

# 2002-2003 PACIFIC NORTHWEST WINTER CANOLA VARIETY TRIAL RESULTS

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## ABSTRACT

A winter rapeseed and canola variety trial with 17 canola (*Brassica napus*) cultivars or advanced breeding lines and three control varieties was planted at nine locations in Oregon, Washington, and Idaho. Mean yields from the eight locations that were harvested ranged from 1251 to 4785 lbs. per acre. Mean yields of the cultivars across all locations ranged from 1788 to 3502 lbs. per acre. Mean oil content of the cultivars over all locations ranged from 36.8 to 40.8%. ‘Baldur’ was the highest yielding cultivar.

## 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 had been exclusively industrial rapeseed with high levels of erucic acid in its oil. During the last twelve 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 when planted at a later date and overwinter 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 (PNWWVT) in fall of 1995. Both commercial cultivars and advanced breeding lines have been tested. In the last eight years, the project has evaluated 76 winter cultivars representing nine companies. The trial is currently 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

Seventeen *B. napus* canola cultivars and breeding lines plus three controls, ‘Ceres’ (*B. napus*), ‘Dwarf Essex’ (*B. napus*), and ‘Debut’ (*B. rapa*), were tested during the 2002-2003 crop year. Trials were planted during early to mid-September near Pendleton and Hermiston, OR (irrigated); near Moscow, Genesee, Nezperce and Grangeville, ID; and near Moses Lake, WA (irrigated). All of the above trials except for the Moses Lake site were planted on land that had been

previously fallow. A recrop trial was planted in late September at Moscow, ID. In addition, a late fallow site was established at Genesee, ID. Planting dates are listed in the location key at the bottom of Table 1. The Moscow recrop trial was direct seeded into that season's spring barley stubble, and the Nezperce site was directed seeded into fallowed winter wheat stubble. At each location, the trial design was a randomized, complete block with four replications. Plot size was 4 feet by 16 ft, and the seeding rate 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 estimated using a Nuclear Magnetic Resonance Analyzer (NMR) on a subsample of seed from each plot harvested.

## **RESULTS AND DISCUSSION**

Of the nine locations planted, eight were harvested. The recrop site at Moscow, ID was lost due to poor establishment caused by dry conditions. Mean yields from the sites ranged from 1251 lbs. per acre at the Nezperce site to 4785 lbs. per acre at the Genesee fallow site (Table 1). Cultivar yields ranged from 1788 lbs. per acre to 3502 lbs. per acre average across all locations. The cultivar with the highest mean yield was 'Baldur.' The trial mean was 2810 lbs. per acre, and eleven cultivars yielded above 2800 lbs. per acre.

Mean flower date was 135 Julian days, with a range of 127-137 (Table 2). 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 63 inches to 69 inches (Table 2). Mean oil content across all varieties and locations was 39.1% and ranged from 36.8 to 40.8% by variety. Seed from the Pendleton site had the highest mean oil content, 40.8%, and seed from the site at Moses Lake had the lowest, 36.9%.

Most cultivars produced acceptable yields at sites where traditional fallow ground was used. Sites that were planted later than traditional dates produced lower mean yields than those sites where traditional practices were used. Cultivars Baldur and 'Kronos' performed well for a second successive year, and two cultivars new to the trial, 'Artus' and 'Talent' had high yields. Several new University of Idaho breeding lines showed good promise, and 'Athena' and Ceres continued to be strong performers.

**Table 1.** Yield results for 20 cultivars in the 2002-2003 Pacific Northwest Winter Canola Variety Trial including mean yield, rank by mean yield, and yield by location.

Cultivar	Mean Yield	Rank	MOSC	GENE	GENL	NEZP	GRAN	MOSL	PEND	HERM
	lbs. / acre		----- lbs. / acre -----							
<b>Trial Controls</b>										
Ceres	2885	8	3266	4862	2411	1205	3667	2505	2601	2567
Dwarf Essex	2762	13	3152	4441	2916	1216	3000	2487	2501	2383
Debut	1788	20	1241	2574	1413	1177	1557	2125	2093	2123
<b>Cenex Harvest States</b>										
Decathlon	2360	19	2890	3765	1211	876	3324	2053	2328	2433
<b>Croplan Genetics</b>										
Baldur	3502	1	4657	6100	3245	1832	4012	3084	2167	2917
Kronos	3370	2	3733	6649	4163	1677	3048	3006	2295	2387
<b>Integra Seed Ltd</b>										
Artus	3302	3	3598	5980	3645	1404	3342	3027	3090	2334
Talent	3070	5	3485	5907	3032	1774	2744	2305	2862	2450
<b>University of Idaho</b>										
Ericka	2598	16	3164	3846	1974	1088	3477	2083	2211	2944
Athena	2862	10	3334	4452	3082	1315	3342	2892	2013	2468
UIC-02.1	2876	9	3694	4979	2786	1245	3288	2531	1877	2612
UIC-02.2	3034	6	3683	5035	2655	1323	3667	2661	2780	2470
UIC-03.1	3124	4	3316	5160	2842	1628	4314	2800	2413	2515
UIC-03.2	2764	12	3550	4581	1761	1228	2994	2491	2535	2970
UIC-03.3	2692	15	3243	5459	2246	601	2811	2346	2624	2208
UIR-03.1	2498	17	2771	3735	2448	896	2318	2443	2503	2872
UIR-03.2	2435	18	2681	4124	2128	1277	3220	2202	1959	1893
UIR-03.3	2810	11	3531	4525	2154	636	3579	2416	3199	2444
UIR-03.4	2712	14	3090	4447	2185	440	3634	2448	2521	2933
UIR-03.5	2948	7	3753	5077	2929	1404	3477	2714	2594	1635
Mean	2819		3292	4785	2546	1251	3298	2531	2410	2470
L.S.D. (p=0.05)			647	884	869	636	NS	462	NS*	NS

