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North Dakota Fresh Market Potato

Cultivar/Selection Trial Results for 2020



photo Robinson, NDSU/UMN

Andy Robinson

Extension Potato Agronomist,
NDSU/University of Minnesota

Susie Thompson

Potato Breeder and Associate Professor,
NDSU

Eric Brandvik

Research Specialist, NDSU

Peter Ihry

Agriculture Technician, NDSU

Potato cultivars or selections included in this report were selected from recently released cultivars, advancing selections with release potential (numbered lines progressing through the trial process), or cultivars that are new to the U.S. Standard potato cultivars used by growers served as checks. For comparison, studies conducted in 2019 evaluated red- and yellow-skinned fresh potatoes (<https://z.umn.edu/Potato2019>).

In 2020, two trials were conducted to identify traits of red- and yellow-skinned potato cultivars and advanced selections at Hoople, N.D. Nineteen red-skinned cultivars and 30 yellow-skinned cultivars were evaluated. Plots were established in a commercial, nonirrigated potato field utilizing common potato-production practices. The authors acknowledge J.G. Hall and Sons for hosting these trials.

Prior to planting, urea at 120 pounds of nitrogen (N) per acre was broadcast and incorporated. A randomized complete block design with four replicates was utilized. Seed tubers were hand cut to approximately 2-ounce seed pieces prior to planting; an exception was the cultivar Obama, which was planted using whole seed tubers.

Tubers were planted on May 21, 2020, in a single row with 9-inch within-row spacing. Plots were 3 feet wide and 30 feet long.

A majority of the plants emerged by June 12 in both trials. Stand and stem counts on 10 plants in a row in each plot was taken on July 9.

Vine length was measured on three plants from the base of the plant to the vine tip on Aug. 12.

Vigor evaluation was completed on Aug. 12. A rating of 1 indicated least vigor and 5 greatest vigor. Vines were desiccated on Aug. 21 and 28 with diquat. Plots were harvested on Sept. 10 and 11 with a single-row plot harvester.

After harvest, potatoes were stored at 55 F until grading. The tuber size profile distribution was determined by sorting all potatoes harvested into C size (less than 1.875 inches), B size (1.875 to 2.25 inches), A size (2.25 to 3.5 inches) and Chef size (greater than 3.5 inches). Total yield is a summation of C + B + A + Chef.

The agronomic data presented in **Tables 1 and 2** were analyzed statistically. These analyses allow the reader to ascertain, at a predetermined level of confidence, if the differences observed among cultivars/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 apply

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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% 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.

The data provided does not indicate endorsement or approval by the authors, or NDSU Extension or University of Minnesota Extension. Reproduction of the tables is permissible if presented with all the same information found in this publication (meaning no portion is deleted and the order of the data is not rearranged).

The authors acknowledge the contribution of cultivars and advanced selections for this work from the breeding programs at North Dakota State University, University of Minnesota, U.S. Department of Agriculture-Agricultural Research Service, Colorado State University, University of Wisconsin, University of Maine, Michigan State University, EBE Farms, Northern Konstar Potatoes, Parkland Seed, Real Potato, Solanum, Southern Potato and SunRain.

