

LAURA HARD RED SPRING WHEAT

Laura hard red spring wheat (*Triticum aestivum* L.) combines higher grain yield than currently registered cultivars with very good bread-making properties. Laura has resistance 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. It was registered on 23 December 1986. Breeder seed of Laura will be maintained by Agriculture Canada Experimental Farm, Indian Head, Saskatchewan.

Key words: Wheat, *Triticum aestivum* L., cultivar description

[Blé rouge de printemps Laura.]

Titre abrégé: Blé rouge de printemps Laura.

Le blé rouge de printemps Laura (*Triticum aestivum* L.) combine un rendement grainier plus élevé que les cultivars actuellement homologués et affiche de très bonnes qualités boulangères. Laura résiste aux races dominantes de la rouille des feuilles causées par *Puccinia recondita* Rob. ex. Desm. f. sp. *tritici* et à la rouille de la tige causée par *P. graminis* Pers. f. sp. *tritici* Eriks, et E. Henn. Il a été homologué le 23 décembre 1986. La semence de l'obtenteur sera maintenue par la Ferme expérimental d'Agriculture Canada, à Indian Head en Saskatchewan.

Mots clés: Blé, *Triticum aestivum* L., description de cultivar

Laura hard red spring wheat (*Triticum aestivum* L.) was developed at the Agriculture Canada Research Station, Swift Current, as part of the South Saskatchewan Wheat Breeding Program. Registration no. 2730 was issued for Laura on 23 Dec. 1986 by the Food Production and Inspection Branch, Plant Health and Plant Products Directorate, Food Production and Inspection Branch of Agriculture Canada.

Pedigree and Breeding Method

Laura was selected from a cross made in 1976 between BW15 and BW517. Both parents were evaluated in the 1975 Western Bread Wheat Co-operative Test where they yielded more grain than Neepawa. Both parents were not eligible for registration because their bread-making properties were not equal to Neepawa. BW15 gave a very high flour yield but had overly strong gluten properties. BW517 had slightly low flour yield but very good gluten and bread-making properties. BW15 derived from the cross Manitou/Tobari 66 and BW517 derived from the four-way cross Carazinho/CT 763//Atlas 66/CT 262.

Laura was developed using a modified pedigree method and early generation yield-testing procedures. In each of the F₄, F₆, and F₈ generations, selections were evaluated in replicated tests at two locations for grain yield potential, agronomic characteristics, resistance to leaf and stem rust, and Canadian Western Red Spring (CWRS) grain quality parameters. The F₁, F₃, F₅ and F₇ generations were grown in a winter nursery at Ciudad Obregon, Mexico. In 1980, an F₈ line designated 7623-UA1A was selected and became the progenitor of Laura. In 1981 and 1982, 7623-UA1A was assessed in the Western Bread Wheat 'AII' and 'B' level tests, respectively, for agronomic performance, disease reaction and grain quality. From 1983 to 1985 it was evaluated in the Western Bread Wheat Cooperative (WBW'C') tests as BW581 and BW593. In 1985 it was also evaluated in the Central Bread Wheat Cooperative (CBW'C') tests as BW593. Breeder seed consists of 142 breeder lines which derive from single F₁₁ plant selections. The 142 breeder lines were selected originally from 158 plant-rows grown in 1985.

Table 1. Grain yield ('00 kg ha⁻¹) of Laura wheat and three check cultivars in Western Bread Wheat Cooperative Test, 1983-1985

Cultivar	Brown soil zone					Dark Brown soil zone					Mean	
	S.C.†	S.V.	Kind.	Reg.	Scot.	Kern.	Acme	Leth.	Wat.	Ell.		
No. of station years	3	2	2	3	3	3	2	2	2	2	2	24
Lancer‡	18.0	19.4	17.8	22.0	18.2	27.2	25.0	20.6	29.0	35.6	23.0	23.0
Leader‡	18.2	16.4	17.8	22.2	19.4	27.7	24.6	21.9	31.8	38.1	23.5	23.5
Neepawa	19.2	19.6	19.6	22.1	19.5	28.1	23.6	22.2	33.7	34.1	23.8	23.8
Laura	19.5	20.8	23.0	23.9	21.1	28.1	27.8	21.0	36.3	38.0	25.5	25.5

