

## 2003 PACIFIC NORTHWEST SPRING CANOLA VARIETY TRIAL RESULTS

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### ABSTRACT

A canola variety trial with 34 cultivars or advanced breeding lines and five control cultivars was grown at seven locations in Oregon, Washington, Montana, and Idaho. Cultivar mean yields ranged from 914 to 1509 lbs. per acre when averaged for all locations. Mean yields for individual location yields ranged from 424 to 3353 lbs. per acre, and the overall mean was 1279 lbs. per acre. Mean oil content of the cultivars ranged from 35.8 to 40.2%.

### INTRODUCTION

Growers in the Pacific Northwest continue to show a strong interest in spring canola, (*Brassica napus* and *B. rapa*). Spring canola offers growers an alternate, spring-planted crop for rotation in an agricultural system predominated by small cereal grains. Comprehensive yield trials are needed to evaluate new cultivars and to determine which areas of the Pacific Northwest are best suited to the available cultivars. With this objective in mind, researchers at the University of Idaho established the Pacific Northwest Canola Variety Trial (PNWCVT) during 1994. This trial has been successful in attracting cultivar entries from seed companies marketing canola in the PNW. During the ten years of spring canola testing, the project has evaluated 145 different spring cultivars representing 18 companies. The trial is funded in part by the Pacific Northwest Canola Research Program and by fees paid by the commercial companies that submit their cultivars or advanced breeding lines to be tested in the PNWCVT.

### MATERIALS AND METHODS

The *B. napus* or "Argentine" cultivars 'Hyola 401', 'Profit' and 'Westar' and the *B. rapa* or "Polish" cultivar 'Goldrush' were used as controls in the trial. In addition, the *B. napus* industrial rapeseed cultivar 'Hero' was included as a control for industrial cultivars. All other entries are *B. napus* types with canola-quality except for 'Sterling', 'Garnet', and the three "UISH" entries, which are industrial rapeseed (*B. napus*) cultivars. Entries ending in "RR" are RoundupReady® types (resistant to glyphosate), while "CF" denotes Clearfield® Canola (resistant to imazemox). Companies entering cultivars are listed with the yield data in Table 1.

The 2003 trials were planted at ten locations: Colfax, WA (direct seed), Rosalia, WA (tilled), Davenport, WA (direct seed), Moscow, ID (tilled), Genesee, ID (tilled and direct seed), Grangeville, ID (tilled), Bonners Ferry, ID (tilled), Kalispell, MT (tilled) and

Pendleton, OR (tilled). Planting dates are shown at the bottom of Table 2. Additional direct seed sites were planned at Moscow and Craigmont, ID, but neither could be planted due to extremely wet field conditions. A third planned direct seed site at Dayton, WA was abandoned due to extremely heavy crop residue left from the previous growing season.

At each location, the trial design used was a randomized, complete block with four replications. The seeding rates were approximately 8 lbs. of seed per acre for *B. napus* cultivars and 6 lbs. per acre for *B. rapa* cultivars. Plot size was 4 feet by 16 feet. All trials were grown on recrop ground and were fertilized according to local practice. The date of flower onset and plant height at maturity was recorded at Kalispell and Genesee. 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 CONCLUSIONS

Of the ten sites planted, only seven were harvested. The trials at three sites (Moscow, Genesee conventional, and Grangeville) were damaged by herbicide residue in the soil. Symptoms were typical of imidazolinone herbicides, and at least two of the sites were discovered to have had a Pursuit herbicide application in previous years.

The mean yield of the trial varied widely across locations. The Rosalia, WA site had the highest yield, 3353 lbs. per acre (Table 1), and the Pendleton, OR site had the lowest yield, 424 lbs. per acre. Yields of cultivars averaged across the seven locations that were harvested varied from 914 to 1534 lbs. per acre. Most cultivars produced accepted yields, but the mean yields were lower than in previous years. The best performing cultivars were UISC.00.3.1.17, Hyola 401, and UISH.03.2. All three lines yielded over 1460 lbs per acre when averaged across all locations.

The earliest cultivar, 'Goldrush,' began flowering 49 days after planting (Table 2). Flowering dates for the remainder of cultivars were compressed due to weather conditions and ranged from 56 to 59 days. Mean plant height ranged from 32 to 47 inches. Mean oil content at of each site ranged from 34.6% at Pendleton to 40.7% at Davenport. Cultivar oil content, averaged across all locations, ranged from 38.5 to 40.2%.

**Table 1.** Yield data for 39 cultivars in the 2003 Pacific Northwest Spring Canola Variety Trial including mean yield and yield with yield rank by location. An asterisk (\*) indicates the variety was not tested at that site.

