

CDC Teal hard red spring wheat

Hughes, G. R. and Hucl, P. 1993. **CDC Teal hard red spring wheat**. *Can. J. Plant Sci.* **73**: 193–197. Teal is an early-maturing hard red spring wheat best adapted to the Black soil zone of western Canada. It combines early maturity with good yield potential, increased kernel size and leaf and stem rust resistance. It was developed at the University of Saskatchewan from a three-way cross involving BW514 (Nainari 60/Huelquen), Benito and BW38 (UM953A/Neepawa; UM953A = Sonora 64/Tezanos Pintos Precos).

Key words: *Triticum aestivum*, cultivar description, bread wheat

Hughes, G. R. et Hucl, P. 1993. **Blé roux vitreux de printemps CDC Teal**. *Can. J. Plant Sci.* **73**: 193–197. CDC Teal est un blé roux vitreux de printemps précoce, particulièrement bien adapté à la zone des sols noirs de l'ouest canadien. En plus d'une grande précocité et d'une bonne productivité, il bénéficie d'un grain plus gros et d'une meilleure résistance aux rouilles des feuilles et de la tige. Il a été obtenu à l'Université de la Saskatchewan à partir d'un croisement à trois voies impliquant BW514 (Nainari 60 × Huelquen), Benito et BW 38 (UM953A × Neepawa). UM953A provenait du croisement Sonora 64 × Tezanos Pintos Precos).

Mots clés: *Triticum aestivum*, description de cultivar, blé panifiable

CDC Teal hard red spring wheat (*Triticum aestivum* L.) was developed jointly by the Department of Crop Science and Plant Ecology and the Crop Development Centre, University of Saskatchewan. Registration no. 3436 was issued for CDC Teal on 10 May 1991 by the Variety Registration Office, Food Production and Inspection Branch, Agriculture Canada, Ottawa.

Pedigree and Breeding Method

CDC Teal was selected from the cross BW514/Benito//BW38. BW38 (UM953A/Neepawa; UM953A = Sonora 64/Tezanos Pintos Precos) and BW514 (Nainari 60/Huelquen) are experimental lines from the Agriculture Canada Research Station, Winnipeg and the University of Saskatchewan, respectively. The three-way cross was made in 1977 and the resulting population advanced to the F₅ generation by a modified single-plant bulk method of selection. The F₂ and F₅ generations were grown in winter increase nurseries at Lincoln, New Zealand. Selection for plant height, maturity, straw strength and rust resistance occurred on a

single-plant basis in the F₃ and F₄ generations and on single-head progeny rows in the F₆ and F₇ generations. The selected F₇ progeny rows were harvested in bulk. These F₇-derived lines were evaluated for yield and quality in tests at Saskatoon and at one to three other Saskatchewan locations per year during 1983 to 1985.

One F₇-derived F₁₁ line (W84315) was entered in the Western Bread Wheat 'B' Test in 1986. This line was tested as BW616 in the Western Bread Wheat Cooperative Test from 1987 to 1989, and in the Central Bread Wheat Cooperative Test from 1988 to 1990. Breeder seed of CDC Teal consists of the bulk of 83 breeder lines which are individually maintained. Each line was derived from a F₁₁ head selection made in 1986.

Performance and Adaptation

CDC Teal was significantly higher yielding than Roblin (Table 1). It outyielded Roblin by 9% in the Dark Brown soil zone and by 7% in the Black soil zone. It was similar in yield to Katepwa (Tables 1 and 2), but significantly lower yielding than Laura in the Brown and Dark Brown soil zones (Table 2).

Table 1. Grain yield ($^{\circ}00 \text{ hg ha}^{-1}$) of CDC Teal wheat and check cultivars in Central Bread Wheat Cooperative Tests, 1988-1990

Cultivar	Dark Brown soil zone ^z	Black soil zone	Mean
Neepawa	22.1	29.2	27.8
Katepwa	22.4	29.2	27.8
Columbus	22.8	29.8	28.4
Roblin	19.6	27.4	25.9
CDC Teal	21.3	29.4	27.8
SE	0.5	0.5	0.4
No. station-years	6	24	30

^zDark Brown soil zone sites are Regina and Saskatoon; Black soil zone sites are Glenlea, Morden, Portage la Prairie, Brandon, Dauphin, Indian Head, Yorkton or Ituna, and Melfort.

Table 2. Grain yield ($^{\circ}00 \text{ hg ha}^{-1}$) of CDC Teal wheat and check cultivars in Western Bread Wheat Cooperative Tests, 1987-1989

Cultivar	Brown soil zone ^z	Dark Brown soil zone	Black soil zone	Mean
Neepawa	24.3	27.3	34.8	27.5
Katepwa	24.9	27.3	31.3	27.2
Laura	26.0	28.5	29.7	28.1
CDC Teal	23.7	26.6	35.5	26.9
SE	0.6	0.3	1.5	0.3
No. station-years	6	20	3	29

^zDark Brown soil zone sites are Swift Current, Stewart Valley, and Kindersley; Dark Brown soil zones are Lethbridge, Regina, Watrous, Acme, Irricana, Scott, Elrose and Saskatoon; the Black soil zone site is Ellerslie.

