



Crop Science Report

RESEARCH/EXTENSION

1987-88 OREGON WINTER RAPESEED TRIAL

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Winter rapeseed yield trials were conducted at four Oregon locations in 1987-88 - Corvallis, Madras, Pendleton, and Powell Butte. This report summarizes the results of these trials.

Tables 1 and 1a summarize data for Corvallis in English and metric units, respectively. Corvallis was the main trial site with 41 varieties and experimental lines tested. Materials from both the Oregon Variety Testing Program, sponsored by the Oregon Department of Agriculture New Crops Board and Palmco, Inc., and from the National Winter Rapeseed Variety Trial coordinated by Dr. Dick Auld, University of Idaho, were included at the Corvallis site.

Weather data for Corvallis is presented in Tables 2 and 2a. There was no appreciable rainfall in western Oregon from early June until the last day of October. Trial land at Hyslop was irrigated (2 inches, 5 cm) prior to field preparation. Fall fertilizer (100 lbs/A, 30-0-0-6) was pre-plant incorporated. The trial was seeded on September 10. Emergence was excellent. The field was irrigated once again (2 inches, 5 centimeters) on September 23 to assure plant establishment.

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Winter temperatures were mild. The lowest temperature recorded at Hyslop Farm during the winter was 23°F. Plant growth continued throughout the winter and there were no losses due to winter injury. Plant vigor in the spring was excellent for all varieties/lines.

In direct contrast to the hot, dry fall weather and mild winter temperatures, cool, wet weather persisted into late spring. May and June temperatures were 1 to 2 degrees cooler and rainfalls one half to two inches higher than normal. Growing conditions were exceptionally good for all cool season crops. Pod set and seed set were excellent.

During a wind and rain storm on April 20 and 21, several Bonis (Svalof) and Weibullsholms lines lodged completely - plants were flat to the ground. The exposed lower side-branches immediately began regrowth and lodged plots appeared normal in as little as two weeks; however, maturity was significantly delayed.

Lodging was not confined to specific portions of the field, but was found in specific lines throughout all replications. This would suggest a genetic rather than an environmental cause to the problem. Other varieties/lines exhibited normal lodging/lean at crop maturity.

The 1987-88 trial was not sprayed with fungicides. Trials in the previous two years had been sprayed. In these earlier trials, check areas showed no greater incidence of disease than treated plots, hence it was concluded that fungal disease was not a problem. This conclusion was in error. Sclerotinia infestation was severe throughout the trial. Infected plant percentages (infection on lower, main stem only) ranged from 2 to 24%. Disease incidence varied in severity across the

field (as evidenced by the high coefficient of variation for Sclerotinia) but significant differences among varieties and lines were still detectable. Future trials will be sprayed for fungal disease control.

Cabbage seed pod weevils had also not been of significance in previous trials so insecticide applications were not made; however, pre-harvest evaluation indicated there was a uniform 5% pod infestation level across the trial. Insecticides for seed pod weevil will be used in future testing.

A set of five early-maturing varieties (Bienvenu, Bridger, Cascade, Ceres, and Indore) were swathed by hand on June 27 and combined with a Wintersteiger Seedmaster combine on July 1. The remaining varieties/lines were swathed on July 5 and 6 and combined on July 12 and 13. Seed quality in non-lodged material was excellent.

Yields ranged from 1766 (an early lodged line) to 4226 with a trial average of 2971 lb/A (Table 1). This is very similar to the 1986-87 trial in which the range was 2087 to 4493 with an average of 3105 lb/A. Shatter loss at harvest was estimated to be approximately 2 to 5%.

Test weights ranged from 48.5 to 51.2 with an average of 49.6 lb/bu (Table 1). This is again similar to the 1986-87 trial in which the range was 48.2 to 52.2 with an average of 49.7.

Tables 3 and 3a give yield and other agronomic data from trials conducted at three locations in eastern Oregon. At Madras, yields ranged from 1901 to 2952 with a yield average of 2429 lb/A. Variety performance over replications was erratic and though a thousand pound difference in yield existed between the lowest and highest yielding variety, this difference was not statistically different.

