

LANCER HARD RED SPRING WHEAT

Lancer hard red spring wheat (*Triticum aestivum* L.) combines a high level of stem solidness which confers resistance to wheat stem sawfly (*Cephus cinctus* Nort.) with improved resistance to common root rot (*Bipolaris sorokiniana* (Sacc. in Sorok.) Shoem.) and seed shattering. It is adapted to the Brown and Dark Brown soil zones of Alberta and Saskatchewan and should be a suitable replacement for Canuck. It was licensed on 15 May 1985. Breeder seed of Lancer will be maintained by Agriculture Canada Research Station, Regina, Saskatchewan.

Key words: Wheat (spring), cultivar description

[Blé de printemps roux vitreux Lancer.]

Titre abrégé: Blé de printemps roux vitreux Lancer.

Le blé roux vitreux de printemps Lancer (*Triticum aestivum* L.) allie à une paille très pleine, résistante au cèphe du blé (*Cephus cinctus* Nort.), une meilleure résistance au piétin commun (*Bipolaris sorokiniana* (Sacc. in Sorok.) et à l'égrenage prématuré. Il convient aux zones des sols bruns et brun foncé de l'Alberta et de la Saskatchewan et, à ce titre, pourrait avantageusement remplacer Canuck. Il a été homologué le 15 mai 1985. La semence de l'obtenteur sera maintenue par la station fédérale de recherches agricoles de Regina (Saskatchewan).

Mots clés: Blé (printemps), description de cultivar

Lancer hard red spring wheat (*Triticum aestivum* L.) was developed at the Agriculture Canada Research Station, Swift Current, Saskatchewan, as part of the South Saskatchewan Wheat Breeding Program. License no. 2536 was issued for Lancer on 15 May 1985 by the Food Production and Inspection Branch, Plant Health and Plant Products Directorate of Agriculture Canada.

Pedigree and Breeding Methods

Lancer was selected by the modified pedigree method from a cross made in 1969 between Fortuna which had a solid-stem and Chris which had a low level of alpha-amylase in the grain. In 1978 the pedigree selection number 6903-180-27D was assigned to Lancer. In 1979 it was evaluated in replicated tests at two locations for yield potential, agronomic characteristics, resistance to the wheat stem sawfly, and grain quality. In 1980 and 1981 it was assessed in the Western Bread Wheat 'A' and 'B' level tests for agronomic performance, dis-

ease and insect reaction, and grain quality. In 1982 it was entered in the Western Bread Wheat Cooperative tests as BW572.

Performance and Adaptation

Lancer yields similarly to Canuck and Leader, but less than Neepawa and Columbus (Table 1). Lancer is similar in maturity to Neepawa and Leader, but is earlier than Canuck and Columbus. The culms of Lancer average 3 cm and 6 cm taller than Neepawa and Leader, respectively, and 5 cm and 7 cm shorter than Columbus and Canuck, respectively. Like its parent, Fortuna, the head is semi-nodding at maturity. Under moist growing conditions the straw is not as strong as the check cultivars.

Using the stem solidness method of De Pauw and Read (1982), it was concluded that Lancer had as solid a stem as Canuck and a significantly more solid stem than Leader, Neepawa, and Columbus (Table 2). Because the proportion of the lumen of the wheat culm filled with pith directly determines the resistance to eggs and larvae of the wheat stem sawfly (Holmes and Peterson 1961, 1962), Lancer should confer a

Table 1. Grain yield and agronomic characteristics of Lancer wheat and four check cultivars†

Cultivar	Yield (kg ha ⁻¹) (25)‡	Maturity (days) (17)	Height (cm) (23)	Lodging (1-9)§ (13)	Test weight (kg hL ⁻¹) (26)	1000-kernel wt (g) (26)
Neepawa	2720	100	82	1.5	79.0	30.0
Columbus	2780	103	90	1.3	80.0	31.2
Canuck	2600	102	92	2.2	81.2	32.0
Leader	2590	100	79	1.5	80.1	29.5
Lancer	2610	100	85	3.6	79.9	30.8

†Expert Committee on Grain Breeding, Report on Western Bread Wheat Cooperative tests, 1982-1984.

‡No. of station years of data.

§1 = no lodging, 9 = completely lodged.

Table 2. Rating† for degree of pith filling the lumen of each internode of the main culm of Lancer and four check cultivars for 1982-1984

Cultivar	Stem internode‡				
	1	2	3	4	5
Neepawa	2.5 ± 0.11	1.7 ± 0.09	1.1 ± 0.03	1.1 ± 0.02	1.1 ± 0.10
Columbus	1.4 ± 0.08	1.2 ± 0.05	1.0 ± 0.00	1.0 ± 0.00	1.0 ± 0.00
Canuck	4.1 ± 0.08	4.0 ± 0.07	3.2 ± 0.14	2.3 ± 0.07	2.9 ± 0.12
Leader	3.1 ± 0.15	3.4 ± 0.12	2.8 ± 0.14	2.0 ± 0.09	2.5 ± 0.13
Lancer	4.2 ± 0.12	4.2 ± 0.09	3.9 ± 0.11	2.6 ± 0.09	2.8 ± 0.10

†Rating for solidness based on 25 plants per cultivar per year. 1 = no pith in lumen of internode, 5 = pith fills entire lumen of internode.

