



UNIVERSITY OF
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VEGETABLE CULTIVAR AND CULTURAL TRIALS 1998

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Agronomics of New Red-Skinned Potato Cultivars

This trial was designed to evaluate some of the basic agronomic characteristics and management parameters required by several newly released **red skinned cultivars** of interest to Saskatchewan's potato industry.

The trials were conducted on the Horticulture Science Department Potato Research plots located in Saskatoon utilizing standard production practices for commercial potatoes. The crop was seeded in mid-May, in rows 90 cm apart. Irrigated plots were watered once soil water potentials rose above -60kPa. Typically, 2.5 cm of water was applied at each irrigation event. The dryland plots relied solely on rainfall. Yields were evaluated at 90 and 120 days after planting. At both harvests, the crop was graded into size categories; small = < 44 mm diam., 44 < medium < 88 mm and oversize = > 88 mm diam. Table stock yields included the medium and oversize categories while the seed category included the pooled yield of small and medium size tubers.

Cultivars tested;

- Norland - is the standard red skinned variety for the Canadian Prairies. It is early maturing with excellent yields of fairly uniform tubers, but its skin tends to fade during storage.
- NorDonna - is a newly released (North Dakota Program) very dark red skinned variety. NorDonna may be slow maturing and lack the yield potential of Norland.
- Cherry Red - this Colorado variety is exceptionally red and holds its color well. Again, this variety may be too slow maturing for local growing conditions.

This trial evaluated the impact of seedpiece spacing on the yields and tuber size distribution of Norland, NorDonna and Cherry Red under irrigated and dryland conditions. The spacings tested were 15, 25 and 35 cm (6, 10 and 14"). The 25 cm spacing would represent the norm for Norland under irrigation while a wider spacing would be more typical in dryland production.

The 1998 growing season was exceptionally long, with excellent growing conditions throughout **if** supplemental irrigation was available for the crop. The dryland trials showing symptoms of drought stress from early July through to the final harvest. The crop canopy for NorDonna was more uniform than Norland but was slower to establish. While the Norland crop had senesced by early September, the NorDonna crop was still growing vigorously at the time of top kill in mid-September. Cherry Red was intermediate between the two other cultivars in terms of its growth habit. **The Norland crop canopy in the dryland plots was substantially larger than for the other two cultivars - suggesting greater drought tolerance.**

Yields under irrigation exceeded those on dryland by a factor three fold averaged over the three cultivars and two harvest dates (Table 1). Norland was the highest yielding cultivar, irrespective of harvest date or availability of moisture during the growing season. NorDonna performed poorly while Cherry Red was intermediate between Norland and NorDonna. Increasing the plant population by reducing the in-row spacing had little effect on yields when moisture was limiting. When moisture was abundant, yields progressively increased as the in-row spacing narrowed. At the closest in-row spacing, average tuber size was still large enough to meet table standards.

EARLY HARVEST - 90 days														
DRYLAND														
	Tablestock (t/ha)					Seed (t/ha)					Avg. tuber wt (g)			
	15 cm	25 cm	35 cm	L/Q		15 cm	23 cm	35 cm	L/Q		15 cm	25 cm	35 cm	L/Q
Cherry Red	8.1	8.3	7.6	NS/NS		12.5	11.3	11.6	NS/NS		72	118	78	Q
Norland	13.2	10.5	8.8	NS/NS		19.9	16.1	13.1	L		82	81	76	NS/NS
Nordonna	0.2	1.9	0.9	NS/NS		2.4	4.0	4.6	NS/NS		29	56	34	NS/NS
LSD 0.05	4.9	4.9	6.5			5.3	5.8	7.3			13	55	28	
IRRIGATED														
Cherry Red	39.2	34.6	31.2	L		39.8	31.5	27.5	L		166	182	204	L
Norland	50.5	54.8	43.3	Q		48.0	45.9	34.4	L,Q		185	208	210	L
Nordonna	16.9	11.7	14.8	NS		22.8	17.4	18.4	NS		116	78	106	Q
LSD 0.05	5.8	6.3	7.2			5.8	3.0	6.2			33	22	24	
FINAL HARVEST - 120 DAYS														
DRYLAND														
Cherry Red	11.4	7.7	10.8	Q		15.7	11.5	13.8	NS		101	83	96	Q
Norland	15.5	15.6	14.8	NS		20.4	19.7	18.3	NS		107	117	113	NS
Nordonna	2.0	4.2	3.6	NS		6.2	8.5	6.6	NS		56	64	80	L
LSD 0.05	7.7	3.6	4.4			7.1	4.7	4.9			28	28	17	
IRRIGATED														
Cherry Red	56.7	48.3	39.2	L		45.1	36.7	29.5	L		187	241	251	L
Norland	70.4	56.7	56.6	L		55.6	46.0	40.8	L		216	220	234	NS
Nordonna	38.3	34.4	41.5	NS		41.2	34.8	38.8	NS		133	148	177	L
LSD 0.05	11.1	10.9	10.3			7.4	9.2	7.8			60	52	25	

*Linear (L) or Quadratic (Q) relationship between variable and in-row spacing (P=0.05).