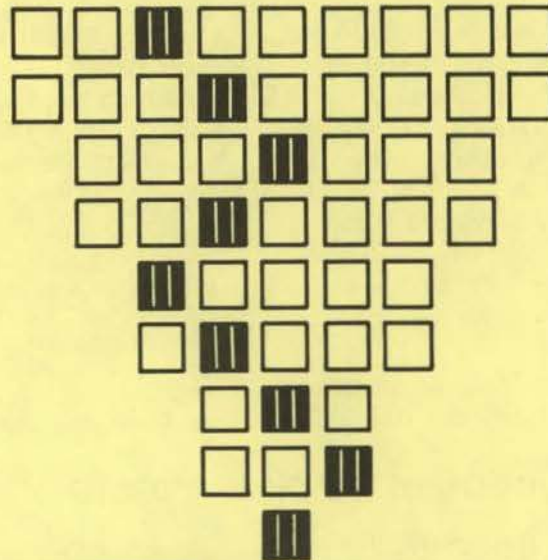
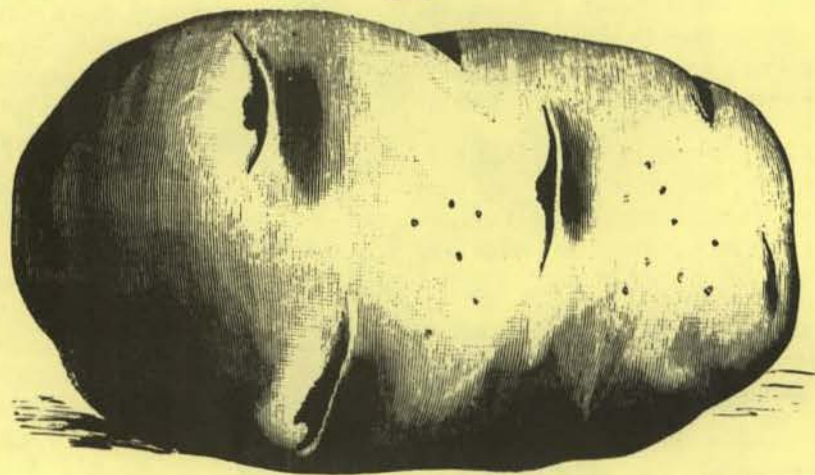


Potato Variety and Advanced Selection Yield Trials

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Potato Variety and Advanced Selection Yield Trials

*S. L. Love, J. C. Ojala, D. L. Corsini and J. J. Pavek**

Although the Idaho potato industry depends largely on a single potato variety, Russet Burbank, new varieties are constantly being sought to fill specialized market needs or to provide improved characteristics such as early maturity, resistance to internal defects and resistance to environmental stress. New potato varieties are released by breeding programs throughout North America. Regardless of whether these varieties were developed in Idaho, specifically for Idaho growing conditions, or were developed elsewhere, extensive evaluations are required to determine their adaptability and suitability for intended market use.

The potato breeding program in Idaho is conducted cooperatively by the USDA-ARS and the University

of Idaho. The purpose of the breeding program is to develop new varieties specifically suited for Idaho growing conditions and to evaluate the adaptability to Idaho of varieties from breeding programs in other states. This report briefly describes the activities of the breeding program and presents the results of evaluations conducted over the past several years.

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Development of New Potato Varieties

The development of a new potato variety usually requires 14 to 18 years from hybridization to release. The progress of a new variety through the breeding program at the University of Idaho Research and Extension Center at Aberdeen would typically occur in the following manner:

Year 1 — Crosses are made between appropriate parents by transferring pollen from the flower of the male parent to the flower of the female parent. The flowers develop into berries from which the true seeds are extracted.

Year 2 — The true seeds are planted and germinated in the greenhouse. These seedling plants are grown to maturity, producing small seed potatoes called seedling tubers.

Year 3 — The seedling tubers are planted in the field as spaced single hills. At harvest, tubers in each hill are inspected and selected for skin type, shape, eye depth, size and uniformity. Each year, 100,000 single hills are grown and about 2,000 are selected for further evaluation.

Year 4 — About 2,000 selections from the previous year's single hills are grown in 12-hill plots. At harvest, the tubers are selected visually for skin type, shape, eye depth, tuber set and yield. Other evaluations made after storage include specific gravity, french fry color and inspection for storage rots and internal tuber defects.

Year 5 — About 150 selections from the previous year's 12-hill plots are grown in preliminary replicated yield trials at the UI R&E Center at Aberdeen. These are evaluated for yield, grade, external defects, internal defects, specific gravity, fry color after storage and susceptibility to blackspot bruise.

Year 6 — About 50 selections from the previous year's preliminary yield trial are grown at the UI R&E Centers at Aberdeen and Kimberly in intermediate yield trials. Evaluations are similar to those for the preliminary yield trial, with additional evaluations for disease susceptibility. All entries in the intermediate yield trial are stem-cut and entered into the seed increase program at the UI Research and Extension Center at Teton to ensure the production of high-quality seed.

Years 7-8 — About 25 selections from the previous year's yield trials are grown in the advanced yield trials at the UI R&E Centers at Aberdeen and Kimberly. Early-harvest trials are conducted for early-maturing selections. Evaluations are similar to those conducted for the intermediate yield trials. Most selections remain in the advanced yield trials for at least 3 years.

Year 9 — About five selections are entered in the Tri-State variety trial conducted in Idaho, Washington and Oregon. Evaluations are made for all criteria listed previously, plus processing. Selections are grown in the Tri-State trial for 1 or 2 years.

Years 10-13 — One to three selections are entered in the Western Regional trials, conducted at 10 to 12 locations throughout the western United States. Evaluations include all tests described for the Tri-State trial. Concurrently, the selections are also evaluated in Extension trials and in cooperative processor and grower trials. Agronomic evaluations are also made to determine optimal management practices. Selections usually remain in the regional trial for 3 years. Virus-free plants are produced by meristem culture and introduced into the limited-generation seed program.

Years 14-15 — Selections performing well in the regional trial continue in Extension and cooperative processor and grower trials. Extensive agronomic and storage evaluations are conducted. Grower seed increases are begun if release appears probable.

Year 16 — A new variety is named and released.

This timetable is not absolute and the number of years required to develop a new potato variety may vary considerably. Most if not all of the clones resulting from

crosses made during a year will be discarded. The chance that any seedling produced in Year 2 will become a successful variety is literally a million to one. This is a result of the complex genetic nature of potatoes combined with the high demands for quality attributes by the potato industry.

Evaluation of Varieties From Other Programs

Potato varieties or selections from other states or countries are obtained for evaluation based on two criteria. The first is outstanding performance in trials conducted at other locations. The second is interest by members of the Idaho potato industry.

The evaluation of varieties from other states is not nearly as extensive as the evaluation of selections in the Idaho breeding program. Varieties from other potato breeding programs are grown in advanced yield trials and Extension trials throughout the state. Private companies within Idaho routinely evaluate recently released varieties.

Variety and Selection Description

Following are brief descriptions of released varieties and promising new selections that have been evaluated for several years. Tables 1 through 12 compare the performance of varieties and advanced selections from various locations from 1986 to 1988. Tables 13 through 16 detail the yield and quality of clones harvested early, usually in mid-August. Additional information on released varieties is available in Current Information Series 454, *Potato Varieties for Idaho*.

Fresh Pack or Processing Types Varieties

Russet Burbank — This well-known variety serves as a standard in all variety trials except chipping. Russet Burbank is medium to late maturing and medium to high yielding with medium russet skin and long, slightly flat tubers. Russet Burbank has medium specific gravity, good internal quality and usually fries well when stored at 45°F. This variety is susceptible to stress, which results in tuber malformations, hollow heart and sugar-end. Russet Burbank is very susceptible to net necrosis and moderately susceptible to early dying (verticillium wilt), major potato viruses and storage rots. This is a multipurpose variety suitable for both freshpack and processing.

Butte — Butte is medium to late maturing and medium to high yielding with a medium russet skin and long tubers with shallow eyes. Under optimum growing conditions, this variety can have 10 percent higher total yield than Russet Burbank. It may produce up to 80 percent U.S. No. 1 yield. Butte has a medium specific gravity and uniform shape and is resistant to malformations, sugar-end, hollow heart, leafroll net necrosis and scab. Butte has a tendency to fry dark from long-term storage at 45°F. It

may produce an abundance of undersized tubers, particularly if the soil nitrogen level is too high early in the growing season. This variety is suitable for both freshpack and processing.

