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North Dakota Fresh Market Potato Cultivar/Selection Trial Results for 2015

Andy Robinson, Extension Potato Agronomist, North Dakota State University/University of Minnesota
Asunta Thompson, Potato Breeder, North Dakota State University

Potato growers continually are looking for the next potato cultivar that provides high yield and good quality, and can be produced sustainably. Potato breeders continue to develop new potato cultivars with many desirable genetic traits. These traits may include increased yield potential, resistance to diseases, better tuber size profile, improved skin color, drought tolerance and enhanced nutrient-use efficiency.

Development of new cultivars can take 10 to 15 years or more. While in development, potatoes are referred to as selections because they are selected from a potato breeding program (these typically are numbered). Cultivars are potato selections that have been named.

With such a long time commitment, determining what new potato cultivars or selections are best suited for production in a given area is essential. For this reason, we have tested newly developed potato cultivars and advanced selections in the Red River Valley to determine adaptation and how they respond to local environmental conditions. Studies during multiple years will help determine the best cultivars when grown in various environments.

Potatoes in this publication were selected from recently released cultivars or advancing selections with release potential (numbered lines progressing through the trial process), or cultivars that are new to the U.S. Standard potato cultivars, including Dark Red Norland, Red Norland and Milva, served as checks. Sangre was included as the storage check and Viking was included as the high-yield check.

In 2015, trial plots were established in a commercial, non-irrigated potato field near Crystal, N.D. A randomized complete block design was utilized with four replicates. Seed tubers were hand cut to 2-ounce seed pieces and suberized for approximately five to 10 days at 55 F and 95 percent relative humidity prior to planting. Tubers were planted on May 21 at a 9-inch within-row spacing; rows were spaced 36 inches apart. Plots were single rows; measuring 25 feet long (33 seed tubers per plot were planted).

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Agronomic practices were typical of North Dakota non-irrigated production. Plots were harvested on Sept. 15 and stored at about 55 F until grading. The tuber size profile distribution was determined by sorting potatoes into C size (less than 1.87 inches), B size (1.87 to 2.25 inches), A size (2.25 to 3.5 inches) and Chef size (greater than 3.5 inches).

The agronomic data presented in Tables 1 and 2 are from the replicated research plots using experimental designs enabling the use of statistical analysis. These analyses allow the reader to ascertain, at a predetermined level of confidence, if the differences observed among cultivar selections are reliable or if they might be due to error inherent in the experimental process.

The LSD (least significant difference) values beneath the columns in the tables are derived from these statistical analyses and apply only to the numbers in the column in which they appear. If the difference between two cultivars/selections exceeds the LSD value at 0.05 or 0.10, it means that with 95 or 90 percent confidence, respectively, the higher-yielding cultivar/selection has a significant yield advantage. When the difference between two cultivars/selections is less than the LSD value, no significant difference was found between the two under these growing conditions.

The CV stands for coefficient of variation and is expressed as a percentage. The CV is a measure of variability in the trial. Large CVs mean a large amount of variation that could not be attributed to differences in the cultivars/selections.

Table 1. Red-skinned potato cultivar/selection trial agronomic characteristics and graded yield from trials conducted near Crystal, N.D., in 2015. Two- and three-year averages are from the 2013 and 2014 trials planted near Crystal.

