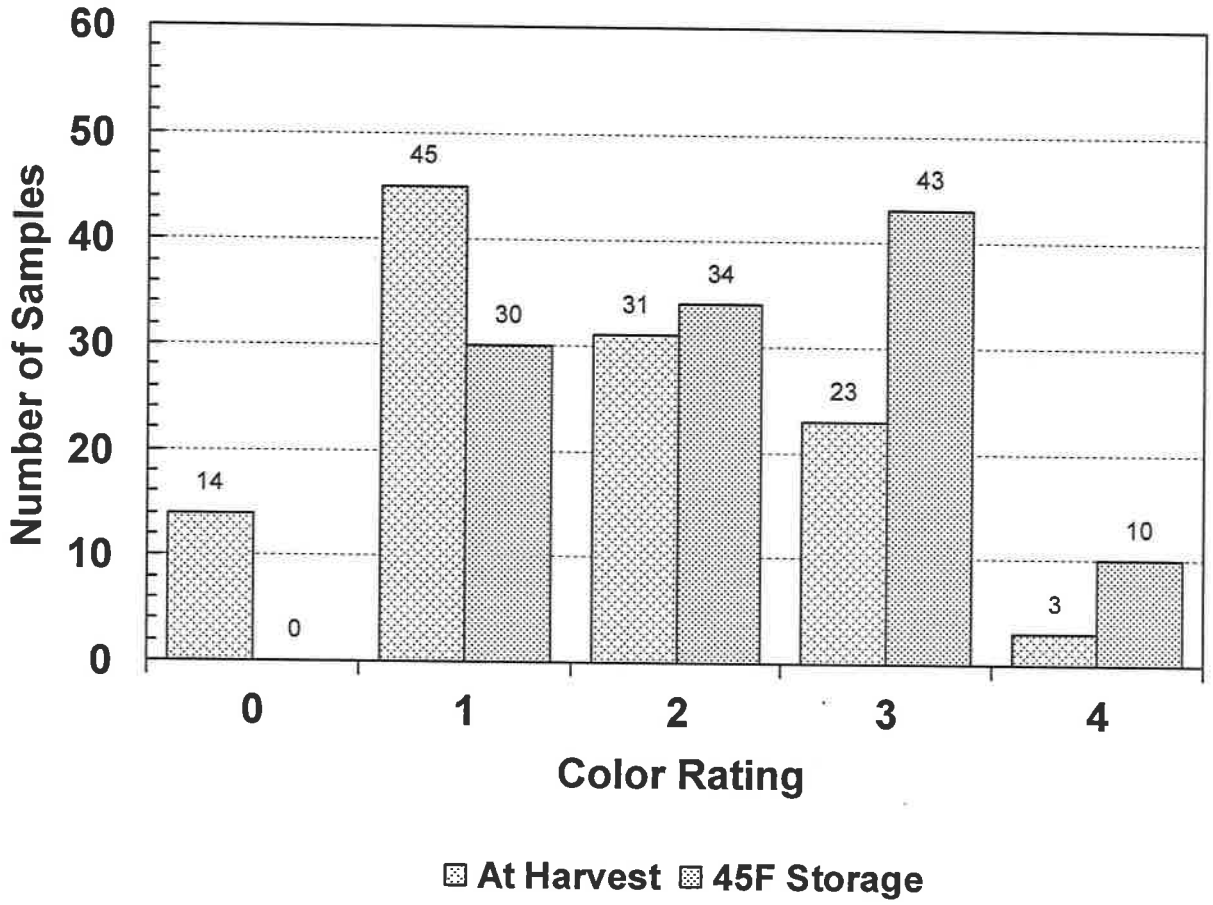


5=No Discoloration

Appendix 7. Specific Gravity Distribution (205 Samples) - 2004

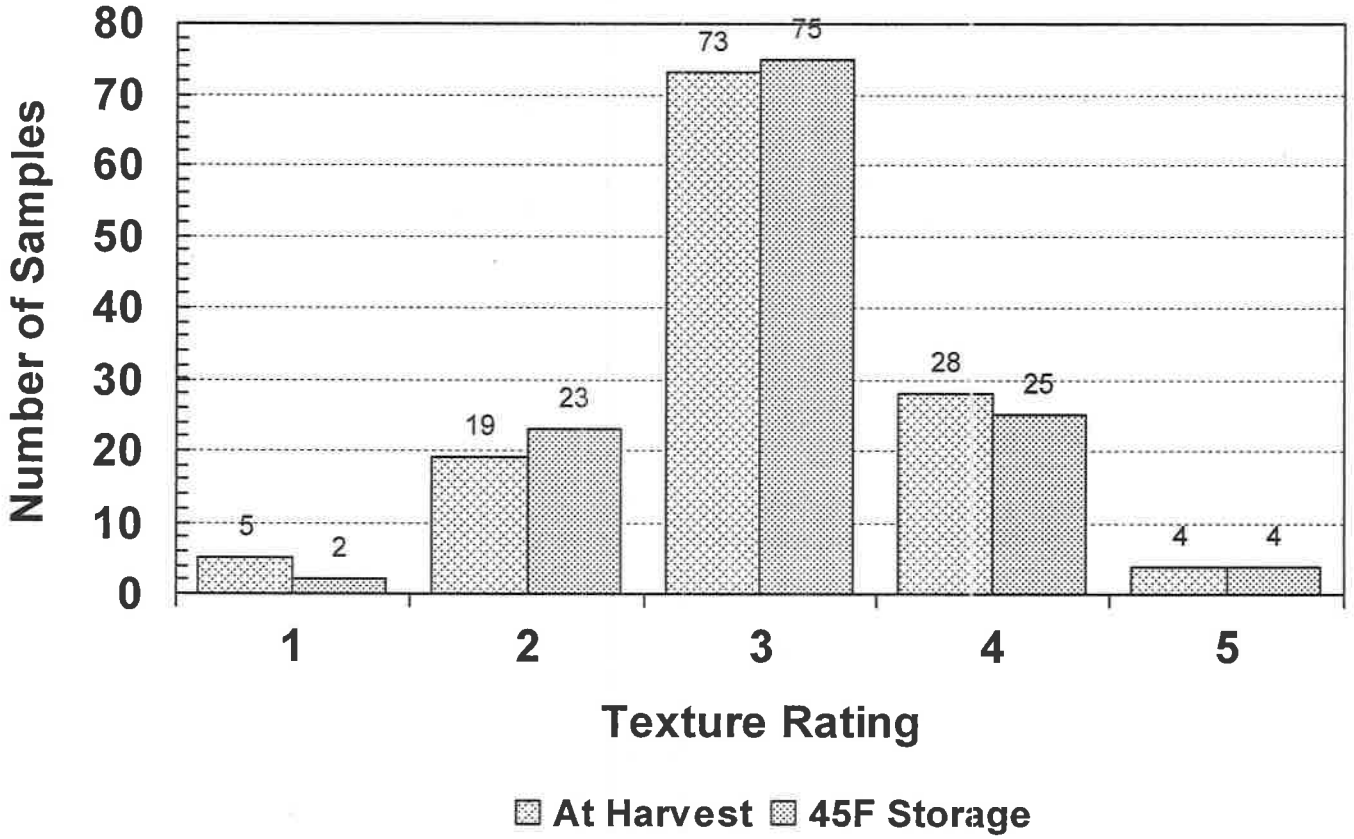


Appendix 8. Fry Color Distribution (117 Samples) - 2004



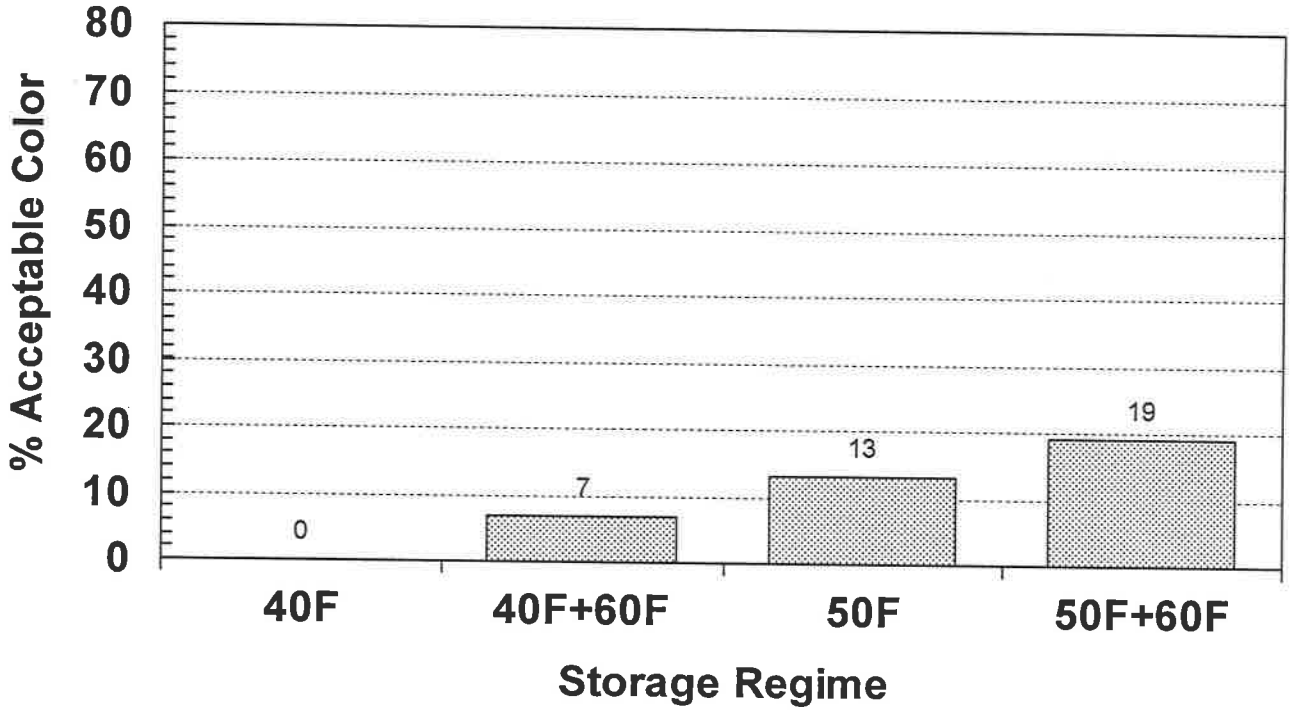
0=Lightest (values ≤2 acceptable)

Appendix 9. Fry Texture Distribution (129 Samples) - 2004



5=Dry Texture

Appendix 10. % Acceptable Chip Color (70 Samples) - 2004



Values ≤2 acceptable (SFA 1-5 Scale)

Notes

COLORADO POTATOES
QUALITY AT ITS PEAK

Dig This!

Watch out! Some packaged foods and beverages pack more servings than you need.

Potassium is a superhero for healthy blood pressure.

There's more to fiber than a good crunch.

Nutrition Facts

Serving Size 1 potato (148g/5.3oz)

Amount Per Serving	
Calories 100	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Potassium 720 mg	21%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 4g	

Vitamin A 0%	• Vitamin C 45%
Calcium 2%	• Iron 6%
Thiamin 8%	• Riboflavin 2%
Niacin 8%	• Vitamin B_6 10%
Folate 6%	• Phosphorous 6%
Zinc 2%	• Magnesium 6%

*Percent Daily Values are based on a 2,000 calorie diet.

Do the math: % Daily Value adds up to a balanced diet.

Too much fat, sodium, and cholesterol can bully your body.

For health, vitamin C gets an A+.

READ THE LABEL:
It's Good For Your Body.

The Healthy Potato

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