2017 Research Progress Report

Potato Breeding and Selection

Submitted by

David G. Holm and Caroline Gray

San Luis Valley Research Center

to the

Colorado Potato Administrative Committee (Area II) Research Committee

and the

Colorado Potato Administrative Committee (Area III)



Mission Statement

"The mission of the Colorado Potato Breeding and Selection Program is to develop cultivars that will help assure that the Colorado potato industry remains productive, competitive, and sustainable and that provide the consumer with improved nutrition and quality."

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Preface

We are pleased to provide this copy of the **2017 Potato Breeding and Selection Research Progress Report**. 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 National Institute of Food and Agriculture (NIFA), Potatoes USA, and PVP royalties. These funds collectively continue to allow us to strengthen our overall collaborative research efforts with colleagues at CSU and other universities and agencies. All of these efforts are aimed at developing improved potato cultivars for Colorado.

Ongoing support by the Colorado potato industry is key to maintaining funds received from NIFA and other sources. NIFA and PVP funding have allowed us to significantly expand our breeding efforts over the years to include resistance to the following: PVY, late blight (foliar and tuber), nematodes, pink rot, storage rots [dry rot (*Fusarium* and early blight) and bacterial soft rot], corky ringspot, and powdery scab, as well as other special initiatives including graduate student support.

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.

Collaborators and areas of collaboration are:

- Samuel Y. C. Essah Cultivar Specific Production Management
- Sastry S. Jayanty Cultivar Specific Postharvest Management and Physiology
- Adam Heuberger Nutritional Characteristics and Health Attributes
- Andrew J. Houser Potato Certification Service and Disease Screening of Advanced Selections for PVY and Ringrot.
- Amy Charkowski Disease Screening of Advanced Selections for Powdery Scab, PMTV, and soft rot (*Dickeya dianthicola* and *Pectobacterium atrosepticum*).
- Colorado Potato Growers
- Southwest Regional Potato Breeding and Cultivar Development Cooperators (Colorado, Texas, and California). The overall objective of this research group is to develop and evaluate improved potato cultivars to meet the production, marketing, and producer/consumer needs of the Southwest U.S.
- Other cooperating research/extension programs several cooperators throughout the United States and Canada provide breeding material and opportunities to screen our germplasm under various growing conditions and disease pressures.

Best wishes for the 2018 production season!

Sincerely,

Dave Holm and Caroline Gray

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 2017.

- ✓ Financial and In-kind 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
 - USDA National Institute of Food and Agriculture Potato Research Award Number 2017-34141-27336.
 - *United States Potato Board* National Chip Processing Trial (NCPT) and National Fry Processing Trial (NFPT)
 - Stone's Farm Supply in-kind support
- ✔ Colorado Potato Administration Committee, Area II Research Committee (Members and At-large Members) and Area III
- ✓ Technical Support and Graduate Students*

Nikki Jo Albert	Mitzi Cisneros	Megan Gylling	Emily Logan
Cassidy Plane	Lexi Shawcroft	Katrina Zavilsan*	Greg Hess*

Numerous other temporary support personnel assisted the project, particularly during seed cutting, planting, and harvest.

~	Research Collaborators -	Colorado State Universi	ity	A duarra I Tanaan
	Samuel Essan Amy Charkowski	Sastry Jayanty	Adam Heuberger	Andrew Houser
~	Staff - San Luis Valley R	esearch Center		
	Tyler Thompson	Sharon Yust	Michelle Leckler	Stan Price
	Ron Price	Tim Poe		
~	Potato Certification Serv	ice		
	Andrew Houser	Terea Almeida	Rick Haslar (retired)	Carolyn Keller
	Sarah Noller	Sarah Shawcroft		

- ✓ Southwest Regional Potato Breeding and Cultivar Development Cooperators (Colorado, Texas, and California).
- ✓ 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 the 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 usually available in Colorado.

2017 Research Progress Report

Potato Breeding and Selection

Submitted by

David G. Holm and Caroline Gray

San Luis Valley Research Center

Introduction

The major objectives of the Colorado Potato Breeding and Selection Program are: (1) to develop new potato cultivars with increased yield, improved quality, improved nutritional and health characteristics, resistance to diseases and pests, and tolerance to environmental stresses; (2) to collaborate with growers, shippers, processors, and research/extension personnel to assess the production, adaptability, marketability, and other characteristics of advanced selections from the Colorado program; (3) to provide a basic seed source of selections to growers for seed increase and commercial testing; (4) to evaluate promising selections for possible interstate and international export.

The primary emphasis is the development of russet cultivars. The balance of the breeding effort is devoted to developing red, specialty, and chipping cultivars. This broad approach recognizes the diverse markets accessed by potato growers throughout Colorado.

Besides the major objectives, specific breeding emphasis is placed on identifying germplasm and developing cultivars that have: (1) early vine maturity and early tuber bulking; (2) immunity to PVY; resistance to (3) late blight (foliar and tuber); (4) storage rots [dry rot (*Fusarium* and early blight) and bacterial soft rot]; (5) pink rot; (6) nematodes; (7) powdery scab/PMTV; (8) corky ringspot, and (9) improved nutritional quality, health attributes, and other "consumer" characteristics such as improved red skin color retention and shelf life. A continuing priority is breeding/selecting for "low input" cultivars, primarily for reduced nitrogen and fungicide input, and for improved postharvest and processing qualities such as lengthened dormancy. Cultivars with these characteristics will help insure that the potato industry in Colorado remains productive and competitive.

Cultivar development is a five-step process, encompassing first, the generation of segregating populations and evaluation for visual agronomic traits. Second, superior progeny are identified, then these selections undergo additional evaluation for a number of economically important characteristics. Third, a profile of cultivar specific management criteria - production and postharvest guidelines are developed, which a grower, shipper, processor, and/or marketer may fine tune for his/her operation. Fourth, a basic seed source is developed to facilitate further seed increase and commercial testing of advanced selections. Fifth, market development takes place to

determine consumer acceptance and recognition in the intended market. Finally, the new cultivar must be introduced to the intended market. These steps provide the base for successful cultivar release. Without all components, fruition is difficult to attain.

The process of cultivar development takes 14 or more 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. Year 3 and later years represent the selection phase of the development process. Each year represents another round of field selection. As each year is completed, fewer and fewer clones remain and the amount of seed per selection is increased. Clones remaining after eight years 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.

The long-term process of cultivar development fosters collaborations among growers, shippers, processors, researchers, and extension personnel. The network must provide for a grower evaluation process to assist in the development of management guidelines, detect unforeseen problems, and determine the predictability of performance of each new cultivar.

Because the timeline for cultivar development is lengthy, improved methods to speed up the breeding and selection process are continually evaluated. Technologies such as marker assisted selection (MAS) provide opportunities, in concert with existing and new collaborators, to facilitate accelerated and focused breeding for high priority characteristics. MAS has value to identify suitable parental material, to facilitate the selection of progeny with these traits, and to generally inform a breeding program on trait specific progress. Expansion of MAS is dependent on increases in future funding and identifying additional appropriate cooperators.

A priority of the potato cultivar development process is to provide a solid foundation for the development and commercialization of new potato cultivars prior to the "formal" naming and release process. As such, potato cultivar development is a long-term process and is difficult to shorten significantly.

Potato Breeding

<u>Germplasm Accession and Introgression</u>. Germplasm with late blight resistance, virus resistance (PVX, PVY, and PLRV), nematode resistance, and other characteristics of importance is continually being acquired from various sources. Primary sources are the USDA-ARS in Aberdeen, Idaho; Prosser, Washington, Sturgeon Bay, Wisconsin (NRSP-6), and Madison, Wisconsin; and Oregon State University. Other sources are Asia, Europe, and South America. All of these materials are incorporated into our germplasm in the breeding program.

<u>Crossing</u>. The Colorado Potato Breeding and Selection Program intercrossed 101 parental clones in 2017 in two separate crossing blocks. The emphasis of the first crossing block was russet and specialty (fingerling) cultivar development and disease resistance. The second crossing block emphasized russet and chip cultivar development, and disease resistance. Seed from 331 combinations was obtained. A subset of these and previous crosses will be planted in the greenhouse in 2018 to produce seedling tubers.

Approximately 49,565 first-size seedling tubers representing 224 families were produced from selected greenhouse crosses made in 2015-2016. These seedlings will undergo initial field selection in 2018. These seedlings represent crosses segregating primarily for russets, yellows, reds, chippers, specialty

types, and resistance to Verticillium wilt, late blight, PVY, corky ringspot, and nematodes. Second through fourth size seedling tubers will be distributed to Idaho (USDA-ARS), North Dakota, Maine, Oregon, Texas, and Alberta, Canada (Agriculture Canada).

Seedling Selection and Clonal Development

Colorado grew 89,935 first-year seedlings representing 463 families in 2017, with 564 selected for subsequent planting, evaluation, and increase in future years. A portion of these seedlings were obtained from the USDA-ARS (Aberdeen, Idaho), Agriculture Canada, Texas A&M University, North Dakota State University, and the University of Maine. Another 722 clones were in 12-hill, preliminary, and intermediate stages of selection. At harvest, 194 were saved for further increase and evaluation in 2018. Sixty-eight advanced selections were saved and will be increased in 2018 pending further evaluation. Another 271 selections and cultivars were maintained for germplasm development, breeding, and other experimental purposes including seed increase/maintenance.

Field trials conducted in 2017 included: Preliminary Trial, Intermediate Yield Trial, Intermediate Specialty Yield Trial, Advanced Yield Trial, Advanced Fingerling Yield Trial, Southwestern Regional Russet Trial, Western Regional Red Trial, Western Regional Specialty Trial, Western Regional Chipping Trial, and the San Luis Valley Chipping Trial. All trials are grown under "low input" conditions, primarily reduced nitrogen and fungicide. Tables 2-12 present the data for the various trials. Appendix 1 summarizes the cultural information for the trials planted at the San Luis Valley Research Center in 2017.

A total of 188 samples are in the process of being 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, chip color, and red color retention. Appendix 2 lists the procedures used for the postharvest evaluations for the trials.

Several advanced selections were evaluated in the Southwest Regional Trials, Western Regional Trials, or by potato growers in 2017 representing russets, specialties, and chipping selections. Advanced Colorado selections evaluated in the Southwest Regional Trials and Western Regional Trials were seven russets (CO08065-2RU, CO08155-2RU/Y, CO08231-1RU, CO09036-2RU, CO09076-3RU, CO09165-6W, and CO09205-2RU), eight yellows and specialties (AC03534-2R/Y, CO05035-1PW/Y, CO08037-2P/P, CO09079-5PW/Y, CO09127-3W/Y, CO09128-3W/Y, CO09128-4W/Y, and CO09218-5W/Y), and one chip selection (AC01144-1W).

Advanced selections available to growers for on-farm trials were seven russets (AC05039-2RU, C003187-1RU, C003202-1RU, C004220-7RU, C005068-1RU, C007015-4RU, and C007049-1RU), eight yellows and specialties (AC05175-3P/Y, C004056-3P/PW, C004067-8R/Y, C005035-1PW/Y, C005037-2R/Y, C005037-3W/Y, and C007131-1W/Y), and ten chip selections (AC00206-2W, AC01144-1W, AC01151-5W, AC03433-1W, AC03452-2W, AC05153-1W, C002033-1W, C002321-4W, C003243-3W, and C007070-13W).

Several selections that have been discontinued from grower evaluations are available for exclusive release. Anyone interested in further information about how exclusive releases are developed may contact David Holm for further information. Included are russets - AC96052-1RU, AC00395-2RU, CO97087-2RU, CO98067-7RU, CO99053-4RU, CO03276-5RU, and CO05175-1RU; reds - CO98012-5R, CO99076-6R, CO99256-2R, CO00277-2R, and CO00291-5R; chippers CO02024-9W; and specialties (including yellows) - AC97521-1R/Y, ATC00293-1W/Y, CO97215-2P/P, CO97226-2R/R,

CO97227-2P/PW, CO97232-1R/Y, CO97232-2R/Y, CO99045-1W/Y, CO00405-1RF, CO00412-5W/Y, CO00415-1RF, CO04099-3W/Y, CO05028-4P/PY, CO05028-11P/RWP, VC0967-2R/Y, VC1002-3W/Y, and VC1009-1W/Y. Data summaries and photographs for all clones are available at *potatoes.colostate.edu/programs/potato-breeding/cultivars/* under the section heading 'Adanced Selections Available for Exclusive Release'.

In 2017, a certificate of Plant Variety Protection was issued for Crimson King (CO97222-1R/R). This new cultivar has been marketed for processing into colored potato chips. A Plant Variety Protection application was submitted for Winterset (CO02321-4W), a chipping cultivar.

Table 13 summarizes the performance of advanced selections that are available for growers to evaluate in 2018. Detailed data summaries for each of the advanced selections are presented in Tables 14A-14AH. Figure 1 includes photographs of these selections. Data summaries for additional selections that are available for exclusive release are available upon request.

Grower Gross Returns

This report also includes information on grower gross returns (\$/acre) for russets and yellow-fleshed selections. Table 15A compiles the grower return data for advanced russet selections and Figure 2 is a graphical representation of the data. Similarly, Table 15B presents the grower return data for yellow flesh selections and Figure 3 graphically presents the data.

Red Color Retention Study

This was the second year for a red color retention study. Table 16 presents color data collected at threeweek intervals over a 15 week period. Figure 4 graphically presents the data for a subset of nine entries listed in Table 16. Graphical representation of red skin color retention over a fifteen week interval. Lower reflective values are associated with darker skin color.

The darkest colored reds (in order of darkness) were CO05211-4R, CO00291-5R, CO05228-4R, and CO99076-6R. Other dark reds were CO99256-2R, CO04159-1R, AC03534-2R/Y. Colorado Rose was next in order of darkness. The lightest colored reds (lightest first) were CO04067-8R/Y, Red LaSoda, CO05037-2R/Y, Chieftain, Sangre S-10, and CO04021-2R/Y. Overall there was not a significant decrease in color during storage. These results are consistent to those of last year.

Collaborative Studies

The following collaborative studies were conducted in 2017:

- Several advanced selections were evaluated for disease symptom expression screening trials in Colorado. These trials were conducted in cooperation with Andrew Houser. Diseases included were bacterial ring rot and PVY (20 selections).
- Several advanced selections were distributed to state/USDA-ARS collaborators in Idaho, Michigan, Oregon, Texas, Washington, and Wisconsin for additional disease evaluations. These selections were screened for one or more of the following diseases: late blight, early blight, scab (common and powdery), PVY, *Verticillim* wilt, and zebra chip.

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- Fourteen advanced selections were evaluated in cultural management trials in collaboration with Samuel Essah.
- Several selections were evaluated for various postharvest characteristics in collaboration with Sastry Jayanty.
- Three selections were entered in the National Fry Processing Trials conducted in Washington, Idaho, North Dakota, Maine, Wisconsin, Michigan, and Minnesota (screening for common scab and PVY). A focus of these trials is to identify selections with low acrylamide potential and that have suitable QSR attributes.
- Nine selections were entered in the National Chip Processing Trials. These trials were planted in up to 11 locations in northern and southern production areas of the US. Trials were conducted in California, Florida, North Carolina, Oregon, Michigan, Missouri, New York, Texas, North Dakota, and Wisconsin (plus a scab trial). Another twenty-six selections were included in the Early Geneneration South pre-NCPT trial in North Carolina.
- Two selections were entered in the USPB/Snack Food Association Trials. These trials were planted in up to 11 locations in northern and sourthern production areas of the US. Trials were conducted in California, Florida, Idaho, Maine, Michigan, Missouri, North Carolina, Oregon, Pennsylvania, North Dakota, and Wisconsin.
- Several selections were provided to Adam Heuberger. His research program focuses on using metabolomics to evaluate nutrition and health traits in advanced selections in our breeding program.

Graduate Students

Greg Hess, Ph.D. student. Greg is coadvised by Sastry Jayanty and David Holm. His thesis is focused on understanding PVY resistance in CSU potato germplasm. He will be screening select progeny for genetic markers associated with PVY resistance. Up to 300 progeny for a selected cross will be molecularly screened using markers targeting the Ryadg (andigena), Rysto (stoloniferum), Rychc (chacoense) genes. These resistant genes provide complete resistance to the various strains of PVY. Also three recently named cultivars from our program [Fortress Russet, Masquerade, and AC99330-1P/Y (aka Harvest Moon)] have complete resistance to PVY as determined via seed certification of the cultivars over a period of years. Part of Greg's project is oriented to determining the source of the resistance genes in these materials. Earlier marker analysis for Ryadg and Rysto indicated that they are not present in Fortress Russet, Masquerade, or Harvest Moon. This suggests that these selections may have Rychc genes or some other source of resistance.

Katrina Zavislan. Trina just completed her Master of Agriculture degree. She defended her research on March 26, 2018. Her project focused on home gardener evaluation of advanced selections from the Potato Breeding and Selection Program. Master gardeners and other volunteers in seven counties grow one potato selection/cultivar and collect data on the weather, pest and disease pressures, plant characteristics, time to maturity, and overall satisfaction with the potatoes. This data will provide a better understanding of the traits consumers value in potatoes for both gardening and consumption. Additionally, it will provide data to Cooperative Extension on potential areas for improvement in Master Gardener training.

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Jeremy Logrono. Jeremy started a M.S. program last September. His research will focus on health attributes of potato.