HiLite — HiLite is a medium-maturing, medium-yielding variety with a medium russet skin and oblong to long tuber type. It is useful for freshpack and possibly for early processing. HiLite has medium to low specific gravity, and produces dark-colored fries from 45°F storage. Strengths: attractive appearance, good early harvest yields, resistance to external defects. Weaknesses: susceptibility to early dying and sugar accumulation during storage.

Krantz — Krantz is an early-maturing, medium-yielding variety with a light russet skin and oblong tuber type. It is useful for freshpack and possibly processing. Krantz has medium specific gravity, similar to Russet Burbank, and has good fry color from 45°F storage. Strengths: good early-harvest yields, high resistance to hollow heart, resistance to scab. Weaknesses: short tuber type, light skin color, susceptibility to growth cracks when grown in heavy soils.

Lemhi Russet — Lemhi Russet is medium to late maturing, medium to high yielding with a medium heavy russet skin and oblong to long, blocky tubers. Lemhi Russet consistently outyields Russet Burbank, has a higher specific gravity and fries better from storage. This variety has an attractive appearance and high internal quality, produces a high percentage U.S. No. 1 yield and is resistant to stresses during the growing season. Lemhi Russet is susceptible to hollow heart and very susceptible to blackspot bruise. This variety is suitable for both freshpack and processing.

Nooksack — Nooksack is a late-maturing, medium-yielding variety with medium russet skin and slightly

flattened, oblong tubers having few shallow eyes. Nooksack has high specific gravity and high U.S. No. 1 yield, and usually fries well when stored at 45°F. This variety is resistant to leafroll net necrosis, verticillium wilt, common scab and external defects. Nooksack emergence after planting is usually late and erratic because of long dormancy and low eye number. This variety is suitable for both freshpack and processing.

Norgold Russet — Norgold Russet is the predominant early-maturing russet variety grown in the Northwest and serves as the standard in early harvest trials. Norgold Russet is a medium-yielding variety with medium russet skin, shallow eyes and oblong tubers. Its total yields are less than those of Russet Burbank but its percent U.S. No. 1 yields are usually higher. This variety has medium to low specific gravity and usually fries dark when stored at 45°F. Norgold is a good early-harvest variety with uniform tuber shape. This variety is very susceptible to verticillium wilt, blackleg and potato viruses, however. Hollow heart and short tubers are often problems. Norgold is suitable for early freshpack.

NorKing Russet — NorKing Russet is a medium-maturing, medium-yielding variety with heavy russet skin and oblong, short, blocky tubers. NorKing Russet has medium specific gravity and fries well when stored at 45°F. NorKing Russet has lower yields than Norgold in early-harvest trials, but higher yields in late-harvest trials. This variety is resistant to scab and external defects and is much more resistant to verticillium wilt than Norgold Russet. NorKing Russet is suitable for early-season freshpack and processing.

Pioneer — Pioneer is a medium-maturing, medium-yielding variety with pink skin and oblong tubers that have shallow eyes. Pioneer has medium specific gravity and fries well when stored at 45°F. This variety produces a high percentage of large tubers with uniform shape. Pioneer is resistant to leafroll net necrosis and is susceptible to blackspot bruise, scab, early blight, verticillium wilt and potato viruses. This variety is suitable for early-season processing.

Red LaSoda — A late-maturing, high-yielding variety with light red skin and oval tuber type. It has low specific gravity and good fresh table quality. Red LaSoda is widely grown and serves as a check variety for other reds. Strengths: high yields and wide adaptability. Weaknesses: occasional hollow heart, occasional growth cracks and deep eyes.

Russet Norkotah — Russet Norkotah is an early-maturing, medium-yielding variety with medium russet skin and oblong to long tubers. Total yields are slightly less than Norgold Russet, and percentage of U.S. No. 1 yield is about the same. In some trials, however, total yields have been considerably lower because of susceptibility to verticillium wilt. Specific gravity is about the same as Norgold Russet but seldom above 1.075. Russet Norkotah tubers have attractive, uniform shape, usually with

out hollow heart. This selection appears suitable for early freshpack.

Russet Nugget — Russet Nugget is a very late-maturing, low-yielding variety developed by the Colorado potato breeding program. It has heavy russet skin and an oval, flat tuber. It has high specific gravity and fries well from 45°F storage. Under Idaho growing conditions, this variety produces a very large, late-maturing vine with an abundance of undersized tubers, indicating that it is only marginally adapted. Russet Nugget is resistant to blackspot bruise and most internal defects but it will occasionally display alligator hide. Russet Nugget appears suitable for freshpack and processing.

Shepody — Shepody is an early-maturing, medium-yielding variety with white skin and long tubers. Shepody has medium to low specific gravity and fries darker than Russet Burbank when stored at 45°F. This variety has high early-season yields and high percentage of large tubers and is resistant to blackspot bruise. Shepody has erratic and usually low specific gravity and accumulates sugars during storage. Shepody is also very susceptible to scab and metribuzin herbicide injury. This variety is suitable for early processing.

Targhee — Targhee is a late-maturing, medium-yielding variety with heavy russet skin, shallow eyes and oblong, blocky tubers. Targhee has medium specific gravity and usually fries dark from long-term storage at 45°F. Total yield of Targhee is about equal to Russet Burbank, and U.S. No. 1 yield is significantly greater. Targhee is resistant to scab, verticillium wilt and potato virus X and has uniform tuber shape. This variety is susceptible to leafroll net necrosis, growth cracks, elephant hide and blackspot bruise. Targhee is primarily suitable for late freshpack.

Advanced Selections

The freshpack or processing selections listed in this section are being evaluated for quality, yield and disease resistance under Idaho growing conditions. Superior selections may be named and released.

A72685-2 — This selection has been dropped from further consideration because of short tuber type and sugar buildup in storage.

A7411-2 — This selection is medium- to late-maturing and medium- to high-yielding with medium russet skin, long tuber type and appearance very similar to Russet Burbank. A7411-2 appears to be superior to Russet Burbank for total yield, U.S. No. 1 yield, specific gravity and fry color. It has medium to high specific gravity and fries well when stored at 45°F. This selection is resistant to hollow heart, brown center, translucent end, leafroll net necrosis, virus X and verticillium wilt. It produces large tubers with uniform shape. A7411-2 is susceptible to scab and has a tendency for slightly deeper eyes. This selection appears suitable for both freshpack and processing and has been an outstanding entry in Idaho potato variety trials.

A74114-4 — This is an early-maturing, medium-yielding variety with medium russet skin and long, cylindrical tubers. In early-harvest trials, this selection has produced total and U.S. No. 1 yields similar to or slightly lower than Norgold Russet. In late-harvest trials, A74114-4 produced slightly lower total yields than Russet Burbank but a much higher yield of U. S. No. 1's. This selection has medium specific gravity, similar to Russet Burbank. It is resistant to internal quality problems, blackspot and shatter bruise and storage rots. A74114-4 is susceptible to early blight and shows occasional growth cracks. This selection appears suitable for freshpack and processing. It has been an outstanding entry in early-harvest trials.

A76147-2 — This is a medium-maturing, very high-yielding selection with white skin and oblong tubers. It is similar in appearance to Kennebec and is consistently the highest yielder in most field trials. It produces high yields in both early and late harvests. A76147-2 has medium to high specific gravity and fries better than Russet Burbank when stored at 45°F. Stressful growing conditions may produce uneven but not malformed tubers. This selection is susceptible to metribuzin injury, scab and net necrosis but is moderately resistant to verticillium wilt. A76147-2 appears suitable for early- and late-harvest processing, although in some trials texture of fried products has been marginally acceptable.

A76260-16 — This selection has been dropped from the breeding program because of high blackspot bruise susceptibility and low solids.

A7816-14 — This selection is medium to late maturing and medium to high yielding with medium russet skin and long tubers. A7816-14 has high specific gravity and fries well when stored at 45°F. This selection appears resistant to internal defects, including blackspot bruise, and is moderately susceptible to shatter bruise. A7816-14 appears suitable for both freshpack and processing.