At Powell Butte, another central Oregon site, the yield range was very narrow - from 2302 to 2816 with a trial average of 2593 lb/A. This trial was heavily grazed by deer on at least two separate occasions, but did not seem to be detrimentally affected. All varieties regrew vigorously in the spring. Test weights at both central Oregon sites tended to be superior to those at Corvallis.

Pendleton is a dryland site located in a 17 inch rainfall zone. Due to the extremely dry fall conditions, establishment at Pendleton was difficult. As is shown in the data tables, portions of the trial were planted on two

separate dates. The early planting of eight varieties was seeded on September 15, 1987. Yields among these varieties ranged from 2023 to 3111 with an average of 2810 lb/A. A group of four varieties was planted on September 29, 1987. Due to mild winter conditions, even this later planting survived with no winter injury or loss of vigor. As in western Oregon, weather in May and June was exceptionally favorable for cool season crops. This favorable weather is reflected in the fact that the average trial yield at Pendleton was only 160 lbs. less than that at Corvallis, a 37 inch rainfall site.

Table 4 shows variety yields over sites and years expressed as a percent of the trial average yield. This data shows that a variety like Cascade is both low in yield and exhibits yield instability. A variety such as Viking is consistent, but low yielding. A variety like Li-radonna, from a grower point of view, would appear to be preferred as it shows both stability and high yield.

Cultural practice information for the Corvallis site is presented in Figure 1.

Investigators would like to thank the Oregon Department of Agriculture New Crops Board and Palmco for their financial support. Without their funding, this trial work would not have been possible.

Table 1. 1987-88 agronomic data for the winter rapeseed trial on Hyslop Farm (English units)

Variety	Source	Bloom % on 4-5-88	Plant Height (in)	Sclerotinia % infected 6-10-88	Yield Pound/ Acre	Test Weight (lb/bu)	1000 Seed Wgt (g)	Comments
Arabella	Mitsubishi	5	72	14	3191	49.8	2.66	
Bienvenu	check	50	56	21	3348	49.3	2.25	
Bridger	Univ of Id	45	57	16	2383	49.4	2.48	
Cascade	Univ of Id	72	58	24	2095	48.9	2.64	
Ceres	King Agro	3	64	8	3483	50.4	2.76	
Crystal	Bonis & Co.	3	64	10	2933	48.8	2.75	
Dwarf Essex	check	8	69	12	2969	50.0	2.74	
Glacier	Bonis & Co.	4	67	19	2525	49.8	2.71	
Indore	OSU	40	60	5	2560	48.8	2.02	
Jet Neuf	check	1	64	5	2900	51.2	2.99	
Lindora	Canola, Inc.	11	70	8	3395	48.8	2.93	
Liporta	Canola, Inc.	8	68	5	3599	50.0	2.87	
Lirabon	Canola, Inc.	11	65	4	2954	50.2	2.90	
Liradonna	Mitsubishi	22	63	15	2988	49.8	2.90	
Nutiva	Burlingham	14	65	9	3366	49.8	2.91	
Rubin	King Agro	0	69	2	3726	49.9	2.53	
Santana	Semundo	20	64	14	3032	49.3	2.52	
Tandem	King Agro	0	68	3	3350	51.2	3.07	
Viking	Daehnfeldt	11	64	11	3039	49.0	2.47	small pods, cracked seed
AWR0107	Allelix	32	65	14	3024	50.5	2.79	
AWR0110	Allelix	20	64	5	3003	48.8	2.65	
K8-1	King Agro	4	71	13	3658	50.4	2.75	
K8-3	King Agro	0	72	8	4226	49.6	2.71	
NRPB0087-2	Nickerson	8	65	7	2980	48.8	2.32	
RBR 72	Rustica	0	66	4	3383	49.4	2.79	
RBR 82	Rustica	8	62	12	2537	48.8	2.55	
RBR 83	Rustica	6	64	5	3704	50.2	2.88	
RBR US1	Rustica	0	69	3	3902	49.5	2.87	
SV0220	Bonis & Co.	30	63	13	2924	50.8	2.86	lodged
SV0223	Bonis & Co.	25	67	10	3050	50.9	2.97	lodged
SV0238	Bonis & Co.	3	66	4	2840	50.4	2.81	
SVO253	Bonis & Co.	15	64	14	3701	48.7	2.56	
SVO261	Bonis & Co.	2	74	17	2011	48.7	2.72	early lodging, green seed
WW0988	Weibullsholms	6	64	9	1766	49.6	2.58	early lodging
WW1011	Weibullsholms	4	70	15	2160	49.6	2.49	early lodging
WW1031	Weibullsholms	0	70	15	1805	48.6	2.52	early lodging, brown seed
WW1045	Weibullsholms	8	63	13	2444	49.9	2.67	lodging
WW1048	Weibullsholms	0	66	20	1915	50.0	2.63	early lodging, brown seed
WW1052	Weibullsholms	15	70	17	2296	48.5	2.51	cracked seed
85-WRB-0047	Allelix	25	77	8	3724	49.8	2.64	
916-01x3	Daehnfeldt	22	70	9	2924	49.3	3.11	
AVERAGE		14	66	11	2971	49.6	2.68	
PLSD (5%)		8	5	8	612	0.9	0.27	
CV		42	6	45	15	1	5	