\* NS = not significantly different (p=0.05)

Location and Planting Date Key:

MOSC = Moscow, Idaho, fallow	Sept 10
GENE = Genesee, Idaho, fallow	Sept 10
GENL = Genesee, Idaho, fallow, late planted	Sept 23
NEZP = Nezperce, Idaho, chemical fallow, no-till	Sept 16
GRAN = Grangeville, Idaho, fallow	Sept 12
MOSL = Moses Lake, Washington, recrop irrigated	Sept 17
HERM = Hermiston, Oregon, irrigated	Sept 18
PEND = Pendleton, Oregon, fallow	Sept 10

**Table 2.** Days to flower from Jan. 1, plant canopy height in inches, mean oil content, and oil content by location of 20 cultivars in the 2002-2003 Pacific Northwest Winter Variety Trial.

Cultivar	Days to Flower	Plant Height	Mean Oil Content	----- Oil Content by Location -----							
				MOSL	MOSC	GENE	GENL	NEZP	GRAN	PEND	HERM
	days	inches	%	----- % -----							
<b>Trial Controls</b>											
Ceres	136	65	38.2	35.5	37.4	37.5	37.7	38.7	36.6	40.3	41.7
Dwarf Essex	137	66	39.5	37.4	39.3	39.6	39.9	42.0	37.5	40.5	40.1
Debut	127	69	36.8	35.2	34.9	36.2	35.8	35.9	34.9	40.4	40.9
<b>Cenex Harvest States</b>											
Decathlon	131	65	38.5	35.6	39.0	38.8	38.8	38.5	37.0	40.4	39.9
<b>Croplan Genetics</b>											
Baldur	136	67	39.3	36.9	39.8	40.3	38.1	40.0	38.5	40.5	40.2
Kronos	136	67	38.3	34.7	37.3	38.5	37.7	38.9	38.1	40.6	40.6
<b>Integra Seed Ltd</b>											
Artus	135	67	37.9	35.0	37.5	37.9	37.6	37.5	36.5	41.2	39.8
Talent	134	67	38.9	36.3	39.6	39.1	36.3	39.9	38.2	42.2	39.6
<b>University of Idaho</b>											
Ericka	130	60	38.8	35.8	38.0	37.9	38.1	38.6	41.1	41.0	39.9
Athena	134	63	38.8	37.1	38.1	38.5	39.3	40.2	36.5	40.2	40.3
UIC-02.1	135	68	39.1	37.2	38.1	38.6	38.8	40.6	39.8	41.4	38.7
UIC-02.2	137	65	39.6	36.8	38.8	39.0	39.1	41.2	40.6	41.0	40.4
UIC-03.1	134	65	39.1	36.4	38.7	38.9	38.7	41.5	36.4	42.0	40.0
UIC-03.2	134	62	39.1	36.7	38.7	39.4	39.1	41.0	37.2	41.4	39.5
UIC-03.3	134	65	39.1	37.1	39.0	39.4	39.1	40.3	38.3	39.5	40.0
UIR-03.1	137	65	39.5	37.4	39.4	39.4	37.7	40.0	41.1	39.8	41.0
UIR-03.2	137	65	39.9	38.2	40.7	40.3	40.6	41.8	37.2	40.9	39.9
UIR-03.3	137	66	40.1	39.8	41.3	41.3	41.3	41.0	37.9	40.0	38.2
UIR-03.4	136	67	40.2	39.0	40.2	40.3	41.0	42.2	39.0	41.7	38.5
UIR-03.5	136	66	40.8	39.0	40.4	41.4	41.4	42.3	38.9	41.6	41.2
Mean	135	66	39.1	36.9	38.8	39.1	38.8	40.0	38.1	40.8	40.0
L.S.D. (p=0.05)	2.4	4.9		0.7	1.0	0.9	2.4	1.7	2.1	NS*	NS

\* NS = not significantly different (p=0.05)

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