A7961-1 — A late-maturing, medium- to high-yielding selection with heavy russet skin and long tuber type, A7961-1 is useful for freshpack and processing. It has medium specific gravity and occasionally fries dark from 45°F storage. Strengths: resistance to malformations, internal defects and shatter bruise. Weaknesses: occasional sugar buildup in storage.

A79141-3 — This selection is medium to late maturing and high yielding with medium russet skin, long tubers and deep eyes. A79141-3 has medium to high specific gravity and fries very well when stored at 45°F. It does not accumulate sugars during storage. It occasionally has hollow heart, irregular shaped tubers and an abundance of undersized tubers. This selection appears suitable for processing, but because of tuber appearance may not be suitable for freshpack.

AC77101-1 — An early-maturing, medium-yielding selection with heavy russet skin and oblong tuber type. It may be useful for early freshpack. AC77101-1 has medium specific gravity and may produce dark fry colors from

45°F storage. Strengths: good early-harvest yields. Weaknesses: short, flat tuber type, susceptibility to early dying.

AC77226-13 — This selection was dropped from further consideration because of low yields and susceptibility to hollow heart.

AC79100-1 — This selection has been dropped from further consideration because of susceptibility to hollow heart and shatter bruise.

AC80369-1 — This selection has been dropped from further consideration because of susceptibility to blackspot bruise.

AD7267-3 — This selection was dropped from further consideration because of susceptibility to black spot bruise, shatter bruise and sugar buildup during storage.

BC0038-1 — A medium-maturing, medium-yielding selection with white skin and oblong tuber type. It may be useful for processing. BC0038-1 has medium specific gravity, similar to Russet Burbank, and produces very light fry colors from 45°F storage. Strengths: low sugar accumulation during storage, attractive appearance. Weaknesses: susceptibility to scab and shatter bruise.

CO8011-5 — A medium-maturing, high-yielding selection with heavy russet skin and oblong tuber type. It may be useful for freshpack. CO8011-5 has low specific gravity and may produce dark fry colors from 45°F storage. Strengths: attractive appearance. Weaknesses: low specific gravity, short flat tuber type, susceptibility to early dying.

COO8014-1 — This selection from Oregon is medium- to late-maturing and a medium- to high-yielding selection. It has oblong medium russeted tubers. COO8014-1 has specific gravity similar to Russet Burbank and fries well from 45°F storage. Malformed tubers with deep bud ends are an occasional problem, along with moderate susceptibility to hollow heart. COO8014-1 needs more testing but may be suitable for freshpack and processing.

GH-11 — This variety is a clonal selection of Russet Burbank exhibiting slight giant hill characteristics. It was selected for moderate resistance to early dying but does not show this resistance consistently. GH-11 is almost identical to Russet Burbank.

GH-13 — This variety is a clonal selection of Russet Burbank exhibiting slight giant hill characteristics. It was selected for moderate resistance to early dying but does not show this resistance consistently. GH-13 is almost identical to Russet Burbank.

NDA848-3 — This selection was dropped from further consideration because of short tuber type and susceptibility to growth cracks.

NDA1411-2 — An early-maturing, medium- to high-yielding selection with medium russet skin and oblong tuber type. This selection is a Norgold type and will be useful primarily for freshpack. NDA1411-2 has medium to low specific gravity and low sugar buildup in

storage. Strengths: high early yields, large tuber size for an early-maturing selection. Weaknesses: low specific gravity, stress induced irregularity in shape.

NDTX9-1068-11R — This variety is a medium-maturing, medium-yielding selection with bright red skin and round tuber type. It has low specific gravity and good fresh table quality. Strengths: good early yields and exceptional red color. Weaknesses: attached stolons, susceptibility to shatter bruise and soft rot.

SH-1 (Shasta) — A selection owned by Plant Genetics, Inc., SH-1 is late maturing, high yielding and produces large tubers similar in type to Shepody. It has medium to low specific gravity and often produces dark fry colors from 45°F storage. Strengths: high yield and good early tuber size. Weaknesses: occasional low specific gravity, oversize tubers, occasional hollow heart and susceptibility to scab.

Chipping Types

Varieties

Atlantic — A medium-maturing, high-yielding variety with buff skin and round tuber type. It is used widely as a chipping variety in the eastern United States. Atlantic has high specific gravity and chips well from 50°F storage. Strengths: high yields, high specific gravity and low sugar buildup in storage. Weaknesses: susceptibility to hollow heart, heat necrosis, shatter bruise and storage rots.

Kennebec — Kennebec is medium-maturing and very high yielding. It has white skin, shallow eyes and oval to oblong tubers. Kennebec total yield and percent U.S. No. 1 yield are consistently higher than Russet Burbank, and the variety is adapted to a wider range of growing conditions. Kennebec has medium specific gravity, chips well when stored at 50°F or when reconditioned from 45°F storage. This variety is resistant to leafroll net necrosis but is susceptible to scab, blackleg, potato viruses, growth

cracks and hollow heart. Kennebec is suitable for french fry processing and chipping.

Norchip — Norchip is a widely grown chipping variety that is used as a standard in chipping trials. Norchip is medium maturing and medium yielding with white skin and round to oblong tubers. This variety has medium specific gravity and usually chips well when stored at 50°F. Norchip is resistant to net necrosis and blackspot bruise but is susceptible to early blight, *Fusarium* dry rot, potato viruses and growth cracks. This variety is suitable for the chipping market.

Advanced Selections

The following chipping selections are being evaluated for quality, yield and disease resistance under Idaho growing conditions. Superior selections may be named and released.

A80559-2 — This variety is a late-maturing, high-yielding selection with white skin and round tuber type. It has exceptionally high specific gravity and chips well from 50°F storage. Strengths: high yields, high specific gravity, low sugar accumulation during storage, resistance to external defects and blackspot bruise. Weakness: susceptibility to shatter bruise.

BR7093-24 (Gemchip) — This is a medium- to late-maturing, high-yielding selection with round white tubers of good grade and appearance. It has higher specific gravity and less tendency for internal or external defects than Norchip. It chips well from 50°F storage and has resistance to most common field diseases but is susceptible to common scab. BR7093-24 is suitable for chipping.

A70369-2 — This selection was dropped from further consideration because of an overabundance of undersize tubers and sugar buildup during storage.

TXA17-1 — This selection was dropped from further consideration because of late maturity and susceptibility to storage rots.

Yield and Quality Performance

Advanced selections in the Idaho potato breeding program are constantly compared to released varieties for yield potential, internal and external quality and resistance to common potato diseases and disorders. These comparisons have been made in many different locations in the state over several trial years.

Total and U.S. No. 1 Yield

In late harvest field trials, selection A76147-2 has consistently higher total yield than other varieties and advanced selections (Fig. 1). A76147-2 has averaged over 90 cwt per acre greater total yield than Russet Burbank. A72685-2 is also a high yielder, averaging over 20 cwt per acre greater total yield than Russet Burbank. A-72685-Z is no longer a candidate for the Idaho breeding program. A7411-2 and Lemhi Russet have average total yields similar to Russet Burbank. NorKing Russet, A74114-4 and Russet Norkotah

have average total yield lower than Russet Burbank.

Most new advanced selections and varieties have consistently higher percent U.S. No. 1 yield than Russet Burbank (Fig. 1). A76147-2, A72685-2, A7411-2 and Lemhi Russet have significantly greater U.S. No. 1 yield than Russet Burbank.

A79141-3, A76147-2 and NDA1411-2 have had greater total yield than Norgold Russet in some early-harvest trials. Lemhi, Russet Burbank, A74114-4, A7961-1, AC79100-1, COO8014-1 and A7816-14 usually have lower yield than Norgold Russet. Later-maturing varieties (Fig. 2) usually do not yield or size well in early-harvest trials.

Specific Gravity

A72685-2, A7411-2 and Lemhi Russet have specific gravity much greater than Russet Burbank (Fig. 3).

