

## CARMAN TRITICALE

Carman is a new cultivar of spring triticale ( $\times$  *Triticosecale* Wittmack) which was developed from a cooperative program involving the Department of Plant Science, University of Manitoba and the International Maize and Wheat Improvement Center (CIMMYT) in Mexico. It is higher yielding than either Rosner or Welsh, cultivars previously licensed in Canada.

Carman est un nouveau cultivar de Triticale de printemps ( $\times$  *Triticosecale* Wittmack) issu des travaux en collaboration du Département de phytotechnie de l'Université du Manitoba et du CIMMYT au Mexique. Son rendement dépasse celui de Rosner et de Welsh, deux cultivars déjà homologués au Canada.

Carman triticale ( $\times$  *Triticosecale* Wittmack) was selected at the University of Manitoba from a line (Beagle) introduced from the International Maize and Wheat Improvement Center (CIMMYT), Mexico in 1975. Carman was named after an agricultural community of the same name in Manitoba, and was granted a license (No. 2033 issued on 30 June 1980) on the basis of 5 yr of extensive testing, under the number UM505-23, in Manitoba and Saskatchewan regional trials. Carman is a spring hexaploid triticale ( $2n=42$ ) with 14 chromosome pairs from wheat (*Triticum turgidum* L. Thell. subsp. *turgidum* var. *durum* (Desf.) MK.) and 7 from rye (*Secale cereale* L.). All of the rye chromosomes contain a normal heterochromatin banding pattern.

The overall average yield of Carman is 6% better than Welsh and 13% better than Glenlea wheat over a 6-yr testing period in its main areas of adaptation (i.e., Manitoba and Saskatchewan) (Table 1). In 1980, Carman was 7% and 15% higher yielding than Glenlea in Eastern Canada and Western Canada, respectively, in the national yield trials (Table 2). Relative to Welsh, Carman is better in grain weight per hectolitre, but still below that of Glenlea wheat, while it is equal to Glenlea wheat in 1000-kernel weight and somewhat better than Welsh. Carman is taller and slightly later in maturity than either Welsh or Glenlea wheat. Carman is resistant to

prevalent races of stem rust (*Puccinia graminis* Pers. f. sp. *tritici* Eriko, and E. Henn.), leaf rust (*P. recondita* Rob. ex Desm. f. sp. *tritici*), bunt (*Tilletia caries* (D.C.) Tul.), loose smut (*Ustilago tritici* Pers. (Rostr.)) and moderately susceptible to root rot (*Helminthosporium sativum* Pammel, King and Bakke). Because of increased fertility, Carman exhibits a level of ergot infection (*Claviceps purpurea* (Fr.) Tul.) similar to that of Welsh, but much better than Rosner. The protein percentage of Carman ( $N \times 5.7$ ; 14% moisture) is below that of Welsh and Glenlea wheat, but the yield of protein per hectare is above that of either Glenlea wheat or Welsh.

Carman originated from an International Maize and Wheat Improvement Center (CIMMYT) cross (UM'5'/tc1 BULK; cross number  $\times$  1530A) which was made by Dr. F. J. Zillinsky and involved a University of Manitoba line and a triticale bulk from Mexico. Unfortunately, the full pedigree was lost, but selections were made in Mexico according to the pedigree method and released as an  $F_5$  bulk ( $\times$  1530A-12M-5N-1M-0Y) named Beagle.

Beagle was introduced from Mexico to Manitoba in 1974, and a selection UM505-23 was first yield tested in 1975. In 1979, head selections were made in Winnipeg to create Breeders' Seed with the resulting head rows being grown in Mexico during the winter of 1979-1980. A seed increase

0008-4220/82/6201-0221 \$2.00

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Table 1. A comparison of Carman and Welsh triticales with Glenlea wheat in Manitoba and Saskatchewan 1975-1980†

Cultivar	Yield (100 kg/ha)	Yield (%)	Maturity (days)	Height (cm)	Test weight (kg/hL)	1000-kernel weight (g)	Protein (%; N×5.7)
Glenlea (wheat)	27.6 <sup>34†</sup>	100	105 <sup>21</sup>	84 <sup>49</sup>	75 <sup>53</sup>	45 <sup>53</sup>	14.0 <sup>18</sup>
Welsh (triticale)	29.3	106	107	81	59	41	13.7
Carman (triticale)	31.3	113	107	89	61	43	12.8

† Tests were conducted by the University of Manitoba and Agriculture Canada, Swift Current.

‡ Number of location test years.

Table 2. A comparison of Carman triticale and Glenlea wheat in the Canadian National Non-breadwheat Cooperative Yield Test 1980

Cultivar	Yield (100 kg/ha)		Yield (%)		Maturity (days)	Ht (cm)	Test wt (kg/hL)	1000-kernel wt (g)	Lodging (1-9)
	Western Canada	Eastern Canada	Western Canada	Eastern Canada					
Glenlea (wheat)	30.2 <sup>12†</sup>	31.2 <sup>2</sup>	100	100	109 <sup>12</sup>	82 <sup>13</sup>	80 <sup>10</sup>	46 <sup>10</sup>	2.3 <sup>6</sup>
Carman (triticale)	34.7 <sup>12</sup>	33.4 <sup>2</sup>	115	107	111 <sup>12</sup>	86 <sup>13</sup>	70 <sup>10</sup>	49 <sup>10</sup>	2.1 <sup>6</sup>

† Number of locations.

of Carman was grown in Winnipeg in 1980 resulting in approximately 1000 kg of Breeders' Seed being available for distribution to SeCan in 1981. Requests for seed stocks should be directed to the Department of Plant Science, University of Manitoba, Winnipeg, Manitoba R3T 2N2.

### Description

**SPIKE.** Mid-dense, nodding attitude, long; pubescent neck; awns rough and medium length; chaff white.

**KERNELS.** Large, amber, soft texture; some degree of shrivelling; medium width, ovate with rounded cheeks; brush hairs medium length; crease large and deep; germ oval and medium in size.

**FERTILITY.** Comparable to that of Welsh and wheat. Carman is similar to Welsh in producing approximately 5% aneuploid progeny. This condition can result in the occurrence of off-type plants, some decreased fertility, and increased ergot infection within a population of this or any triticale cultivar depending upon environmental conditions.

The authors gratefully acknowledge the financial support of the Bronfman Family Foundation, the New Crop Development Fund, and Agriculture Canada during the period of Carman's development. To all of our colleagues who cooperated in the testing and evaluation of this cultivar, the authors express their appreciation.

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