Colorado State University Potato Program Website

We invite you to visited our website. To access the potato breeding program section of the potato program website go to potatoes.colostate.edu/potato-breeding/. This has been a valuable resource for people with inquiries wanting detailed information about advanced selections in our program. Please let us know if you have any suggestions or recommendations for improving our website or if you would like us to include additional information.

San Luis Valley Research Center Facebook Page

A Facebook page for the San Luis Valley Research Center (facebook.com/SLVRC.potatoes/) was developed to inform the public about various activities at the SLV Research Center including the potato breeding program. We encourage you to 'Like' our page to receive posts.

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	80,000-90,000 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 year of field selection.
4	Twelve-hills of each single-hill selection are planted. Second of field selection.
5	Preliminary Selections Tier 1 (PT1). Third year 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 Tier 2 (PT2). Fourth year 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 year 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).
8-14+	Advanced Selections: Includes selections that have advanced from the IYT. Additional 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-12th+ cycles of field selection. All advanced yield trials (AYT) have 4 reps x 25 plants. Sixth and seventh year of field selections respectively have a 400/1,200 plant tuber-unit seed increase. All 8th year selections have up to a 1/3 acre tuber-unit seed increase planted. All 9th year and older selections generally have up to a ½ acre or more of seed increase depending on grower demand.
	Selections in the sixth year 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 year of field selection are entered into cultural management trials and postharvest disease reaction (dry rot and soft rot) evaluations.
10	All 8 th year selections are entered in the Southwest Regional Trials (4 locations - CO, TX, two in CA). Cultural management trials and postharvest disease reaction evaluations continue as needed.
11-13	All 9 th -11 th year selections are entered in the Western Regional Trials (4 trials): main (russets and long whites), reds, specialties, and chippers. The Western Coordinating Committee (WERA027) 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.

	Blackspot Index ¹			% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
AC08116-1P/Y	4.1	2.8	3.5	2.1	101	1.8
AFC5726-1RU	5.0	5.0	5.0	2.6	52	5.0
AFC5730-3RU	5.0	5.0	5.0	2.7	52	5.0
CO11062-3RU	5.0	5.0	5.0	2.5	66	4.6
CO12117-4RF/R				1.8	108	
CO12125-3PF/P				1.7	87	
CO12152-1RU	5.0	4.3	4.7	1.4	87	4.6
CO12246-1RU	5.0	5.0	5.0	2.2	49	5.0
CO12254-15RU	5.0	5.0	5.0	2.9	98	5.0
CO12254-17RU	5.0	4.9	5.0	2.0	56	3.6
CO12267-1RU	5.0	5.0	5.0	2.2	84	5.0
CO12305-2RU	5.0	4.8	4.9	1.4	63	4.6
CO12377-2RU	4.9	4.3	4.6	2.0	49	4.6
CO12378-1RU	5.0	5.0	5.0	3.2	105	4.4
Banana	5.0	4.8	4.9	2.9	76	4.4
Canela Russet	5.0	5.0	5.0	2.0	167	5.0
Centennial Russet	5.0	4.8	4.9	3.0	83	4.6
Russet Burbank	5.0	5.0	5.0	1.2	132	3.4
Russet Norkotah	5.0	5.0	5.0	1.5	124	4.6
Sangre-S10	5.0	5.0	5.0	1.8	103	4.6
Shepody	5.0	5.0	5.0	1.8	90	4.8
Yukon Gold	5.0	5.0	5.0	0.9	116	5.0

 Table 2A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Preliminary Trial entries - 2017.

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

 2 Tubers were stored at 45F for 92 days.

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

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

		Fry Color ¹		Fry	Texture ²
	Specific	At	3 wks 55F+	At	3 wks 55F+
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F
AC08116-1P/Y	1.086	2	2	3	4
AFC5726-1RU	1.087	2	2	4	3
AFC5730-3RU	1.086	0	1	3	3
CO11062-3RU	1.082	3	3	4	3
CO12117-4RF/R	1.077	-	-	4	4
CO12125-3PF/P	1.069	-	-	2	2
CO12152-1RU	1.094	0	0	3	3
CO12246-1RU	1.083	1	1	3	3
CO12254-15RU	1.067	3	3	2	2
CO12254-17RU	1.084	2	2	3	3
CO12267-1RU	1.078	1	1	4	3
CO12305-2RU	1.070	2	1	4	3
CO12377-2RU	1.075	2	1	4	4
CO12378-1RU	1.090	1	0	5	5
Banana	1.083	2	3	3	4
Canela Russet	1.079	3	3	3	3
Centennial Russet	1.076	3	3	2	2
Russet Burbank	1.073	2	2	3	3
Russet Norkotah	1.073	3	3	2	3
Sangre-S10	1.068	4	4	2	3
Shepody	1.078	3	2	3	3
Yukon Gold	1.088	3	3	3	3

Table 2B. Specific gravity, french fry color, and texture for Preliminary Trial clones - 2017.

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

²Fry 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.

	Bl	ackspot Ind	ex ¹	% Weight	Dormançy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
AC00206-2W	4.7	4.4	4.6	2.3	75	4.4
AC01144-1W	4.9	4.6	4.8	1.1	104	4.6
AC01151-5W	4.6	3.1	3.9	2.1	103	2.2
AC03433-1W	4.7	4.5	4.6	1.6	87	3.8
AC03452-2W	5.0	5.0	5.0	2.2	77	4.8
AC05153-1W	4.7	4.3	4.5	4.2	60	4.6
AC11453-2W	3.8	3.7	3.8	1.5	94	4.6
AC11453-7W	4.6	4.3	4.5	1.9	59	5.0
AC11463-2W	4.6	4.6	4.6	1.7	105	4.0
AC11467-4W	3.8	4.1	4.0	1.9	101	4.8
AC11494-6W	3.7	4.2	4.0	1.5	87	4.6
AFC5563-5W	3.6	3.2	3.4	2.5	46	5.0
AFC5687-2W	5.0	4.7	4.9	3.2	154	4.0
AFC5888-2W	4.7	4.6	4.7	2.8	94	5.0
CO95051-7W	4.9	4.4	4.7	2.5	104	3.8
CO02033-1W	4.7	4.7	4.7	1.5	125	4.2
CO02321-4W	5.0	5.0	5.0	2.3	103	4.6
CO03243-3W	5.0	4.8	4.9	2.5	95	3.6
CO07070-13W	5.0	4.0	4.5	2.5	90	3.8

 Table 3A. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley Chipping study entries - 2017.

Table 3A continued on next page

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

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

²Tubers were stored at 45F for 91 days.

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

Class	Bl Bud End	ackspot Ind	ex ¹	% Weight	Dormancy	Enzymatic
Cione	Duu Ellu	Stelli Ellu	Average	LOSS	(Days)	Drowning
CO10072 7W	5.0	47	4.0	2.2	0.1	5.0
CO10075-7W	5.0	4.7	4.9	2.2	81	5.0
CO100/6-4W	3.4	3.3	3.4	2.1	88	4.6
CO11023-2W	4.9	5.0	5.0	2.1	/0	5.0
CO11023-9W	5.0	4.4	4.7	2.7	98	4.4
CO11037-5W	5.0	5.0	5.0	1.3	105	5.0
CO11047-3W	4.5	4.9	4.7	2.3	87	4.8
CO11047-7W	5.0	3.4	4.2	1.7	87	5.0
CO11079-3W	5.0	4.3	4.7	2.1	52	3.6
CO12235-3W	4.8	4.3	4.6	2.4	101	4.6
CO12235-5W	5.0	4.7	4.9	2.1	101	5.0
CO12235-11W	5.0	4.9	5.0	1.7	101	5.0
CO12236-4W	4.6	4.9	4.8	2.1	87	4.6
CO12248-4W	4.4	3.6	4.0	2.0	98	4.8
CO12293-1W	4.8	5.0	4.9	2.5	98	3.6
CO12428-1W	41	2.6	34	2.4	84	5.0
CO12428-2W	43	37	4.0	2.1	56	5.0
NDC12138C-1W		3.9	4.0	$\frac{2.0}{2.0}$	63	4.6
Atlantic	2.0	3.0	4 .5	2.0	07	4 .0
Chinata	2.0 1.0	5.0	2.7 4.0	1./	7/ 117	5.0
Cilipeta	4.8	5.0	4.9	1.5	11/	4.4
Snowden	5.5	2.4	2.9	1.8	97	4.4

Table 3A (cont'd). Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for San Luis Valley Chipping study entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

Clone	Specific Gravity	7 wks 40F	7 wks/40F +2 wks/60F	7 wks 50F	7 wks/50F +2 wks/60F
AC00206-2W	1 076	35	4 0	2.0	15
AC01144-1W	1.085	3.5	3.5	1.5	2.0
AC01151-5W	1.082	4.5	4.0	3.0	2.5
AC03433-1W	1.078	2.5	3.5	2.0	2.5
AC03452-2W	1.071	3.0	3.5	2.0	3.5
AC05153-1W	1.078	3.5	2.5	2.5	3.0
AC11453-2W	1.097	3.0	3.0	1.5	2.5
AC11453-7W	1.098	4.0	3.0	2.0	3.0
AC11462-1W	1.082	4.0	3.5	2.5	2.0
AC11463-2W	1.072	5.0	4.5	3.5	4.0
AC11467-4W	1.084	3.0	2.0	2.0	1.5
AC11494-6W	1.092	4.0	3.5	2.5	2.5
AC11521-2W	1.083	5.0	4.0	2.5	3.5
AFC5563-5W	1.079	5.0	4.0	2.5	3.5
AFC5687-2W	1.080	5.0	4.5	2.5	3.5
AFC5888-2W	1.074	5.0	4.5	3.0	3.5
CO95051-7W	1.094	3.0	2.5	1.0	1.5
CO02033-1W	1.092	4.0	4.0	2.5	2.5
CO02321-4W	1.081	3.5	3.0	2.5	3.5
CO03243-3W	1.069	3.5	3.5	2.0	2.5
CO07070-13W	1.087	3.0	3.5	1.0	2.0

Table 3B. Chip color¹ after various storage regimes, and specific gravity of San Luis Valley Chipping study entries - 2017.

Table 3B continued on the next page

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

Clone	Specific Gravity	7 wks 40F	7 wks/40F +2 wks/60F	7 wks 50F	7 wks/50F +2 wks/60F
CO10073-7W	1.081	3.0	3.5	1.0	2.0
CO10076-4W	1.077	3.0	3.5	2.5	2.5
CO11023-2W	1.084	3.5	3.5	2.5	2.5
CO11023-9W	1.082	3.0	2.5	1.5	3.0
CO11037-5W	1.083	4.0	2.0	1.5	2.5
CO11047-3W	1.078	3.0	3.5	3.0	3.5
CO11047-7W	1.088	3.0	3.0	2.5	3.0
CO11079-3W	1.087	5.0	3.0	2.5	3.0
CO12235-3W	1.087	4.0	2.5	2.5	2.5
CO12235-5W	1.083	4.5	4.0	1.5	2.0
CO12235-11W	1.071	3.5	2.5	1.0	2.5
CO12236-4W	1.080	4.0	3.0	1.5	2.0
CO12248-4W	1.080	4.0	3.5	1.5	2.0
CO12293-1W	1.076	4.5	3.0	2.5	3.5
CO12428-1W	1.088	3.5	2.0	1.5	2.0
CO12428-2W	1.088	3.5	1.5	1.0	3.0
CO13196-6W	1.086	3.5	3.5	2.0	2.5
CO13232-5W	1.078	3.5	3.5	1.5	1.0
CO13232-10W	1.075	3.0	3.5	1.5	1.0
CO13232-11W	1.077	4.5	3.0	2.0	1.5
CO13232-22W	1.076	4.5	2.5	3.0	1.5
CO13232-25W	1.083	3.0	1.5	1.5	1.5
CO13233-1W	1.092	3.5	2.0	2.0	2.0
CO13265-5W	1.074	5.0	4.5	3.5	3.5
CO13428-3W	1.082	4.5	2.5	3.0	3.0
CO13428-9W	1.082	4.5	2.5	2.0	2.5
FC16795-1W	1.085	4.5	3.0	2.5	3.5
FC16796-3W	1.078	4.5	4.0	2.5	3.0
NDC12138C-1W	1.087	3.0	1.0	1.0	2.0
NDC14437CAB-3W	1.081	3.0	2.5	2.5	3.0
Atlantic	1.095	4.5	4.0	1.0	3.5
Chipeta	1.086	4.5	4.5	3.0	3.5
Snowden	1.093	4.5	3.0	2.5	3.0

Table 3B (cont'd). Chip color¹ after various storage regimes, and specific gravity of San Luis Valley Chipping study entries - 2017.

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

	Yield (Cwt/A)						1
	US #1						Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
CO10085-1RU	387	315	82	281	34	71	1.80/1.23
CO10094-5RU	268	225	84	161	63	38	1.83/1.18
CO11009-2RU	364	325	89	232	93	27	1.62/1.16
CO11009-3RU	417	375	90	135	240	31	1.83/1.10
CO11021-1RU	379	333	87	246	87	39	1.92/1.17
CO11055-1RU	369	337	91	220	117	31	1.68/1.14
CO11110-3RU	335	254	75	208	47	79	1.83/1.17
CO11221-1RU	434	408	94	223	185	23	1.83/1.21
CO11333-1RU	279	240	86	220	19	37	1.70/1.18
CO11377-1RU	420	341	81	306	36	79	1.71/1.29
CO11384-1RU	266	216	81	192	24	50	1.89/1.19
Canela Russet	337	309	92	212	97	23	1.68/1.22
Russet Norkotah ²	222	147	66	126	20	74	1.93/1.18
Mean	355	307	85	212	87	44	1.79/1.19
LSD ³ (0.05)	71	80	13	88	64	46	0.11/0.04

Table 4A. Yield, grade, and tuber shape for Intermediate Yield Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

² Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO10085-1RU	0.0		0.0
CO10094-5RU	2.1	MS*. GC	0.0
CO11009-2RU	3.3	GC*	0.0
CO11009-3RU	2.5	MS*. GC	7.7
CO11021-1RU	2.2	MS. GC*	0.0
CO11055-1RU	0.4	MS*	7.1
CO11110-3RU	0.5	MS*	0.0
CO11221-1RU	0.7	MS*	27.8
CO11333-1RU	1.0	MS*	0.0
CO11377-1RU	0.0		0.0
CO11384-1RU	0.0		0.0
Canela Russet	1.5	MS*	0.0
Russet Norkotah	0.7	MS*	0.0

Table 4B. Grade defects for Intermediate Yield Trial entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO10085-1RU	100	3.0	3.0	3.0	4.0	3.0	35
CO10094-5RU	100	3.5	3.5	33	3.0	2.5	2.0
CO11009-2RU	96	3.0	3.5	2.9	4.0	3.0	3.0
CO11009-3RU	88	2.5	4.0	2.7	4.0	3.0	3.0
CO11021-1RU	96	3.0	3.5	3.2	4.0	3.0	3.0
CO11055-1RU	96	3.5	4.0	3.0	4.0	3.0	2.0
CO11110-3RU	98	3.0	3.5	3.0	3.0	2.0	2.0
CO11221-1RU	96	3.0	4.0	2.9	4.0	3.0	4.0
CO11333-1RU	100	3.5	4.0	2.4	3.0	2.0	1.5
CO11377-1RU	98	3.5	4.0	3.9	3.5	2.0	3.0
CO11384-1RU	96	3.5	4.0	2.3	3.5	3.0	1.5
Canela Russet	98	3.0	3.5	2.3	4.0	4.0	3.5
Russet Norkotah ⁰	72	3.0	3.0	4.1	2.5	2.0	1.0
Mean	97	3.2	3.7	3.0	3.6	2.7	2.5
LSD ⁷ (0.05)	8	1.0	1.0	1.1	0.8	0.4	0.7

Table 4C. Growth characteristics of Intermediate Yield Trial entries - 2017.

¹Emergence 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.

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

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

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

⁶Russet Norkotah % stand data not included in mean or LSD calculation.

⁷LSD=least significant difference.

	Bla	ackspot Inde	\mathbf{x}^{1}	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
CO10085-1RU	5.0	5.0	5.0	2.5	49	4.8
CO10094-5RU	4.6	4.5	4.6	3.0	63	4.2
CO11009-2RU	4.7	5.0	4.9	2.5	56	2.2
CO11009-3RU	5.0	5.0	5.0	1.9	77	3.0
CO11021-1RU	4.7	4.8	4.8	1.9	98	2.8
CO11055-1RU	5.0	4.4	4.7	3.5	35	3.4
CO11110-3RU	5.0	5.0	5.0	2.8	49	3.4
CO11221-1RU	5.0	4.9	5.0	2.2	70	3.6
CO11333-1RU	5.0	4.7	4.9	2.4	84	4.0
CO11377-1RU	4.6	4.6	4.6	2.7	70	3.8
CO11384-1RU	5.0	5.0	5.0	3.0	70	4.8
Canela Russet	5.0	4.5	4.8	2.4	133	4.4
Russet Norkotah	5.0	5.0	5.0	2.3	91	3.4

 Table 4D.
 Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Yield Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color ¹	Fry '	Fry Texture ²		
	Specific	At	3 wks 55F+	At	3 wks 55F+		
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F		
CO10085-1RU	1.095	2	1	3	4		
CO10094-5RU	1.093	2	0	3	4		
CO11009-2RU	1.086	0	0	4	4		
CO11009-3RU	1.100	0	0	4	4		
CO11021-1RU	1.092	3	3	4	4		
CO11055-1RU	1.091	3	2	3	4		
CO11110-3RU	1.075	0	1	3	3		
CO11221-1RU	1.097	1	0	5	4		
CO11333-1RU	1.082	1	1	3	3		
CO11377-1RU	1.091	2	0	3	3		
CO11384-1RU	1.085	2	2	3	3		
Canela Russet	1.102	3	2	4	4		
Russet Norkotah	1.078	3	2	3	3		

Table 4E.Specific gravity, french fry color, and texture for Intermediate Yield
Trial entries - 2017.