(continues on page 14)

Table 1. 1988 western regional potato variety trial, Aberdeen, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Culls and U.S. No. 2	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz			< 4 oz						
			6-12 oz									
----- (cwt/acre) -----		----- (%) -----					----- (%) -----					
A7816-14	390	301	77	25	42	6	16	1.095	2	0.7	3.6	2.1
A7961-1	385	284	74	28	31	14	12	1.088	5	3.5	0.9	2.2
AC79100-1*	378	319	84	28	45	9	7	1.092	10	2.1	5.6	1.8
AC80369-1*	378	280	74	17	41	15	11	1.092	0	4.1	3.0	0.8
COO8014-1	418	341	82	25	47	10	8	1.085	2	1.0	3.9	1.5
NDTX9-1068-11R	426	342	80	23	38	13	6	1.071	2	1.1	4.3	3.8
SH-1	508	444	87	42	38	6	7	1.083	2	0.8	1.3	1.8
Lemhi Russet	376	282	75	17	38	14	11	1.095	0	4.2	4.1	1.2
Norgold Russet	347	289	83	26	44	12	5	1.076	20	2.8	3.4	3.5
Red LaSoda	477	395	83	27	47	5	12	1.080	15	1.6	2.4	2.5
Russet Burbank	340	196	58	16	28	16	26	1.084	12	1.6	3.3	2.4
Shepody	348	303	87	26	48	9	4	1.081	0	2.0	2.2	2.3
A74114-4	406	424	80	36	35	6	14	1.084	12	1.4	1.3	2.1
A7411-2	508	444	87	42	38	6	7	1.089	0	2.5	2.1	1.9
AC77101-1	407	318	78	17	48	11	11	1.082	10	3.9	2.2	2.1
CO8011-5	427	360	84	34	39	10	6	1.072	0	1.8	3.5	2.3
BC0038-1	383	298	78	20	39	14	8	1.083	0	2.0	6.0	1.6
AC77226-13	289	240	83	14	51	16	1	1.083	0	2.0	3.1	2.3
GH-11	356	228	64	6	39	20	17	1.083	8	1.5	3.3	2.0
GH-13	335	207	62	13	31	23	16	1.081	0	1.9	2.1	1.5
LSD (0.05)	57	62						0.004		0.7	1.2	0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 2. 1987 western regional potato variety trial, Aberdeen, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz			< 4 oz						
			6-12 oz									
- (cwt/acre) -		----- (%) -----					----- (%) -----					
A76147-2	593	540	91	59	29	2	7	1.081	5	2.4	1.5	2.7
A7816-14	503	429	85	34	40	10	5	1.093	0	1.6	1.4	3.4
A7961-1	547	488	89	43	40	7	4	1.083	10	2.5	0.9	2.8
A79141-3	509	431	85	21	50	11	5	1.087	10	3.0	2.0	1.6
AC79100-1*	482	456	95	49	41	4	2	1.084	22	3.2	2.1	2.8
AC80369-1*	484	436	90	53	32	4	6	1.094	12	4.0	1.7	1.4
COO8014-1	518	473	91	20	58	7	2	1.086	2	1.7	2.3	1.4
NDTX9-1068-11R	471	432	92	30	51	8	0	1.069	0	2.0	4.0	4.0
SH-1	693	614	89	67	19	2	10	1.081	25	1.0	0.9	3.0
Lemhi Russet	578	539	93	37	50	5	2	1.092	8	4.1	2.4	1.8
Norgold Russet	410	356	87	24	46	13	0	1.073	35	2.9	2.0	3.0
Red LaSoda	582	530	91	27	55	5	4	1.079	8	2.1	2.0	2.4
Russet Burbank	521	346	66	10	46	14	20	1.084	5	1.9	2.1	2.4
LSD (0.05)	85	84						0.004		0.6	1.2	0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 3. 1986 western regional potato variety trial, Aberdeen, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
- (cwt/acre) -		----- (%) -----										
A7411-2	432	393	91	22	69	6	3	1.091	0	3.6	2.0	1.6
A74114-4	335	279	83	20	63	8	9	1.086	0	2.3	1.0	2.3
A76147-2	537	499	93	56	47	4	3	1.082	0	3.1	2.6	1.5
A76260-16*	407	383	94	22	72	6	0	1.080	0	4.0	1.5	1.1
A79141-3	525	456	86	12	74	12	2	1.093	10	3.2	2.3	0.6
AC79100-1*	426	392	92	48	43	6	3	1.088	20	3.2	5.3	1.1
AD7267-3*	316	282	89	15	75	9	1	1.085	3	4.1	4.0	1.2
COO8014-1	430	392	91	24	67	6	3	1.088	3	2.5	2.8	0.6
Russet Norkotah	390	348	89	19	70	10	1	1.076	5	3.0	1.6	1.8
Russet Nugget	362	325	89	33	56	9	2	1.096	5	1.9	1.8	0.9
Lemhi Russet	482	442	92	31	61	6	2	1.092	0	4.5	3.6	1.0
Norgold Russet	361	323	89	23	67	10	0	1.079	20	2.8	2.6	2.0
Shepody	475	420	88	43	45	5	7	1.079	5	2.3	1.7	1.8
Russet Burbank	475	392	83	9	74	12	5	1.088	13	2.8	2.1	1.0
LSD (0.05)	40	42						0.003		0.5	0.9	0.5

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

*Selections dropped from further consideration.

Table 4. 1988 western regional potato variety trial, Kimberly, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Culls and U.S. No. 2	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Fry ³ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)					
-- (cwt/acre) --		----- (%) -----									
A7816-14	483	293	61	38	20	5	34	1.079	15	2.2	2.8
A7961-1	426	290	68	45	19	4	29	1.084	14	4.0	1.8
AC79100-1*	412	345	84	49	30	6	10	1.079	48	3.4	2.9
AC80369-1*	524	434	83	50	27	4	14	1.081	0	4.5	1.1
COO8014-1	479	385	80	40	33	6	14	1.079	2	2.8	1.0
NDTX9-1068-11R	427	357	84	43	32	9	7	1.065	8	2.8	3.9
Lemhi Russet	525	401	76	39	32	8	16	1.089	38	4.9	1.4
Norgold Russet	320	210	66	18	33	15	19	1.069	20	3.3	1.7
Red LaSoda	666	550	83	55	23	4	13	1.077	5	2.2	2.9
Russet Burbank	471	250	53	21	24	8	39	1.080	10	3.1	1.9
A74114-4	442	298	67	37	25	6	27	1.079	0	2.1	2.2
A7411-2	656	350	53	38	14	12	34	1.085	2	3.1	1.7
AC77101-1	425	332	78	38	33	6	16	1.077	35	4.5	2.4
CO8011-5	440	381	87	45	35	5	8	1.069	5	3.7	1.8
BC0038-1	337	266	79	27	40	13	7	1.074	8	2.3	1.3
AC77226-13*	314	284	90	31	34	8	2	1.077	12	3.9	1.4
GH-11	471	246	52	15	28	6	42	1.080	0	3.3	1.6
GH-13	485	253	52	16	26	11	37	1.082	15	3.0	1.5
LSD (0.05)	137	130						0.005		0.6	0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

*Selections dropped from further consideration.

Table 5. 1987 western regional potato variety trial, Kimberly, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
	- (cwt/acre) -	----- (%) -----							(%)			
A76147-2	510	444	87	53	28	5	8	1.080	0	4.3	2.3	2.4
A7816-14	539	429	79	49	25	5	15	1.090	0	3.6	3.8	2.1
A7961-1	339	274	81	31	38	10	9	1.088	2	4.6	1.1	2.2
A79141-3	422	304	72	12	39	18	10	1.086	5	3.5	3.1	1.2
AC79100-1*	492	419	85	40	37	8	7	1.083	15	4.0	5.3	2.4
AC80369-1*	458	387	84	39	39	4	11	1.082	0	4.1	3.5	2.2
COO8014-1	481	417	87	24	49	6	8	1.083	0	2.3	5.0	2.2
NDTX9-1068-11R	478	413	86	28	47	11	3	1.070	0	3.6	5.6	3.2
Lemhi Russet	550	476	87	31	46	6	7	1.089	5	4.7	3.5	2.2
Norgold Russet	272	203	75	3	43	24	1	1.070	4	4.3	2.2	2.8
Red LaSoda	589	528	90	39	42	5	5	1.078	8	4.0	5.3	2.6
Russet Burbank	448	343	77	8	46	19	5	1.077	0	3.5	3.7	2.2
LSD (0.05)	92	78						0.004		0.7	1.7	0.7

