

AN EVALUATION OF THE CULINARY QUALITY OF SPECIALTY POTATOES

by
Erik J. Sorensen and Loretta J. Mikitzel¹

For the past several years, Washington State University Cooperative Extension has conducted on-farm trials with specialty potatoes. This work has led to the commercial success of a number of yellow and purple-fleshed cultivars in Washington. These cultivars are currently marketed as fresh potatoes for baking or boiling. In 1992, the processing quality of selected specialty potato cultivars was evaluated.

Samples of specialty potatoes from a trial planted near Pasco were evaluated at the WSU Department of Horticulture and Landscape Architecture in Pullman. Included in the on-farm trial in 1992 for the first time were several pink and orange-fleshed cultivars. A total of 55 different specialty potatoes were grown. Tubers were planted and harvested by hand. At Pullman, 25 of the specialty cultivars were prepared as chips and french fries and evaluated for color, taste, and market acceptance. In addition to commercially available specialty cultivars, a number of small orange-fleshed accessions from the USDA were included.

Table 1 lists the cultivars evaluated as chips. Eighteen specialty potato cultivars and 'Atlantic' were evaluated over a two day period. 'Atlantic', a standard chipping cultivar, scored the highest in all categories. Evaluators liked the taste and color of chips made from 'Atlantic' and most stated that they would buy them.

Among the specialty potatoes, the evaluators liked the taste of 'Alaska Sweetheart', a pink-fleshed cultivar, 'All Blue', the leading fresh market purple-fleshed cultivar, 'McIntosh Black', a purple-fleshed cultivar, the yellow-fleshed cultivars 'Donna', 'Bintje', and 'Rote Eesterling', and '88-K-9.20', an orange-fleshed USDA accession. These cultivars had a taste that 60 to 66% of the evaluators liked. 'Iditared' and 'Michigold' were found to have a taste that two thirds or more of the evaluators disliked. "Burnt", "bitter", and "weird" are representative comments made about these cultivars.

¹ Area Extension Agent, Washington State University Cooperative Extension, Pasco, Wa. and Assistant Horticulturist, Washington State University Department of Horticulture and Landscape Architecture, Pullman, Wa.

This Presentation is part of the Proceedings of the 1993 Washington State Potato Conference & Trade Fair.

'Bintje' ranked a close second behind 'Atlantic' in color appeal. More than 95% of the evaluators found the yellow color of 'Bintje' to be appealing. A number of evaluators commented on the "very good chip color" of 'Bintje'. When prepared as a chip, the color of the purple-fleshed cultivars, 'All Blue', 'Glacier', and 'McIntosh Black', was particularly striking. 'All Blue' had the highest score of the purple-fleshed cultivars, appealing to 69% of the evaluators. Favorable comments on the chips made from purple-fleshed cultivars included "exotic looking", "unique color", "great novelty food", and "would buy it just for the color". Evaluators also found the chip color of 'Rote Eesterline', '88-K-7.106', an orange-fleshed accession, 'Alaska Sweetheart', and 'Yukon Gold', a leading yellow-fleshed cultivar, to be appealing. All had a favorable rating of more than 60%. As a group, the orange-fleshed accessions scored well for color. 'Iditared', 'Brigus', 'Blossom', 'Michigold' produced fries with unappealing colors. Negative comments on these cultivars included "too dark" and "look burnt".

Most evaluators would buy chips made from the specialty potatoes which scored highly on taste and color. The evaluators tended to feel strongly when asked if they would buy the chips. There were very few evaluators in the undecided, "maybe", category. The highest scoring specialty potato cultivars were 'Bintje', '88-K-7.106', 'All Blue', 'Donna', 'Rote Eesterling', 'McIntosh Black', and '88-K-9.20' which were rated favorably by between 81 and 52% of the evaluators. Based on the samples from this trial, 'Delta Gold', 'Glacier', 'Brigus', 'Michigold', and 'Iditared' were the cultivars which the largest number of evaluators would not buy.

Consumers were evaluated samples of chips made from the specialty potatoes at the "Taste of Washington Farms" program held at the Pike Place Market in Seattle. Table 2 lists the two cultivars evaluated. The majority of those who responded to the questionnaire found the chip color of 'All Blue' and '88-K-7.106' to be appealing. Over 90% stated that they would buy chips made from orange-fleshed potatoes and nearly 70% would buy purple potato chips. One person who commented on the purple and orange potato chips dubbed them "Huskey Chips".

Table 3 lists the cultivars evaluated as french fries. Seven specialty potato cultivars were compared to 'Russet Burbank', a standard processing cultivar. Among the cultivars tested at Pullman as french fries, 'AO-82283-1', a yellow-fleshed accession from Oregon, scored the highest for taste, color, and market acceptance.

Over 80% of the evaluators liked the taste of 'AO-82283-1'. Comments included "strong potato flavor" and "good texture". Tied for second in taste were 'Russet Burbank' and 'Huckleberry'. The taste of french fries prepared from 'Huckleberry' and 'Russet Burbank' was liked by 63% of the evaluators. The orange-fleshed accession, '88-K-7.109', had a taste that 60% of the evaluators liked. Taste scores were generally higher in the french fry evaluation than in the chip evaluation. None of the cultivars tested as a french fry was found to have a taste that was disliked by more than one-third of the evaluators. The most common complaints were that the french fries were "soggy", "soft", or "bland".