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

²Fry 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.

		- 1					
			τ	J S #1			Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
AC08121-1P/Y	383	231	60	224	7	151	1.25/1.19
AFC5633-2P/P	297	189	64	169	20	107	1.42/1.26
CO11138-6W/Y	390	277	71	226	50	103	1.06/1.24
CO11250-1W/Y	482	379	79	269	110	90	1.37/1.23
CO11252-1W/Y	580	410	70	380	30	166	1.10/1.18
CO11266-1W/Y	430	343	79	303	40	84	1.23/1.20
CO11317-1W/Y	480	368	77	299	69	77	1.16/1.31
CO11323-3W/Y	354	205	58	194	11	148	1.03/1.32
CO11324-2W/Y	398	226	57	226	0	171	1.06/1.18
CO11408-3W/Y	441	188	43	188	0	249	1.06/1.19
TC12472-1R/Y	434	368	85	292	76	64	1.06/1.24
Purple Majesty	438	307	70	278	30	120	1.48/1.22
Yukon Gold	367	316	86	175	141	21	1.25/1.23
Mean	407	281	66	241	39	119	1.20/1.23
LSD ² (0.05)	102	168	40	100	77	56	0.07/0.05

Table 5A. Yield, grade, and tuber shape for Intermediate Specialty Yield Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart ³
AC08121-1P/Y	0.2	MS*	0.0
AFC5633-2P/P	0.2	GC*	0.0
CO11138-6W/Y	2.4	GC*	0.0
CO11250-1W/Y	2.6	GR*	0.9
CO11252-1W/Y	0.9	MS*, GR*	0.0
CO11266-1W/Y	0.9	MS, GR*	0.0
CO11317-1W/Y	6.5	GR*	2.8
CO11323-3W/Y	0.5	GR*	0.0
CO11324-2W/Y	0.0		0.0
CO11408-3W/Y	0.6	GR*	0.0
TC12472-1R/Y	0.4	MS*	0.0
Purple Majesty	0.3	MS*	0.0
Yukon Gold	8.2	MS*	0.0

Table 5B. Grade defects for Intermediate Specialty Yield Trial
entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AC08121-1P/Y	94	3.0	40	49	35	3.0	3.0
AFC5633-2P/P	98	2.5	4.0	2.6	3.0	2.0	2.5
CO11138-6W/Y	88	4.0	4.0	3.3	4.0	2.5	1.5
CO11250-1W/Y	100	4.0	4.5	4.3	4.0	3.5	4.0
CO11252-1W/Y	96	4.0	4.0	4.7	4.0	3.0	4.0
CO11266-1W/Y	92	3.0	3.0	3.4	4.0	3.5	4.0
CO11317-1W/Y	100	3.5	3.5	3.7	4.5	3.0	3.5
CO11323-3W/Y	98	3.5	4.5	5.1	3.5	2.0	1.5
CO11324-2W/Y	98	3.5	4.0	5.2	3.5	2.0	3.5
CO11408-3W/Y	100	4.0	4.0	7.2	3.5	2.5	3.5
TC12472-1R/Y	84	3.0	3.5	3.3	5.0	4.0	4.0
Purple Majesty	100	3.5	4.0	4.4	4.0	2.5	2.5
Yukon Gold	100	2.5	4.0	2.2	3.5	2.0	2.5
Mean	96	3.4	3.9	4.1	3.8	2.7	3.1
LSD ⁶ (0.05)	6	NS	NS	1.9	NS	1.0	0.8

Table 5C. Growth characteristics of Intermediate Specialty Yield Trial entries - 2017.

¹Emergence 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.

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

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

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

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

	Bla	ackspot Inde	\mathbf{x}^{1}	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
AC08121-1P/Y	5.0	5.0	5.0	3.5	56	3.0
AFC5633-2P/P				2.7	70	
CO11138-6W/Y	5.0	5.0	5.0	3.2	70	5.0
CO11250-1W/Y	4.7	4.2	4.5	2.5	35	4.2
CO11252-1W/Y	4.6	4.2	4.4	4.3	28	4.8
CO11266-1W/Y	5.0	5.0	5.0	2.5	63	5.0
CO11317-1W/Y	4.1	3.5	3.8	2.3	70	4.0
CO11323-3W/Y	5.0	5.0	5.0	1.9	42	5.0
CO11324-2W/Y	4.6	4.8	4.7	2.7	56	3.4
CO11408-3W/Y	3.4	3.6	3.5	3.6	28	4.4
TC12472-1R/Y	3.0	2.4	2.7	5.1	70	2.4
Purple Majesty				2.1	56	
Yukon Gold	5.0	4.5	4.8	1.4	91	4.2

 Table 5D.
 Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Intermediate Specialty Yield Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color ¹	Fry	Fry Texture ²			
Clone	Specific Gravity	At Harvest	3 wks 55F+ 11 wks 45F	At Harvest	3 wks 55F+ 11 wks 45F			
	-							
AC08121-1P/Y	1.087	3	2	2	2			
AFC5633-2P/P	1.072	-	-	2	2			
CO11138-6W/Y	1.072	3	3	1	1			
CO11250-1W/Y	1.102	2	2	3	3			
CO11252-1W/Y	1.096	2	2	2	2			
CO11266-1W/Y	1.093	0	1	4	4			
CO11317-1W/Y	1.089	2	2	2	2			
CO11323-3W/Y	1.080	1	1	3	3			
CO11324-2W/Y	1.089	2	2	2	2			
CO11408-3W/Y	1.097	0	1	3	3			
TC12472-1R/Y	1.091	3	2	2	2			
Purple Majesty	1.079	-	-	2	2			
Yukon Gold	1.087	3	2	3	3			

 Table 5E.
 Specific gravity, french fry color, and texture for Intermediate Specialty

 Yield Trial entries - 2017.

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

²Fry 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.

				1			
			U	Tuber Shape ¹			
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
AC05039-2RU	320	273	85	229	44	44	1 71/1 14
CO07015-4RU	307	219	71	210	9	86	1.65/1.18
CO07049-1RU	414	339	82	285	55	72	1.70/1.24
CO10087-4RU	316	297	94	189	108	14	1.83/1.21
CO10091-1RU	366	296	80	266	30	68	1.63/1.25
Canela Russet	357	335	94	230	105	21	1.68/1.23
Russet Norkotah ²	197	155	77	114	41	40	2.01/1.17
Mean	347	293	84	235	58	51	1.75/1.21
LSD ³ (0.05)	30	43	9	37	32	27	0.08/0.05

Table 6A. Yield, grade, and tuber shape for Advanced Yield Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

² Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
AC05039-2RU CO07015-4RU CO07049-1RU CO10087-4RU CO10091-1RU Canela Russet Russet Norkotah	$ \begin{array}{c} 1.0\\ 0.5\\ 0.5\\ 1.4\\ 0.5\\ 0.2\\ 1.5\\ \end{array} $	MS* MS*, GC* GC* MS*, GC* GC* MS* MS* SG	$\begin{array}{c} 0.0 \\ 0.0 \\ 0.0 \\ 3.9 \\ 0.0 \\ 0.0 \\ 0.0 \end{array}$

Table 6B. Grade defects for Advanced Yield Trial entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type	Vine Maturity ⁵
AC05039-2RU	98	33	4 0	3.8	3.0	2.0	23
CO07015-4RU	97	3.3	3.8	4.3	3.3	3.0	2.0
CO07049-1RU	97	2.8	3.8	3.1	3.8	3.0	3.0
CO10087-4RU	99	4.0	4.3	2.5	3.5	2.3	2.5
CO10091-1RU	98	3.5	3.0	2.7	3.5	3.0	3.3
Canela Russet	98	2.5	2.8	2.3	4.0	3.3	3.5
Russet Norkotah ⁰	71	2.3	2.5	2.9	2.5	3.0	1.8
Mean	98	3.1	3.4	3.1	3.4	2.8	2.6
LSD ⁷ (0.05)	NS	0.8	0.7	0.5	0.7	0.4	0.5

Table 6C. Growth characteristics of Advanced Yield Trial entries - 2017.

¹Emergence 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.

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

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

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

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference; NS=not significant.

	Blackspot Index ¹			% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
AC05039-2RU	5.0	5.0	5.0	2.1	91	5.0
CO07015-4RU	5.0	5.0	5.0	2.0	84	4.4
CO07049-1RU	4.5	4.7	4.6	3.3	84	3.8
CO10087-4RU	5.0	4.8	4.9	3.7	91	4.0
CO10091-1RU	5.0	5.0	5.0	2.2	84	4.6
Canela Russet	4.7	3.9	4.3	2.5	140	4.6
Russet Norkotah	5.0	4.3	4.7	2.0	84	3.2

 Table 6D.
 Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Yield Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry Color ¹		Fry	Fry Texture ²	
Clone	Specific Gravity	At Harvest	3 wks 55F+ 11 wks 45F	At Harvest	3 wks 55F+ 11 wks 45F	
AC05039-2RU	1.089	2	2	3	3	
CO07015-4RU	1.082	2	1	3	3	
CO07049-1RU	1.087	1	2	3	3	
CO10087-4RU	1.092	2	1	3	4	
CO10091-1RU	1.090	1	0	4	4	
Canela Russet	1.106	3	1	4	4	
Russet Norkotah	1.078	3	3	2	3	

Table 6E.	Specific gravity,	french fry color,	and texture f	for Advanced	Yield '	Trial
	entries - 2017.					

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

²Fry 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.

	Total		Tuber Length			Tuber Shape ¹	
Clone	(Cwt/A)	<2"	2-4"	4-6"	>6"	L:W/W:T	
CO08029-1RF/R CO08062-3PF/P Banana	391 355 337	22 24 25	232 203 199	115 104 72	18 17 15	2.39/1.06 2.32/1.08 2.56/1.11	
Mean	361	23	211	98	16	2.42/1.09	
LSD ² (0.05)	NS	NS	NS	33	NS	0.18/0.04	

Table 7A. Yield, grade, and tuber shape for Advanced Fingerling Yield Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15= round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference; NS=not significant.

Clone	% External Defects ¹	External Defects Observed ²	% Hollow Heart ³
CO08029-1RF/R	1.0	MS, GR*	$0.0 \\ 0.0 \\ 0.0$
CO08062-3PF/P	2.2	MS*, SG	
Banana	7.7	MS, SG, GR*	

Table 7B. Grade defects for Advanced Fingerling Yield Trial
entries - 2017.

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

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

³Percent hollow heart calculated as follows: (Weight of tubers >10 ounces with defects/total sample weight) x 100.
Clone	%	Emergence	Vine	Stems/	Vine	Vine	Vine
	Stand	Uniformity ¹	Vigor ²	Plant	Size ³	Type ⁴	Maturity ⁵
CO08029-1RF/R	98	2.5	3.0	4.0	4.8	3.0	4.0
CO08062-3PF/P	99	2.5	3.0	2.7	4.0	3.0	3.5
Banana	99	3.5	4.0	4.0	4.5	3.0	3.3
Mean	99	2.8	3.3	3.6	4.4	3.0	3.6
LSD6 (0.05)	NS	1.0	NS	NS	0.6	NS	NS

Table 7C. Growth characteristics of Advanced Fingerling Yield Trial entries - 2017.

¹Emergence 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.

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

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

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

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

				%				
	Bl	Blackspot Index ¹			Dormancy	Enzymatic		
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴		
CO08029-1RF/R				3.4	98			
CO08062-3PF/P				2.6	56			
Banana	4.9	4.8	4.9	3.1	56	5.0		

Table 7D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Fingerling Yield Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color ¹	Fry '	Fry Texture ²		
Clone	Specific Gravity	At Harvest	3 wks 55F+ 11 wks 45F	At Harvest	3 wks 55F+ 11 wks 45F		
CO08029-1RF/R CO08062-3PF/P	1.089 1.075	-	-	1	32		
Banana	1.092	3	3	3	4		

Table 7E. Specific gravity, french fry color, and texture for Advanced Fingerling YieldTrial entries - 2017.

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

²Fry 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.

			1				
			J	JS #1			Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
AOTX05043-1RU	322	293	91	198	95	26	1.73/1.17
CO09036-2RU	359	277	76	238	39	78	2.04/1.12
CO09076-3RU	358	303	85	166	137	40	1.96/1.13
CO09165-6W	311	248	80	227	21	61	1.98/1.15
CO09205-2RU	314	278	89	242	35	33	1.90/1.15
COTX05095-2RU	327	282	86	224	58	41	1.60/1.19
Canela Russet	281	248	88	191	56	27	1.69/1.19
Russet Norkotah ²	193	126	65	113	14	62	2.00/1.17
Mean	325	276	85	212	63	44	1.87/1.16
LSD ³ (0.05)	43	50	7	45	40	18	0.11/0.05

Table 8A . Yield, grade, and tuber shape for Southwest Regional Russet Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart ³
AOTX050/3 1PU	1 1	MS*	0.0
$CO00036_2 RU$	1.1	MS*	0.0
C009030-2RU	1.1	MS* CC CD	1.1
C009076-3RU	4.2	MS*, GC, GR	0.5
CO09165-6W	0.7	MS, GR*	0.0
CO09205-2RU	1.0	MS*	0.0
COTX05095-2RU	1.3	MS*, GR*	1.1
Canela Russet	6.9	MS, GC*, GR	0.0
Russet Norkotah	2.5	MS*, SG	0.5

Table 8B. Grade defects for Southwest Regional Russet Trial
entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AOTX05043-1RU	96	2.8	3.3	2.4	3.5	3.0	2.8
CO09036-2RU	97	3.0	3.8	2.9	4.3	3.0	3.0
CO09076-3RU	96	3.0	3.3	2.4	3.8	3.0	2.5
CO09165-6W	100	3.0	2.8	2.8	4.0	2.5	2.0
CO09205-2RU	100	3.3	2.8	2.4	2.8	3.0	2.3
COTX05095-2RU	99	3.5	3.8	2.9	3.0	3.0	2.8
Canela Russet	93	2.5	2.3	2.6	3.5	3.8	3.5
Russet Norkotah ⁰	61	2.5	2.5	3.5	2.8	2.8	1.8
Mean	97	2.9	3.0	2.7	3.4	3.0	2.6
LSD ⁷ (0.05)	7	0.7	0.7	0.6	0.7	NS	0.5

Table 8C. Growth characteristics of Southwest Regional Russet Trial entries - 2017.

¹Emergence 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.

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

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

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

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference; NS=not significant.

	Bl	ackspot Ind	ex ¹	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
	5.0	2.0	4.5	0.1	00	2.4
A01X05043-1RU	5.0	3.9	4.5	2.1	98	3.4
CO09036-2RU	4.9	4.4	4.7	1.9	84	4.0
CO09076-3RU	5.0	5.0	5.0	2.8	70	4.2
CO09165-6W	5.0	4.9	5.0	3.0	56	4.4
CO09205-2RU	5.0	4.8	4.9	1.8	35	4.0
COTX05095-2RU	4.8	4.2	4.5	2.1	70	3.6
Canela Russet	5.0	4.4	4.7	2.3	140	4.4
Russet Norkotah	5.0	5.0	5.0	2.1	98	3.6

 Table 8D.
 Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Russet Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color ¹	Fry Texture ²		
	Specific	At	3 wks 55F+	At	3 wks 55F+	
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F	
AOTX05043-1RU	1 089	2	1	2	2	
CO09036-2RU	1.009	1	0	5	$\frac{2}{4}$	
CO09076-3RU	1.084	1	1	2	2	
CO09165-6W	1.074	1	1	2	2	
CO09205-2RU	1.075	0	2	3	3	
COTX05095-2RU	1.083	2	3	4	4	
Canela Russet	1.104	2	2	4	4	
Russet Norkotah	1.079	2	3	3	3	

Table 8E.Specific gravity, french fry color, and texture for Southwest Regional
Russet Trial entries - 2017.

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

²Fry 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.

