

**An evaluation scheme to identify
superior cultivars of winter and spring canola
that are suitable for production in the Pacific Northwest.**

2001 PACIFIC NORTHWEST WINTER CANOLA TRIAL RESULTS

Jim B. Davis¹, Jack Brown¹, and Don Wysocki²

¹PSES Dept., Univ. of Idaho, Moscow, ID 83844-2339

²Oregon State University

ABSTRACT

A winter rapeseed and canola variety trial with 20 *Brassica napus* cultivars or advanced breeding lines and two control varieties was planted at 14 locations in Oregon, Washington, and Idaho. Mean yields from the 10 locations that were harvested ranged from 821 to 3406 lbs. per acre. Mean yields of the cultivars across all locations ranged from 1672 to 2370 lbs. per acre. Mean oil content of the cultivars ranged from 37.2 to 40.2%.

INTRODUCTION

For many years, winter rapeseed has been grown on a small acreage in the inland Pacific Northwest region of the U.S.A. Until the last decade, this production has been exclusively industrial rapeseed with high levels of erucic acid in its oil. During the last ten years the acreage has increased, and much of this new production has been with cultivars that produce canola quality oil and meal. Many new cultivars are now available, and yield trials throughout the region are needed to evaluate these new cultivars and to identify more areas in the region that are suited to winter canola or rapeseed production. In addition, many growers would like to plant winter canola in a recrop situation rather than planting in early August onto summer fallow as is traditional. Late planting is necessitated by recrop production, and for a winter canola or rapeseed cultivar to be successful under such conditions, it must be able to establish in relatively dry soils and over-winter as a small plant. Pressure from increased flea beetle populations has also pushed optimum planting times to later dates. Plant breeders at the University of Idaho have been working to develop cultivars that are suited to production in a recrop situation and these new cultivars and other available cultivars need to be tested under recrop and late planted conditions. In addition, cultivars need to be tested using new direct seed technology to determine varietal responses to tillage method.

To address these issues, the University of Idaho founded the Pacific Northwest Winter Canola Variety Trial in 1995 (PNWWVT). The trial is funded in part by the Pacific Northwest Canola Research Program and by fees paid by the commercial companies or universities that submit their cultivars or advanced breeding lines to be tested in the PNWWVT.

MATERIALS AND METHODS

Nineteen Argentine (*Brassica napus*) canola cultivars and breeding lines along with one industrial rapeseed breeding line were tested during the 2000-2001 crop year. Trials were planted during mid-September near Pendleton and Hermiston, OR; near Moscow, Genesee, Lewiston, and Grangeville, ID; and near Lind (two sites, conventional and direct seed) and Moses Lake, WA (irrigated). All of the above trials were planted on land that had

been previously fallow. Recrop trials were planted in late September at Lewiston, Moscow, and Potlatch., ID. All three of the recrop trials were direct seeded (no-till) into that season's spring barley stubble. Two additional trials were direct seeded in late September at Genesee and at Pendleton chem-fallow ground. At each location, the trial design used was a randomized, complete block with four replications, except for the Grangeville site that had three replications due to space constraints. Plot size was 3.5 feet by 16 feet at tilled sites, and 4 feet by 16 feet at direct seed sites. The seeding rate used was approximately 8 lbs. per acre. Trials were fertilized according to local practice. The date of 50% bloom and plant height at maturity was recorded at the Moscow and Genesee sites. After harvest, the seed was weighed to determine yield. Oil content was measured on a subsample of seed from each plot at Potlatch, Moscow (fallow), Genesee (conventional fallow and no-till fallow), Grangeville, Lewiston (fallow) and Moses Lake.

RESULTS AND DISCUSSION

Of the 14 locations planted, 10 were harvested. The recrop sites at Moscow and Lewiston, ID were lost due to winterkill and poor establishment, and both sites at Lind, WA failed to establish due to dry conditions. Mean yields from the sites ranged from 821 lbs. per acre at Grangeville, to 3406 lbs. per acre at the Moscow fallow site (Table 1). Mean cultivar yields ranged from 1672 lbs. per acre to 2370 lbs. per acre. The cultivar with the highest mean yield was 'Bruno.' Fourteen other cultivars yielded above 2000 lbs. per acre, and were not statistically different from Bruno.