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 6. 1986 western regional potato variety trial, Kimberly, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Culls and U.S. No. 2	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
	-- cwt/acre --	----- (%) -----							(%)			
A7411-2	442	387	88	27	61	6	6	1.096	3	4.1	1.9	1.3
A74114-4	388	305	78	33	45	10	12	1.089	13	3.0	1.9	2.5
A76147-2	359	316	88	56	32	8	4	1.088	13	3.7	2.9	1.8
A76260-1*	438	365	84	44	40	7	9	1.081	13	4.4	3.2	1.1
A79141-3	460	374	82	16	66	16	2	1.095	33	3.8	3.6	0.8
AC79100-1*	330	276	84	34	50	11	5	1.086	26	3.6	3.8	1.8
COO8014-1	376	330	87	19	69	10	2	1.091	10	2.8	4.7	1.5
Lemhi Russet	337	296	88	31	57	9	3	1.094	20	4.5	2.5	1.8
Russet Norkotah	260	221	82	15	67	14	4	1.079	10	3.5	2.2	2.1
Norgold Russet	281	242	86	23	63	13	1	1.080	50	3.3	2.8	2.5
Russet Burbank	455	362	79	20	59	13	8	1.092	10	3.6	2.2	1.4
Shepody	261	242	92	43	50	6	1	1.084	0	3.3	2.0	2.2
Russet Nugget	160	134	81	9	73	18	0	1.093	7	3.0	1.8	1.2
LSD (0.05)	151	133						0.006		0.6	0.8	0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 7. 1988 western regional potato variety trial, Rexburg, Idaho.

Potato variety or selection	Total yield	U.S. No. 1				Culls and U.S. No. 2	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color	
		Yield	> 12 oz	6-12 oz	< 4 oz							
	- (cwt/acre) -	----- (%) -----						(%)				
A74114-4	408	280	69	22	34	15	16	1.097	2	2.3	1.6	2.4
A7816-14	332	236	71	8	38	24	5	1.098	0	2.6	2.7	3.3
A7961-1	305	227	74	17	37	19	7	1.099	0	4.1	0.6	2.9
BR7093-24	403	294	73	10	43	22	5	1.096	6	3.7	3.7	1.5
NDA1411-2	477	374	78	23	41	10	12	1.087	0	4.4	3.2	2.7
Atlantic	424	330	78	17	41	17	5	1.105	10	1.8	4.4	1.1
Krantz	319	233	73	27	38	9	18	1.082	0	2.3	3.8	0.9
Lemhi Russet	392	295	75	20	38	17	8	1.100	2	4.8	2.5	2.1
Norchip	428	260	61	12	34	12	28	1.090	10	1.2	3.8	1.1
NorKing Russet	402	306	76	10	46	17	6	1.090	0	3.2	2.8	2.3
Russet Burbank	379	221	58	6	31	29	12	1.094	5	3.3	2.2	2.3
Russet Norkotah	381	301	79	21	46	12	8	1.079	2	2.5	2.0	3.1
Shepody	423	323	76	30	35	10	14	1.096	0	3.5	2.2	2.3
Norgold Russet	420	320	76	23	35	16	8	1.081	10	2.1	1.3	3.5
COO8014-1	395	321	81	15	47	15	4	1.095	0	2.6	3.4	1.5
A79141-3	371	234	63	4	33	32	5	1.100	0	4.0	2.8	1.3
A80559-2	414	281	68	6	40	25	7	1.108	2	2.3	5.0	1.0
LSD (0.05)	47	43						0.004		0.3	1.0	0.4

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

Table 8. 1987 western regional potato variety trial, Rexburg, Idaho.

Potato variety or selection	Total yield	U.S. No. 1				Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color	
		Yield	> 12 oz	6-12 oz	< 4 oz							
	-- (cwt/acre) --	----- (%) -----						(%)				
A72865-2*	427	314	74	12	43	22	5	1.097	0	3.3	3.0	2.5
A7411-2	244	159	65	22	31	12	23	1.089	2	3.0	1.2	2.5
A74114-4	251	175	70	4	36	26	4	1.093	0	2.8	1.4	2.1
A76147-2	478	324	68	28	30	11	21	1.089	15	3.1	2.7	2.3
A7816-14	311	205	66	13	36	22	12	1.100	0	2.4	2.4	2.4
A7961-1	329	211	64	11	33	27	9	1.097	4	2.9	1.8	2.5
BR7093-24	436	303	70	13	41	16	14	1.096	13	3.3	2.5	1.0
NDA1411-2	365	225	62	14	31	22	16	1.080	2	4.1	2.3	2.2
SH-1	469	324	69	25	34	9	22	1.088	5	1.7	1.2	1.7
Atlantic	322	177	55	5	31	29	15	1.100	6	0.9	3.1	0.9
Krantz	148	90	61	11	33	22	17	1.082	0	2.4	2.0	1.5
Lemhi Russet	223	141	63	11	34	23	14	1.094	6	4.3	1.7	1.8
Norchip	313	126	40	1	22	27	32	1.085	6	2.0	2.1	0.7
NorKing Russet	329	216	66	6	32	32	3	1.093	3	2.8	2.9	1.6
Russet Burbank	289	95	33	1	13	52	15	1.089	12	2.4	1.6	1.5
Russet Norkotah	202	119	59	4	33	31	10	1.080	0	4.0	1.7	2.3
Shepody	255	168	66	26	30	13	21	1.088	0	1.8	1.3	2.4
LSD (0.05)	53	50						0.004		0.6	0.8	0.5

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

*Selections dropped from further consideration.

Table 9. 1986 potato variety trial, Rexburg, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
- (cwt/acre) -		-----							(%)			
Long russets and white-skinned processors												
A72685-2*	378	308	81	24	57	15	4	1.099	0	3.4	3.9	2.7
A7411-2	338	255	76	20	55	13	12	1.095	0	3.0	2.5	2.5
A74114-4	343	267	78	20	58	15	7	1.095	1	2.4	1.6	2.7
A76147-2	447	399	89	48	41	7	4	1.094	2	3.0	3.2	2.4
Russet Norkotah	275	216	79	14	65	17	4	1.082	0	3.3	2.3	3.4
NDA848-3*	359	254	71	24	46	10	20	1.093	7	2.8	3.1	2.8
Butte	363	244	67	13	54	25	8	1.090	0	3.4	3.9	2.7
Kennebec	449	358	80	38	42	7	13	1.094	5	3.0	2.7	1.7
Lemhi Russet	333	257	77	14	63	15	8	1.102	2	4.0	3.4	2.1
Nooksack	318	263	81	7	74	17	2	1.100	0	1.8	2.7	1.3
NorKing Russet	348	272	78	8	71	18	3	1.092	5	3.4	3.2	1.9
Shepody	367	269	73	17	66	14	13	1.096	0	2.5	1.3	2.2
Targhee	290	215	74	17	57	23	3	1.087	2	3.3	3.2	3.8
Russet Burbank	342	191	55	7	48	25	20	1.091	33	2.7	2.2	2.1
Chippers												
A70369-2*	360	219	61	4	56	34	6	1.102	0	3.5	1.8	1.1
BR7093-24	402	317	79	15	64	17	4	1.098	3	3.6	2.4	1.1
TXA17-1*	375	276	74	4	70	22	4	1.094	0	3.3	1.3	0.6
Norchip	331	226	68	2	66	22	10	1.092	14	2.4	2.4	0.7
LSD (0.05)	41	45						0.004		0.4	0.8	0.5

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

*Selections dropped from further consideration.