	_		1				
	US #1						Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
CO08037-2P/P	296	235	79	206	29	55	1.43/1.07
CO09079-5PW/Y	279	68	24	65	3	209	1.33/1.22
CO09127-3W/Y	314	192	60	172	20	120	1.06/1.21
CO09128-3W/Y	250	34	13	34	0	216	1.21/1.15
CO09128-5W/Y	299	110	36	109	1	187	1.00/1.18
CO09218-4W/Y	358	257	71	241	16	100	1.14/1.32
Purple Majesty	296	181	62	170	11	109	1.34/1.16
Yukon Gold	283	240	85	192	48	38	1.21/1.20
Mean	297	165	54	149	16	129	1.22/1.19
LSD ² (0.05)	52	50	12	48	14	44	0.09/0.05

Table 9A. Yield, grade, and tuber shape for Southwest Regional Specialty Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart ³
C009027 2D/D	0.1	CC*	0.5
C008037-2P/P	2.1	GC*	0.5
CO09079-5PW/Y	0.4	MS*	0.0
CO09127-3W/Y	0.9	MS*, GC*	0.0
CO09128-3W/Y	0.2	GR*	0.0
CO09128-5W/Y	0.4	MS*, GR	0.0
CO09218-4W/Y	0.6	GC*, GR*	0.0
Purple Majesty	1.9	MS*, SG	0.0
Yukon Gold	1.9	MS*, SG, GC, GR	0.0

Table 9B. Grade defects for Southwest Regional Specialty Trial
entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
CO08037-2P/P	99	2.5	2.3	3.0	3.0	3.3	3.5
CO09079-5PW/Y	90	2.8	2.3	3.3	3.3	3.0	2.5
CO09127-3W/Y	98	3.3	3.8	4.7	3.5	2.0	1.5
CO09128-3W/Y	82	2.8	3.3	5.0	3.0	2.0	2.0
CO09128-5W/Y	99	3.8	4.3	5.3	3.5	2.0	1.5
CO09218-4W/Y	86	2.3	2.5	3.9	3.8	3.0	4.0
Purple Majesty	87	2.5	3.3	3.3	3.8	3.0	2.3
Yukon Gold	87	3.0	3.8	2.4	3.0	3.0	2.3
Mean	91	2.8	3.2	3.8	3.3	2.7	2.4
LSD6 (0.05)	NS	0.7	0.9	1.0	0.5	0.3	0.7

Table 9C. Growth characteristics of Southwest Regional Specialty Trial entries - 2017.

¹Emergence 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.

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

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

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

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

Clone	Bl Bud End	ackspot Ind Stem End	ex ¹ Average	% Weight Loss ²	Dormancy (Days) ³	Enzymatic Browning
C008037-2P/P				5 5	70	
CO09079-5PW/Y	5.0	5.0	5.0	2.1	105	48
CO09127-3W/Y	5.0	5.0	5.0	3.3	56	5.0
CO09128-3W/Y	5.0	5.0	5.0	2.1	70	4.0
CO09128-5W/Y	4.1	3.2	3.7	2.1	42	4.0
CO09218-4W/Y	3.4	3.4	3.4	2.4	56	3.2
Purple Majesty				2.1	56	
Yukon Gold	5.0	5.0	5.0	1.2	91	4.8

 Table 9D.
 Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Southwest Regional Specialty Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color ¹	Fry T	Fry Texture ²			
	Specific	At	3 wks 55F+	At	3 wks 55F+			
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F			
CO08037-2P/P	1.087	-	-	1	1			
CO09079-5PW/Y	1.074	4	3	3	3			
CO09127-3W/Y	1.077	2	1	3	2			
CO09128-3W/Y	1.075	3	1	2	1			
CO09128-5W/Y	1.088	1	1	1	2			
CO09218-4W/Y	1.079	2	2	2	2			
Purple Majesty	1.086	-	-	2	2			
Yukon Gold	1.087	2	2	3	3			

Table 9E.	Specific gravity, french fry color, and texture for Southwest Regional
	Specialty Trial entries - 2017.

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

		1					
			l	JS #1			Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
A03141-6	366	342	93	202	139	17	1.69/1.18
A06030-23	310	268	86	240	28	38	1 81/1 12
A07061-6	450	404	90	320	84	34	1.68/1.16
A08009-2TE	390	337	86	270	67	45	1.97/1.18
A08433-4VR	437	396	91	279	117	32	1.61/1.24
AO03123-2	351	327	93	250	76	23	1.87/1.15
AO06191-1	338	312	92	234	78	22	1.75/1.19
AOR06070-1KF	425	388	91	212	176	25	1.81/1.23
AOR07781-5	323	280	87	202	78	33	1.81/1.24
CO08065-2RU	331	295	89	177	118	18	1.66/1.23
CO08155-2RU/Y	335	294	87	235	59	36	1.79/1.22
CO08231-1RU	357	327	92	209	118	24	1.72/1.19
COTX09022-3RuRE/Y	388	347	90	237	110	24	1.25/1.29
TX08352-5Ru	307	233	75	219	14	69	1.82/1.18
Canela Russet	297	266	89	196	71	26	1.72/1.24
Ranger Russet	305	267	85	123	143	28	2.01/1.25
Russet Burbank 2	351	256	73	199	56	76	1.85/1.31
Russet Norkotah ²	156	109	69	86	23	45	1.93/1.22
Shepody	288	151	52	132	19	88	1.99/1.31
Mean	353	305	86	219	86	37	1.80/1.22
LSD ³ (0.05)	58	61	7	46	48	13	0.14/0.08

Table 10A. Yield, grade, and tuber shape for Western Regional Main Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²Russet Norkotah yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart ³
A03141-6	1.8	MS*, SG	0.0
A06030-23	1.5	MS, SG, GC*	0.4
A07061-6	2.5	MS*, GR*	0.0
A08009-2TE	2.1	MS*, SG, GR	0.0
A08433-4VR	2.1	MS, GC*, GR	0.0
AO03123-2	0.3	MS*	0.0
AO06191-1	0.8	MS*, GR*	0.0
AOR06070-1KF	2.7	MS*, SG, GR	1.2
AOR07781-5	3.2	MS*, SG, GC, GR	2.2
CO08065-2RU	5.4	MS, GC*, GR	1.2
CO08155-2RU/Y	1.2	MS*, GR	0.0
CO08231-1RU	1.5	MS, GC, GR*	0.7
COTX09022-3RuRE/Y	4.1	MS, GC*, GR	0.0
TX08352-5Ru	1.6	MS*	0.0
Canela Russet	1.8	MS, GC, GR*	0.0
Ranger Russet	3.9	MS*, SG, GC	0.0
Russet Burbank	5.6	MS, SG*, GC, GR	0.3
Russet Norkotah	1.6	MS*	0.0
Shepody	16.7	MS, SG*, GR	0.0

Table 10B. Grade defects for Western Regional Main Trial entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
A03141_6	99	33	35	32	45	4.0	3.0
A06030-23	100	3.5	3.0	3.2	33	4.0 3.0	2.5
A07061-6	100	3.0	3.0 4.0	27	3.8	3.0	3.8
A08009-2TE	100	3.0	3.0	3.0	3.5	3.0	3.0
A08433-4VR	99	3.0	33	2.0	4 5	4.0	4.0
A003123-2	100	2.8	3.3	2.6	3.8	3.5	3.5
A006191-1	97	3.3	2.5	2.0	4.0	4.0	3.5
AOR06070-1KF	100	3.0	3.8	2.9	4.0	3.5	3.8
AOR07781-5	98	3.5	3.3	3.7	4.0	3.0	3.0
CO08065-2RU	99	3.5	3.3	2.4	3.8	3.0	3.3
CO08155-2RU/Y	98	3.5	4.5	2.4	3.0	3.3	3.0
CO08231-1RU	99	2.8	3.0	2.9	4.0	4.0	4.0
COTX09022-3RuRE/Y	98	4.0	4.5	4.0	3.5	3.0	2.8
TX08352-5Ru	99	3.0	3.0	3.1	4.0	2.5	1.5
Canela Russet	99	2.5	2.5	2.5	4.0	3.3	3.5
Ranger Russet	100	3.0	3.3	2.3	3.8	3.0	3.0
Russet Burbank	70	2.8	3.8	3.5	3.8	3.5	3.3
Russet Norkotah ^o	53	2.3	2.0	3.4	2.3	3.0	1.8
Shepody	94	2.5	3.0	2.8	4.0	3.0	3.0
Mean	97	3.1	3.3	2.8	3.8	3.3	3.2
LSD ⁷ (0.05)	8	0.7	0.7	0.6	0.6	0.5	0.5

Table 10C. Growth characteristics of Western Regional Main Trial entries - 2017.

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

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

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

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

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

⁶Russet Norkotah % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference.

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	Bl	ackspot Inde	ex ¹	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
A03141-6	5.0	5.0	5.0	2.3	112	4.0
A06030-23	4.6	4.0	4.3	1.8	91	2.0
A07061-6	5.0	5.0	5.0	2.4	42	4.4
A08009-2TE	5.0	3.7	4.4	2.3	49	2.8
A08433-4VR	5.0	4.9	5.0	1.8	84	4.6
AO03123-2	5.0	5.0	5.0	2.5	91	4.8
AO06191-1	5.0	4.9	5.0	2.4	119	3.6
AOR06070-1KF	5.0	4.6	4.8	3.3	70	4.2
AOR07781-5	5.0	4.4	4.7	2.2	56	3.2
CO08065-2RU	4.7	4.0	4.4	5.2	84	3.4
CO08155-2RU/Y	5.0	5.0	5.0	2.2	63	4.4
CO08231-1RU	4.8	4.6	4.7	2.5	63	4.2
COTX09022-3RuRE/Y	4.5	3.3	3.9	3.1	49	4.0
TX08352-5Ru	5.0	4.4	4.7	1.6	98	4.0
Canela Russet	5.0	5.0	5.0	2.8	133	4.8
Ranger Russet	5.0	4.1	4.6	1.9	63	3.0
Russet Burbank	4.6	3.8	4.2	1.4	63	2.8
Russet Norkotah	5.0	5.0	5.0	2.3	119	3.2
Shepody	5.0	5.0	5.0	2.1	63	3.8

Table 10D. Blackspot, storage weight loss, dormancy, and enzymatic browning
evaluations for Western Regional Main Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry Color ¹		Fry ′	Texture ²
	Specific	At	3 wks 55F+	At	3 wks 55F+
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F
A03141-6	1.103	2	0	4	4
A06030-23	1.094	$\overline{0}$	Ő	4	4
A07061-6	1.089	1	1	3	3
A08009-2TE	1.095	3	3	3	3
A08433-4VR	1.096	3	2	3	3
AO03123-2	1.092	1	1	4	4
AO06191-1	1.105	1	1	4	4
AOR06070-1KF	1.112	0	0	5	5
AOR07781-5	1.099	0	0	5	5
CO08065-2RU	1.110	0	0	5	5
CO08155-2RU/Y	1.094	0	1	4	4
CO08231-1RU	1.097	0	1	4	4
COTX09022-3RuRE/Y	1.094	1	1	4	4
TX08352-5Ru	1.076	3	3	3	3
Canela Russet	1.101	2	2	4	4
Ranger Russet	1.092	2	1	3	3
Russet Burbank	1.091	2	2	3	3
Russet Norkotah	1.077	2	3	2	2
Shepody	1.093	3	3	3	3

 Table 10E.
 Specific gravity, french fry color, and texture for Western Regional Main Trial entries - 2017.

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

²Fry 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.

		- 1					
	US #1						Tuber Shape ¹
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
A06336-2Y	302	244	80	230	13	58	1.44/1.22
A06336-5Y	312	142	45	135	6	169	1.06/1.25
AC03534-2R/Y	453	333	73	268	65	119	1.09/1.26
AC10376-1W/Y	413	295	71	262	33	114	1.25/1.15
CO05035-1PW/Y	486	443	91	217	226	34	1.74/1.25
CO07131-1W/Y	50	0	0	0	0	50	1.02/1.06
CO10018-11W/Y	412	255	61	233	23	137	1.07/1.24
CO10064-1W/Y	384	275	71	227	48	101	1.12/1.20
CO10097-2W/Y	403	250	61	240	10	153	1.15/1.14
CO10098-2W/Y	363	197	54	182	15	161	1.18/1.23
CO10098-4W/Y	294	75	25	75	0	217	1.02/1.28
CO10098-5W/Y	283	105	36	105	0	177	1.17/1.24
COTX00104-6R	319	284	89	121	163	7	1.27/1.14
PORTX03PG25-2R/R	327	275	84	234	41	45	2.00/1.07
COA07365-4RY	336	248	74	200	48	85	1.15/1.14
NDTX059759-3RY/Y Pinto	372	324	87	183	140	35	1.47/1.29
Purple Majesty	297	198	67	175	23	90	1.43/1.19
Yukon Gold	349	300	87	185	115	30	1.24/1.19
Mean	342	236	64	182	54	99	1.23/1.20
LSD ² (0.05)	61	56	10	54	27	29	0.09/0.08

Table 11A. Yield, grade, and tuber shape for Advanced and Western Regional Specialty Specialty Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart
A06336-2Y	0.0		0.0
A06336-5Y	0.4	MS*	0.4
AC03534-2R/Y	0.1	GR*	0.0
AC10376-1W/Y	0.9	GR*	0.2
CO05035-1PW/Y	2.0	SG, GC, GR*	0.0
CO07131-1W/Y	0.0		0.0
CO10018-11W/Y	4.6	MS, SG, GC*, GR	0.0
CO10064-1W/Y	1.9	MS, GR*	0.0
CO10097-2W/Y	0.1	GR*	0.0
CO10098-2W/Y	1.4	MS, GC*, GR	0.5
CO10098-4W/Y	0.6	MS*, GR*	0.0
CO10098-5W/Y	0.6	MS, GR*	0.0
COTX00104-6R	6.0	MS*, SG*, GC*, GR*	8.0
PORTX03PG25-2R/R	1.8	MS. GC*	0.0
COA07365-4RY	0.8	MS [*] . GR	0.0
NDTX059759-3RY/Y Pinto	3.5	MS. GC. GR*	0.0
Purple Maiesty	3.2	MS*	0.4
Yukon Gold	1.6	GC*, GR	0.0

Table 11B. Grade defects for Advanced and Western RegionalSpecialty Trial entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity ¹	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
A06336-2Y	97	35	43	32	3.0	33	15
A06336-5Y	99	3.3	3.3	3.5	3.0	2.5	2.5
AC03534-2R/Y	94	3.0	3.0	3.7	3.8	3.0	3.5
AC10376-1W/Y	96	3.0	3.3	2.6	4.0	3.3	3.3
CO05035-1PW/Y	96	2.0	3.5	3.7	4.0	3.0	4.0
CO07131-1W/Y	60	3.0	1.0	3.3	1.8	3.0	2.8
CO10018-11W/Y	100	3.3	4.0	4.8	4.0	2.5	3.5
CO10064-1W/Y	99	3.3	4.0	3.9	4.0	3.0	3.0
CO10097-2W/Y	98	3.3	3.5	5.2	4.0	3.0	2.5
CO10098-2W/Y	100	2.8	3.3	5.0	4.0	3.0	3.8
CO10098-4W/Y	98	3.0	4.0	6.3	3.5	2.3	3.0
CO10098-5W/Y	95	3.0	4.0	4.7	3.5	2.0	2.5
COTX00104-6R	97	2.8	2.0	2.4	3.0	4.0	3.5
PORTX03PG25-2R/R	100	3.0	3.3	6.1	4.0	2.5	2.5
COA07365-4RY	100	3.5	4.0	3.6	3.5	2.8	3.0
NDTX059759-3RY/Y Pinto	93	3.3	3.5	2.1	4.3	3.3	3.0
Purple Majesty	77	2.5	2.5	2.7	3.5	3.0	2.5
Yukon Gold	91	3.5	4.0	2.4	3.5	3.0	2.3
Mean	94	3.0	3.3	3.8	3.6	2.9	2.9
$LSD^{6}(0.05)$	11	0.6	0.6	0.9	0.5	0.5	0.5

Table 11C. Growth characteristics of Advanced and Western Regional Specialty Trial entries - 2017.

¹Emergence 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.

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

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

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

⁶LSD=least significant difference.

	Bl	ackspot Ind	ex ¹	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
A06336-2Y	5.0	5.0	5.0	1.7	77	4.0
A06336-5Y	5.0	5.0	5.0	2.2	70	4.8
AC03534-2R/Y	5.0	5.0	5.0	3.7	98	3.6
AC10376-1W/Y	5.0	4.5	4.8	2.5	119	2.8
CO05035-1PW/Y	4.9	4.8	4.9	2.7	35	3.6
CO07131-1W/Y	5.0	4.6	4.8	9.0	14	3.2
CO10018-11W/Y	4.6	4.2	4.4	3.2	56	3.6
CO10064-1W/Y	4.5	2.9	3.7	1.9	91	2.6
CO10097-2W/Y	4.5	4.6	4.6	3.4	105	4.4
CO10098-2W/Y	4.7	3.9	4.3	3.3	63	3.2
CO10098-4W/Y	2.5	3.0	2.8	3.1	35	2.8
CO10098-5W/Y	4.5	3.2	3.9	3.7	56	3.6
COTX00104-6R	4.7	4.3	4.5	2.9	63	1.8
PORTX03PG25-2R/R				5.6	63	
COA07365-4RY	5.0	5.0	5.0	5.1	91	4.4
NDTX059759-3RY/Y Pinto	4.6	4.3	4.5	2.2	70	2.4
Purple Majesty				2.1	63	
Yukon Gold	5.0	4.7	4.9	1.3	98	5.0

 Table 11D. Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Specialty Trial entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

		Fry	Color^1	Fry '	Texture ²
	Specific	At	3 wks 55F+	At	3 wks 55F+
Clone	Gravity	Harvest	11 wks 45F	Harvest	11 wks 45F
A06336-2Y	1.077	1	2	2	3
A06336-5Y	1.075	3	2	2	2
AC03534-2R/Y	1.076	4	3	2	2
AC10376-1W/Y	1.089	3	3	2	3
CO05035-1PW/Y	1.094	3	2	3	3
CO07131-1W/Y	1.073	2	3	1	1
CO10018-11W/Y	1.099	1	0	4	4
CO10064-1W/Y	1.101	0	1	4	4
CO10097-2W/Y	1.081	1	1	3	3
CO10098-2W/Y	1.103	2	1	5	5
CO10098-4W/Y	1.100	1	0	3	3
CO10098-5W/Y	1.107	0	0	4	5
COTX00104-6R	1.080	3	3	2	3
PORTX03PG25-2R/R	1.068	-	-	2	2
COA07365-4RY	1.086	2	2	3	3
NDTX059759-3RY/Y Pinto	1.085	3	3	2	3
Purple Majesty	1.084	-	-	3	3
Yukon Gold	1.093	1	2	3	3

 Table 11E.
 Specific gravity, french fry color, and texture for Advanced and Western Regional Speciality Trial entries - 2017.