Cultivar	Mean	KALI		BONN		DAVE		ROSA		COLF		GENE		PEND	
	lbs. per acre	----- lbs. per acre and rank -----													
<b>Trial Controls</b>															
Hyola.401	1509	931	13	688	1	1684	6	3526	12	1404	6	1806	1	522	5
Profit	1269	911	15	368	15	1120	40	3666	7	1324	14	1177	27	315	31
Westar	1255	837	20	291	24	1678	7	3064	29	1133	29	1322	21	463	15
Goldrush	1215	132	36	237	33	1716	3	3030	31	1354	10	1599	5	438	17
Hero	1158	536	33	255	31	1324	31	3201	25	1192	24	1027	35	570	2
<b>Croplan Genetics</b>															
Kab.36 CF	1293	668	31	463	7	1272	35	3515	13	1340	13	1304	22	488	12
HyClass.2061RR	1398	1091	6	488	3	1453	21	3560	10	1281	17	1414	11	496	11
<b>Cargill Specialty Canola Oils</b>															
IMC.109RR	1182	962	12	310	21	1215	37	3335	20	1013	36	1084	33	355	28
IMC.110RR	1026	520	34	270	30	1071	42	2747	35	1169	26	1161	30	243	35
IMC.208RR	1063	729	27	254	32	934	45	2993	32	1048	35	1125	31	358	27
IMC.304RR	914	812	22	222	34	997	43	2474	36	732	38	993	36	169	36
CHN.501	1295	740	26	337	16	1410	22	3490	15	1353	11	1322	20	417	19
CHN.503	1114	998	10	423	9	761	46	3156	26	1083	33	1082	34	296	33
<b>Interstate Seed</b>															
Hyola.357MagnRR	1346	1004	9	566	2	1364	27	3127	28	1484	3	1399	13	481	14
Hyola.505 RR	*	*		*		1314	32	*		1073	34	*		*	
Hylite.225 RR	*	*		*		1550	12	*		*		*		*	
SW F5229	*	*		*		1708	4	*		*		*		*	
SW F5191 RR	*	*		*		1392	24	*		*		*		*	
SW F5189 RR	*	*		*		1539	13	*		*		*		*	
SW GladiatoRR	*	*		*		1471	18	*		*		*		*	
ExCalibuRR	*	*		*		1296	34	*		*		*		*	
S.0097 CF	*	*		*		1079	41	*		*		*		*	
<b>Monsanto</b>															
DLK.223 RR	*	*		*		1741	2	*		1522	2	*		*	
<b>University of Idaho Canola</b>															
Sunrise	1289	1238	2	213	36	1528	14	3229	23	1285	16	1114	32	418	18
Premier	1248	603	32	470	5	1229	36	3457	16	1095	32	1329	19	555	4
Clearwater CF	1318	1298	1	302	22	1192	38	3543	11	1195	23	1202	26	498	10
UISC.00.1.3.5	1348	916	14	427	8	1387	25	3262	22	1346	12	1579	6	518	7
UISC.00.3.1.7	1357	1027	8	373	14	1305	33	3224	24	1363	9	1701	3	505	8
UISC.00.3.1.17	1534	1110	4	380	12	1701	5	3636	8	1643	1	1747	2	519	6
UISC.00.3.8.DE	1443	782	25	419	10	1554	11	3826	3	1447	4	1575	7	498	9
UISC.02.4.18	1322	716	29	317	20	1324	30	3706	5	1411	5	1388	14	392	24
<b>University of Idaho Industrial Rapeseed</b>															
Sterling	1344	878	18	279	28	1568	9	3580	9	1367	8	1384	15	351	30
Garnet	1307	1139	3	322	19	1455	20	3310	21	1134	28	1423	10	364	26
Gem CF	1234	371	35	277	29	1638	8	3445	17	1096	31	1414	11	398	23
UISH.00.3.13.19	1367	1109	5	285	26	1565	10	3390	19	1263	22	1382	16	574	1
UISH.00.3.13.25	1383	904	17	300	23	1410	23	3899	1	1381	7	1372	17	414	21
UISH.00.3.19.23	1328	670	30	282	27	1480	17	3877	2	1292	15	1238	25	458	16
UISH.03.2	1466	1055	7	468	6	1746	1	3685	6	1269	19	1557	8	482	13
UISH.03.3	1313	968	11	487	4	1459	19	3054	30	1270	18	1652	4	301	32
<b>Mean</b>	1279	844		535		1388		3353		1244		1349		424	
<b>L.S.D (p = 0.05)</b>		510		170		373		552		362		412		168	

**Table 2.** Days to flowering from planting date, plant canopy height, lodging score, mean oil content, and oil content by location of 39 cultivars in the 2003 PNW Canola Variety Trial.

