

# **Triticale Cereal Testing Trial, Central Oregon 2003**

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## **Introduction**

Cereals are an important rotational crop for central Oregon. Soft white wheat, historically, has been the most important species for grain. Hard red spring wheat acreage has dominated though in the last three years. There has been some additional interest in triticale. Central Oregon is well situated to the markets in Portland, Oregon. Public, and private Pacific Northwest plant breeders release new cereal varieties each year. To provide growers with accurate, up-to-date information on variety performance, a statewide variety-testing program was initiated in 1993 with funding provided by the Oregon State University (OSU) Extension Service, OSU Agricultural Experiment Station, Oregon Wheat Commission, and Oregon Grains Commission. Height, lodging, yield, test weight, thousand kernel weight, and protein data are determined for all sites, including Madras. Other information is collected as time and labor allows. Data are summarized in extension publications and county extension newsletters as well as in other popular press media. Data for all trials are on the OSU Cereals Extension web page (<http://www.css.orst.edu/cereals>). For future reference, use the web page for earliest access to data, as trial results are posted as soon as they are available.

## **Materials and Methods**

Plots (4.5 ft × 20 ft) were planted at a rate of 30 seeds/ft<sup>2</sup> (unless otherwise noted) in six-inch row spacing with an Oyjord plot drill. Winter triticale trials were planted on October 15, 2002.

Soil samples were taken on March 15, 2003 and were analyzed by Agri-Check Laboratory at Umatilla, Oregon. Soil test results are presented in table 1. The nitrogen supply goal for triticale is 200 lb N/acre.

Table 1. Soil test results from samples taken on March 15, 2003, state-wide variety test trial, at COARC, Madras, Oregon.

Soil Depth	pH	NO <sub>3</sub> (lb/a)	NH <sub>4</sub> (lb/a)	P (ppm)	K (ppm)	S (ppm)
0-12	7.8	18	17	38	333	18.4
12-24	7.9	19	14	18	309	6.0
0-24 Total		37	31			

The triticale variety trials were fertilized with 575 lb/acre of 30-10-0-7 on March 17, 2003. Total nitrogen (soil + fertilizer N) available to the plants was 209 lb/acre.

Weed control for the trials included: applying 1.5 pints/acre of 2,4-D, on March 24, 2003.

The trials were irrigated as needed with a 30 feet x 40 feet spacing, solid-set sprinkler (9/64<sup>th</sup> inch heads) irrigation system. Date of first irrigation for the triticale variety trial occurred April 29, 2003 and last irrigation occurred on July 2, 2003.

Heading dates were recorded when 50 percent heading occurred. Just prior to harvest, lodging scores (% plot) and plant height (inches) measurement were taken. The trials were harvested with a Hege plot combine. Harvest dates were August 14, 2003. The grain samples were shipped to the OSU Hyslop Farm at Corvallis, Oregon. Unfortunately, samples were inadvertently discarded before yield, test weights, protein and moisture could be assessed.

### Results and Discussion

‘Fidellio’ and ‘OR 72020140’ were the last varieties to head out, which is same heading date as Stephens. The earliest heading date was 6 days earlier (Décor and Enot) than Fidellio. Great strides have been made in breeding earlier heading cultivars.

Lodging was significantly higher than the previous year. 2003 trial average was 11.0% lodging compared to 2002 trial average of 3%. Hail damaged occurred in early August on mature fields, causing, on average a 30% loss of seed.

Table 1. Statewide variety testing program for winter triticale, Madras, OR, 2003.

Variety or line <sup>1</sup>	Market class <sup>2</sup>	Heading (doy)	Height (inch)	Lodging (%)
Alzo	Trit	152	43.7	5.0
Bogo	Trit	151	41.8	8.0
Décor	Trit	146	39.0	17.3
EF00-5337-1.8-9	Trit	148	41.3	35.0
Enot	Trit	146	38.5	14.0
Fidellio	Trit	153	42.0	13.3
OR 72020133	Trit	148	44.0	3.3
OR 72020140	Trit	153	31.0	0.7
RSI 530	Trit	152	41.5	2.3
RSI 626	Trit	150	44.2	14
Stephens	SW	154	40.2	1.7
Sturdy	Trit	148	45.5	8.3
Titan	Trit	147	40.3	8.3
Trical 336	Trit	147	44.3	8.3
Bogo @ 10 seeds/ft	Trit	152	39.7	7.0
Bogo @ 20 seeds/ft	Trit	152	41.8	2.7
Bogo @ 40 seeds/ft	Trit	152	40.2	38.3
Trial Mean		150.2	41.1	11.0
PLSD (0.05)		1.76	3.7	17.5
CV		0.7	5.5	95
Pr>F		0.0001	0.001	0.0027