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

²Fry 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.

		1					
			Tuber Shape ¹				
Clone	Total	Total	%	4-10 oz	>10 oz	<4 oz	L:W/W:T
AC01144-1W	422	343	81	288	54	76	0.94/1.20
AC11463-2W	390	329	85	160	169	16	1.13/1.25
AFC5687-2W	336	307	91	190	117	13	1.10/1.20
AFC5563-5W	313	255	81	241	14	58	1.09/1.22
AOR09034-3	386	331	86	268	63	44	0.99/1.19
CO10073-7W	314	248	78	227	20	61	1.06/1.25
CO10076-4W	351	251	72	251	0	95	0.95/1.25
CO11023-2W	315	246	78	213	33	58	1.01/1.27
CO11023-9W	298	250	84	226	24	44	1.04/1.19
CO11037-5W	314	274	87	207	67	35	1.00/1.17
CO11048-8W	332	246	73	154	92	18	1.21/1.21
CO11074-1W	299	245	82	167	78	17	0.89/1.20
CO11087-1W	231	184	79	175	9	43	1.11/1.20
NDA081453CAB-2C	300	244	81	178	66	54	1.00/1.23
NDTX081648CB-13W	366	341	93	258	83	24	1.02/1.29
OR09256-2	302	232	76	227	5	70	1.12/1.15
Atlantic ²	172	149	86	97	51	21	1.04/1.24
Chipeta	437	393	90	256	137	26	1.28/1.10
Snowden	325	271	83	249	23	53	1.00/1.26
Mean	335	277	82	219	59	45	1.05/1.22
LSD ³ (0.05)	55	59	7	47	35	17	0.07/0.06

Table 12A. Yield, grade, and tuber shape for Advanced and Western Regional Chipping Trial entries - 2017.

¹L=length, W=width, T=thickness. For L:W <1.00=compressed; 1.00-1.15=round; 1.16-1.55=oval; 1.56-1.95=oblong; 1.96-2.35=long; >2.35=very long. For W:T, the larger the value, the flatter the tuber.

²Atlantic yield data not included in mean or LSD calculations.

³LSD=least significant difference.

Clone	% External Defects	External Defects Observed ²	% Hollow Heart
AC01144-1W	0.8	MS, GR*	0.0
AC11463-2W	11.1	MS, GC*, GR	3.0
AFC5687-2W	4.6	MS, GR*	0.0
AFC5563-5W	0.0		0.0
AOR09034-3	2.7	GC*, GR	0.0
CO10073-7W	1.6	GC*, GR	0.0
CO10076-4W	1.2	MS*, GC	0.0
CO11023-2W	3.4	MS, GC, GR*	0.0
CO11023-9W	1.4	MS, GR*	0.0
CO11037-5W	1.4	MS, GC*, GR	0.0
CO11048-8W	21.4	GC*, GR	0.6
CO11074-1W	12.4	GC*, GR	2.0
CO11087-1W	2.2	GC*, GR*	0.0
NDA081453CAB-2C	0.7	MS, GC*, GR	0.0
NDTX081648CB-13W	0.3	MS*	0.0
OR09256-2	0.0		0.0
Atlantic	1.6	GC*, GR	6.3
Chipeta	4.3	MS, GC*, GR	0.6
Snowden	0.2	MS*	0.0

Table 12B. Grade defects for Advanced and Western Regional
Chipping Trial entries - 2017.

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

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

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

Clone	% Stand	Emergence Uniformity	Vine Vigor ²	Stems/ Plant	Vine Size ³	Vine Type ⁴	Vine Maturity ⁵
AC01144-1W	94	38	40	29	38	3.0	3.0
AC11463-2W	100	3.3	4.0	2.3	4.5	3.0	4.0
AFC5687-2W	93	3.0	3.0	1.6	4.0	3.8	4.0
AFC5563-5W	98	3.5	3.3	3.1	3.5	3.3	3.0
AOR09034-3	100	3.8	4.0	2.9	4.0	3.0	3.0
CO10073-7W	96	3.3	3.5	3.7	3.0	2.8	3.0
CO10076-4W	98	3.5	3.3	3.5	3.5	3.0	3.0
CO11023-2W	98	3.0	3.3	2.8	3.5	3.0	3.0
CO11023-9W	93	3.0	2.8	2.1	3.8	3.3	4.0
CO11037-5W	98	3.3	3.5	3.4	3.8	3.0	3.0
CO11048-8W	96	3.0	3.0	2.2	3.8	3.3	4.0
CO11074-1W	98	3.3	2.0	3.2	3.8	3.3	4.0
CO11087-1W	94	2.5	2.0	1.8	3.0	3.8	3.3
NDA081453CAB-2C	100	2.8	3.8	3.2	4.0	2.5	2.8
NDTX081648CB-13W	100	3.5	4.0	4.0	4.0	3.0	3.0
OR09256-2	100	3.5	4.0	2.7	4.0	2.3	2.5
Atlantic	63	2.0	3.3	2.6	3.0	3.0	3.0
Chipeta	100	3.5	4.3	3.3	5.0	3.5	3.8
Snowden	97	3.8	4.0	4.2	4.0	3.3	2.8
Mean	97	3.2	3.4	2.9	3.8	3.1	3.3
LSD ⁷ (0.05)	5	0.7	0.6	0.6	0.5	0.6	0.4

Table 12C. Growth characteristics of Advanced and Western Regional Chipping Trial entries - 2017.

¹Emergence 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.

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

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

⁶Atlantic % stand data not included in mean or LSD calculations.

⁷LSD=least significant difference.

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

	Bl	ackspot Inde	ex ¹	% Weight	Dormancy	Enzymatic
Clone	Bud End	Stem End	Average	Loss ²	(Days) ³	Browning ⁴
AC01144-1W	4.3	4.2	4.3	1.8	70	2.2
AC11463-2W	3.4	2.8	3.1	2.5	84	1.6
AFC5687-2W	3.6	2.6	3.1	3.8	140	2.4
AFC5563-5W	4.1	3.3	3.7	3.1	35	3.8
AOR09034-3	3.8	3.3	3.6	3.2	70	3.4
CO10073-7W	4.3	2.8	3.6	4.1	70	2.8
CO10076-4W	4.1	2.2	3.2	3.0	84	2.2
CO11023-2W	4.2	2.9	3.6	2.9	56	3.2
CO11023-9W	4.4	2.8	3.6	3.8	70	4.0
CO11037-5W	4.9	4.0	4.5	1.7	98	3.0
CO11048-8W	3.6	2.3	3.0	2.4	70	1.2
CO11074-1W	4.4	2.9	3.7	2.4	70	1.2
CO11087-1W	3.7	3.3	3.5	2.9	133	2.8
NDA081453CAB-2C	5.0	4.5	4.8	3.1	91	4.6
NDTX081648CB-13W	4.0	2.8	3.4	2.9	70	2.6
OR09256-2	4.5	2.8	3.7	2.5	98	2.6
Atlantic	3.9	2.8	3.4	4.5	70	4.6
Chipeta	4.6	4.0	4.3	1.8	91	2.4
Snowden	4.5	2.2	3.4	2.7	77	2.0

Table 12D. Blackspot, storage weight loss, dormancy, and enzymatic browning
evaluations for Advanced and Western Regional Chipping Trial
entries - 2017.

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

²Tubers were stored at 45F for 91 days.

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

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

Clone	Specific Gravity	7 wks 40F	7 wks/40F +2 wks/60F	7 wks 50F	7 wks/50F +2 wks/60F
AC01144-1W	1.093	4.0	3.0	3.0	2.5
AC11463-2W	1.091	5.0	4.5	4.0	4.5
AFC5687-2W	1.099	3.5	3.5	1.5	1.5
AFC5563-5W	1.094	4.5	3.5	2.0	2.0
AOR09034-3	1.100	4.5	4.0	2.5	2.5
CO10073-7W	1.090	3.5	3.5	1.0	3.5
CO10076-4W	1.087	4.0	1.5	3.0	3.0
CO11023-2W	1.101	3.5	3.5	3.5	3.5
CO11023-9W	1.096	2.0	3.5	3.0	2.5
CO11037-5W	1.099	3.5	4.0	3.0	2.0
CO11048-8W	1.099	3.5	3.5	3.0	1.5
CO11074-1W	1.098	3.0	2.5	2.0	2.5
CO11087-1W	1.099	3.5	3.0	2.0	2.5
NDA081453CAB-2C	1.096	4.0	4.0	2.5	3.0
NDTX081648CB-13W	1.100	4.5	4.0	3.0	3.0
OR09256-2	1.099	4.5	4.0	2.5	3.0
Atlantic	1.104	4.0	4.0	3.5	3.0
Chipeta	1.108	4.5	4.0	3.5	3.0
Snowden	1.096	4.0	2.5	2.5	2.0

Table 12E. Chip color 1 after various storage regimes, and specific gravity of Advancedand Western Regional Chipping Trial entries - 2017.

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

Clone	Usage ¹	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects	% Hollow Heart
Russets								
AC05039-2RU	Dual	6	312	89	2.1	1.087	1.7	0.1
CO05068-1RU	Dual	6	461	89	3.7	1.098	3.6	1.5
CO03187-1RU	Dual	4	367	77	1.3	1.086	0.7	0.0
CO03202-1RU	Dual	5	433	86	3.3	1.090	1.0	0.1
CO04220-7RU	Dual	4	400	79	2.3	1.088	1.4	0.5
CO07015-4RU	Dual	5	343	80	2.1	1.083	1.5	0.1
CO07049-1RU	Dual	5	385	80	2.9	1.081	0.5	0.0
CO08065-2RU	Dual	4	366	83	3.3	1.102	2.3	0.6
CO08155-2RU/Y	Dual	4	367	80	3.1	1.089	1.5	0.0
CO08231-1RU	FM	4	426	87	3.8	1.088	1.2	0.3
Canela Russet	FM	43	351	90	3.3	1.096	1.2	0.1
Russet Norkotah	FM	106	369	84	1.7	1.079	2.4	0.4
Specialties								
CO04056-3P/PW	Spec	5	353	32	2.8	1.086	0.2	0.0
CO04067-8R/Y	Spec	5	431	65	2.7	1.082	2.6	0.0
AC05175-3P/Y	Spec	6	330	66	1.0	1.071	0.1	0.0
CO05035-1PW/Y	Spec	6	488	91	3.5	1.083	1.6	0.4
CO05037-2R/Y	Spec	5	314	32	2.9	1.089	0.0	0.0
CO05037-3W/Y	Spec	5	435	55	2.2	1.079	1.0	0.0
CO07131-1W/Y	Spec	5	100	0	2.2	1.073	0.0	0.0
Masquerade	Spec	7	522	79	3.1	1.092	1.6	0.4
Purple Majesty	Spec	30	453	54	2.2	1.085	0.8	0.9
Yukon Gold	Spec	48	395	88	1.9	1.087	2.2	0.4

Table 13. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects.

Table 13 continued on next page

Clone	Usage ¹	# Trials	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Chinners								
AC01151-5W	Chip	6	465	79	3.1	1.088	2.6	0.2
AC03433-1W	Chip	6	396	80	3.6	1.085	7.1	0.2
CO02033-1W	Chip	6	426	85	2.7	1.098	0.8	1.6
CO03243-3W	Chip	6	465	86	3.3	1.086	2.0	0.5
AC00206-2W AC03452-2W	Chip Chip	6 7	321 444	79 85	2.8 3.2	1.087 1.077	2.2 1.5	1.1 0.5
AC05153-1W	Chip	6	340	66	1.8	1.089	1.5	0.1
CO07070-13W	Chip	4	350	73	2.1	1.091	0.8	1.1
AC01144-1W	Chip	4	480	71	3.1	1.081	1.0	0.0
Atlantic Chipeta Winterset (CO02321-4W)	Chip Chip Chip	52 48 7	450 530 411	86 84 81	3.2 3.3 2.9	1.098 1.090 1.099	2.7 5.3 3.2	4.8 0.6 0.0

Table 13 (cont'd). Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects.

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

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

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

⁴Based on tubers greater than 10 ounces.

Several selections that have been discontinued from grower evaluations are available for exclusive release. Data summaries for all clones are available at *potatoes.colostate.edu/programs/potato-breeding/cultivars/*. Please contact David Holm for further information. Included are **russets** - AC96052-1RU, AC00395-2RU, CO97087-2RU, CO98067-7RU, CO99053-4RU, CO03276-5RU, and CO05175-1RU; **reds** - CO98012-5R, CO99076-6R, CO99256-2R, CO00277-2R, and CO00291-5R; **chippers** CO02024-9W; and **specialties** (including yellows) - AC97521-1R/Y, ATC00293-1W/Y, CO97215-2P/P, CO97226-2R/R, CO97227-2P/PW, CO97232-1R/Y, CO97232-2R/Y, CO99045-1W/Y, CO00405-1RF, CO00412-5W/Y, CO00415-1RF, CO04099-3W/Y, CO05028-4P/PY, CO05028-11P/RWP, VC0967-2R/Y, VC1002-3W/Y, and VC1009-1W/Y.







CO03202-1RU Image Unavailable

CO04220-7RU Image Unavailable





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Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	312	271-366
Yield US #1 (Cwt/A	.)	6	279	243-341
% US #1		6	89	85-93
Yield >10 oz (Cwt/A	A)	6	66	44-97
Yield <4 oz (Cwt/A))	6	28	19-44
% External Defects ¹		6	1.7	0.5-3.8
% Hollow Heart ²		6	0.1	0.0-0.6
% Stand		6	98	92-100
Emergence Uniform	ity	6	3.4	3.0-4.0
Vine Vigor ³		6	3.3	3.0-4.0
Stems/Plant		6	2.9	2.3-3.8
Vine Size ⁴		6	2.3	1.0-3.0
Vine Type ⁵		6	2.3	2.0-3.0
Vine Maturity ⁶		6	2.1	1.5-2.8
Blackspot ⁷ Bu Ster Av	d End m End verage	7 7 7	5.0 4.8 4.9	4.8-5.0 4.3-5.0
Weight Loss ⁸		7	2.3	1.8-3.0
Dormancy ⁹		7	83	55-101
Enzymatic Browning	g ¹⁰	7	4.5	4.2-5.0
Specific Gravity		7	1.087	1.084-1.089
Fry Color ¹¹ H S	arvest torage	7 7	1.0 2.1	0.0-2.0 1.0-3.0
Fry Texture ¹² H	arvest torage	7 7	3.3 3.1	3.0-4.0 3.0-4.0

Table 14A. Detailed data summary for AC05039-2RU.

