LEADER HARD RED SPRING WHEAT

Leader hard red spring wheat (*Triticum aestivum L.*) combines resistance to the wheat stem sawfly with a low level of alpha-amylase activity. It is adapted to the Brown soil zones of Alberta and Saskatchewan.

Le blé vitreux roux de printemps Leader (*Triticum aestivum* L.) combine la résistance au cèphe du blé à une faible activité de l'α-amylase. Il est adapté aux zones de sols bruns de l'Alberta et de la Saskatchewan.

Origin and Breeding

Leader hard red spring wheat (*Triticum aestivum* L.) was developed at the Agriculture Canada Research Station in Swift Current as part of the South Saskatchewan Wheat Breeding Program. Leader was developed using the pedigree breeding method under selection number 6903-57. It has been evaluated as BW535 in the Western Bread Wheat Cooperative Test and the Central Bread Wheat Cooperative Test from 1978-1980, and 1979-1980, respectively. It received License no. 2085 in March 1981.

Leader was selected from a cross made in 1969 between the cultivar Fortuna, which has resistance to the wheat stem sawfly (*Cephus cinctus* Nort.), and the cultivar Chris, which has a desirably low level of alpha-amylase activity. F. G. Kosmolak and R. Campbell, Research Station, Agriculture Canada, Winnipeg, screened early generation lines from this cross for bread-making quality.

Performance and Adaptation

Leader has the capability to replace Chester in the Brown soil zone of southwestern Saskatchewan and southern Alberta where yield losses due to the wheat stem sawfly occur annually (Table 1). Leader's outstanding attribute is a long dormancy period reflected by its relatively high Hagberg Falling Number values (Tables 2 and 3). Hagberg Falling Number value is related inversely to the alpha-amylase activity of the wheat sample.

Description

SPIKE. Oblong to fusiform, mid-dense, erect, apically awnletted; glumes mid-long, mid-wide, glabrous, white; shoulders mid-wide, square to rounded, some slightly elevated; beaks short, mid-wide, acute.

KERNEL. Colour medium red; shape mid-size, mid-wide, mid-long, ovate; germ mid-size, round to oval; crease mid-wide, mid-deep, frequently open at brush end; brush

Table 1. Average agronomic data from report on Western Bread Cooperative Test (1978-1980)

Trait	No. of tests	Leader	Chester	Columbus	Neepawa
Yield (kg/ha)	22	2690	2680	2930	2810
Maturity (days)	14	93.9	93.2	95.2	92.3
Height (cm)	19	75	77	81	77
Lodging (1-9 scale)	5	1.6	1.6	1.2	1.4
Test weight (kg/hL)	10	80.3	78.9	80.3	79.9
1000-K wt (g)	10	31.1	32.0	32.7	31.3
Stems cut by sawfly† (%)	5	19.7	19.9	56‡	66.3

† Percentage of stems cut by the wheat stem sawfly measured in special insect nurseries at Swift Current and Lethbridge.
‡ Four tests.

0008-4220/82/6201-0231 $2.00

Table 2. Hagberg Falling Number values for Leader, Chester, Columbus and Neepawa

Seed Source	Year†	Leader	Chester	Columbus	Neepawa
Kindersley	1978	465	225	440	355
Winnipeg	1979	415	–	431	191
Winnipeg	1980	291	–	362	94
Swift Current	1980	239	62	248	62

† Samples from the 1978 Western Bread Wheat Cooperative Test were downgraded due principally to exposure to rain. Data from Winnipeg and Swift Current based on heads exposed to water in a rain simulator for 80 and 72 h, respectively.

Table 3. Hagberg Falling Number values of four cultivars which were exposed to ambient weather conditions at Swift Current, 1980

Days after combine ripeness	Leader	Columbus	Chester	Canuck
0	569 *a*	655 *a*	342 *c*	447 *b*
53	501 *a*	515 *a*	283 *b*	369 *b*
80	438 *a*	437 *a*	248 *b*	319 *b*

a–c Means within a row followed by the same letter do not differ, $P \leq 0.05$ (Duncan's multiple range test).

mid-size, mid-long to short; cheeks rounded to slightly angular.

STRAW. Pithy under most conditions, mid-long, mid-strong, white.

MATURITY. Mid-season, similar to Chester.

SHATTERING. Moderately resistant, similar to Canuck.

LODGING. Moderately resistant, similar to Chester.

SAWFLY REACTION. Moderately resistant, similar to Chester.

DISEASE REACTION. Resistant to leaf and stem rust, bunt, loose smut, and head discoloration; moderately susceptible to common root rot.

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

Breeder seed from 311 Breeder lines will be maintained by the Seed Section of Agriculture Canada, Research Station at Regina, Saskatchewan.

ACKNOWLEDGMENTS

The expert technical assistance of G. E. McCrystal and C. W. B. Lendrum of the Swift Current Research Station, L. A. Patterson of the Regina Research Station, and P. Powless of the Indian Head Experimental Farm is gratefully acknowledged.

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