Table 1a. 1987-88 agronomic data for the winter rapeseed trial on Hyslop Farm (Metric units)

Variety	Source	Bloom % on 4-5-88	Plant Height (cm)	Sclerotinia % infected 6-10-88	Yield Kg/ha	Test weight kg/m3	1000 Seed Wgt (g)	Comments
Arabella	Mitsubishi	5	183	14	3573	640.9	2.66	
Bienvenu	check	50	142	21	3749	634.5	2.25	
Bridger	Univ of Id	45	145	16	2668	635.8	2.48	
Cascade	Univ of Id	72	147	24	2346	629.3	2.64	
Ceres	King Agro	3	163	8	3900	648.6	2.76	
Crystal	Bonis & Co.	3	163	10	3284	628.1	2.75	
Dwarf Essex	check	8	175	12	3325	643.5	2.74	
Glacier	Svalof	4	170	19	2828	640.9	2.71	
Indore	OSU	40	152	5	2867	628.1	2.02	
Jet Neuf	check	1	163	5	3248	658.9	2.99	
Lindora	Canola, Inc.	11	178	8	3802	628.1	2.93	
Liporta	Canola, Inc.	8	173	5	4030	643.5	2.87	
Lirabon	Canola, Inc.	11	165	4	3308	646.1	2.90	
Liradonna	Mitsubishi	22	160	15	3346	640.9	2.90	
Nutiva	Burlingham	14	165	9	3769	640.9	2.91	
Rubin	King Agro	0	175	2	4173	642.2	2.53	
Santana	Semundo	20	163	14	3395	634.5	2.52	
Tandem	King Agro	0	173	3	3752	658.9	3.07	
Viking	Daehnfeldt	11	163	11	3403	630.6	2.47	small pods, cracked seed
AWR0107	Allelix	32	165	14	3386	649.9	2.79	
AWR0110	Allelix	20	163	5	3363	628.1	2.65	
K8-1	King Agro	4	180	13	4096	648.6	2.75	
K8-3	King Agro	0	183	8	4733	638.4	2.71	
NRPB0087-2	Nickerson	8	165	7	3337	628.1	2.32	
RBR 72	Rustica	0	168	4	3788	635.8	2.79	
RBR 82	Rustica	8	157	12	2841	628.1	2.55	
RBR 83	Rustica	6	163	5	4148	646.1	2.88	
RBR US1	Rustica	0	175	3	4370	637.1	2.87	
SV0220	Bonis & Co.	30	160	13	3274	653.8	2.86	lodged
SV0223	Bonis & Co.	25	170	10	3416	655.1	2.97	lodged
SV0238	Bonis & Co.	3	168	4	3180	648.6	2.81	
SVO253	Bonis & Co.	15	163	14	4145	626.8	2.56	
SVO261	Bonis & Co.	2	188	17	2252	626.8	2.72	early lodging, green seed
WW0988	Weibullsholms	6	163	9	1977	638.4	2.58	early lodging
WW1011	Weibullsholms	4	178	15	2419	638.4	2.49	early lodging
WW1031	Weibullsholms	0	178	15	2021	625.5	2.52	early lodging, brown seed
WW1045	Weibullsholms	8	160	13	2737	642.2	2.67	lodging
WW1048	Weibullsholms	0	168	20	2144	643.5	2.63	early lodging, brown seed
WW1052	Weibullsholms	15	178	17	2571	624.2	2.51	cracked seed
85-WRB-0047	Allelix	25	196	8	4170	640.9	2.64	
916-01x3	Daehnfeldt	22	178	9	3274	634.5	3.11	
AVERAGE		14	168	11	3327	638.4	2.68	
PLSD (5%)		8	13	8	685	11.6	0.27	
CV		42	6	45	15	1	5	