‡Internodes numbered consecutively from base of plant to base of spike.

Table 3. Comparison of common root rot disease index of Lancer and four check cultivars for 1982-1984

Cultivar	Common root rot disease index†									
	1984			1983		1982			SC	Mean
	Ston‡	Scott	Reg	Ston	Scott	Ston	Scott			
Neepawa	20	44	29	11	14	37	24	15	24	
Columbus	31	42	31	21	23*	45	38	37*	34	
Canuck	44**	56	29	14	29**	52	47**	29	38	
Leader	41**	74**	50**	20	24*	61**	26	42**	42	
Lancer	31	50	28	17	21	32	23	26	29	

†Lower disease index values infer more resistance to common root rot.

‡Ston = Saskatoon; Reg = Regina; SC = Swift Current.

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

high level of resistance to the wheat stem sawfly (*Cephus cinctus* Nort.). Lancer expressed a higher level of resistance to common root rot caused primarily by *Bipolaris sorokiniana* (Sacc. in Sorok.) Shoem. than Canuck, Columbus, and Leader (Table 3).

Lancer also exhibited significantly lower shattering losses than Canuck and Columbus under irrigated conditions (Table 5). In 1984 there were no differences in response to shattering under dryland conditions due primarily to the abnormally small seed size

Table 4. Summary of disease reactions for Lancer and four check cultivars (Western Bread Wheat cooperative test, 1982–1984)

	Leaf rust			Stem rust			Bunt			Loose smut		
	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984
Neepawa	40MS†	50I	50I	VR	10R	10R	R	I	I	MR	MR	MR
Columbus	VR	5R	01R	10MR-MS	10R	20RMR	R	R	R	S	MS	MS
Canuck	80S	80S	80S	20R-MR	30R	70S	R	I	I	MS	MS	—
Leader	03MS	3I	OTR,20I	VR	10R	10VR	R	R	I	S	MR	—
Lancer	03MS	5I	OTR	5R-MR	10R-TS	10VR	R	R	I	R	MR	MR

†The number and/or T (trace) before the letter denoting the reaction-type to leaf and stem rust indicates the percentage of the plant area infected in accordance with the modified Cobb Scale. VR = very resistant, R = resistant, MR = moderately resistant, I = intermediate, MS = moderately susceptible, S = susceptible and — = no data available.

Table 5. Grain shattering as percentage of total grain yield and seed size of Lancer and four check cultivars on irrigated and dryland conditions in 1984

	Shattering (%)†		1000-kernel weight (g)	
	Irrigated	Dryland	Irrigated	Dryland
Neepawa	9.0 ^{ab}	—	32.2 ^d	—
Columbus	13.9 ^b	—	35.4 ^a	—
Canuck	13.4 ^b	0.14	34.4 ^{abc}	22.5
Leader	11.9 ^{ab}	0.10	32.2 ^d	23.7
Lancer	5.8 ^a	0.21	34.2 ^{bc}	24.9

†Shattering expressed as percentage of initial grain weight.

a–d Cultivars followed by the same letter within a column do not differ significantly (DMR test, $P = 0.05$).

caused by the very dry growing conditions.

Lancer should be a suitable replacement for Canuck in the Brown and Dark Brown soil zones where the wheat stem sawfly is a pest.

Description

SPIKES. Fusiform, mid-dense, mid-long, semi-nodding, apically awnletted; glumes mid-wide, mid-long to long, glabrous, white; glume shoulders square, few rounded and some slightly elevated, mid-wide to narrow; glume beaks mid-wide, acute.

KERNELS. Color medium red, mid-size, narrow to mid-wide, mid-long, elliptical to

ovate; cheeks rounded to angular; brush hairs medium long; crease mid-wide, mid-deep; germ mid-size, round.

MATURITY. Mid-season, similar to Leader.

STRAW. Medium height, weak to mid-strong, solid.

SAWFLY REACTION. Similar to Canuck, better than Leader.

SHATTERING. Similar to Neepawa, better than Canuck and Columbus.

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. and E. Henn. Moderately resistant to common bunt caused by *Tilletia foetida* (Wallr.) Liro and *T. caries* (DC.) Tul., loose smut caused by *Ustilago tritici* (Pers.) Rostr., and common root rot caused primarily by *B. sorokiniana* (Sacc. in Sorok.) Shoem. (Table 4).

PHOTOPERIOD RESPONSE. Insensitive, similar to Leader.

QUALITY. Equal to Marquis; high flour yield, high loaf volume, low (desirable) levels of alpha-amylase activity, and marginal farinograph water absorption; eligible for top grades of Canadian Western Red Spring wheat.

Maintenance and Distribution of Pedigreed Seed

Breeder seed originating from 192 breeder lines will be maintained by the Seed Section of the Experimental Farm, Agriculture Canada, Indian Head, Saskatchewan S0G 2K0. Distribution and multiplication of pedigreed seed stocks will be handled by SeCan Association, 512-885 Meadowlands Drive, Ottawa, Ontario K2C 3N2.

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