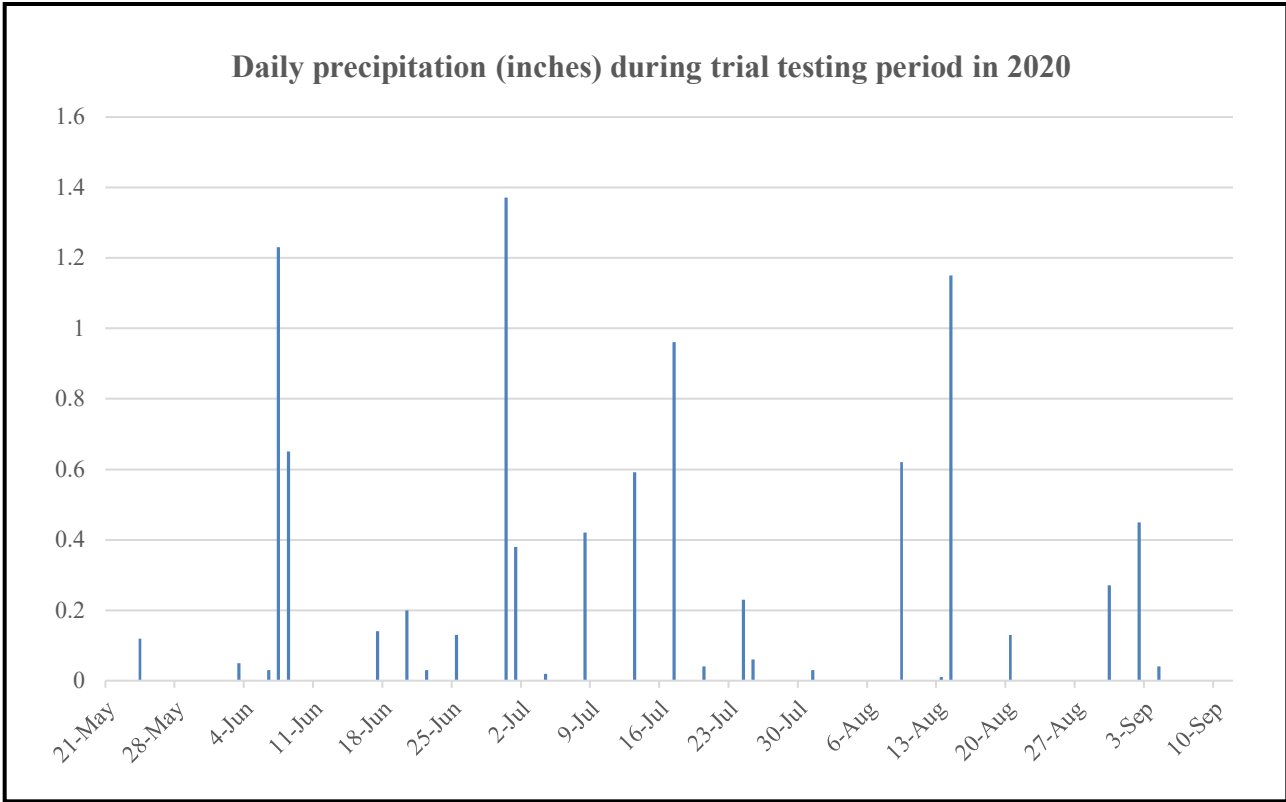


Figure 1. Daily rainfall from May 21 to Sept. 11, 2020, from the North Dakota Agricultural Weather Network weather station near Crystal, N.D.

Table 1. Agronomic performance and graded yield of red-skinned potato cultivars/selections near Hoople, N.D., 2020.

Cultivar/Selection	Stand ¹	Stems/plant ²	Vine length ³	Vigor ⁴	C ⁵	B	A	Chef	Total yield	Specific gravity
	%	number	inch	cwt/a						
Autumn Rose	91	3.9	26	4.0	17	155	67	1	239	1.082
Cerata	83	4.5	35	2.8	5	115	208	2	330	1.073
CO99076-6R	91	4.5	25	4.0	8	147	157	0	311	1.083
Cristina	84	3.8	26	4.0	7	167	195	3	373	1.078
Dark Red Norland	84	4.9	26	3.3	2	66	284	19	370	1.074
Dark Red Norland (Real Potato)	85	3.5	29	3.3	2	85	218	4	308	1.073
MSW 343-2R	84	2.9	26	3.8	4	101	242	8	356	1.066
ND113207-1R	84	4.2	27	3.8	16	139	128	0	283	1.068
ND13241C-6R	81	4.6	30	4.0	45	205	19	0	270	1.088
ND1431Y-2R	81	3.5	26	4.0	4	110	212	9	336	1.076
ND1455Y-1R	79	3.1	24	3.8	5	126	64	0	195	1.072
NDAF113484B-1	89	2.6	22	4.0	2	55	242	10	309	1.071
Red Norland	88	3.8	25	3.3	2	84	231	8	326	1.075
Red Pontiac	90	4.3	28	4.3	7	86	197	6	295	1.074
Red Prairie	89	3.4	27	3.8	10	209	99	0	318	1.074
Roko	82	3.6	29	4.5	5	139	183	0	327	1.080
Sangre	55	1.5	27	4.3	4	40	90	6	139	1.061
W8890-1R	92	5.4	28	3.8	14	150	133	1	299	1.075
W8893-1R	86	3.7	23	2.8	4	102	139	3	249	1.072
Column mean	84	4	27	4	9	121	164	4	298	1.075
CV %	9	17	13	13	21	25	25	126	16	0.2
LSD 0.05	11	0.9	5	0.7	6	36	59	7	68	0.004
LSD 0.10	9	0.8	4	0.6	5	30	49	6	57	0.003

¹ Stand count was taken on July 9 (seven weeks after planting) by counting every emerged plant and dividing by the number planted.