## The Influence Of Nitrogen Application On Carrot Seed Yield

John Hart, Marvin Butler, and Claudia Campbell

Central Oregon is the major hybrid carrot seed production area supplying the domestic fresh market carrot industry. Hybrid carrot seed yield is low, typically less than 500 lb/a. However, the price paid the grower is \$8 to 15/lb to the grower. Relative small changes in yield make a substantial difference to income, often making the difference between break even and a substantial profit.

Nitrogen is needed for carrot seed production and has been given credit for both increasing and decreasing seed yield. No record of replicated N rate evaluation is known for Central Oregon. Our objective was to measure carrot seed yield when 0, 50, and 90 lb N/a were spring-applied to a commercial field of Nantes type hybrid seed carrots, following the standard fall application of . . . .

Three replications of the nitrogen rates were applied to four rows (15 ft wide) 1325 ft long areas of a commercial field near Madras, Oregon in a completely randomized design. Cleaned seed yields are given in Table 1.

Table 1. Nantes type hybrid carrot seed yield influence to nitrogen fertilizer rates in a commercial field near Madras, OR in 2003.

Nitrogen rate	Seed Yield
----lb/a----	----lb/a----
0	223 b
50	331 a
90	242 b

Application of 50 lb N/a produced significantly more carrot seed than apply 0 or 90 lb N/a. For most crops, 50 lb N/a is a low spring application rate and would not be sufficient for optimum yield. Verification that a low rate of N is appropriate in this situation was found in the remainder of the commercial field. Approximately 15 acres of the field received 75 lb N/a and produced a seed yield of 328 lb/a, approximately the same yield attained when 50 lb N/a was applied. This data demonstrates the need for a relatively low rate of N and that an over application of N can be detrimental. The addition of only 15 to 40 lb N/a above the amount needed for maximum yield, reduced yield 89 lb/a, and would have cost the producer approximately \$1000/a.

To support the data in Table 1, we will use measurements of aboveground N accumulation determined by earlier studies in 2001 and 2002, and soil test measurements. Between 150 and 225 lb/a were found in the carrot seed crop at harvest in 2001 and 2002. The hybrid grown in 2003 was similar to the hybrid accumulating only 150 lb N/a. Table 2 provides a ledger approach to the crop N needs and the amount supplied by the soil.

Soil from the plots was sampled from the surface foot in early May. Data from 2001/2002 nutrient accumulation measurements was used to estimate the amount of N in the crop when the soil was sampled. The previous crop was roughstalk bluegrass. Crops following grass grown for seed in the Willamette Valley typically receive 50 to 100 lb N/a from the decomposing perennial grass roots. The “Balance Needed” by the carrot crop in Table 2 should be easily supplied by the decomposing grass roots.

Table 2. A ledger approach to carrot seed N supply in 2003.

System Component	Amount of N
	lb/a
Crop Use	175
In crop on May 1	-25
Amount needed for remainder of season	150
Amount available in soil on May 1	-50
Amount needed for remainder of season	100
From fertilizer	-50
Balance needed	50

Carrots grown for seed benefit from N fertilizer application. Following a roughstalk bluegrass crop, application of 50 to 75 lb N/a was sufficient for optimum carrot seed yield. The N rate is critical since a small, 15 to 40 lb/a, over application depresses seed yield and can cost growers \$1,000/a.

The amount of N supplied by the previous crop is difficult to estimate. A site and year specific test that predicts the amount of N needed for a spring application for carrot seed production is desirable.

### References

- Butler, M.D., J.M. Hart, B.R. Martens, and C.K. Campbell. 2002. Seed carrot above ground biomass and nutrient accumulation, 2001. In: W.C. Young III (ed.), *2001 Seed Production Research at Oregon State University USDA-ARS Cooperating*, Department of Crop and Soil Science Ext/CrS 121, 4/02, Corvallis, OR.
- Hart, J. M. and M. D. Butler. 2003. Seed carrot above ground biomass and nutrient accumulation, 2001/2002 growing season. In: W.C. Young III (ed.), *2002 Seed Production Research at Oregon State University USDA-ARS Cooperating*, Department of Crop and Soil Science Ext/CrS 121, 4/03, Corvallis, OR