Cultivar	Days to Flowering	Plant Height	Mean Oil Content	Oil Content by Location					
				KALI	GENE	DAVE	ROSE	COLF	PEND
	days	inches	%	%					
<b>Trial Controls</b>									
Hyola.401	56	32	35.8	34.8	38.2	38.7	35.4	34.8	32.8
Profit	58	41	39.2	39.7	40.4	42.1	37.3	40.8	35.1
Westar	59	44	37.9	38.8	38.3	39.9	36.4	39.1	34.9
Goldrush	49	36	35.8	31.2	38.3	36.9	35.5	38.0	34.7
Hero	58	39	38.7	39.0	39.0	41.2	36.9	39.7	36.1
<b>Croplan Geneticscs</b>									
Kab.36 CF	59	42	38.2	39.0	38.6	41.2	36.1	40.1	34.4
HyClass.2061RR	58	41	38.6	39.0	39.7	41.1	37.5	39.5	34.9
<b>Cargill Specialty Canola Oils</b>									
IMC.109RR	58	42	38.3	38.1	39.4	40.5	37.4	40.1	34.1
IMC.110RR	59	41	37.1	37.7	37.5	40.4	35.7	38.2	33.0
IMC.208RR	58	41	37.3	37.8	37.4	39.9	36.3	40.5	31.7
IMC.304RR	58	34	38.1	40.1	38.4	40.0	36.4	39.7	34.1
CHN.501	59	47	37.3	38.5	37.2	38.1	35.8	39.0	34.9
CHN.503	58	43	36.9	37.8	36.9	39.6	34.9	38.1	33.8
<b>Interstate Seed</b>									
Hyola.357MagnRR	56	38	36.9	38.0	36.6	40.6	35.0	38.7	33.0
Hyola.505 RR	*	*	*	*	*	42.5	*	39.8	*
Hylite.225 RR	*	*	*	*	*	42.0	*	*	*
SW F5229	*	*	*	*	*	42.8	*	*	*
SW F5191 RR	*	*	*	*	*	40.6	*	*	*
SW F5189 RR	*	*	*	*	*	40.9	*	*	*
SW GladiatoRR	*	*	*	*	*	42.2	*	*	*
ExCalibuRR	*	*	*	*	*	41.6	*	*	*
S.0097 CF	*	*	*	*	*	41.9	*	*	*
<b>Monsanto</b>									
DLK.223 RR	*	*	*	*	*	39.5	*	39.3	*
<b>University of Idaho Canola</b>									
Sunrise	58	40	37.6	38.8	39.0	39.1	35.6	39.1	33.9
Premier	58	38	37.3	38.2	38.1	41.3	34.8	40.2	31.6
Clearwater CF	58	44	37.8	38.5	37.1	40.7	36.4	39.7	34.2
UISC.00.1.3.5	57	39	36.0	36.9	36.5	38.0	34.8	37.2	32.6
UISC.00.3.1.7	56	35	37.9	38.1	39.0	39.9	36.8	40.4	33.3
UISC.00.3.1.17	56	38	39.7	39.4	41.3	41.1	38.8	41.7	35.9
UISC.00.3.8.DE	56	36	38.2	38.1	38.3	40.9	36.5	40.8	34.8
UISC.02.4.18	57	40	37.9	37.8	37.5	41.2	36.2	40.7	34.2
<b>University of Idaho Industrial</b>									
Sterling	57	39	38.9	40.0	39.2	40.8	36.7	40.7	35.7
Garnet	57	35	39.3	39.5	39.1	42.5	38.3	40.5	35.6
Gem CF	58	40	39.1	39.9	39.3	41.5	37.7	40.2	36.1
UISH.00.3.13.19	58	39	38.4	39.2	38.5	41.2	36.0	39.7	35.8
UISH.00.3.13.25	57	39	38.8	39.4	39.2	40.4	37.5	40.2	36.0
UISH.00.3.19.23	58	41	39.2	39.6	39.3	42.3	37.7	40.8	35.7
UISH.03.2	57	37	40.2	39.0	40.9	43.2	38.9	41.6	37.4
UISH.03.3	57	32	38.6	38.8	38.8	41.3	36.7	40.8	35.1
<b>Mean</b>	57	39	38.1	38.6	40.7	39.7	39.7	34.6	38.5
<b>L.S.D. (p = 0.05)</b>	1.0	4.3		1.8	2.1	1.6	2.2	2.2	1.6

**Location and planting date key:**

KALI Kalispell, MT; tilled April 29  
 BONN Bonners Ferry, ID; tilled April 23  
 DAVE Davenport, WA; direct seed April 22

ROSA Rosalia, WA; tilled April 18  
 COLF Colfax, WA; direct seed April 21  
 GENE Genesee, ID; direct seed May 21  
 PEND Pendleton, OR; tilled April 1