Table 3. Agronomic characteristics of CDC Teal wheat and check cultivars in Central Bread Wheat Cooperative Tests, 1988-1990

Cultivar	Maturity (d)	Height (cm)	Lodging (1-9) ^z	Test wt (kg hL ⁻¹)	1000-kernel wt (g)
Neepawa	92.2	81	2.3	78.7	30.7
Katepwa	91.9	81	2.8	79.1	31.5
Columbus	95.4	86	2.2	79.4	33.0
Roblin	90.2	74	1.3	78.6	33.6
CDC Teal	90.9	76	1.5	79.4	32.7
SE	0.3	0.7	0.2	0.2	0.2
No. station-years	23	27	13	30	30

^z1 = no lodging, 9 = completely lodged.

CDC Teal is similar to Roblin in maturity, height and lodging resistance, and has better test weight but smaller kernels (Table 3). It is shorter and stronger strawed than Katepwa and Laura (Table 4). In eastern Saskatchewan and Manitoba, it matures 1 d earlier than Katepwa and 4 d earlier than Columbus. It is

2 d earlier than Laura. CDC Teal provides early maturity with a Katepwa yield level and is best suited to the Black soil zone.

CDC Teal is superior to Katepwa and similar to Roblin and Laura for resistance to stem and leaf rust (Tables 5 and 6). It has better loose smut resistance than Laura and

Table 4. Agronomic characteristics of CDC Teal wheat and check cultivars in Western Bread Wheat Cooperative Tests, 1987-1989

Cultivar	Maturity (d)	Height (cm)	Lodging (1-9) ^z	Test wt (kg hL ⁻¹)	1000-kernel wt (g)
Neepawa	97.4	75	3.2	78.4	30.3
Katepwa	97.1	75	4.3	78.6	30.7
Laura	98.8	73	4.0	79.1	31.6
CDC Teal	97.0	72	2.4	78.3	31.4
SE	0.2	0.5	0.5	0.1	0.3
No. station-years	23	28	8	27	27

^z1 = no lodging, 9 = completely lodged.

Table 5. Disease reactions of CDC Teal and check cultivars, Central Bread Wheat Cooperative Tests, 1988-1990

Year	Leaf rust ^z	Stem rust ^z	Loose smut ^y	Common bunt ^y	Common root rot ^x
<i>Neepawa</i>					
1988	20 MR ^w	10 R	11 MR	16 MR	29
1989	20 R-MR	Tr MR	6 R	36 I	36
1990	20 R-MR	10 MR-MS	2 R	30 I	34
<i>Katepwa</i>					
1988	30 MR	5 R	21 MR	1 R	36
1989	20 R-MR	2 R-MR	3 R	15 R	35
1990	10 R-MR	10 MR	- R	7 R	35
<i>Columbus</i>					
1988	10 R	10 R-MR	20 MR	2 R	39*
1989	5 R	10 MR-MS	0 R	7 R	37
1990	10 R	20 MR-MS	4 MR	2 R	45
<i>Roblin</i>					
1988	3 VR	3 VR	11 MR	21 S	25
1989	10 M	Tr R	5 R	44 S	26
1990	5 VR	Tr R	18 MR	43 S	25
<i>CDC Teal</i>					
1988	5 R	10 R	2 R	6 R	40*
1989	5 VR	Tr R	22 MR	33 I	42
1990	5 VR	20 MR	4 MR	26 I	59**

^zPercentage infection and pustule reaction type.

^yPercentage infection and resistance rating.

^xDisease index.

^wVR = very resistant, R = resistant, MR = moderately resistant, I = intermediate, M = mesothetic reaction, MS = moderately susceptible, S = susceptible, Tr = trace infection.

*, ** Significantly different from Neepawa at the 5% and 1% probability levels, respectively.

better bunt resistance than either Laura or Roblin, but is inferior to Katepwa. In weathering tests, CDC Teal performs similarly to Roblin and is inferior to Katepwa. However, its sprouting resistance is superior to that of Roblin and is similar to Katepwa (Table 7).

Other Characteristics

GROWTH HABIT. Spring.

COLEOPTILE COLOUR. Green.

LEAVES. Light green, glabrous, slight waxy bloom.