Table 10. 1988 potato variety trial, Shelley, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Culls and U.S. No. 2	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
- (cwt/acre) -		-----							(%)			
A7411-2	374	270	72	17	40	15	13	1.097	0	4.5	2.7	1.0
A74114-4	381	309	81	22	45	9	10	1.088	0	2.6	1.6	1.8
A7816-14	423	305	72	17	40	13	15	1.103	0	3.2	3.2	1.3
A7961-1	399	302	76	15	41	13	12	1.096	0	4.5	1.1	1.5
NDA1411-2	336	229	68	19	33	16	15	1.076	0	4.5	3.6	2.0
Krantz	315	257	82	12	49	12	6	1.082	0	3.1	4.4	1.2
Lemhi Russet	392	307	78	20	41	13	8	1.095	2	4.8	3.2	1.0
NorKing Russet	381	326	86	24	46	10	4	1.088	2	3.6	3.1	1.4
Russet Burbank	374	241	64	7	33	24	12	1.083	4	3.7	2.4	1.4
Russet Norkotah	271	205	76	13	37	18	6	1.072	0	4.0	2.3	1.5
Shepody	355	282	79	20	44	11	10	1.088	0	3.1	2.7	1.8
Norgold Russet	318	236	74	12	41	22	4	1.071	7	3.4	3.4	2.1
COO8014-1	394	315	80	11	48	16	4	1.093	0	2.2	4.3	0.9
A79141-3	382	246	64	4	33	30	6	1.102	0	3.7	2.8	0.5
LDS (0.05)	37	37						0.003		0.4	0.8	0.4

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

Table 11. 1987 potato variety trial, Shelley, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
	- (cwt/acre) -	----- (%) -----							(%)			
A72856-2*	361	289	80	26	40	15	5	1.097	0	4.7	3.8	1.9
A7411-2	195	155	79	13	46	16	5	1.098	0	4.8	2.5	2.0
A74114-4	153	79	51	1	20	45	4	1.084	0	5.0	1.0	2.2
A76147-2	331	262	79	29	40	9	11	1.091	0	4.6	3.7	1.8
A7816-14	269	216	80	11	48	15	5	1.107	0	3.9	2.6	1.9
A7961-1	220	160	73	13	40	22	5	1.097	3	4.8	1.2	1.7
NDA1411-2	230	167	73	5	46	20	8	1.077	0	5.0	2.5	1.7
Krantz	52	32	61	0	34	29	10	1.077	0	4.2	4.6	1.2
Lemhi Russet	189	142	75	27	35	14	11	1.091	14	5.0	2.8	1.7
NorKing Russet	243	163	67	4	38	29	4	1.086	0	4.7	4.2	1.8
Russet Burbank	261	117	45	2	19	41	14	1.089	36	4.6	2.5	1.8
Russet Norkotah	150	89	59	2	27	37	4	1.073	0	4.6	2.1	1.9
Shepody	166	121	73	18	37	19	9	1.089	3	3.9	1.7	2.2
LSD (0.05)	33	29						0.004		0.3	1.0	0.4

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 12. 1986 potato variety trial, Shelley, Idaho.

Potato variety or selection	Total yield	U.S. No. 1					Malformed	Specific gravity	Hollow ¹ heart	Blackspot ² bruise	Shatter ³ bruise	Fry ⁴ color
		Yield	> 12 oz	6-12 oz	< 4 oz	(%)						
	- (cwt/acre) -	----- (%) -----							(%)			
A72685-2*	451	381	84	33	51	13	3	1.094	0	4.1	5.4	1.9
A7411-2	405	301	74	11	62	25	2	1.087	0	3.4	3.1	1.9
A74114-4	352	253	72	14	58	17	11	1.085	0	2.4	2.1	2.3
A76147-2	489	442	90	51	40	7	2	1.098	0	3.3	4.2	1.9
A7816-14	427	358	84	31	53	13	3	1.098	0	2.7	4.6	1.6
Russet Norkotah	269	172	64	4	60	35	1	1.078	0	3.5	2.5	2.8
NDA848-3*	443	372	84	31	53	13	3	1.083	3	3.1	3.1	1.3
Butte	429	319	74	13	61	25	1	1.083	2	3.8	4.0	2.2
Lemhi Russet	385	286	75	18	56	22	4	1.091	0	4.4	3.6	1.7
Nooksack	287	224	78	13	65	21	1	1.094	2	1.8	3.0	1.5
NorKing Russet	349	226	65	4	61	34	1	1.086	0	3.1	3.1	1.2
Pioneer	289	253	87	42	44	12	2	1.081	0	4.1	3.3	2.1
Shepody	347	264	76	22	53	21	4	1.086	0	2.3	2.2	1.7
Targhee	329	228	69	15	54	28	3	1.086	3	4.1	3.1	2.4
Russet Burbank	391	228	58	6	52	35	7	1.085	44	3.6	3.2	1.7
LSD (0.05)	43	44						0.002		0.3	0.7	0.5

¹Hollow heart was measured only in potatoes greater than 12 oz.

²Blackspot bruise susceptibility: 0 (resistant) to 5.0 (most susceptible).

³Shatter bruise susceptibility with lowest score = most resistant.

⁴USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

* Selections dropped from further consideration.

Table 13. 1988 early harvest potato variety trial, Kimberly, Idaho. All entries harvested on July 28.

Potato variety or selection	Total yield	U.S. No. 1				Specific Malformed	Hollow ¹ gravity	Fry ² heart	color	
		Yield	> 12 oz	6-12 oz	< 4 oz					
	--- (cwt/acre) ---	----- (%) -----							(%)	
AC77101-1	232	105	45	3	19	45	9	1.063	2	1.2
AC79100-1*	139	52	37	0	8	60	3	1.053	0	2.1
Russet Burbank	211	56	27	0	4	61	13	1.060	0	1.6
COO8014-1	258	166	64	3	29	30	5	1.060	0	0.8
A7961-1	174	100	57	2	24	32	10	1.062	0	1.1
GH-11	228	73	32	0	7	51	16	1.058	0	1.9
A7411-2	229	156	68	1	28	25	7	1.064	0	1.6
Norgold Russet	271	164	61	3	27	35	5	1.065	0	2.8
A74114-4	248	154	62	5	29	25	25	1.062	2	1.8
NDTX9-1068-11R	222	147	66	3	37	32	3	1.052	0	2.0
CO8011-5	220	118	54	2	23	40	6	1.054	0	1.6
Lemhi Russet	204	83	41	0	14	50	9	1.066	0	1.8
A7816-14	198	66	33	1	14	29	37	1.059	0	2.5
GH-13	191	34	18	0	2	67	15	1.061	0	1.7
AC80369-1*	169	94	56	3	25	37	8	1.060	0	0.6
Red LaSoda	260	181	70	2	36	25	5	1.056	0	1.9
BC0038-1	228	158	69	7	40	28	3	1.067	5	1.6
AC77226-13	111	18	16	0	3	83	1	1.059	0	1.2
Shepody	147	78	53	0	17	43	3	1.058	0	1.6
SH-1	197	122	62	5	37	32	6	1.056	0	1.1
HiLite	284	163	57	0	22	42	0	1.064	0	1.4
LDS (0.05)	32	32						0.003		0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²USDA fry grade score with lower score indicating lighter color; Fried directly from field.

*Selections dropped from further consideration.

Table 14. 1987 early harvest potato variety trial, Kimberly, Idaho. All entries harvested on July 31.

Potato variety or selection	Total yield	U.S. No. 1				Malformed	Specific gravity	Hollow ¹ heart	Fry ² color	
		Yield	> 12 oz	6-12 oz	< 4 oz					
	--- (cwt/acre) ---	----- (%) -----							(%)	
Russet Burbank	220	116	53	3	30	32	15	1.068	0	1.8
Lemhi Russet	245	167	68	1	36	30	2	1.074	0	1.7
A7961-1	240	171	71	4	40	25	4	1.073	2	1.9
AC79100-1*	196	151	77	4	45	20	3	1.065	2	2.3
NDA1411-2	342	295	86	24	48	7	7	1.074	0	1.9
Norgold Russet	303	220	73	3	45	26	2	1.074	12	1.9
A79141-3	303	185	61	2	33	38	1	1.080	0	0.8
A76147-2	280	241	86	22	43	13	1	1.071	0	2.6
COO8014-1	269	197	73	2	40	25	2	1.075	0	0.7
A7816-14	264	228	86	8	53	12	2	1.068	0	2.1
AC80369-1*	191	130	68	3	35	19	13	1.067	0	0.9
LSD (0.05)	50	52						0.003		0.6

¹Hollow heart was measured only in potatoes greater than 12 oz.

²USDA fry grade score with lower score indicating lighter color. Fried directly from the field.

*Selections dropped from further consideration.

Table 15. 1986 early harvest potato variety trial, Kimberly, Idaho. All entries harvested on August 26.