Refer to footnotes on page 100.
Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	6	461	420-531
Yield US #1 (Cwt/A)	6	409	357-485
% US #1	6	89	83-92
Yield >10 oz (Cwt/A)	6	135	87-188
Yield <4 oz (Cwt/A)	6	36	28-54
% External Defects ¹	6	3.6	1.4-7.2
% Hollow Heart ²	6	1.5	0.3-3.4
% Stand	6	99	96-100
Emergence Uniformity	6	3.4	3.0-3.8
Vine Vigor ³	6	3.3	2.5-3.8
Stems/Plant	6	3.1	2.7-3.7
Vine Size ⁴	6	4.4	4.0-5.0
Vine Type ⁵	6	3.1	3.0-3.5
Vine Maturity ⁶	6	3.7	3.0-4.0
Blackspot ⁷ Bud E	nd 7	4.6	3.2-5.0
Stem E Avera	age 7	4.2 4.4	3.4-4.8
Weight Loss ⁸	7	3.0	2.5-3.7
Pormancy ⁹	7	62	41-84
Enzymatic Browning ¹⁰	7	2.5	2.0-4.2
Specific Gravity	7	1.098	1.093-1.106
Fry Color ¹¹ Harv Stora	est 7 nge 7	0.3 0.6	0.0-1.0 0.0-1.0
Fry Texture ¹² Harvestor	est 7 age 7	3.4 3.7	3.0-4.0 3.0-4.0

Table 14B. Detailed data summary for CO05068-1RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	4	367	320-419
Yield US #1 (Cwt/A)	4	281	247 - 322
% US #1	4	77	60 - 90
Yield >10 oz (Cwt/A)	4	63	49 - 98
Yield <4 oz (Cwt/A)	4	83	33 - 169
% External Defects ¹	4	0.7	0.5 - 0.9
% Hollow Heart ²	4	0.0	0.0 - 0.0
% Stand	4	97	95 - 99
Emergence Uniformity	4	3.3	3.0-4.0
Vine Vigor ³	4	3.3	2.8 - 3.5
Stems/Plant	4	3.0	2.6-3.4
Vine Size ⁴	4	2.8	2.3 - 3.3
Vine Type ⁵	4	2.8	2.5 - 3.0
Vine Maturity ⁶	4	1.3	1.0 - 1.5
Blackspot ⁷ Bud E Stem E Avera	End 5 End 5 age 5	4.9 4.8 4.8	4.8 - 5.0 4.4 - 5.0
Weight Loss ⁸	5	3.2	2.5 - 4.4
Dormancy ⁹	5	65	54 - 70
Enzymatic Browning ¹⁰	5	4.7	4.4 - 4.8
Specific Gravity	5	1.086	1.083 - 1.091
Fry Color ¹¹ Harv Stora	vest 5 age 5	2.0 2.4	1.0 - 4.0 2.0 - 3.0
Fry Texture ¹² Harv Stora	vest 5 age 5	3.0 3.2	3.0 - 3.0 3.0 - 4.0

Table 14C. Detailed data summary for CO03187-1RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	433	371-495
Yield US #1 (Cwt/A)	5	370	332-396
% US #1	5	86	80-89
Yield >10 oz (Cwt/A)	5	106	62-138
Yield <4 oz (Cwt/A)	5	59	39-94
% External Defects ¹	5	1.0	0.0-2.4
% Hollow Heart ²	5	0.1	0.0-0.5
% Stand	5	98	96-99
Emergence Uniformity	5	3.0	2.5-3.5
Vine Vigor ³	5	2.6	2.0-3.0
Stems/Plant	5	2.4	2.0-3.0
Vine Size ⁴	5	4.1	3.5-4.5
Vine Type ⁵	5	3.0	3.0-3.0
Vine Maturity ⁶	5	3.3	3.0-4.0
Blackspot ⁷ Bud End Stem End Average	d 6 d 6 e 6	4.7 4.5 4.6	4.3-5.0 4.1-5.0
Weight Loss ⁸	6	3.4	2.8-4.1
Dormancy ⁹	6	110	91-126
Enzymatic Browning ¹⁰	6	4.7	4.2-5.0
Specific Gravity	6	1.090	1.088-1.092
Fry Color ¹¹ Harves Storage	t 6 e 6	2.2 2.3	1.0-3.0 1.0-3.0
Fry Texture ¹² Harves Storage	t 6 e 6	3.2 3.5	3.0-4.0 3.0-5.0

Table 14D. Detailed data summary for CO03202-1RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	4	400	378-424
Yield US #1 (Cwt/A)	4	315	311 - 323
% US #1	4	79	73 - 84
Yield >10 oz (Cwt/A)	4	50	46 - 56
Yield <4 oz (Cwt/A)	4	79	60 - 106
% External Defects ¹	4	1.4	0.7 - 2.3
% Hollow Heart ²	4	0.5	0.0 - 1.2
% Stand	3	99	98 - 99
Emergence Uniformity	3	3.5	3.5 - 3.5
Vine Vigor ³	3	3.7	3.5 - 4.0
Stems/Plant	3	3.3	3.1 - 3.7
Vine Size ⁴	3	3.3	3.0 - 3.5
Vine Type ⁵	3	3.0	3.0 - 3.0
Vine Maturity ⁶	3	2.3	2.0 - 3.0
Blackspot ⁷ Bud E Stem E Avera	nd 5 nd 5 ge 5	4.9 4.7 4.8	4.8 - 5.0 4.3 - 5.0
Weight Loss ⁸	5	2.3	2.0-2.6
Dormancy ⁹	5	85	70 - 109
Enzymatic Browning ¹⁰	5	4.1	3.6-4.4
Specific Gravity	5	1.088	1.084 - 1.092
Fry Color ¹¹ Harve Stora	est 5 ge 5	0.8 1.8	0.0 - 1.0 1.0 - 3.0
Fry Texture ¹² Harve Stora	est 5 ge 5	3.6 3.8	3.0-4.0 3.0-4.0

Table 14E. Detailed data summary for CO04220-7RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	343	307 - 404
Yield US #1 (Cwt/A)	5	276	219 - 341
% US #1	5	80	71 - 86
Yield >10 oz (Cwt/A)	5	34	9 - 70
Yield <4 oz (Cwt/A)	5	61	32 - 86
% External Defects ¹	5	1.5	0.0 - 3.6
% Hollow Heart ²	5	0.1	0.0 - 0.5
% Stand	5	98	96 - 100
Emergence Uniformity	5	3.2	3.0 - 3.8
Vine Vigor ³	5	3.3	3.0 - 3.8
Stems/Plant	5	3.8	3.1 - 4.3
Vine Size ⁴	5	2.5	2.0-3.3
Vine Type ⁵	5	3.0	2.8 - 3.0
Vine Maturity ⁶	5	2.1	1.3 - 2.8
Blackspot ⁷ Bud En Stem En Averag	d 6 d 6 ge 6	4.9 4.5 4.7	4.7 - 5.0 4.1 - 5.0
Weight Loss ⁸	6	2.4	1.6-3.2
Dormancy ⁹	6	77	48 - 101
Enzymatic Browning ¹⁰	6	3.8	2.6-4.4
Specific Gravity	6	1.083	1.082 - 1.086
Fry Color ¹¹ Harves Storag	st 6 ge 6	1.7 2.2	1.0 - 3.0 1.0 - 3.0
Fry Texture ¹² Harver Storag	st 6 ge 6	3.3 3.5	3.0-4.0 3.0-4.0

Table 14F. Detailed data summary for CO07015-4RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	385	337 - 431
Yield US #1 (Cwt/A)	5	311	251 - 358
% US #1	5	80	73 - 83
Yield >10 oz (Cwt/A)	5	51	9-76
Yield <4 oz (Cwt/A)	5	72	60 - 90
% External Defects ¹	5	0.5	0.0 - 1.5
% Hollow Heart ²	5	0.0	0.0 - 0.0
% Stand	5	96	94 - 98
Emergence Uniformity	5	2.6	2.0-3.0
Vine Vigor ³	5	3.1	2.3 - 3.8
Stems/Plant	5	3.0	2.3 - 3.7
Vine Size ⁴	5	3.3	3.0-3.8
Vine Type ⁵	5	2.9	2.5 - 3.0
Vine Maturity ⁶	5	2.9	2.3 - 3.0
Blackspot ⁷ Bud Er Stem Er Averag	nd 6 nd 6 ge 6	4.9 4.9 4.9	4.5 - 5.0 4.7 - 5.0
Weight Loss ⁸	6	3.9	2.9 - 5.2
Dormancy ⁹	6	89	76 - 108
Enzymatic Browning ¹⁰	6	4.1	3.8-4.6
Specific Gravity	6	1.081	1.075 - 1.087
Fry Color ¹¹ Harve Storag	est 6 ge 6	1.5 2.2	1.0 - 2.0 2.0 - 3.0
Fry Texture ¹² Harve Storag	est 6 ge 6	2.8 2.5	2.0 - 4.0 2.0 - 3.0

Table 14G. Detailed data summary for CO07049-1RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	4	366	331 - 399
Yield US #1 (Cwt/A)	4	305	271 - 328
% US #1	4	83	79 - 89
Yield >10 oz (Cwt/A)	4	72	35 - 118
Yield <4 oz (Cwt/A)	4	54	18 - 70
% External Defects ¹	4	2.3	0.3 - 5.4
% Hollow Heart ²	4	0.6	0.0 - 1.2
% Stand	4	99	98 - 99
Emergence Uniformity	4	3.5	3.0-4.3
Vine Vigor ³	4	3.5	3.0-4.0
Stems/Plant	4	3.1	2.4 - 3.4
Vine Size ⁴	4	3.8	3.5 - 4.0
Vine Type ⁵	4	3.0	3.0-3.0
Vine Maturity ⁶	4	3.3	3.0 - 3.5
Blackspot ⁷ Bud E Stem E Avera	End 5 End 5 age 5	4.7 4.2 4.5	4.4 - 5.0 3.8 - 4.8
Weight Loss ⁸	5	5.0	4.0-6.3
Dormancy ⁹	5	84	71 - 104
Enzymatic Browning ¹⁰	5	4.2	3.4 - 4.6
Specific Gravity	5	1.102	1.098 - 1.110
Fry Color ¹¹ Harv Stora	est 5 age 5	0.0 0.2	0.0 - 0.0 0.0 - 1.0
Fry Texture ¹² Harv Stora	est 5 age 5	4.2 3.8	3.0 - 5.0 3.0 - 5.0

Table 14H. Detailed data summary for CO08065-2RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	4	367	306 - 446
Yield US #1 (Cwt/A)	4	295	228 - 329
% US #1	4	80	73 - 88
Yield >10 oz (Cwt/A)	4	50	28 - 65
Yield <4 oz (Cwt/A)	4	67	36-112
% External Defects ¹	4	1.5	1.2 - 1.7
% Hollow Heart ²	4	0.0	0.0 - 0.0
% Stand	4	90	82 - 98
Emergence Uniformity	4	3.5	3.0 - 3.8
Vine Vigor ³	4	3.8	2.8-4.5
Stems/Plant	4	2.8	2.4 - 3.2
Vine Size ⁴	4	3.0	3.0-3.0
Vine Type ⁵	4	3.1	3.0 - 3.3
Vine Maturity ⁶	4	3.1	3.0 - 3.3
Blackspot ⁷ Bud E	End 5	5.0	4.9 - 5.0
Stem E Avera	age 5	4.7 4.8	4.1 - 5.0
Weight Loss ⁸	5	2.8	2.2 - 3.6
Dormancy ⁹	5	64	55 - 89
Enzymatic Browning ¹⁰	5	4.6	4.4 - 4.8
Specific Gravity	5	1.089	1.085 - 1.094
Fry Color ¹¹ Harv Stora	vest 5 age 5	0.8 1.0	0.0 - 1.0 1.0 - 1.0
Fry Texture ¹² Harv Stora	rest 5 age 5	3.6 3.8	3.0-4.0 3.0-4.0

Table 14I. Detailed data summary for CO08155-2RU/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	4	426	357 - 496
Yield US #1 (Cwt/A)	4	368	316-436
% US #1	4	87	77 - 92
Yield >10 oz (Cwt/A)	4	98	57 - 137
Yield <4 oz (Cwt/A)	4	54	24 - 89
% External Defects ¹	4	1.2	0.8 - 1.5
% Hollow Heart ²	4	0.3	0.0 - 0.7
% Stand	4	97	96 - 99
Emergence Uniformity	4	3.1	2.8 - 3.3
Vine Vigor ³	4	3.1	3.0 - 3.3
Stems/Plant	4	3.4	2.9-4.2
Vine Size ⁴	4	4.0	3.0 - 5.0
Vine Type ⁵	4	3.4	3.0-4.0
Vine Maturity ⁶	4	3.8	3.0-4.0
Blackspot ⁷ Bud Er	nd 5	4.9	4.7 - 5.0
Stem Er Averag	nd 5 ge 5	4.6 4.7	4.1 - 5.0
Weight Loss ⁸	5	3.4	2.5 - 4.1
Dormancy ⁹	5	67	56-83
Enzymatic Browning ¹⁰	5	4.5	4.2 - 4.6
Specific Gravity	5	1.088	1.081 - 1.097
Fry Color ¹¹ Harve Storag	st 5 ge 5	1.8 2.2	0.0 - 3.0 1.0 - 3.0
Fry Texture ¹² Harve Storag	st 5 ge 5	3.0 3.2	2.0-4.0 3.0-4.0

Table 14J. Detailed data summary for CO08231-1RU.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	43	351	214-468
Yield US #1 (Cwt/A)	43	317	182-421
% US #1	43	90	77-96
Yield >10 oz (Cwt/A)	43	99	28-203
Yield <4 oz (Cwt/A)	43	30	14-61
% External Defects ¹	43	1.2	0.0-6.9
% Hollow Heart ²	43	0.1	0.0-0.9
% Stand	42	96	82-100
Emergence Uniformity	42	2.9	1.0-4.0
Vine Vigor ³	42	2.4	1.0-3.5
Stems/Plant	42	2.0	1.1-4.2
Vine Size ⁴	42	3.8	3.0-5.0
Vine Type ⁵	42	3.5	3.0-4.3
Vine Maturity ⁶	42	3.3	2.8-4.0
Blackspot ⁷ Bud En Stem En Averag	d 54 d 54 e 54	4.8 4.4 4.6	3.7-5.0 2.5-5.0
Weight Loss ⁸	54	3.3	1.3-7.0
Dormancy ⁹	54	140	83-195
Enzymatic Browning ¹⁰	54	4.6	3.4-5.0
Specific Gravity	54	1.096	1.075-1.111
Fry Color ¹¹ Harves Storag	st 54 e 54	1.9 2.3	0.0-3.0 0.0-4.0
Fry Texture ¹² Harves Storag	st 54 e 54	3.9 3.9	2.0-5.0 3.0-5.0

Table 15K. Detailed data summary for Canela Russet.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	106	369	159-557
Yield US #1 (Cwt/A)	106	312	101-480
% US #1	106	84	59-94
Yield >10 oz (Cwt/A)	106	104	10-247
Yield <4 oz (Cwt/A)	106	49	13-131
% External Defects ¹	106	2.4	0.0-9.6
% Hollow Heart ²	106	0.4	0.0-2.8
% Stand	105	98	88-100
Emergence Uniformity	100	3.2	1.0-4.0
Vine Vigor ³	100	2.8	1.0-4.0
Stems/Plant	105	3.6	2.3-5.7
Vine Size ⁴	100	2.4	1.0-4.0
Vine Type ⁵	100	2.6	2.0-3.5
Vine Maturity ⁶	109	1.7	1.0-3.0
Blackspot ⁷ Bud End Stem End Average	d 112 d 112 e 113	4.7 4.4 4.6	2.9-5.0 2.6-5.0
Weight Loss ⁸	113	3.4	1.0-7.1
Dormancy ⁹	112	97	70-140
Enzymatic Browning ¹⁰	112	3.4	2.2-4.8
Specific Gravity	116	1.079	1.066-1.091
Fry Color ¹¹ Harves Storage	t 113 e 113	2.1 2.4	1.0-4.0 1.0-4.0
Fry Texture ¹² Harves Storage	t 113 e 113	2.7 2.8	1.0-4.0 1.0-5.0

Table 14L. Detailed data summary for Russet Norkotah.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	353	281-446
Yield US #1 (Cwt/A)	5	123	61-234
% US #1	5	32	20-52
Yield >10 oz (Cwt/A)	5	2	0-5
Yield <4 oz (Cwt/A)	5	230	211-249
% External Defects ¹	5	0.2	0.0-0.3
% Hollow Heart ²	5	0.0	0.0-0.0
% Stand	5	98	97-99
Emergence Uniformity	5	3.0	2.8-3.3
Vine Vigor ³	5	2.4	1.8-3.0
Stems/Plant	5	4.4	3.6-5.6
Vine Size ⁴	5	3.5	3.0-4.0
Vine Type ⁵	5	3.0	3.0-3.0
Vine Maturity ⁶	5	2.8	2.0-3.0
Blackspot ⁷ Bud E	End		
Stem E Avera	End age		
Weight Loss ⁸	6	3.0	1.7-6.6
Dormancy ⁹	6	85	70-102
Enzymatic Browning ¹⁰			
Specific Gravity	6	1.086	1.077-1.094
Fry Color ¹¹ Harv Stora	vest age		
Fry Texture ¹² Harv Stora	vest 6 age 6	2.7 3.0	2.0-3.0 2.0-4.0

Table 14M. Detailed data summary for CO04056-3P/PW.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	431	369-504
Yield US #1 (Cwt/A)	5	283	221-372
% US #1	5	65	60-74
Yield >10 oz (Cwt/A)	5	19	10-46
Yield <4 oz (Cwt/A)	5	137	121-158
% External Defects ¹	5	2.6	1.5-3.9
% Hollow Heart ²	5	0.0	0.0-0.0
% Stand	5	95	92-96
Emergence Uniformity	5	2.9	2.5-3.3
Vine Vigor ³	5	3.1	3.0-3.3
Stems/Plant	5	4.7	3.3-6.6
Vine Size ⁴	5	3.9	3.3-4.3
Vine Type ⁵	5	3.1	2.8-3.5
Vine Maturity ⁶	5	2.7	2.3-3.0
Blackspot ⁷ Bud En Stem En Averag	d 6 d 6 e 6	4.7 3.0 3.8	4.3-4.8 2.6-3.9
Weight Loss ⁸	6	3.5	1.5-5.1
Dormancy ⁹	6	57	49-74
Enzymatic Browning ¹⁰	6	3.8	2.8-4.6
Specific Gravity	6	1.082	1.079-1.089
Fry Color ¹¹ Harves Storag	st 6 e 6	1.3 1.2	1.0-2.0 1.0-2.0
Fry Texture ¹² Harves Storag	st 6 e 6	2.3 2.3	2.0-3.0 2.0-3.0

Table 14N. Detailed data summary for CO04067-8R/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	6	330	267-389
Yield US #1 (Cwt/A)	6	222	135-299
% US #1	6	66	48-81
Yield >10 oz (Cwt/A)	6	20	4-43
Yield <4 oz (Cwt/A)	6	108	69-171
% External Defects ¹	6	0.1	0.0-0.5
% Hollow Heart ²	6	0.0	0.0-0.0
% Stand	6	96	93-98
Emergence Uniformity	6	3.3	3.0-3.8
Vine Vigor ³	6	2.8	2.5-3.0
Stems/Plant	6	3.5	2.8-4.4
Vine Size ⁴	6	2.1	1.5-2.5
Vine Type ⁵	6	2.7	2.0-3.0
Vine Maturity ⁶	6	1.0	1.0-1.3
Blackspot ⁷ Bud En Stem En Avera	nd 7 nd 7 ge 7	4.9 4.6 4.8	4.6-5.0 4.1-5.0
Weight Loss ⁸	7	3.9	2.6-5.3
Dormancy ⁹	7	79	69-95
Enzymatic Browning ¹⁰	7	3.4	2.6-4.0
Specific Gravity	7	1.071	1.068-1.074
Fry Color ¹¹ Harve Stora	est 7 ge 7	1.0 1.1	0.0-2.0 0.0-3.0
Fry Texture ¹² Harve Stora	est 7 ge 7	2.1 2.1	1.0-5.0 1.0-4.0