Cultivar/selection	Stand[1]	Stems per plant[2]	Vigor	C[3]	B	A	Chef	Total yield		
								2015	2014-15 average	2013-15 average
	------- number -------		(1-5)[4]	---------- cwt/a ----------						
CO00277-2R	26	6.5	3.5	46	122	182	0	349	--	--
CO00291-5R	25	4.4	2.0	23	82	166	1	272	--	--
CO98012-5R	26	4.0	3.8	39	149	213	1	402	369	305
CO99076-6R	25	4.3	3.0	23	87	231	7	349	--	--
Dakota Ruby	26	4.9	3.0	39	129	232	6	406	351	289
Dark Red Norland	24	4.3	3.5	12	57	301	22	393	343	271
MN10001PLWR-14R	25	2.8	1.8	33	58	50	0	142	124	--
MN10002PLWR-06R	25	3.4	1.5	12	54	231	16	314	--	--
MN10020PLWR-08R	25	3.7	2.8	20	60	115	2	198	206	--
ND6002-1R	26	2.7	2.8	11	52	276	18	355	359	288
ND7132-1R	23	2.9	3.0	14	86	201	9	309	312	253
ND7982-1R	25	6.0	3.8	41	201	156	0	398	331	248
NDA7985-1R	26	3.2	3.8	7	37	283	67	394	--	--
Red Endeaver	26	5.1	3.8	37	118	276	7	438	438	331
Red Norland	27	4.4	4.0	17	80	301	3	400	375	312
Red Pontiac	26	3.4	4.0	11	45	250	94	401	--	--
Runestone Gold	25	5.4	3.0	27	130	237	10	404	338	285
Sangre	17	1.4	1.0	22	70	160	26	278	307	262
Viking	25	2.0	2.7	7	26	241	99	372	351	314
W8405-1R	25	5.5	3.8	31	123	235	10	400	390	311
Mean	25	4.0	3.0	24	88	217	20	349	--	--
CV %	9	18.0	19.0	43	33	27	94	21	--	--
LSD 0.10	3	0.8	0.7	12	34	70	22	87	--	--
LSD 0.05	3	1.0	0.8	14	41	84	26	104	--	--

[1]Stand count was taken on June 30 by counting every emerged plant.

[2]Stems per plant were counted on all plants on June 30 and are shown as the average number of stems per plant.

[3]Size of potatoes was sorted on a Kerian Speed sizer as C = less than 1.87, B = 1.87-2.25, A = 2.25-3.5 and Chef = greater than 3.5 inches.

[4]Vigor evaluation was completed on Aug. 12. Rating compared with Red Norland; 1 indicates least vigor and 5 greatest vigor.

Table 2. Yellow-skinned potato cultivar/selection trial agronomic characteristics and graded yield from trials conducted near Crystal, N.D., in 2015. Two- and three-year averages are from 2013 and 2014 studies planted near Crystal.

Cultivar/selection	Stand[1]	Stems per plant[2]	Vigor	C[3]	B	A	Chef	Total yield		
								2015	2014-15 average	2013-15 average
	------- number -------		(1-5)[4]	---------- cwt/a ----------						
A05182-7Y	26	4.2	3.8	77	201	138	6	422	--	--
Elfe	27	3.0	3.3	26	141	118	0	285	--	--
Gioconda	24	3.7	3.5	16	81	359	33	490	--	--
Julinka	25	3.7	3.8	32	118	167	4	322	--	--
MN02586	24	5.5	3.8	46	136	234	0	416	353	--
Milva	25	4.0	3.8	20	133	258	2	414	386	327
Satina	24	4.0	4.0	24	107	274	3	407	368	--
Soraya	25	4.3	4.0	24	137	266	5	432	410	--
Viviana	24	4.9	3.5	21	105	263	4	393	--	--
Yukon Gem	25	3.4	3.5	10	53	263	30	356	346	--
Mean	25	4.1	3.7	30	121	234	9	394	--	--
CV %	7	11.6	13.5	29	17	18	112	10	--	--
LSD 0.10	2	0.6	0.6	10	25	51	12	48	--	--
LSD 0.05	3	0.7	0.7	12	30	62	14	58	--	--

[1]Stand count was taken on June 30 by counting every emerged plant.

[2]Stems per plant were counted on all plants on June 30 and are shown as the average number of stems per plant.

[3]Size of potatoes was sorted on a Kerian Speed sizer as C = less than 1.87, B = 1.87-2.25, A = 2.25-3.5 and Chef = greater than 3.5 inche

[4]Vigor evaluation was completed on Aug. 12. Rating compared with Red Norland; 1 indicates least vigor and 5 greatest vigor.

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