Potato variety or selection	Total yield	U.S. No. 1				Malformed	Specific gravity	Hollow ¹ heart	Fry ² color	
		Yield	> 12 oz	6-12 oz	< 4 oz					
	-- (cwt/acre) --	----- (%) -----						(%)		
A7411-2	462	409	88	24	64	7	5	1.089	0	1.0
A74114-4	368	279	76	19	57	12	12	1.084	16	0.9
A76147-2	487	401	82	35	47	9	9	1.082	26	1.9
A79141-3	520	427	82	34	57	7	2	1.076	13	0.8
Lemhi Russet	458	386	84	24	60	10	6	1.091	51	0.9
Russet Norkotah	362	304	84	12	71	14	3	1.077	14	1.0
NDA1411-2	440	378	86	40	46	6	8	1.080	33	0.6
Norgold Russet	475	407	85	20	66	11	3	1.075	65	1.4
Russet Burbank	475	325	68	9	59	14	18	1.083	5	1.0
Shepody	301	235	78	15	63	18	4	1.084	0	0.7
LSD (0.05)	116	111						0.006		0.4

¹Hollow heart was measured only in potatoes greater than 12 oz.

²USDA fry grade score with lower score indicating lighter color. Fried directly from the field.

Table 16. 1985 early harvest potato variety trial, Aberdeen, Idaho. All entries harvested on August 16.

Potato variety or selection	Total yield	U.S. No. 1				Malformed	Specific gravity	Hollow ¹ heart	Fry ² color	
		Yield	> 12 oz	6-12 oz	< 4 oz					
	-- (cwt/acre) --	----- (%) -----						(%)		
A76147-2	330	288	87	41	77	7	6	1.079	0	1.3
Lemhi Russet	217	142	65	23	49	25	9	1.075	7	0.7
Russet Burbank	220	130	59	35	35	24	17	1.074	0	1.1
A74114-4	240	195	81	35	70	9	10	1.075	17	0.6
Russet Norkotah	232	182	78	19	56	18	4	1.074	11	0.4
HiLite	283	210	74	11	49	21	4	1.077	6	0.4
NorKing Russet	282	231	82	28	63	4	4	1.082	19	0.3
Norgold Russet	281	242	86	24	50	21	4	1.073	4	0.4
LSD (0.05)	38	40						0.003		0.5

¹Hollow heart was measured only in potatoes greater than 10 oz.

²USDA fry grade score with lower score indicating lighter color. Fried directly from the field.

A76147-2, A74114-4 and NorKing Russet have specific gravities similar to Russet Burbank. Russet Norkotah has distinctly low specific gravity in Idaho field trials.

Fry Color

Samples of potatoes from each selection and variety in the field trials were placed into storage at 45°F. After 3 months, the samples were fried at 375°F for 3 minutes and rated for USDA fry grade. Potatoes having USDA fry grade scores less than 2.5 are usually suitable for processing. NorKing Russet, Russet Burbank, A7411-2, A76147-2 and Lemhi Russet had fry grade scores averaging less than 2.0 (Fig. 4), indicating they produce light-colored process products. Russet Norkotah, A72685-2 and A74114-4 produce darker-colored process products.

Bruising

Most varieties and selections were more susceptible to blackspot bruising than Russet Burbank (Fig. 5). All advanced selections were more resistant to this disorder than Lemhi Russet, however. A74114-4 demonstrated higher resistance to blackspot bruising, as well as shatter bruising, than most other varieties and selections. A74114-4, Russet Norkotah and A7411-2 had greater resistance to shatter bruising than Russet Burbank. A72685-2, NorKing

Russet and A76147-2 appear to be most susceptible to shatter bruising.

Diseases and Disorders

Selections A72685-2, A7411-2 and A76147-2 have greater resistance to early blight (*Alternaria solani*) disease than Russet Burbank (Fig. 6). NorKing Russet, Lemhi Russet and A74114-4 are more susceptible to early blight than Russet Burbank. Russet Norkotah appears to be particularly susceptible to this disease.

Selections A7411-2, A76147-2 and A72685-2 are moderately to very resistant to verticillium wilt (early dying) disease (Fig. 7). Russet Norkotah is very susceptible to verticillium wilt. NorKing Russet, Lemhi Russet and A74114-4 have slightly more resistance to verticillium wilt than Russet Burbank.

NorKing Russet and Lemhi Russet are more resistant to common scab (*Streptomyces scabies*) than Russet Burbank (Fig. 8). A72685-2, A7411-2, A76147-2 and A74114-4 are more susceptible to common scab than Russet Burbank.

A7411-2 and Russet Norkotah have the greatest resistance to the internal disorder, hollow heart, averaging less than 2 percent in 10 trial locations (Fig. 9).

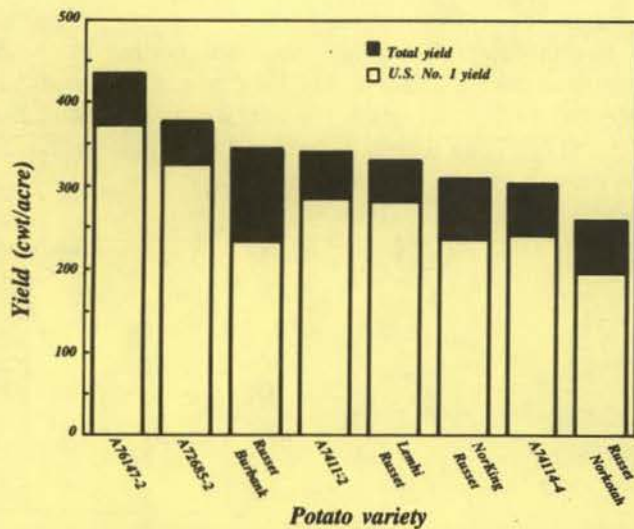


Fig. 1. Total and U.S. No. 1 yield of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of 10 locations.

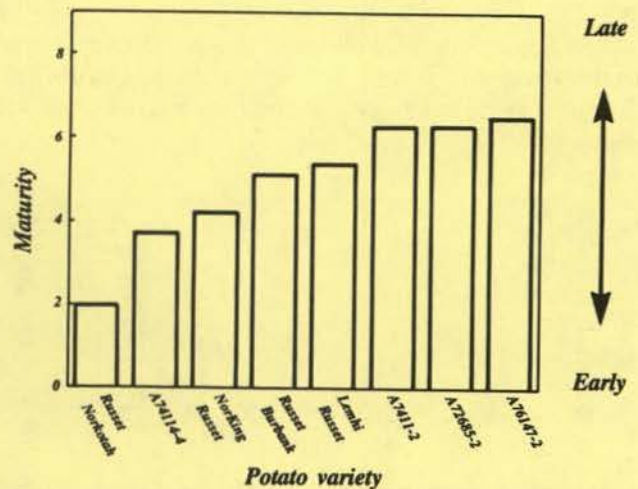


Fig. 2. Average potato vine maturity of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of five locations.

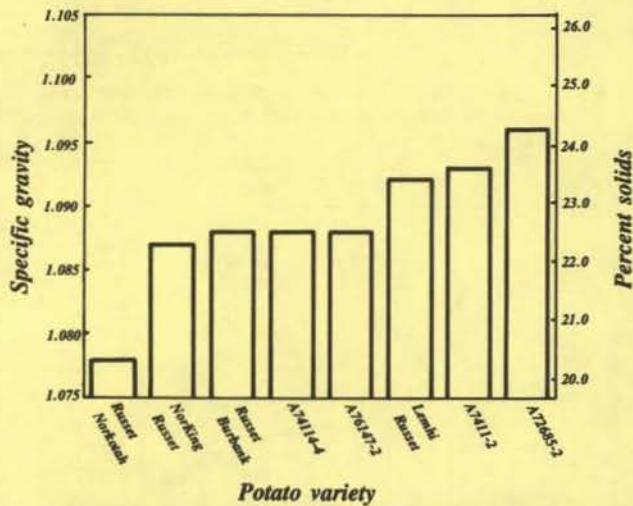


Fig. 3. Specific gravity of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of 10 locations.

