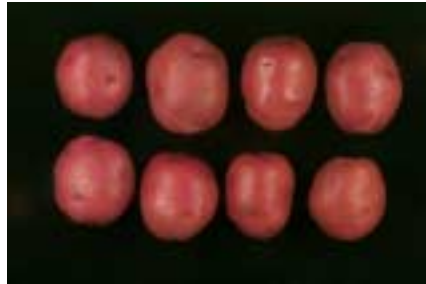


WINEMA (NDO2438-6R)

A. Mosley, D. Hane, S. James, K. Rykbost, C. Shock, F. Boullester, B. Charlton,
E. Eldredge and S. Yilma



Oregon released WINEMA in cooperation with the North Dakota, California, Idaho, and Washington Agricultural Experiment Stations in 2000. Winema is an early maturing, round to oval, red-skinned clone suitable for table use.

Winema, tested as NDO2438-6R, was selected in 1989 at Klamath Falls, Oregon from a cross between Redsen and 1196-2R performed by Dr. Robert Johansen of North Dakota State University at Fargo in 1987. Early selection and evaluations were done in trials at Klamath Falls, Oregon and Tulelake and Bakersfield, California from 1990 to 1993. Initially, seed was multiplied at the Klamath Experiment Station, with subsequent seed increases at the Central Oregon Agricultural Research Center and by private cooperators. Winema was widely evaluated in Western Regional red-skinned trials in six states in 1995, 1997, and 1998.

Winema produces lower total yields than Red LaSoda and Dark Red Norland but similar marketable yields with a higher percentage of

small, high-value tubers, and significantly fewer culls ([Tables 1 and 4](#)). Winema tubers are round to oval, seldom exhibit growth cracks or rough shape common to Red LaSoda and Dark Red Norland, produce uniform bright skin color that does not fade in storage, and have shallow eyes compared to Red LaSoda ([Table 2](#)).

Winema tubers have lower specific gravity than Dark Red Norland and Red LaSoda ([Tables 1 and 4](#)). Internal defects, including hollow heart and brown center, and external growth cracks seldom occur in Winema. Protein content, percent sucrose, and total glycoalkaloids are similar for Winema, Red LaSoda, and Dark Red Norland, but Winema is lower in vitamin C ([Table 3](#)). Preliminary culinary evaluations at Klamath Falls failed to detect after-cooking darkening, off-flavor, or sloughing problems.

Winema vines mature slightly earlier than Red LaSoda. Vines are sensitive to metribuzin injury. Winema is very susceptible to potato virus Y and foliar PVY symptoms are very difficult to detect

visually. Winema is susceptible to most fungal diseases. In limited testing at Corvallis, Oregon, Winema experienced much less foliar and tuber late blight infection than most selections included in the trial. This was thought to be due to mature vines in Winema at the time of infection. Winema is susceptible to corky ringspot caused by tobacco rattle virus. Moderate susceptibility to fusarium dry rot has been observed in seed lots at Powell Butte, Oregon and Stockton, California.

Certified seed of Winema is available from seed growers in California and Oregon. Limited quantities of *invitro* and greenhouse stocks can be ordered from the [Foundation Potato Seed Program](#) (Phone 541-737-5838) at Oregon State University. WINEMA will be protected through the Plant Variety Protection (PVP) Act.

Table 1. Yield and quality characteristics of NDO2438-6R, Red LaSoda, and Dk. Red Norland in Western Regional Trials, 1995, 1997, 1998¹.

Entry	Yield cwt/a						Culls	% Marketable ²	Oz/ Tuber	Spec. Grav.
	Total	<4 oz	US No. 1 4-10 oz	Total Marketable ²	US No. 1 >10 oz					
NDO2438-6R	338	57	178	235	83	17	70	4.5	1.065	
Red LaSoda	421	33	189	222	136	60	53	6.2	1.071	
Dk. Red Norland	398	47	223	270	90	48	68	5.5	1.069	

¹ Locations: California, Colorado, Idaho, Oregon, Texas, Washington

² Yield < 4 oz. - ≤ 10 oz.

Table 2. Physiological defects and Morphological characteristics of NDO2438-6R, Red LaSoda, & Dk. Red Norland in Western Regional Trials, 1995, 1997, 1998¹.

Entry	% HH & BC ²	Growth Cracks ³	Skinning ⁴	Vine Vigor ⁵	Vine Mat. ⁶	Tuber Shape ⁷	Skin Color ⁸	Eye Depth ⁹
NDO2438-6R	3	4.9	3.8	3.4	2.3	1.5	3.8	3.6
Red LaSoda	6	3.3	3.4	3.5	2.7	2.1	2.3	1.9
Dk. Red Norland	4	3.5	3.7	3.2	2.9	2.4	2.9	3.4

¹ Locations: California, Colorado, Idaho, Oregon, Texas, Washington

² HH = Hollow Heart; BC = Brown Center

³ Growth Cracks: 1 = Severe; 5 = None

⁴ Skinning: 1 = Severe; 5 = None

⁵ Vine Vigor: 1 = Weak; 5 = Strong

⁶ Vine Maturity: 1 = Early; 5 = Late

⁷ Tuber Shape: 1 = Round; 5 = Long, Narrow

⁸ Skin Color: 1 = Pale; 5 = Dk. Red

⁹ Eye Depth: 1 = Deep; 5 = Shallow

Table 3. Relative tuber composition of NDO2438-6R, Red LaSoda, and Dk. Red Norland at Aberdeen, ID¹.

Entry	% Oven Dried Solids	% DWB			Mg/100g FWB	
		Dextrose	Sucrose	Protein	Vitamin C	Total Glycoalkaloids
NDO2438-6R	16.1	0.01	0.18	6.71	23.63	2.55
Red LaSoda	17.3	0.08	0.19	6.66	29.34	3.20
Dk. Red Norland	17.0	0.05	0.19	6.37	28.38	3.32

¹ 1997 - 1998 courtesy Dr. Dennis Corsini, ARS/USDA

Table 4. Yield and quality characteristics of NDO2438-6R, Red LaSoda, and Dk. Red Norland in Oregon and California Trials 1992 - 1998¹.

Entry	Location	Years	Yield cwt/a					Culls	% Marketable ²	Spec. Grav.
			Total	<4 oz	US No. 1 4-10 oz	Total Marketable ²	US No. 1 >10 oz			
NDO2438-6R	Corvallis	4	489	61	248	309	149	33	63	1.062
	Klamath Falls	6	490	47	261	308	157	26	63	1.063
	Bakersfield	5	370	33	269	302	57	12	82	1.071
	Tulelake	3	454	17	252	269	172	13	59	1.075
	AVG.		451	40	258	297	134	21	67	1.068
Red LaSoda	Corvallis	4	537	39	258	297	185	55	55	1.072
	Klamath Falls	6	582	37	238	275	213	95	47	1.073
	Bakersfield	5	466	12	251	263	147	56	56	1.078
	Tulelake	3	536	7	222	229	238	69	43	1.077
	AVG.		530	24	242	266	196	69	50	1.075
Dk. Red Norland	Corvallis	4	609	54	352	406	132	71	67	1.074
	Klamath Falls	6	443	56	234	290	107	47	65	1.067
	Bakersfield	4	444	20	314	334	71	39	75	1.073
	Tulelake	2	451	15	241	256	124	73	57	1.075
	AVG.		487	36	285	322	109	58	66	1.072

¹ Locations: Corvallis and Klamath Falls (Oregon); Bakersfield and Tulelake (California).

² Yield < 4 oz. - ≤ 10 oz.