†Locations are: S.C., Swift Current; S.V., Stewart Valley; Kind., Kindersley; Reg., Regina; Scot., Scott; Kern., Kernen; Acme; Leth., Lethbridge; Wat., Watrous; Ell., Ellerslie, which is located in Black Soil Zone.

‡Solid-stemmed cultivars.

Table 2. Grain yield ('00 kg ha⁻¹) of Laura wheat and six check cultivars in Western Bread Wheat Cooperative Tests, 1983 and 1984

Cultivar	Brown soil zone					Dark Brown soil zone					Mean
	S.C.†	S.V.	Kind.	Reg.	Scot.	Kern.	Acme	Leth.	Wat.	Ell.	
No. of station years	2	1	1	2	2	2	2	2	1	1	16
Columbus	23.1	17.8	22.1	23.2	23.6	27.4	26.3	19.3	29.0	39.5	24.6
Conway	24.8	24.9	19.3	22.7	22.2	29.1	24.9	20.9	28.1	33.2	24.7
Kenyon	25.2	23.0	17.9	23.0	22.4	28.2	24.8	20.5	28.9	33.1	24.4
Lancer‡	24.6	23.6	15.3	21.5	19.4	26.8	25.0	20.6	22.5	33.4	23.2
Leader‡	22.9	18.9	15.5	20.8	20.3	27.0	24.5	20.6	26.8	37.9	23.2
Neepawa	24.0	24.2	17.1	21.4	20.1	27.5	23.6	20.0	30.4	33.1	23.6
Laura	24.2	25.4	22.0	21.6	22.4	28.2	27.8	20.8	35.7	34.7	25.5

†Locations are: S.C., Swift Current; S.V., Stewart Valley; Kind., Kindersley; Reg., Regina; Scot., Scott; Kern., Kernen; Acme; Leth., Lethbridge; Wat., Watrous; Ell., Ellerslie, which is located in Black Soil Zone.

‡Solid-stemmed cultivars.

Table 3. Agronomic characteristics of Laura wheat and three check cultivars in Western Bread Wheat Co-operative Tests (1983–1985)

Cultivar	Maturity (d) (15)†	Height (cm) (23)	Lodging (1–9)‡ (12)	Test weight (kg hL ⁻¹) (27)	1000-kernel wt (g) (27)
Neepawa	96	74	1.4	78.6	28.2
Leader	97	72	1.3	79.6	28.2
Lancer	98	77	3.3	79.5	30.4
Laura	98	73	1.2	79.3	29.1

†Number of station years of data.

‡1 = no lodging, 9 = completely lodged.

Table 4. Agronomic performance of Laura and check cultivars in Central Bread Wheat Cooperative Tests (1985)

Cultivar	Yield (kg ha ⁻¹) (10)†	Maturity (d) (8)	Lodging (1–9)‡ (8)	Height (cm) (9)	Test weight (kg hL ⁻¹) (10)	1000-kernel wt (g) (10)
Neepawa	3910	106.5	3.2	94	80.4	33.5
Sinton	3940	108.3	2.8	96	79.7	36.0
Benito	3840	106.2	4.0	92	80.2	31.5
Columbus	4040	110.2	2.6	100	80.7	36.9
Laura	4140	108.8	4.0	92	80.4	33.7

†Number of station years of data.

‡1 = no lodging, 9 = completely lodged.