Mean flower date was 139 Julian days, with a range of 138-141 (Table 2). Cool, wet weather in early May delayed flowering in the traditionally early cultivars, thus compressing the range of flowering date. Warm weather in late May/early June ended flower on all cultivars nearly simultaneously, which is not unusual. Mean plant height by cultivar ranged from 60 inches to 70 inches at the Genesee summer fallow site (Table 2). Plant heights were unusually short this year. One site included in the mean, Genesee direct seed, had very short plants, which was likely related to the late planting date. Also, the Genesee fallow was damaged by herbicide drift, which resulted in shorter plants. Mean oil content across all varieties and locations was 38.6% and ranged from 37.2 to 40.2% by variety. Seed from the no-till site at Genesee had the highest mean oil content, 41.3%, and seed from Moses Lake had the lowest, 36.6%.

Most cultivars produced acceptable yields at sites where traditional fallow ground was used. Recrop sites and sites that were planted later than traditional dates produced lower mean yields than those sites where traditional practices were used. In addition, more variation was seen among cultivars at non-traditional sites, indicating that some cultivars are better adapted to late planting or recrop systems than other cultivars. Even though some cultivars show more promise in recrop systems, the lower yields at these sites and total failure of the recrop trial at Moscow and Lewiston shows that more work is needed to make recrop winter canola a viable option. Data from the PNWWVT has been summarized in a flyer and distributed to interested growers and seed companies to provide information on which to base sound farming decisions.

Table 1. Yield results for 22 cultivars in the 2000-2001 PNW Winter Variety Trial.

Cultivar	Mean	Yield	PEND	PE-N	HERM	MOSE	POTL	MOSC	GENE	GE-N	LEWI	GRAN
	Yield	Rank		-----		-----		-----		-----		-----
	lbs./acre	-						lbs./acre				
Trial Controls												
CASCADE	1786	21	2473	977	800	2553	845	2921	2039	1283	2181	371
BRIDGER	1957	16	2374	511	1274	2614	1181	3327	1911	2344	2075	436
Cenex Harvest States												
DECATHLON	2067	12	3236	1252	1004	2576	664	3627	2837	1483	1924	*
InterMountain Canola												
CAPITOL	2008	15	2554	1112	1075	2393	1348	3604	2607	1640	1742	276
CONTACT	2274	6	3059	1110	1136	3147	829	3700	1962	2624	2897	149
MCH.89	1865	18	2653	1099	841	1914	1103	3168	1559	1936	2514	394
Integra Seed												
CERES	1672	22	2519	812	857	1655	471	2675	2599	1187	2270	236
OLSEN	2054	14	2580	1052	657	2021	703	3774	3612	1402	2686	413
BRUNO	2370	1	*	1380	*	2612	1541	3807	2840	1921	2490	1000
INT.221	1793	20	*	838	*	2208	922	3381	1600	1619	1980	948
INT.222	2061	13	*	992	*	2839	693	3286	2575	1928	2111	675
McKay Seed												
ERICKA	1929	17	2969	830	858	2294	1203	3241	1992	1719	2258	656
University of Idaho												
ATHENA	2315	3	3115	1059	1236	2592	1844	3775	3170	1631	2413	1158
92SW76.75414	1840	19	3309	885	890	2134	626	3084	1921	1576	2137	120
92WC2.3453	2238	8	3179	888	970	2378	1295	3509	3136	2308	2478	979
93WC3.426	2149	11	3406	1081	832	2142	1296	3436	3517	1513	2115	1120
93WC4.433	2345	2	3158	1390	1081	2851	1693	3339	2398	2362	2837	1761
93WC5.1735	2288	5	3100	1177	1131	2856	1622	3828	2382	1928	2567	1198
92WC3.134212	2272	7	3277	1239	1045	3103	1190	2839	2528	3020	2205	1559
93WC4.15362	2205	9	3230	559	1189	2808	1497	3764	2431	1983	2387	1676
94WC68.1610	2309	4	3293	1323	1282	2947	1387	3458	2738	2067	2287	1566
94WC68.116	2178	10	3218	984	1103	2559	1650	3588	2749	1604	2146	1311
Mean	2087		2984	1025	1014	2509	1164	3406	2505	1867	2309	821
LSD	570		617	316	NS	563	398	558	563	820	NS	503

Location Key: PEND: Pendleton OR, PE-N: Pendleton OR no-till, HERM: Hermiston OR, LEWI: Lewiston ID, MOSE: Moses Lake WA, POTL: Potlatch, ID no-till recrop, MOSC: Moscow ID, GENE: Genesee ID, GE-N: Genesee, ID no-till, GRAN: Grangeville, ID late-planted fallow (not included in overall mean due to non-uniform establishment and severe and non-uniform wild oat infestation.)