'Saginaw Gold', a yellow-fleshed cultivar, ranked second for color behind 'AO-82283-1'. In general, yellow and orange-fleshed cultivars had the highest scores for color appeal as french fries. The fry color of 'AO-82283-1' was found appealing by nearly 95% of the evaluators. The "good color" of the yellow french fries prepared from this cultivar was remarked upon by a number of evaluators. French fries prepared from 'Saginaw Gold' were rated as appealing by nearly 90%. These figures compare to a score of just over 50% for 'Russet Burbank'. The lowest score for color was that of 'Caribe'. French fries made from this cultivar had a "grey color" that less than 20% of the evaluators found appealing. 'Russian Blue' also had a low score. Only one-third of the evaluators found the purple color of this cultivar to be appealing.

A majority of evaluators said that they would buy french fries made from yellow or pink-fleshed potatoes, as well as french fries made from 'Russet Burbank'. 'Caribe', a white-fleshed potato with purple skin, and 'Russian Blue', a purple-fleshed cultivar were the only cultivars tested that most evaluators said that they would not buy.

The 25 specialty potato cultivars evaluated as chips and french fries in this trial represent only a small percentage of the specialty cultivars that are available in the United States. Over the past 6 years, more than 200 specialty cultivars have been grown in trials near Pasco. Each cultivar has its own unique agronomic and culinary qualities. Not all the cultivars evaluated this year as chips and french fries were well received. Further testing may demonstrate those cultivars to be better suited for fresh use as baked or boiled potatoes.

Purple and orange potato chips will never appeal to everyone, but opportunities exist for such items in niche markets. A bag of red, white, and blue potato chips? Golden yellow french fries? To date, consumer response to chips and french fries made from specialty potatoes has been favorable. The color of chips and french fries made from some specialty potatoes is appealing and, at least in the case of french fries, the taste of some specialty cultivars has been rated higher than that of the standard cultivar. Commercial processors have already shown interest in such specialty items. Blue corn chips have proven to be a commercial success. Don't be surprised if purple potato chips or yellow french fries are next.

Acknowledgement

The authors are grateful to those individuals who supplied planting material, including Charles Brown, USDA, N.S. (Bud) Wright, Agriculture Canada, and David Ronninger, Ronninger's Seed Potatoes. The authors are also grateful to Don Johnston, Kiska Farms, for his help in conducting the trial.

Table 1. Culinary quality of specialty potatoes prepared as chips, August 1992.

Cultivar/ Accession	Flesh Color	Scores (% of Evaluators)								
		Taste			Color			Would You Buy?		
		Like	Neutral	Dislike	Appealing	Neutral	Unappealing	Yes	Maybe	No
Pullman, August 19, 1992										
Alaska Sweetheart	pink	65	21	14	64	7	29	38	8	54
All Blue	purple	64	29	7	69	8	23	64	0	36
Atlantic*	white	100	0	0	93	7	0	100	0	0
Brigus	yellow	42	29	29	0	14	86	14	0	86
Delta Gold	yellow	7	50	43	29	14	57	0	9	91
Donna	yellow	65	21	14	57	36	7	64	0	36
Iditared	yellow	14	21	65	7	0	93	21	0	79
Yellow Finn	yellow	36	28	38	21	43	36	23	8	69
88-K-3.58	orange	54	38	8	50	36	14	46	8	46
88-K-7.55	orange	36	36	28	29	29	7	43	7	50
Pullman, August 20, 1992										
Atlantic*	white	78	17	5	100	0	0	86	0	14
Binje	yellow	61	26	13	96	4	0	81	5	14
Blossom	pink	23	45	32	9	14	77	11	0	89
Glacier	purple	32	46	23	18	14	68	26	5	69
McIntosh Black	purple	61	35	4	50	14	36	55	5	40
Michigold	yellow	10	14	76	5	5	90	9	9	82
Rote Eesterling	yellow	64	27	9	77	23	0	63	0	37
Yukon Gold	yellow	46	27	27	61	35	4	45	15	40
88-K-7.106	orange	50	41	9	77	14	9	75	5	20
88-K-9.20	orange	66	17	17	35	48	17	52	11	37

* Standard cultivar as check

Table 2. Culinary quality of specialty potatoes prepared as chips, September 1992.

Cultivar/ Accession	Flesh Color	Scores (% of Evaluators)					
		Color			Would You Buy?		
		Appealing	Neutral	Unappealing	Yes	Maybe	No
Seattle, Sept. 7, 1992							
All Blue	purple	63	12	25	68	25	7
88-K-7.106	orange	91	9	0	91	9	0

Table 3. Culinary quality of specialty potatoes prepared as french fries, August 1992.

Cultivar/ Accession	Flesh Color	Scores (% of Evaluators)								
		Taste			Color			Would You Buy?		
		Like	Neutral	Dislike	Appealing	Neutral	Unappealing	Yes	Maybe	No
Pullman, August 21, 1992										
AO-82283-1	yellow	81	13	6	94	6	0	88	0	12
Caribe	white	44	37	19	19	31	50	27	7	66
Huckleberry	pink	63	25	12	47	20	33	69	7	23
Russian Blue	purple	31	38	31	33	20	47	33	7	60
Saginaw Gold	yellow	44	37	19	87	0	13	53	0	47
Spunta	yellow	44	31	25	50	29	21	50	0	50
Russet Burbank*	white	63	25	12	53	27	20	56	6	38
88-K-7.109	orange	60	40	0	81	19	0	60	7	33

* Standard cultivar as check