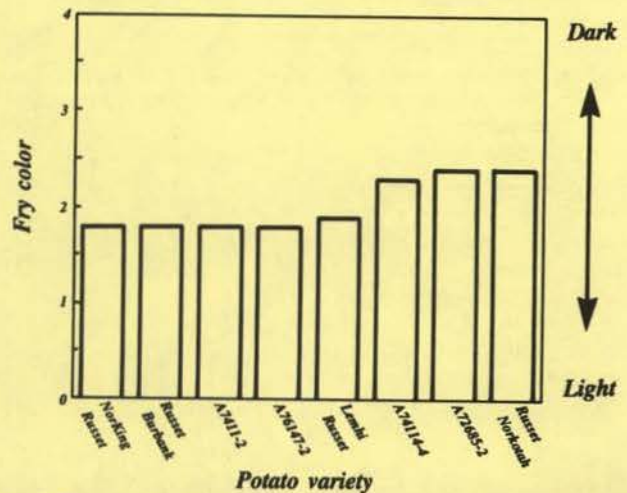


Fig. 4. French fry color after 45°F storage of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of 10 locations.

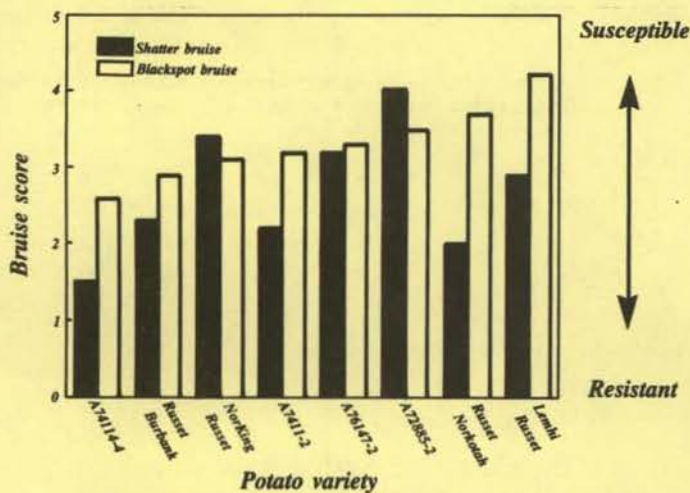


Fig. 5. Blackspot and shatter bruise resistance of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of 10 and 6 locations for blackspot and shatter bruise, respectively.

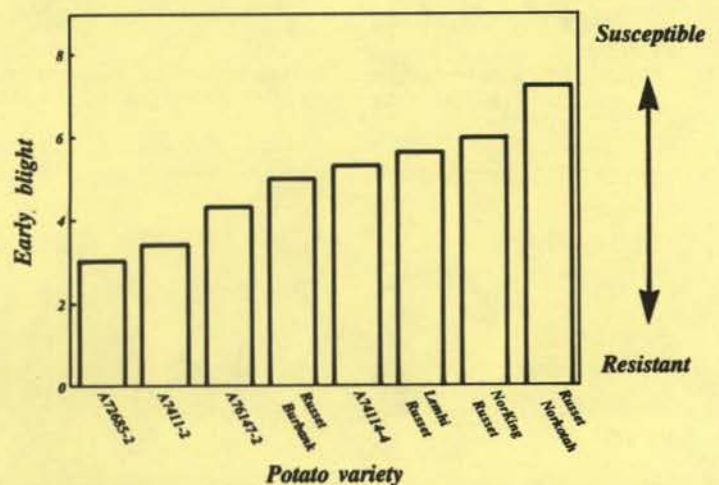


Fig. 6. Early blight resistance of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of three locations.

A74114-4, A76147-2 and NorKing Russet averaged between 5 and 7 percent and A72685-2 and Lemhi Russet both averaged 11 percent hollow heart in field trials. Russet Burbank averaged 17 percent hollow heart in these same locations.

Russet Burbank was the most susceptible to growth cracks of the varieties and advanced selections tested (Fig. 10). A72685-2, Russet Norkotah, A7411-2, Lemhi Russet and NorKing Russet were significantly more resistant to growth cracks than Russet Burbank.

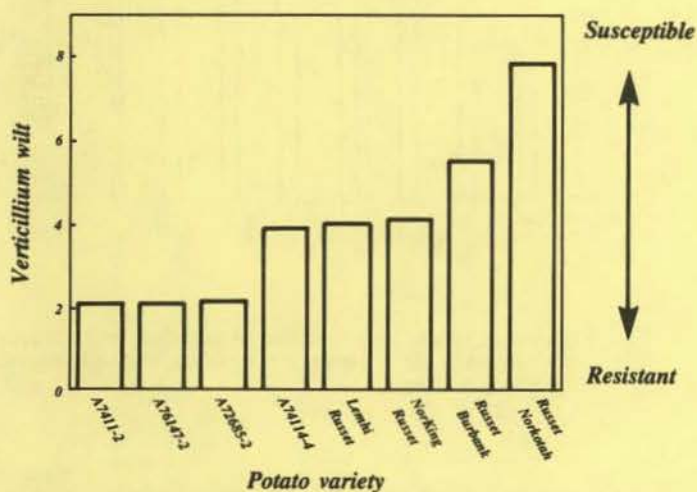


Fig. 7. Verticillium wilt resistance of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of four locations.

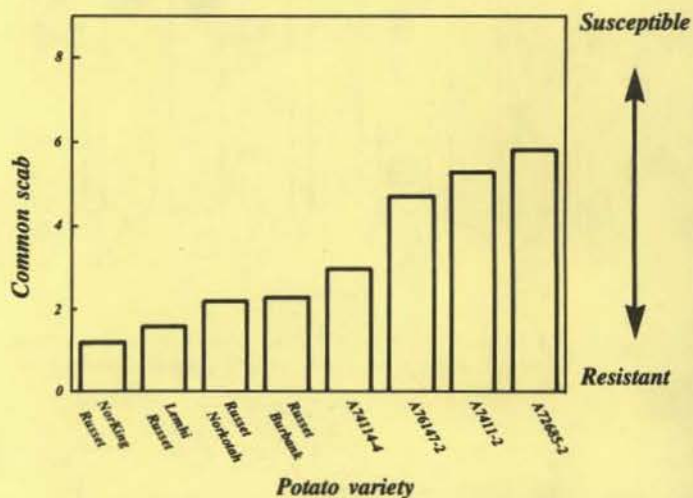


Fig. 8. Common scab resistance of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of five locations.

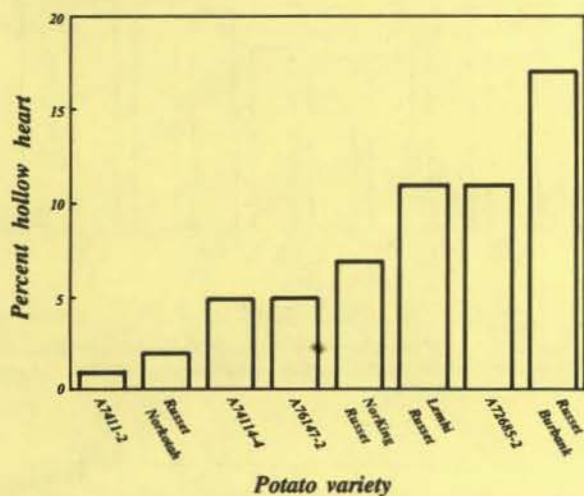


Fig. 9. Hollow heart resistance of varieties and advanced selections in Idaho potato variety trials, 1985-87. Average of 10 locations.

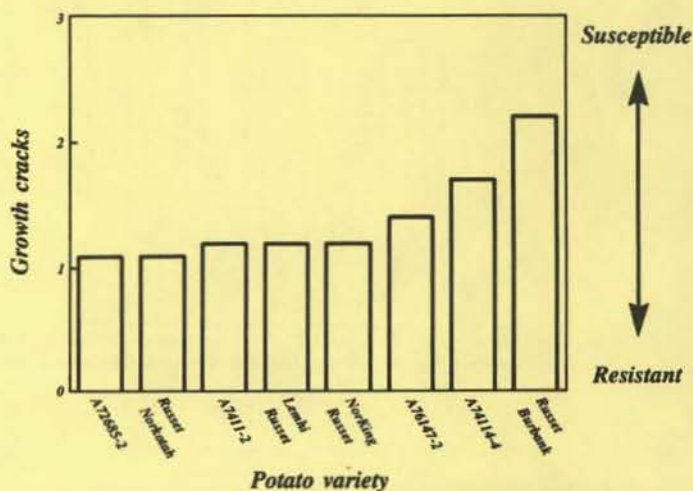


Fig. 10. Growth crack resistance of varieties and advanced selections in Idaho potato variety trials, 1986-87. Average of five locations.



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