Table 14O. Detailed data summary for AC05175-3P/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	6	488	416-560
Yield US #1 (Cwt/A)	6	443	369-525
% US #1	6	91	88-94
Yield >10 oz (Cwt/A)	6	208	139-297
Yield <4 oz (Cwt/A)	6	38	31-45
% External Defects ¹	6	1.6	0.0-2.9
% Hollow Heart ²	6	0.4	0.0-2.1
% Stand	6	94	84-98
Emergence Uniformity	6	3.0	2.0-4.0
Vine Vigor ³	6	3.4	2.8-4.0
Stems/Plant	6	3.8	2.9-4.2
Vine Size ⁴	6	4.0	3.5-4.3
Vine Type ⁵	6	2.8	2.0-3.3
Vine Maturity ⁶	6	3.5	3.0-4.0
Blackspot ⁷ Bud I Stem I Aver	End 7 End 7 rage 7	4.9 4.7 4.8	4.8-5.0 4.5-5.0
Weight Loss ⁸	7	2.9	2.3-4.1
Dormancy ⁹	7	44	34-70
Enzymatic Browning ¹⁰) 7	4.1	3.2-4.6
Specific Gravity	7	1.083	1.078-1.094
Fry Color ¹¹ Harv	vest 7 age 7	2.3 2.7	1.0-3.0 2.0-4.0
Fry Texture ¹² Harr	vest 7 age 7	2.7 2.9	2.0-4.0 2.0-3.0

Table 14P. Detailed data summary for CO05035-1PW/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	314	234-389
Yield US #1 (Cwt/A)	5	111	55-187
% US #1	5	32	22-47
Yield >10 oz (Cwt/A)	5	6	0-28
Yield <4 oz (Cwt/A)	5	202	179-226
% External Defects ¹	5	0.0	0.0-0.2
% Hollow Heart ²	5	0.0	0.0-0.0
% Stand	5	99	97-100
Emergence Uniformity	5	3.3	3.0-3.5
Vine Vigor ³	5	2.6	1.8-3.3
Stems/Plant	5	4.8	3.8-5.5
Vine Size ⁴	5	3.1	2.5-3.5
Vine Type ⁵	5	3.2	3.0-3.8
Vine Maturity ⁶	5	2.9	2.3-3.3
Blackspot ⁷ Bud Er Stem Er Averag	nd 6 nd 6 ge 6	4.8 4.6 4.7	4.6-5.0 4.2-5.0
Weight Loss ⁸	6	2.7	2.0-3.1
Dormancy ⁹	6	60	42-81
Enzymatic Browning ¹⁰	6	4.2	3.8-4.6
Specific Gravity	6	1.089	1.083-1.094
Fry Color ¹¹ Harve Storag	est 6 ge 6	1.2 1.3	1.0-2.0 1.0-3.0
Fry Texture ¹² Harve Storag	est 6 ge 6	3.8 3.8	3.0-4.0 3.0-4.0

Table 14Q. Detailed data summary for CO05037-2R/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	435	349-532
Yield US #1 (Cwt/A)	5	240	182-313
% US #1	5	55	51-60
Yield >10 oz (Cwt/A)	5	9	2-19
Yield <4 oz (Cwt/A)	5	190	163-211
% External Defects ¹	5	1.0	0.4-1.4
% Hollow Heart ²	5	0.0	0.0-0.0
% Stand	5	93	88-96
Emergence Uniformity	5	3.4	2.5-4.5
Vine Vigor ³	5	3.8	3.3-5.0
Stems/Plant	5	6.6	5.2-7.5
Vine Size ⁴	5	3.3	3.0-3.5
Vine Type ⁵	5	2.9	2.5-3.0
Vine Maturity ⁶	5	2.2	1.3-2.8
Blackspot ⁷ Bud En Stem En Averag	d 6 d 6 ge 6	4.9 4.7 4.8	4.7-5.0 4.3-5.0
Weight Loss ⁸	6	2.7	2.4-3.2
Dormancy ⁹	6	82	77-88
Enzymatic Browning ¹⁰	6	3.6	3.2-4.2
Specific Gravity	6	1.079	1.077-1.083
Fry Color ¹¹ Harves Storag	st 6 ge 6	1.5 2.5	1.0-2.0 1.0-3.0
Fry Texture ¹² Harves Storag	st 6 je 6	2.5 3.0	2.0-3.0 2.0-4.0

Table 14R. Detailed data summary for CO05037-3W/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	5	100	50 - 134
Yield US #1 (Cwt/A)	5	0	0 - 1
% US #1	5	0	0 - 1
Yield >10 oz (Cwt/A)	5	0	0 - 0
Yield <4 oz (Cwt/A)	5	100	50 - 133
% External Defects ¹	5	0.0	0.0 - 0.0
% Hollow Heart ²	5	0.0	0.0 - 0.0
% Stand	5	90	60 - 100
Emergence Uniformity	5	2.5	1.3 - 3.0
Vine Vigor ³	5	1.3	1.0 - 2.3
Stems/Plant	5	5.6	3.3 - 7.3
Vine Size ⁴	5	1.6	1.0 - 2.0
Vine Type ⁵	5	2.9	2.3 - 3.3
Vine Maturity ⁶	5	2.2	1.0 - 3.0
Blackspot ⁷ Bud En Stem En Averag	nd 6 nd 6 ge 6	4.6 4.4 4.5	4.0 - 5.0 3.7 - 4.7
Weight Loss ⁸	6	9.8	8.5 - 11.4
Dormancy ⁹	6	22	14 - 38
Enzymatic Browning ¹⁰	6	3.2	1.6-4.6
Specific Gravity	6	1.073	1.063 - 1.083
Fry Color ¹¹ Harve Storag	est 6 ge 6	1.5 2.8	1.0 - 2.0 2.0 - 3.0
Fry Texture ¹² Harve Storas	est 6 ge 6	1.7 1.8	1.0 - 3.0 1.0 - 4.0

Table 14S. Detailed data summary for CO07131-1W/Y.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	7	522	452-585
Yield US #1 (Cwt/A)	7	410	349-471
% US #1	7	79	71-84
Yield >10 oz (Cwt/A)	7	93	43-141
Yield <4 oz (Cwt/A)	7	104	62-149
% External Defects ¹	7	1.6	0.5-3.7
% Hollow Heart ²	7	0.4	0.0-1.6
% Stand	7	99	98-100
Emergence Uniformity	7	3.5	3.0-4.0
Vine Vigor ³	7	4.3	3.8-5.0
Stems/Plant	7	5.0	3.0-7.4
Vine Size ⁴	7	4.3	4.0-4.8
Vine Type ⁵	7	3.3	3.0-3.5
Vine Maturity ⁶	7	3.1	2.8-3.5
Blackspot ⁷ Bud End Stem End Averag	d 8 d 8 e 8	4.4 3.4 3.9	3.1-5.0 2.6-5.0
Weight Loss ⁸	8	4.3	2.0-5.9
Dormancy ⁹	8	39	23-52
Enzymatic Browning ¹⁰	8	4.0	3.0-4.6
Specific Gravity	8	1.092	1.081-1.096
Fry Color ¹¹ Harves Storag	st 8 e 8	2.5 2.8	1.0-4.0 2.0-3.0
Fry Texture ¹² Harves Storag	st 8 e 8	3.0 3.4	2.0-4.0 3.0-4.0

Table 14T. Detailed data summary for Masquerade.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		30	453	251-606
Yield US #1 (Cwt/A))	30	250	57-401
% US #1		30	54	23-72
Yield >10 oz (Cwt/A	.)	30	26	0-61
Yield <4 oz (Cwt/A)		30	200	90-326
% External Defects ¹		30	0.8	0.0-3.2
% Hollow Heart ²		30	0.9	0.0-3.4
% Stand		30	96	77-100
Emergence Uniformi	ty	30	3.3	2.5-5.0
Vine Vigor ³		30	3.5	2.3-4.5
Stems/Plant		30	4.3	2.7-6.1
Vine Size ⁴		30	3.2	2.3-4.0
Vine Type ⁵		30	2.7	2.0-3.0
Vine Maturity ⁶		30	2.2	1.0-3.0
Blackspot ⁷ Buc	d End			
Av	erage			
Weight Loss ⁸		40	3.5	1.1-6.8
Dormancy ⁹		40	60	41-85
Enzymatic Browning	10			
Specific Gravity		40	1.085	1.074-1.094
Fry Color ¹¹ Ha	arvest orage			
Fry Texture ¹² Ha	arvest orage	35 35	2.7 2.7	1.0-4.0 1.0-4.0

Table 14U. Detailed data summary for Purple Majesty.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	48	395	283-513
Yield US #1 (Cwt/A)	48	350	240-444
% US #1	48	88	78-94
Yield >10 oz (Cwt/A)	48	146	48-248
Yield <4 oz (Cwt/A)	48	37	21-66
% External Defects ¹	48	2.2	0.0-8.2
% Hollow Heart ²	48	0.4	0.0-2.2
% Stand	48	96	87-100
Emergence Uniformity	48	3.3	2.5-4.8
Vine Vigor ³	48	3.7	3.0-5.0
Stems/Plant	48	2.5	1.6-3.8
Vine Size ⁴	48	3.2	2.5-4.5
Vine Type ⁵	48	2.7	2.0-3.5
Vine Maturity ⁶	48	1.9	1.0-3.0
Blackspot ⁷ Bud End Stem End Average	1 62 1 62 e 62	4.5 4.2 4.4	2.0-5.0 2.4-5.0
Weight Loss ⁸	62	2.0	0.9-4.3
Dormancy ⁹	62	91	63-132
Enzymatic Browning ¹⁰	62	4.4	3.4-5.0
Specific Gravity	62	1.087	1.079-1.093
Fry Color ¹¹ Harves Storage	t 62 e 62	1.7 2.7	1.0-4.0 1.0-4.0
Fry Texture ¹² Harves Storage	t 62 e 62	3.2 3.1	1.0-5.0 1.0-5.0

Table 14V. Detailed data summary for Yukon Gold.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	6	465	402-557
Yield US #1 (Cwt/A)	6	368	303-430
% US #1	6	79	67-90
Yield >10 oz (Cwt/A)	6	68	53-115
Yield <4 oz (Cwt/A)	6	85	45-134
% External Defects ¹	6	2.6	0.6-7.4
% Hollow Heart ²	6	0.2	0.0-0.6
% Stand	6	97	96-99
Emergence Uniformity	6	3.3	2.8-4.0
Vine Vigor ³	6	3.0	2.8-3.5
Stems/Plant	6	3.5	2.3-4.8
Vine Size ⁴	6	3.4	3.0-3.8
Vine Type ⁵	6	3.0	3.0-3.0
Vine Maturity ⁶	6	3.1	3.0-3.3
Blackspot ⁷ Bud E Stem E Avera	End 17 End 17 age 17	4.4 3.1 3.8	3.2-5.0 1.3-5.0
Weight Loss ⁸	17	2.5	1.6-4.4
Dormancy ⁹	17	97	70-127
Enzymatic Browning ¹⁰	17	1.9	1.2-3.6
Specific Gravity	18	1.088	1.075-1.103
Chip Color ¹¹ 4	40 18 0R 18 50 18 0R 18	4.4 3.7 2.5 2.4	3.0-5.0 2.5-5.0 1.0-4.0 1.0-3.5

Table 14W. Detailed data summary for AC01151-5W.

Variable	e	# Trials	Mean	Range
Total Yield (Cwt	t/A)	6	396	309-492
Yield US #1 (Cw	vt/A)	6	320	242-421
% US #1		6	80	74-86
Yield >10 oz (Cv	wt/A)	6	69	22-95
Yield <4 oz (Cw	t/A)	6	50	41-64
% External Defe	cts ¹	6	7.1	3.7-10.1
% Hollow Heart	2	6	0.2	0.0-1.0
% Stand		6	94	89-98
Emergence Unife	ormity	6	3.0	2.3-4.3
Vine Vigor ³		6	2.8	2.5-3.3
Stems/Plant		6	3.4	2.5-4.6
Vine Size ⁴		6	3.8	3.5-4.0
Vine Type ⁵		6	3.0	3.0-3.0
Vine Maturity ⁶		6	3.6	3.0-4.0
Blackspot ⁷	Bud End Stem End Average	16 16 16	4.8 4.2 4.5	4.3-5.0 2.5-5.0
Weight Loss ⁸		16	3.3	1.6-5.5
Dormancy ⁹		16	82	69-101
Enzymatic Brow	ning ¹⁰	16	4.4	3.4-5.0
Specific Gravity		17	1.085	1.076-1.092
Chip Color ¹¹	40 40R 50 50R	17 17 17 17	3.3 2.7 1.8 1.9	2.5-5.0 1.5-4.0 1.0-4.0 1.0-3.0

Table 14X. Detailed data summary for AC03433-1W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		6	426	368-484
Yield US #1 (Cwt/A))	6	361	317-399
% US #1		6	85	79-89
Yield >10 oz (Cwt/A)	6	50	15-75
Yield <4 oz (Cwt/A)		6	61	36-92
% External Defects ¹		6	0.8	0.2-1.6
% Hollow Heart ²		6	1.6	0.0-2.6
% Stand		6	98	96-101
Emergence Uniformi	ty	6	3.2	3.0-3.5
Vine Vigor ³		6	3.7	3.0-4.0
Stems/Plant		6	3.6	2.7-4.7
Vine Size ⁴		6	3.3	3.0-3.8
Vine Type ⁵		6	3.0	2.8-3.0
Vine Maturity ⁶		6	2.7	2.0-3.0
Blackspot ⁷ Buc Stem Av	l End 1 End erage	17 17 17	3.7 3.4 3.6	2.7-5.0 2.0-4.7
Weight Loss ⁸		17	3.2	1.5-5.2
Dormancy ⁹		17	112	70-167
Enzymatic Browning	10	17	3.7	2.4-4.6
Specific Gravity		18	1.098	1.090-1.106
Chip Color ¹¹	40 40R 50 50R	18 18 18 18	3.5 2.8 2.0 2.0	2.5-4.0 1.0-4.0 1.0-3.0 1.0-3.5

Table 14Y. Detailed data summary for CO02033-1W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A	.)	6	465	439-501
Yield US #1 (Cwt/A	A)	6	401	357-438
% US #1		6	86	81-88
Yield >10 oz (Cwt/	A)	б	93	76-113
Yield <4 oz (Cwt/A	()	б	55	46-71
% External Defects	1	6	2.0	0.6-2.8
% Hollow Heart ²		6	0.5	0.0-0.9
% Stand		6	97	92-99
Emergence Uniform	nity	6	3.3	2.5-5.0
Vine Vigor ³		6	3.6	3.3-4.3
Stems/Plant		6	3.0	2.5-3.5
Vine Size ⁴		6	4.0	3.8-4.3
Vine Type ⁵		6	3.0	3.0-3.0
Vine Maturity ⁶		6	3.3	3.0-4.0
Blackspot ⁷ B Ste	ud End em End verage	16 16 16	4.4 3.7 4.1	3.4-5.0 2.8-4.8
Weight Loss ⁸		16	3.3	2.3-4.9
Dormancy ⁹		16	83	63-101
Enzymatic Brownir	ng ¹⁰	16	3.3	2.4-4.2
Specific Gravity		17	1.086	1.069-1.095
Chip Color ¹¹	40 40R 50 50R	17 17 17 17	3.9 2.8 2.0 1.9	2.5-5.0 1.0-4.0 1.0-3.0 1.0-3.0

Table 14Z. Detailed data summary for CO03243-3W.

Variable	#7	Frials	Mean	Range
Total Yield (Cwt/A)		6	321	279-362
Yield US #1 (Cwt/A)		6	255	210-299
% US #1		6	79	75-83
Yield >10 oz (Cwt/A)		6	38	16-69
Yield <4 oz (Cwt/A)		6	60	49-70
% External Defects ¹		6	2.2	0.5-3.4
% Hollow Heart ²		6	1.1	0.0-2.5
% Stand		6	96	89-98
Emergence Uniformity		6	3.1	2.3-3.3
Vine Vigor ³		6	2.6	2.0-3.0
Stems/Plant		6	2.5	2.2-2.9
Vine Size ⁴		6	2.1	1.3-2.8
Vine Type ⁵		6	2.6	2.3-3.0
Vine Maturity ⁶		6	2.8	2.3-3.0
Blackspot ⁷ Bud E Stem E Avera	End End age	15 15 15	4.5 3.8 4.2	3.7-5.0 2.0-4.9
Weight Loss ⁸		15	3.3	2.3-5.0
Dormancy ⁹		15	86	63-103
Enzymatic Browning ¹⁰		15	4.4	3.4-5.0
Specific Gravity		15	1.087	1.076-1.093
Chip Color ¹¹ 4 5	40 0R 50 0R	16 16 16 16	2.8 2.2 1.8 1.7	1.5-4.0 1.0-4.0 1.0-3.0 1.0-2.5

Table 14AA. Detailed data summary for AC00206-2W.