Table 2. Weather summary for Corvallis, Oregon, Sept., 1987-June, 1988 (English)

Month	Temperature (F)								Rainfall (In.)	
	Ave. Max.	Dev.	Max.	Ave. Min.	Dev.	Min.	Ave.	Dev.	Total	Dev.
Sept. 87	78.8	3.3	101	46.8	-0.9	37	62.8	1.2	0.05	-1.43
Oct. 87	73.4	9.1	91	41.5	-0.2	33	57.4	4.4	0.27	-3.12
Nov. 87	53.8	1.5	64	40.8	3.6	30	47.3	2.6	3.90	-2.27
Dec. 87	43.7	-2.8	59	34.5	-0.1	23	39.1	-1.5	11.42	3.65
Jan. 88	44.7	-0.4	57	33.2	0.3	23	39.0	0	7.12	-0.43
Feb. 88	52.1	1.7	63	34.9	-0.1	26	43.5	0.8	1.70	-3.16
Mar. 88	56.3	2.5	70	36.5	0.4	29	46.4	1.5	3.90	-0.73
April 88	60.9	1.6	78	42.1	3.3	31	51.5	2.5	3.33	0.87
May 88	64.2	-2.0	86	43.8	0.6	35	54.0	-0.7	3.84	1.92
June 88	71.6	-1.0	88	48.6	0.3	39	60.1	-0.3	1.83	0.63
Ave.	59.95	1.4	75.7	40.3	0.7	30.6	50.1	1.1	--	--
Total	--	--	--	--	--	--	--	--	37.36	-4.07

Table 2a. Weather summary for Corvallis, Oregon, Sept., 1987-June, 1988 (Metric)

Month	Temperature (C)								Rainfall (cm)	
	Ave. Max.	Dev.	Max.	Ave. Min.	Dev.	Min.	Ave.	Dev.	Total	Dev.
Sept. 87	26.0	1.8	38.3	8.2	-0.5	2.8	17.1	0.7	0.1	-3.6
Oct. 87	23.0	5.1	32.8	5.3	-0.1	0.6	14.1	2.4	0.7	-7.9
Nov. 87	12.1	0.8	17.8	4.9	2.0	-1.1	8.5	1.4	9.9	-5.8
Dec. 87	6.5	-1.6	15.0	1.4	-0.1	-5.0	3.9	-0.8	29.0	9.3
Jan. 88	7.1	-0.2	13.9	0.7	0.2	-5.0	3.9	0.0	18.1	-1.1
Feb. 88	11.2	0.9	17.2	1.6	-0.1	-3.3	6.4	0.4	4.3	-8.0
Mar. 88	13.5	1.4	21.1	2.5	0.2	-1.7	8.0	0.8	9.9	-1.9
April 88	16.1	0.9	25.6	5.6	1.8	-0.6	10.8	1.4	8.5	2.2
May 88	17.9	-1.1	30.0	6.6	0.3	1.7	12.2	-0.4	9.8	4.9
June 88	22.0	-0.6	31.1	9.2	0.2	3.9	15.6	-0.2	4.6	1.6
Ave.	15.5	0.8	24.3	4.6	0.4	-0.8	10.1	0.6	--	--
Total	--	--	--	--	--	--	--	--	94.9	-10.3