Table 6. Disease reactions of CDC Teal and check cultivars, Western Bread Wheat Cooperative Tests, 1987-1989

Year	Leaf rust ^z	Stem rust ^z	Loose smut ^y	Common bunt ^y	Common root rot ^x
<i>Neepawa</i>					
1987	40 MR-MS ^w	10 R	3 R	13 S	27
1988	30 MR-M	5 R	11 R ^v	16 I	45
1989	20 R-MR	Tr R	6 R ^v	36 I	32
<i>Katepwa</i>					
1987	30 MR-MS	5 R	5 R	5 I	26
1988	20 MR	10 R	11 R ^v	1 R	47
1989	20 R-MR	Tr R	3 R ^v	15 R	29
<i>Laura</i>					
1987	3 R	5 R	52 S	34 S	21*
1988	10 MR	5 VR	—	29 S	35**
1989	10 R-MR	Tr R	73 HS	52 S	23*
<i>CDC Teal</i>					
1987	1 VR	5 R	18 MR	21 S	36**
1988	5 R	10 R	4 R	6 I	58**
1989	10 VR	Tr R	12 MR	43 S	38

^zPercentage infection and pustule reaction type.

^yPercentage infection and resistance rating.

^zDisease index.

^wVR = very resistant, R = resistant, MR = moderately resistant, I = intermediate, MS = moderately susceptible, S = susceptible, Tr = trace infection.

^yData from the Central Bread Wheat Cooperative Test.

*, ** Significantly different from Neepawa at the 5% and 1% probability levels, respectively.

Table 7. Mean percentage sprouted heads and falling number values after various weathering tests for CDC Teal and check cultivars

Cultivar	% sprouted heads ^z	Weathering tests		
		FN1 ^y	FN2 ^x	FN3 ^w
Katepwa	29.0	528	200	266
Columbus	0.5	540	445	375
Roblin	44.0	372	162	151
CDC Teal	27.3	424	154	136
LSD ($P = 0.05$)	10.3	68	92	97

^zPercent intact spikes sprouted after immersion in water for 5 h then placed in a mist chamber at 98% RH and 20°C for 7 d at Saskatoon (mean of two replicates of 10 spikes) in 1990 and 1991. Spikes harvested at GS 92.

^yFalling number values determined on grain from intact spikes treated in a mist chamber for 72 h at Saskatoon in 1990 and 1991 (mean of two replicates of 20 spikes).

^xFalling number values determined on grain from artificial weathering tests, Central Bread Wheat Cooperative test, 1990.

^wFalling number values determined on grain from plants left standing in the field for approximately 60 d after physiological maturity, Central Bread Wheat Cooperative test, 1988-1989.

CULM. Pronounced waxy bloom on upper internode, little or no anthocyanin at maturity, fine straight neck, hollow internodes.

HEADING. Early.

SAWFLY REACTION. Susceptible.

SHATTERING. Resistant, similar to Katepwa.

SPROUTING TENDENCY. Medium, similar to Katepwa.

WEATHERING RESISTANCE. Low, similar to Roblin.

Spike Characteristics

AWNS. Apically awnletted.

SHAPE. Strap or oblong, mid-dense, mid-long.

ATTITUDE. Erect.

GLUMES. Glabrous, white at maturity, narrow to mid-wide, mid-long; shoulders rounded to square, mid-wide; beaks narrow, acute, slight basal folds.

Kernel Characteristics

COLOUR. Medium red.

TEXTURE. Hard.

SHAPE. Mid-size, mid-wide, mid-long, ovate.

GERM. Mid-size, oval.

CREASE. Mid-wide, deep.

CHEEKS. Angular.

BRUSH. Mid-size, mid-long to long.

KERNELS. Colour medium red; cheeks angular, brush mid-size, hairs medium to long; crease medium, deep; germ mid-size, oval.

GRADE ELIGIBILITY. Top grades of Canadian Western Red Spring Wheat.

Disease Reaction

Resistant to prevalent races of leaf rust caused by *Puccinia recondita* Rob. ex Desm. f. sp.

tritici and stem rust caused by *P. graminis* Pers. f. sp. *tritici* Eriks. & Henn.; moderately resistant to loose smut caused by *Ustilago tritici* (Pers.) Rostr.; intermediate resistance to common bunt caused by *Tilletia foetida* (Wall.) Liro and *T. caries* (DC.) Tul.; moderately susceptible to common root rot caused by *Cochliobolus sativus* (Ito & Kurib.) Drechs. ex Dast.

Maintenance and Distribution of Pedigreed Seed

Breeder seed will be maintained by the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0. Distribution and multiplication of pedigreed seed stocks is being handled by Value-Added Seeds Inc., Box 390, Saltcoats, Saskatchewan, Canada S0A 3R0.

Appreciation is expressed to D. Lucuik, D. Beauchesne, K. Wu, D. Huel, D. Cyca, G. Lemon and D. Bergh for their technical assistance in developing this early maturing bread wheat cultivar.

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