Table 5. Disease reactions of Laura and four check cultivars in Western Bread Wheat Cooperative Tests 1983–1985

Year	Leaf rust	Stem rust	Common bunt	Loose smut	Common root rot
			<i>Laura</i>		
1983	TR†	3‡ VR	3 R	87 HS	11§
1984	TR	1 VR	77 S	75 HS	22*
1985	TR	10 R	38 S	86 HS	32
			<i>Columbus</i>		
1983	5 R	10 R	3 R	24 MR	22**
1984	1 R	20 R-MR	9 R	34 MS	35
			<i>Lancer</i>		
1983	5 M	10 R-TS	0 R	31 MR	18
1984	TR	10 VR	28 I	34 MR	36
1985	20 M	20 R-MR	8 R	29 MR	40
			<i>Leader</i>		
1983	3 M	10 R	0 R	26 MR	21**
1984	0 TR	10 VR	25 I	—	55**
1985	30 M	10 R	10 R	34 MS	62**
			<i>Neepawa</i>		
1983	50 M	10 R	8 I	25 MR	12
1984	50 M	10 R	33 I	23 MR	31
1985	50 M	10 R	31 S	24 MR	35

†Type of reactions: TR = trace resistant; VR = very resistant; R = resistant; MR = moderately resistant; I = intermediate resistance; M = intermediate to MR and MS; MS = moderately susceptible; S = susceptible; HS = highly susceptible; and — = no data available.

‡Percent infection.

§Disease index.

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

Performance and Adaptation

Laura averaged 7% higher grain yield than Neepawa during 3 yr in the WBW'C' tests (Table 1) and has yielded more grain than the other registered cultivars in both the WBW'C' and CBW'C' tests (Tables 2 and 4).

Laura matures about 2 d later than Neepawa, is similar in maturity to Lancer and Sinton, and is about 1.4 d earlier than Columbus (Tables 3 and 4). In the WBW'C' tests Laura appears to have slightly stronger straw than Neepawa but not in the CBW'C'. It has an awned spike and is resistant to seed shelling.

Laura is resistant to prevalent races of leaf and stem rust, and moderately resistant to common root rot (Table 5). It is physiologically susceptible to loose smut and common bunt, but it has morphological resistance to loose smut and is being classified as moderately resistant to this disease.

Description

SPIKES. Oblong to fusiform, mid-dense, mid-long, erect, awned; glumes mid-wide, mid-long, glabrous, white; glume shoulders square, some rounded, some slightly elevated, mid-wide; glume beaks mid-wide, tending to acuminate.

KERNELS. Color medium red, hard, mid-size, mid-wide, mid-long, ovate; cheeks angular to slightly rounded; brush hairs mid-long; crease mid-wide, mid-deep; germ mid-size, ovate.

MATURITY. Two days later than Neepawa and Katepwa.

STRAW. Mid-height, similar strength to Neepawa, hollow.

SAWFLY REACTION. Susceptible.

SHATTERING. Resistant, similar to Neepawa.

DISEASE REACTION. Resistant to prevalent races of leaf rust caused by *Puccinia recon-dita* Rob. ex. Desm. f. sp. *tritici* and stem

rust caused by *P. graminis* Pers. f. sp. *tritici* Ericks. and E. Henn. Moderately resistant to common root rot caused primarily by *Bipolaris sorokiniana* (Sacc. in Sorok.) Shoem., and loose smut caused by *Ustilago tritici* (Pers.) Rostr. Susceptible to common bunt caused by *Tilletia foetida* (Wallr.) Liro and *T. caries* (DC.) Tul.

PHOTOPERIOD RESPONSE. Insensitive.

QUALITY. Equal to Marquis; very good bread baking properties, much stronger gluten properties than Neepawa; eligible for top grades of Canadian Western Red Spring Wheat.

Maintenance and Distribution of Pedigreed Seed

Breeder seed originating from 142 breeder lines will be maintained by the Seed Section of the Experimental Farm, Agriculture Canada, Indian Head, Saskatchewan, Canada S0G 2K0. Distribution and multiplication of pedigreed seed stocks will be handled by SeCan Association, 512-885 Meadowlands Drive, Ottawa, Ontario, Canada K2C 3N2.

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