Variable	e	# Trials	Mean	Range
Total Yield (Cwt/A)		7	444	388-505
Yield US #1 (Cw	rt/A)	7	377	321-428
% US #1		7	85	81-88
Yield >10 oz (Cw	vt/A)	7	65	34-91
Yield <4 oz (Cwt	/A)	7	60	46-74
% External Defec	ets ¹	7	1.5	0.9-2.2
% Hollow Heart ²	2	7	0.5	0.0-1.5
% Stand		7	98	97-99
Emergence Unifo	ormity	7	3.5	3.3-4.0
Vine Vigor ³		7	3.8	3.3-4.3
Stems/Plant		7	3.3	2.7-4.4
Vine Size ⁴		7	3.4	3.0-3.8
Vine Type ⁵		7	2.8	2.3-3.0
Vine Maturity ⁶		7	3.2	3.0-3.8
Blackspot ⁷	Bud End Stem End Average	16 16 16	4.9 4.8 4.9	4.4-5.0 3.6-5.0
Weight Loss ⁸		16	2.0	1.4-2.8
Dormancy ⁹		16	71	52-95
Enzymatic Brown	ning ¹⁰	16	4.8	4.4-5.0
Specific Gravity		17	1.077	1.071-1.087
Chip Color ¹¹	40 40R 50 50R	17 17 17 17 17	3.4 2.8 1.8 1.8	2.5-4.5 1.0-4.0 1.0-4.0 1.0-3.5

Table 14AB. Detailed data summary for AC03452-2W.

Variable	ŧ	† Trials	Mean	Range
Total Yield (Cwt/A)		6	340	301-376
Yield US #1 (Cwt/A)		6	229	161-277
% US #1		6	66	51-74
Yield >10 oz (Cwt/A)		6	18	10-32
Yield <4 oz (Cwt/A)		6	107	75-137
% External Defects ¹		6	1.5	0.1-3.5
% Hollow Heart ²		6	0.1	0.0-0.3
% Stand		6	97	96-99
Emergence Uniformity		6	3.6	3.3-3.8
Vine Vigor ³		6	3.4	3.0-4.0
Stems/Plant		6	4.7	3.8-5.7
Vine Size ⁴		6	2.5	2.0-3.0
Vine Type ⁵		6	2.7	2.0-3.0
Vine Maturity ⁶		6	1.8	1.0-2.8
Blackspot ⁷ Bud I Stem I Aver	End End rage	14 14 14	4.6 3.8 4.2	3.9-4.9 2.1-4.7
Weight Loss ⁸		14	4.6	3.5-6.7
Dormancy ⁹		14	86	60-113
Enzymatic Browning ¹⁰)	14	3.2	2.0-4.6
Specific Gravity		15	1.089	1.078-1.099
Chip Color ¹¹	40 40R 50 50R	15 15 15 15	4.0 3.0 2.3 2.1	2.5-4.5 1.0-4.0 1.5-4.0 1.0-3.5

Table 14AC. Detailed data summary for AC05153-1W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/	A)	4	350	299-389
Yield US #1 (Cwt	t/A)	4	262	177-319
% US #1		4	73	58-84
Yield >10 oz (Cw	rt/A)	4	45	33-57
Yield <4 oz (Cwt/	/A)	4	86	59-116
% External Defec	ts ¹	4	0.8	0.0-2.0
% Hollow Heart ²		4	1.1	0.4-2.1
% Stand		4	95	87-99
Emergence Unifo	rmity	4	3.5	3.3-3.8
Vine Vigor ³		4	3.6	3.3-4.0
Stems/Plant		4	4.0	3.7-4.6
Vine Size ⁴		4	2.3	1.8-2.5
Vine Type ⁵		4	2.3	2.0-2.5
Vine Maturity ⁶		4	2.1	1.5-2.8
Blackspot ⁷	Bud End stem End Average	10 10 10	4.7 3.7 4.2	4.1-5.0 2.6-4.3
Weight Loss ⁸		10	4.6	2.5-8.6
Dormancy ⁹		10	67	42-90
Enzymatic Brown	ing ¹⁰	10	4.3	3.4-5.0
Specific Gravity		11	1.091	1.085-1.098
Chip Color ¹¹	40 40R 50 50R	11 11 11 11 11	3.1 2.7 1.7 2.2	2.5-4.0 1.5-3.5 1.0-3.0 1.5-3.0

Table 14AD. Detailed data summary for CO07070-13W.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		4	480	422-554
Yield US #1 (Cwt/A)		4	341	265-422
% US #1		4	71	56-81
Yield >10 oz (Cwt/A))	4	36	24-54
Yield <4 oz (Cwt/A)		4	135	76-200
% External Defects ¹		4	1.0	0.8-1.2
% Hollow Heart ²		4	0.0	0.0-0.0
% Stand		4	97	94-99
Emergence Uniformi	ty	4	3.6	3.3-4.0
Vine Vigor ³		4	3.9	3.5-4.0
Stems/Plant		4	3.4	2.9-4.3
Vine Size ⁴		4	3.7	3.3-4.0
Vine Type ⁵		4	2.5	2.0-3.0
Vine Maturity ⁶		4	3.1	2.8-3.3
Blackspot ⁷ Buc Stem Ave	l End 1 End erage	9 9 9	4.7 4.4 4.5	4.2-5.0 3.6-5.0
Weight Loss ⁸		9	2.0	1.1-3.4
Dormancy ⁹		9	90	70-108
Enzymatic Browning	10	9	4.0	2.2-4.6
Specific Gravity		10	1.081	1.074-1.093
Chip Color ¹¹	40 40R 50 50R	10 10 10 10	3.3 2.6 2.0 2.4	2.0-4.0 1.5-3.5 1.0-3.5 1.5-3.0

Table 14AE. Detailed data summary for AC01144-1W.

Variable	2	# Trials	Mean	Range
Total Yield (Cwt	/A)	52	450	172-597
Yield US #1 (Cw	vt/A)	52	388	149-512
% US #1		52	86	76-93
Yield >10 oz (Cw	vt/A)	52	143	51-290
Yield <4 oz (Cwi	t/A)	52	49	19-109
% External Defe	cts ¹	52	2.7	0.1-9.1
% Hollow Heart ²	2	52	4.8	0.2-16.4
% Stand		52	96	63-100
Emergence Unifo	ormity	46	3.6	2.0-4.8
Vine Vigor ³		46	3.6	2.8-4.3
Stems/Plant		52	3.1	2.2-4.9
Vine Size ⁴		46	3.2	2.2-4.0
Vine Type ⁵		46	3.0	2.8-3.8
Vine Maturity ⁶		52	3.2	2.8-4.0
Blackspot ⁷	Bud End Stem End Average	76 76 77	3.3 2.8 3.1	1.8-5.0 1.4-4.3
Weight Loss ⁸		77	4.2	1.1-7.9
Dormancy ⁹		74	84	56-119
Enzymatic Brown	ning ¹⁰	75	4.6	3.8-5.0
Specific Gravity		78	1.098	1.083-1.120
Chip Color ¹¹	40 40R 50 50R	78 78 78 78 78	4.1 3.6 2.8 2.6	2.0-5.0 1.5-5.0 1.0-4.5 1.0-5.0

Table 14AF. Detailed data summary for Atlantic.

Variable		# Trials	Mean	Range
Total Yield (Cwt/A)		48	530	355-757
Yield US #1 (Cwt/A)		48	449	249-606
% US #1		48	84	70-92
Yield >10 oz (Cwt/A)		48	169	52-388
Yield <4 oz (Cwt/A)		48	53	22-119
% External Defects ¹		48	5.3	1.1-13.0
% Hollow Heart ²		48	0.6	0.0-4.0
% Stand		48	98	94-100
Emergence Uniformity	1	41	3.6	3.0-5.0
Vine Vigor ³		41	4.1	3.2-5.0
Stems/Plant		47	3.4	2.0-4.9
Vine Size ⁴		41	4.5	4.0-5.0
Vine Type ⁵		41	3.1	2.5-4.0
Vine Maturity ⁶		48	3.3	3.0-4.0
Blackspot ⁷ Bud Stem Aver	End End rage	71 71 73	4.0 3.8 3.9	2.2-5.0 1.4-5.0
Weight Loss ⁸		73	3.0	1.0-8.0
Dormancy ⁹		69	101	70-153
Enzymatic Browning ¹⁰	0	70	4.0	2.4-5.0
Specific Gravity		73	1.090	1.070-1.108
Chip Color ¹¹	40 40R 50 50R	73 73 73 73	4.5 3.9 2.7 2.5	3.0-5.0 1.5-5.0 1.0-5.0 1.0-4.5

Table 14AG. Detailed data summary for Chipeta.

Variable	# Trials	Mean	Range
Total Yield (Cwt/A)	7	411	339-508
Yield US #1 (Cwt/A)	7	335	250-397
% US #1	7	81	71-89
Yield >10 oz (Cwt/A)	7	78	54-105
Yield <4 oz (Cwt/A)	7	61	33-95
% External Defects ¹	7	3.2	1.2-5.6
% Hollow Heart ²	7	0.0	0.0-0.3
% Stand	7	95	86-99
Emergence Uniformity	7	3.5	3.0-3.8
Vine Vigor ³	7	4.2	3.5-4.8
Stems/Plant	7	3.1	2.1-4.1
Vine Size ⁴	7	3.4	3.0-3.5
Vine Type ⁵	7	2.9	2.8-3.3
Vine Maturity ⁶	7	2.9	2.5-3.3
Blackspot ⁷ Bud End Stem End Average	1 18 1 18 e 18	4.7 3.9 4.3	4.0-5.0 3.0-5.0
Weight Loss ⁸	18	3.4	2.3-4.8
Dormancy ⁹	18	84	63-106
Enzymatic Browning ¹⁰	18	4.3	3.6-5.0
Specific Gravity	19	1.099	1.081-1.109
Chip Color ¹¹ 40 40F 50 50F) 19 R 19) 19 R 19	3.7 2.6 1.8 2.0	2.0-4.5 1.0-3.5 1.0-2.5 1.0-3.5

Table 14AH.Detailed data summary for Winterset
(CO02321-4W).

Footnotes for Tables 14A-14AH:

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

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

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

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

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

⁶Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

⁷Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

⁸Tubers were stored at 45F for approximately 3 months.

⁹Days from harvest to first visible growth. Tubers were stored at 45F.

¹⁰Degree of darkening rated at 60 minutes after slicing tubers lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

¹¹Chip 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.

 12 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.

Clone	Yield >10 oz (cwt/A)	Yield 4-10 oz (cwt/A)	Yield <4 oz (cwt/A)	Grower Returns (\$/Acre) ¹
AC05039-2RU	66	190	28	4,793
CO05068-1RU	135	274	36	7,917
CO03187-1RU	63	218	83	5,302
CO03202-1RU	106	264	59	7,075
CO04220-4RU	50	265	79	5,713
CO07015-4RU	34	242	61	4,892
CO07049-1RU	51	260	72	5,641
CO08065-2RU	72	233	54	5,699
CO08155-2RU/Y	50	245	67	5,363
CO08231-1RU	98	270	54	6,954
Canela Russet	99	218	30	6,088
Russet Norkotah	104	208	49	6,103

Table 15A. Grower return data for russet selections and standard cultivars - 2018.

¹Yield data and associated \$ returns is based on multiple year research trials at the the SLVRC. Individual grower results may differ based on management practices. Production costs, packaging, and handling charges were not deducted. Potato prices quoted on February 19, 2018 by Farm Fresh Direct, LLC. Tubers >10 oz = \$25.50/cwt, tubers 4-10 oz = \$16/cwt, and tubers <4 oz = \$2.50/cwt, US #2s and culls = no value.





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Clone	Yield >10 oz (cwt/A)	Yield 4-10 oz (cwt/A)	Yield <4 oz (cwt/A)	Grower Returns (\$/Acre) ¹
CO04067-8R/Y	19	264	137	9.674
AC05175-3P/Y	20	202	108	7,599
CO05035-1PW/Y	208	235	38	11,613
CO05037-2R/Y	6	105	202	6,760
CO05037-3W/Y	9	231	190	9,680
CO07131-1W/Y	0	0	100	2,000
Yukon Gold	93	317	104	12,125

Table 15B. Grower return data for yellow flesh selections and Yukon Gold - 2018.

¹Yield data and associated \$ returns is based on multiple year research trials at the SLVRC. Individual grower results may differ based on management practices. Production costs, packaging, and handling charges were not deducted. Potato prices quoted on February 19, 2018 by Farm Fresh Direct, LLC. Size A (tubers > 4 oz) = 24.50/cwt and size B (tubers< 4 oz) = 20/cwt.




	Weeks of Storage after Harvest						
Selection/Cultivar	6 wks	9 wks	12 wks	15 wks	18 wks	21 wks	Mean
CO05211-4R	13.0	11.8	12.6	13.1	11.9	11.7	12.4
CO00291-5R	12.6	13.5	13.3	12.6	13.0	12.9	13.0
CO05228-4R	13.9	13.0	14.0	13.7	12.9	13.0	13.4
CO99076-6R	13.2	13.2	13.8	14.4	13.3	13.2	13.5
CO99256-2R	13.4	14.1	14.1	14.9	14.0	13.9	14.1
CO04159-1R	13.9	13.4	14.3	14.9	14.0	13.9	14.1
AC03534-2R/Y	13.7	14.6	14.6	13.8	14.4	14.0	14.2
Colorado Rose	14.3	13.7	14.3	15.1	14.5	15.2	14.5
CO06215-2R	14.3	14.2	14.6	15.0	14.5	14.7	14.6
CO98012-5R	13.5	14.2	15.0	15.5	14.6	14.6	14.6
TC12472-1R/Y	15.1	14.1	14.8	15.2	14.6	14.8	14.8
Rio Colorado	15.1	14.0	15.0	15.8	14.8	14.9	15.0
CO04021-2R/Y	15.8	15.7	16.0	15.7	15.7	15.4	15.7
Sangre-S10	15.3	15.0	15.8	17.0	17.0	17.3	16.2
Chieftain	17.1	16.0	16.5	17.8	17.3	17.7	17.1
CO05037-2R/Y	18.4	15.8	16.7	18.4	17.5	17.8	17.4
Red LaSoda	17.6	16.5	17.2	18.1	17.5	17.9	17.4
CO04067-8R/Y	17.6	17.7	18.1	17.6	17.9	18.2	17.8
Mean	14.9	14.5	15.0	15.0	15.1	15.1	

Table 16.	Red color retention study: 2017-2018.	The entries	are ordered from da	rker to lighter
	skin color based on the average reflect	ance values	over the fifteen wee	ek interval.

¹Lower reflective values are associated with darker skin color.

Figure 4. Graphical representation of red skin color retention over a fifteen week interval. Selections with the darkest skin color have an asterisk after the clonal designation.





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APPENDIX 1. Cultural management information for the Potato Breeding and Selection Program's trials at the San Luis Valley Research Center - 2017.

LOCATION: San Luis Valley Research Center

SOIL TYPE: Sandy Loam (Dunul cobbly sandy loam)

DATE:

Planted - 5/15/17 Hilled - 5/23/17 Vines Killed - 8/23/17 (Reglone 0.25 gal/A + 2.75 oz/A Agri Tin) 100 days after planting Harvested - 9/25/17

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 except 2 for Intermediate Yield Trials

METHOD OF HARVEST:

Machine (Grimme 1-row)

FERTILIZER:

 $5/15/17 - 80 \text{ lbs N} + 60 \text{ lbs P}_2O_5 + 80 \text{ lbs K}_20 + 25 \text{ lbs S} + 2.5 \text{ lb Zn/A} (dual band in-row liquid application)$ 6/24/17 - 10 lbs N (fertigated)6/25/17 - 10 lb N (fertigated)7/1/17 - 10 lbs N (fertigated)7/7/17 - 8 lbs N (fertigated)7/13/17 - 4 lbs N (fertigated) $Total fertilizer applied: 122 \text{ lbs N} + 80 \text{ lbs P}_2O_5 + 40 \text{ lbs K}_20 + 25 \text{ lb S} + 2.5 \text{ lb Zn/A}$

IRRIGATION:

Center Pivot -10.6" gross application (application frequency and amount based on ET) Rainfall - 1.4" (5/15/17 - 8/23/17)

INSECTICIDES APPLIED:

Weekly - mineral oil (1 gal/A) 6/17/17 - Leverage 360 (3 oz/A imidacloprid and ß-cyfluthrin) 7/18/17 - Fulfill (2.75 oz/A pymetrozine)

FUNGICIDES APPLIED:

6/23/17 - Bravo Ultrex (1.2 lb a.i./A chlorothalonil) 7/13/17 - Endura (4.5 oz/A boscalid) 7/28/17 - Quadris Opti (14 oz a.i./A)

HERBICIDES APPLIED:

5/23/17 - Chateau (2 oz/A flumioxazin) 5/23/17 - Dual Magnum (2 pt/A S-metolachlor) 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 and warmed up for 24 hours prior to bruising. After bruising, tubers are stored at room temperature for two 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.

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 $3\frac{1}{2}$ minutes at 375F. Fry color is rated on a 0-4 scale using the USDA color standards. Color ratings ≤ 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 two weeks at 60F. Chips are cooked at 365F until bubbling slows. Chip color is rated using the Snack Food Association 1-5 scale. Ratings ≤ 2.0 are acceptable.

Notes