Table 3. Agronomic data from 1987-88 winter rapeseed trials in Eastern Oregon

Variety	Madras		Pendleton *			Powell Butte	
	Yield lb/A	TW lb/bu	Yield lb/A	Yield lb/A	Hgt in	Yield lb/A	TW lb/bu
Arabella				2437	68		
Cascade	2484	51.1	2615		68	2582	50.5
Ceres	2952	52.7		2275	61	2302	50.1
Glacier	2311	51.8	2839		71	2738	50.2
Lindora	1901	51.2	3082		68	2505	50.3
Lirabon	2616	51.9	3069		70	2707	51.0
Liradonna	2402	51.6	2951		71	2645	50.2
Nutiva	2503	52.0	3111		72	2427	50.5
Rubin	2240	51.4		2765	66	2551	50.7
Santana	2690	51.7	2792		73	2816	49.8
Tandem				2547	62		
Viking	2191	50.9	2023		72	2661	50.4
Average	2429	51.6	2810	2506	68.5	2593	50.4
PLSD (5%)	NS	0.7	415	NS	--	NS	NS
CV (%)	20	1	11	13	--	22	2

* Two dates of seeding were used at Pendleton due to seed arrival date and field conditions. Eight varieties were seeded on September 15, 1987. The other four varieties were planted on September 29, 1987. Direct statistical comparison should not be made between the two variety sets.

Table 3a. Agronomic data from 1987-88 winter rapeseed trials in Eastern Oregon

Variety	Madras		Pendleton *			Powell Butte	
	Yield kg/ha	TW kg/m ³	Yield kg/ha	Yield kg/m ³	Hgt cm	Yield kg/ha	TW kg/m ³
Arabella				2729	172		
Cascade	2782	658	2929		172	2892	650
Ceres	3306	678		2548	154	2578	645
Glacier	2588	667	3180		180	3067	646
Lindora	2129	659	3452		172	2806	647
Lirabon	2930	668	3437		177	3032	656
Liradonna	2690	664	3305		180	2962	646
Nutiva	2803	669	3484		182	2718	650
Rubin	2509	662		3097	167	2857	653
Santana	3013	665	3127		185	3154	641
Tandem				2853	157		
Viking	2454	655	2266		182	2980	649
Average	2720	664	3147	2807	173	2904	649
PLSD (5%)	NS	9	465	NS	--	NS	NS
CV (%)	20	1	11	13	--	22	2

* Two dates of seeding were used at Pendleton due to seed arrival date and field conditions. Eight varieties were seeded on September 15, 1987. The other four varieties were planted on September 29, 1987. Direct statistical comparison should not be made between the two variety sets.

Table 4. Variety Yields at Various Sites for 1987 and 1988 Expressed as Percent of Site Yield Average

Variety	Corvallis		Madras		Pendleton		Average
	1987	1988	1987	1988	1987	1988	
	yield as % of site ave						
Arabella	104	107				97	103
Bienvenu	131	113					122
Bridger	73	80					76
Cascade	96	71	74	102	89	93	87
Ceres	114	117	98	121	106	91	108
Dwarf Essex	113	100					106
Glacier	120	85	104	95	104	101	102
Jet Neuf	92	98					95
Lindora	82	114	100	78	97	110	97
Lirabon	132	99	117	108	103	109	111
Liradonna	99	101	116	99	100	105	103
Nutiva	129	113		103		111	114
Rubin	101	125		92		110	107
Sanatana	84	102	104	111	97	99	99
Tandem	85	113	109		112	102	104
Viking	70	102	74	90	71	72	80

Fig. 1 Cultural Practice Information for Corvallis Site

Year: 1987-88

Location: Corvallis, Oregon
Hyslop Farm, Field 1-8, west end
Elevation - 225 ft (69 m)
Latitude - 44.63 N
Longitude - 123.2° W

Cultural Practices:

Planted	- September 10, 1987; Field pre-irrigated
Field History	- Fallow, Winter Wheat
Seeding Rate	- 12 seeds/sq ft (129 seeds/sq m)
Row Spacing	- 8 inches (20.3 cm)
Plot Size	- 4 ft (1.2 m) by 33 ft (10 m)
Fertilizer	- 100 lb/A (112 kg/ha) 30-0-0-6 ppi - 1.5 lb/A (1.7 kg/ha) Boron Sept. 16, 1988 - 220 lb/A (246 kg/ha) 46-0-0-0 March 4, 1988 - 30 lb/A S (34 kg/ha) as Gypsum March 10, 1988
Pesticides	- 3 lb/A (3.36 kg/ha) Devrinol Sept. 22, 1987
Swathed	- June 27, July 5 & 6, 1988 (by hand)
Combined	- July 1, 12 & 13, 1988 (Wintersteiger Seed Master)