

COULTER DURUM WHEAT

Coulter is a new durum wheat cultivar developed from the cross D.T. 188/D.T. 224//D.T. 182 at the Agriculture Canada Research Station, Winnipeg, Manitoba. Coulter is similar to the cultivar Hercules in resistance to disease and lodging. It is 1.5 days later and slightly shorter-strawed. The major agronomic attribute of Coulter is its higher yield performance in the Black soil zone of Manitoba and Saskatchewan.

Coulter durum wheat (*Triticum turgidum* L.) was developed at the Agriculture Canada Research Station, Winnipeg. It is a high-yielding, medium-early, short, strong-strawed cultivar adapted to the Black and Brown soils of the Prairie Provinces. Licence No. 1721 was issued in January 1977.

Pedigree and Breeding Method

Coulter is a selection from the triple cross D.T. 188/D.T. 224//D.T. 182, made in 1965. The selections D.T. 188 and D.T. 182, from the breeding program of the Winnipeg Research Station, were chosen as parents for their high yield and excellent quality, respectively. Both lines are sister selections of cv. Hercules. D.T. 224, selected at North Dakota State University from the cross Ld. 357*4/3/Stewart//P.I. 192179/Ld. 351, was chosen for its yield. Starting with the F₁, early generations were alternately grown at Ciudad Obregon, Mexico in winter and at Glenlea, Manitoba in summer. Selection was directed at developing a cultivar with maturity, height, straw strength, and disease resistance com-

parable to Hercules, but with improved yield and pasta quality.

Quality evaluation began with F₄ lines in 1967. Prediction tests were conducted by the Quality Unit, Winnipeg Research Station from F₄ to F₉, and subsequent full-scale quality tests were conducted by the Grain Research Laboratory, Canadian Grain Commission.

F₇ lines from the cross were entered in comparative trials in 1969 and the line R.L. 7013, now designated Coulter, was entered in the Cooperative Durum Wheat Test in 1972. Disease reactions were determined in special tests conducted by plant pathologists at Winnipeg and Saskatoon.

Cultivar Performance

The major agronomic attribute of Coulter is its yield performance in the Black soil zone (Table 1). During 4 yr of testing, it yielded 5.1% more than Wascana, the highest yielding check cultivar. Coulter yielded 9 and 6% higher than Hercules and Macoun, respectively, cultivars which are of comparable height and lodging resistance. In the Brown soil zone, Coulter yields 2-3% less

Table 1. Average agronomic data from Cooperative Durum Wheat Test 1973-1976

Cultivar	Yield, kg/ha (00's)			Maturity in days	Resis. to lodging	Ht (cm)	Test wt (kg/hl)	1,000- kernel wt (g)
	Black soil zone, 20SY	Brown soil zone, 20SY	Overall mean, 42SY†					
Hercules	32.0	24.9	27.9	96.3	1.6	90	80.4	44.1
Wakooma	32.8	28.7	30.8	100.1	2.7	95	79.3	40.8
Wascana	33.3	28.4	30.8	99.5	2.6	95	79.2	43.7
Macoun	32.9	26.6	29.8	98.7	1.8	91	80.5	43.9
Coulter	35.0	27.8	31.4	97.8	1.7	87	80.0	40.9

†Includes data of 2 station-years from Langdon, N.D.

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Table 2. Average disease data from Cooperative Durum Wheat Test 1973-1976

Cultivar	Stem† rust reaction	Leaf† rust reaction	Loose smut (%)	Kernel smudge (%)	Root rot (%)	Septoria‡ leaf spot 1-9	Tan‡ spot reac.	Starchy‡ kernels (%)
Hercules	1R	6R	2	4.5	22	3.7	MS	7.6
Wakooma	4R	7R	1	4.9	17	2.7	MS-S	8.4
Wascana	12R-MR	4R	3	5.4	25	2.7	MS	12.8
Macoun	tR	8R	5	6.2	23	3.7	MS	8.6
Coulter	tR	4R	2	3.6	15	3.7	S	10.5

†Denote percent infection and pustule type.

‡Three-year averages only.

than Wascana and Wakooma, but higher than the other check cultivars.

In comparison to Hercules, Coulter is 1.5 days later, slightly shorter, and similar in lodging resistance. It has good resistance to stem rust, leaf rust, and loose smut, and moderate resistance to kernel smudge (Table 2).

Characteristics:

SPIKE. Fusiform, middense, awned, awns with black tinge prior to ripening fading to white at maturity; glumes glabrous, white, midlong, midwide, shoulders narrow, square to elevated; beaks midwide, acuminate, about 3 mm long.

KERNEL. Amber, midsize, midlong, midwide, ovate to elliptical; germ midsize, oval; crease midwide, shallow to middeep; brush very short to nil; cheeks rounded to slightly angular.

STRAW. Slightly shorter than Hercules, strong.

MATURITY. 1.5 days later than Hercules.

DISEASE REACTION. Resistant to prevalent races of leaf and stem rust, and loose smut; moderately resistant to bunt and kernel smudge; moderately susceptible to root rot and leaf spot organisms.

PASTA QUALITY. Superior to Hercules.

Maintenance and Distribution of Pedigreed Seed Stocks

Seed of Coulter was increased in 1976 by the Seed Section, Agriculture Canada Research Station, Regina, Saskatchewan. The Seed Section will maintain Breeder seed. Breeder, Select, and Foundation seed was distributed in 1977.

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