Table 2. Days to flower from Jan. 1, plant canopy height, lodging score, mean oil content, and oil content by location of 22 cultivars in the 2000-2001 PNW Winter Variety Trial.

Cultivar	Days to Flower days after Jan 1	Plant Height inches	Lodging Score -	Mean Oil Content %	POTL	Oil Content by Location					
						MOSC	GENE	GE-N	GRAN	LEWI	MOSE
Trial Controls											
CASCADE	139	43	5.50	38.7	39.6	39.4	38.8	40.6	37.0	38.6	36.9
BRIDGER	139	43	2.75	39.4	40.2	40.3	39.1	42.2	36.7	39.3	37.9
Cenex Harvest States											
DECATHLON	139	43	5.50	38.0	39.3	38.9	38.3	41.8	35.0	37.4	35.6
InterMountain Canola											
CAPITOL	141	45	1.75	38.2	40.3	39.4	37.9	40.8	35.9	37.4	35.8
CONTACT	138	48	4.25	39.4	41.2	40.5	40.2	42.5	34.6	38.9	37.5
MCH.89	140	42	3.75	39.4	40.7	40.3	39.0	42.7	38.7	38.1	36.3
Integra Seed											
CERES	139	49	6.00	38.0	39.7	38.9	38.0	40.4	37.1	37.2	34.9
OLSEN	140	44	4.00	38.6	40.4	40.3	39.5	41.5	35.9	37.0	35.2
BRUNO	138	46	1.75	37.8	31.6	40.2	39.6	41.9	36.0	38.1	36.7
INT.221	138	43	2.00	38.4	39.4	39.9	38.1	41.7	36.9	37.1	35.9
INT.222	140	44	2.75	38.8	39.9	40.5	39.3	41.8	37.0	36.3	37.1
McKay Seed											
ERICKA	138	41	6.00	37.7	38.3	38.5	37.6	40.6	35.9	37.2	35.7
University of Idaho											
ATHENA	139	44	5.75	39.1	39.7	39.8	39.5	40.7	38.1	38.7	37.0
92SW76.75414	140	45	7.75	40.2	41.4	42.4	40.9	42.3	34.3	41.0	39.5
92WC2.3453	139	48	5.50	38.7	39.0	39.3	39.5	40.7	37.6	37.2	37.8
93WC3.426	139	48	6.00	37.2	37.6	38.1	38.7	40.7	34.2	36.2	35.0
93WC4.433	139	47	4.25	38.7	39.4	39.3	38.4	41.4	38.4	37.5	36.6
93WC5.1735	141	49	5.00	38.1	38.8	38.8	38.3	40.6	36.6	37.3	36.3
92WC3.134212	139	44	2.75	38.9	39.9	39.8	38.9	41.3	37.4	37.7	37.6
93WC4.15362	140	44	5.50	37.6	30.3	39.9	38.8	41.5	38.0	38.0	36.5
94WC68.1610	140	48	3.00	39.1	39.7	40.0	39.8	41.6	37.9	38.0	36.6
94WC68.116	141	46	2.75	38.4	39.3	38.9	39.1	40.5	37.3	37.0	36.7
Mean	139	45	4.28	38.6	38.9	39.7	39.0	41.3	36.8	37.8	36.6
LSD	2.2	4.7	1.98	2.0	NS	1.1	0.8	1.0	2.2	1.2	1.1

Location Key, POTL: Potlatch ID no-till recrop, MOSC: Moscow ID, GENE: Genesee ID, GE-N: Genesee ID, late planted no-till fallow; GRAN: Grangeville ID, late-planted fallow, LEWI: Lewiston ID, MOSE: Moses Lake WA