² Stems per plant were counted on 10 plants on July 9 (seven weeks after planting) and are shown as the average number of stems per plant.

³ Vine length was measured on three plants from the base of the plant to the vine tip on Aug. 12.

⁴ Vigor evaluation was completed on Aug. 12 (12 weeks after planting). A rating of 1 indicated least vigor and 5 greatest vigor.

⁵ Potatoes were sorted on a Kerian Speed sizer as C = less than 1.875, B = 1.875-2.25, A = 2.25-3.5 and Chef = greater than 3.5 inches.

photo Robinson, NDSU/UMN



Table 2. Agronomic performance and graded yield of yellow-skinned potato cultivars/selections near Hoople, N.D., 2020.

Cultivar/Selection	Stand ¹	Stems/plant ²	Vine length ³	Vigor ⁴	C ⁵	B	A	Chef	Total yield	Specific gravity
	%	number	inch	cwt/a						
A00286-3Y	84	3.6	31	4.3	25	160	206	0	391	1.080
A06336-2Y	79	4.1	27	3.8	27	147	172	1	348	1.076
Actrice	85	3.9	29	2.8	9	96	411	17	533	1.069
Agata	89	3.7	24	3.8	18	182	284	4	489	1.071
Alegria	83	3.8	31	4.0	14	156	315	7	491	1.082
Arizona	82	4.2	29	3.5	17	186	265	19	486	1.071
Belmonda	86	4.1	33	4.0	97	191	175	0	463	1.084
CO05037-3W/Y	86	7.8	26	2.0	81	240	52	0	372	1.081
CO10064-1W/Y	83	4.7	30	4.0	75	209	77	0	360	1.101
CO11250-1W/Y	84	6.0	28	3.5	74	208	46	0	329	1.094
CO11266-1W/Y	89	4.8	32	4.5	72	196	41	0	309	1.082
Crop 56	88	4.5	34	4.8	42	236	73	1	352	1.084
Crop 58	84	3.6	28	3.5	10	123	225	25	384	1.078
Crop 80	84	4.5	31	3.8	26	146	213	0	384	1.082
Electra	81	4.1	34	5.0	22	168	280	7	476	1.072
Jelly	81	2.8	31	5.0	9	115	191	1	317	1.077
Lanorma	84	3.8	33	3.8	15	156	209	0	380	1.076
Milva	80	4.1	31	4.0	24	156	295	3	477	1.077
Montreal	85	3.9	26	3.0	26	137	296	9	468	1.077
MN04844	47	1.2	22	3.8	15	31	48	0	93	1.076
Musica	83	4.5	32	3.3	23	247	257	1	528	1.080
ND1487-1Y	84	4.7	32	4.0	57	248	126	0	431	1.078
ND1241-1Y	83	2.9	27	4.0	36	131	157	0	323	1.105
NDA081451CB-1CY	83	4.3	30	4.0	56	184	145	0	385	1.086
Melody	84	3.3	32	4.0	40	155	241	5	442	1.074
Noelle	81	5.6	31	2.0	72	231	80	0	383	1.069
Obama	85	4.9	29	3.0	24	245	268	3	541	1.072
Paroli	81	3.8	29	3.8	10	82	310	54	457	1.070
W15240-2Y	81	3.4	29	3.0	12	134	184	0	329	1.073
W9576-11Y	86	4.0	30	2.8	15	154	337	11	517	1.069
Mean	82	4.1	30	3.7	35	168	199	6	408	1.079
CV	8	22	9	13	85	19	23	180	16	0.3
LSD p=0.05	10	1.3	4	0.7	42	45	64	14	94	0.005
LSD p=0.10	8	1	3	0.6	35	38	54	12	78	0.004

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