

1985 SPRING RAPESEED VARIETY AND SELECTION EVALUATION IN CENTRAL OREGON

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ABSTRACT

Four varieties and 18 selections of edible oil spring rape of the Brassica napus type were planted at Madras and Powell Butte but the trial was not successful at Powell Butte because of severe stand reductions from frost and other factors. Andor, Westar, and Altex (canola types) and Topas, a Swedish variety, were similar in seed yield, producing 2,815, 2,504, 2,251, and 2,406 lbs/a, respectively. Most selections were also similar in seed yield to the four varieties. Topas and selections 4, 8, 11, 15, and 17 did not lodge.

Supposedly an export market exists for edible oil rapeseed that is low in erucic acid and glucosinolate. Therefore, varieties and selections were obtained to evaluate lodging resistance, maturity, seed yield, and oil content for potential production in central Oregon as a new crop.

MATERIALS AND METHODS

Two identical nurseries were planted each at Madras and Powell Butte on Madras loam and Deschutes sandy loam soils, respectively. All trial entries were double low varieties and selections of the Brassica napus type. Double low refers to seed with five percent or less erucic acid (EA) and three milligrams per gram or less glucosinolate. Canola is the term used for these varieties in Canada of which three were tested: Altex, Andor, and Westar. Topas is a Swedish variety that has shown good performance in Europe for many years. The 18 BS selections originated from Daehnfeltd's breeding program in Odense, Denmark. Selection was based on lodging resistance, seed yield, early maturity, and low EA and glucosinolate. Each variety was replicated four times in a randomized complete block design.

The Madras test was planted March 19, 1985, after a seed-bed incorporation of 600 lbs/A of 27-12-0-4 (162 lb N/A, 31.5 lb P/A, 24 lb S/A). Four hundred fifty pounds of 27-12-0-4 (122 lb N/A, 23.6 lb P/A, 18 lb S/A) was soil incorporated

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before planting the trial at Powell Butte on April 3, 1985. Both nurseries were planted with a Oyjord multiple row plot drill without presswheels. The seeding rate was six pounds per acre and the seeding depth was three fourths of an inch for all varieties and selections. Plots were 20 feet long and six rows wide with eight inches between rows. Before swath-ing, each outside row and three feet from each end of the plot were removed. Swathing was done by hand with rice knives. Swathing started July 19 and was completed for the last va-rieties on July 23. The stems were cut just below the lowest seed pod when the pods started to change from a green to brown color. The cut material was placed on top of the 18 to 24 inch high stubble for drying. All varieties were threshed on August 5, 1985, with a Hege 125 combine.

The Madras nursery was irrigated when needed by a solid set sprinkler system. Hand move sprinkler lines were used at Powell Butte. No herbicides or insecticides were applied on either trial.

Data were collected on plant height, percent lodging, flowering date, seed yield, test weight, and oil content in the seed. Oil content was determined by Dr. Dick Auld in his laboratory at the University of Idaho. Statistical analyses were conducted for each trait except lodging and flowering date. Duncan's multiple range test at the .05 probability level was used to test for significant differences.

RESULTS AND DISCUSSION

Powell Butte Trial

This location is 3,200 feet elevation with an 80 to 90-day growing season. Planting was delayed until April 3, 1985, to lessen the possibility of frost injury. Rape seedlings began emerging on April 10 but it was not uniform throughout the trial. Seedlings continued to emerge for about a month be-cause of low soil moisture and temperature at the seed depth. However, there was adequate soil moisture at the 2.5 to 3-inch depth. Soil disturbance at planting coupled with subsequent warm windy conditions caused the loss of moisture in the area of the seed. Rolling or firming of the planted rows may have been helpful to reduce this condition. There was some rain-fall before the first irrigation on April 16 but it was not sufficient to significantly increase germination. It appeared that the late emerging seedlings were either killed or se-verely injured by the low temperatures on the dates indicated in the following tabulation.

<u>Date</u>	<u>Min. Temp. (Deg. F)</u>	<u>Date</u>	<u>Min. Temp. (Deg. F)</u>
Apr. 20	12	May 8	29
24	21	9	25
25	21	10	28
26	23	11	28
30	28	12	19
May 4	21	13	28
5	23	15	25

These temperatures were recorded at Redmond. It became obvious by May 28 that no useful information could be obtained from the experiment so it was abandoned. Six flea beetles were found on May 6 but only a few rape cotyledons showed any damage.

For comparison, trials of spring rape planted on April 9, 1979, at Powell Butte and at Redmond on March 30, 1980, were successful. Seed yields of from 1,229 to 3,909 and 454 to 2,396 pounds seed per acre, were obtained at Powell Butte and Redmond, respectively. Altex, one canola variety in the 1985 test at Powell Butte, was also included in the 1980 test at Redmond and yielded 1,716 pounds of seed per acre with an oil content of 36.4 percent. However, Candle, a canola variety of the B. campestris type, in the same trial produced 2,396 pounds and 31 percent oil. In April 1979, there were five days with less than 32 degrees F (28, 23, 20, 24, and 29) after one week following planting. In April 1980 there were 10 days with less than 32 degrees F after one week following planting. The 1979 and 1980 temperatures were not much different than those in 1985 so there were probably other environmental factors that affected seedling survival. In the 1979 test, one spring variety, Nugget, with 3,909 pounds seed per acre, was similar to the best winter rapeseed variety (Rapora) of 3,917 pounds per acre when grown at Madras in 1981. Therefore, it is still of interest to determine the performance of the newest spring rape varieties at Powell Butte.

Madras Trial

The seed yield of Altex, Westar, Topas, and Andor was similar: 2,251 to 2,815 pounds per acre (Table 1). Most of the selections were also similar in yield to these varieties. The seed yield of selection BS-15-85 (2,899 lbs/a) was only significantly greater than selections 2, 3, 8, 16, and 17. Selections 3 and 8 were lower in seed yield than some selections and the varieties Andor, Westar, and Topas. However, most selections were similar in yield. The test weight per bushel for BS-17-85 was significantly higher than any variety and selections 1, 2, 4, 5, 6, 9, 10, 14, 15, and 18. All varieties except Topas lodged 100 percent. Selections 4, 8, 11, 15, and 17 did not lodge. It is interesting to note that of these selections, numbers 4, 8, and 17, were significantly

taller than the other non-lodging ones. Of all trial entries BS-4-85 was the only early non-lodging one although BS-2, -10 and -14 of similar maturity exhibited only slight amounts of lodging.

All varieties and selections were satisfactory for maturity and oil content.

Based upon one year's data, the growers could expect a similar response from the production of Andor, Westar, Topas, and Altex. It is suggested that growers familiarize themselves with all cultural practices and have a plan for marketing the seed before undertaking rapeseed production.

TABLE 1. Spring rapeseed variety trial, Madras, Oregon, 1985

Variety/ Selection	Seed Yield	Test Weight	Height	Lodging	Flowering Date	Oil Content
	lbs/acre	lbs/bu	in	%	mo/day	%
BS-15-85	2899 a*	50.6 ef*	58.5 h-k*	0	6-2	42.3 ab*
ANDOR	2815 ab	51.5 b-e	58.0 jk	100	5-29	42.9 a
BS-10-85	2706 ab	51.2 b-f	62.5 a-e	25	5-30	40.6 c-h
BS-14-85	2704 ab	50.7 def	61.8 c-g	13	6-1	41.7 a-e
BS-5-85	2625 ab	51.3 b-f	62.5 a-e	23	6-2	39.9 gh
BS-1-85	2520 abc	50.7 def	60.5 f-i	72	6-2	41.8 a-e
WESTAR	2504 abc	50.8 c-f	57.5 jk	100	5-28	41.9 a-d
BS-9-85	2482 abc	51.5 b-e	62.5 a-e	20	6-2	40.6 c-h
TOPAS	2406 abc	51.0 b-f	58.3 jk	0	6-3	41.7 a-e
BS-11-85	2401 abc	51.9 abc	59.5 g-j	0	6-5	40.5 c-h
BS-4-85	2352 a-d	51.0 b-f	64.3 abc	0	5-31	41.5 a-f
BS-12-85	2337 a-e	51.6 a-e	64.5 ab	13	6-5	40.2 e-h
BS-13-85	2265 a-e	51.8 a-d	62.0 b-f	24	6-4	39.8 gh
ALTEX	2251 a-e	51.3 b-f	57.0 k	100	5-30	41.2 b-g
BS-7-85	2249 a-e	52.1 ab	61.0 d-h	25	6-4	40.0 fgh
BS-6-85	2232 a-e	51.0 b-f	63.3 a-d	5	6-5	40.5 d-h
BS-18-85	2220 a-e	50.3 f	65.0 a	25	6-4	41.2 b-g
BS-16-85	2147 b-e	52.1 ab	63.3 a-d	13	6-6	38.2 i
BS-2-85	2147 b-e	50.6 def	59.3 h-k	18	5-31	42.1 abc
BS-17-85	1814 cde	52.8 a	65.0 a	0	6-6	39.3 hi
BS-8-85	1682 de	51.7 a-e	62.3 b-e	0	6-5	39.0 hi
BS-3-85	1643 e	51.7 a-e	63.5 a-d	13	6-5	39.7 gh
AVERAGE	2336	51.3	61.4	---	----	40.7
CV (%)	18	1	2	---	----	2

* Values with the same letter are not significantly different at the .05 level of probability using Duncan's multiple range test.