AC Certa spring triticale

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AC Certa, a spring triticale cultivar (X Triticosecale Wittmack) was developed at CIMMYT and introduced by the Semiarid Prairie Agricultural Research Centre, Research Branch, Agriculture and Agri-Food Canada, Swift Current, SK as part of the Triticale Breeding Project, via the 21st ITSN in 1989. Registration no. 4153 was issued for AC Certa on 27 June 1995 by the Plant Health and Plant Products Directorate, Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada K1A 0C6.

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Pedigree and Breeding Methods
AC Certa derives from the cross Hare 263/Civet”S” made by CIMMYT at El Batan, México in 1982. It was developed by a modified pedigree selection method in which the F1, F2, F4, F6 and F8 generations were grown in nurseries at Ciudad Obregon, Sonora which were artificially inoculated with stem rust (caused by Puccinia graminis Pers. f. sp. tritici Eriks.) and leaf rust (caused by P. recondita Rob. ex Desm. f. sp. tritici). The F3 and F5 generations were grown at Toluca, México which is a disease “hot spot” for Septoria tritici and Fusarium spp. [particularly F. nivale (Fr.) Ces. and F. graminearum Schwabe], Barley Yellow Dwarf Virus and yellow rust (caused by Puccinia striiformis West.). The F7 generation was grown at El Batan where the prevalent diseases are stem rust, leaf rust, yellow rust and Barley Yellow Dwarf Virus. Visual “intuitive” selection was done throughout all generations for grain yield components (spike fertility, high number of grains per spike and tillers), agronomic type, pre-harvest sprouting resistance and disease resistance. Following harvest, seed was graded for appearance, size, colour and plumpness and for test weight following bulk harvests. The F3, F4 and F8 generations were bulk harvested and all other early generations were harvested as individual plants. Yield testing was conducted at Toluca in 1987 and Ciudad Obregon in 1987–1988. Seed for entry no. 20 of the 21st ITSN was multiplied at Hermosillo, Sonora during the 1988–1989 growing cycle. It was introduced in 1989 and designated 8930-020. It was evaluated for agronomic and kernel characteristics in 1989 and entered into the Triticale ‘A’ Test in 1990 and advanced to the Triticale ‘B’ Test in 1991. It was evaluated in the Western Spring Triticale Cooperative Test from 1992 to 1994 under the experimental designation T128. AC Certa was grown in special nurseries established for the evaluation of reaction to common root rot, common bunt and leaf and stem rust at Agriculture and Agri-Food Canada Research Centres located at Saskatoon, Lethbridge and Winnipeg.

Abbreviations: ITSN, International Triticale Screening Nursery
The 117 breeder lines derived from F_{7} derived F_{12} single plant progeny grown at Swift Current, Saskatchewan in 1993 in 3-m rows and in 1994 at Indian Head, Saskatchewan in 15-m rows.

### Performance and Adaptation
AC Certa is well adapted to the soils of the Canadian Prairies with overall grain yield equal to the best check, AC Alta (Table 1). In the Black soil zone of Manitoba and Saskatchewan and the Brown soil zone of Saskatchewan and Alberta, AC Certa was significantly greater \((P < 0.05)\) yielding than AC Copia and Banjo, respectively. It was not significantly different from the other checks in any of the soil zones.

The test weight of AC Certa was 4% greater than that of AC Copia, the best check cultivar (Table 2). The kernel weight of AC Certa was equal to Frank but significantly \((P < 0.05)\) less than the other triticale check cultivars. AC Certa had good lodging resistance and was 1 d earlier maturing than the earliest triticale checks.

### Disease Reaction
AC Certa was very resistant to the prevalent races of stem rust (caused by *Puccinia graminis* Pers. f. sp. *tritici* Ericks.), and leaf rust (caused by *P. recondita* f. sp. *tritici* Rob. ex Desm.); highly resistant to common bunt [caused by *Tilletia foetida* (Wallr.) Liro and *T. caries* (DC) Tul.] and moderately resistant to common root rot. AC Certa was very resistant to the prevalent races of stem rust (caused by *Puccinia graminis* Pers. f. sp. *tritici* Ericks.), and leaf rust (caused by *P. recondita* f. sp. *tritici* Rob. ex Desm.); highly resistant to common bunt [caused by *Tilletia foetida* (Wallr.) Liro and *T. caries* (DC) Tul.] and moderately resistant to common root rot.
resistant to moderately susceptible to common root rot (caused primarily by Bipolaris sorokiniana (Sacc. in Sorok.) Shoem. (Table 3).

End-use Suitability
Hagberg Falling Numbers of AC Certa averaged 20 s greater than those of the best triticale checks making it the first triticale developed to combine high grain yield and high test weight with improved Hagberg Falling Number (Table 4). AC Certa averaged 0.5% greater protein concentration than the check triticale cultivars and 0.3% less than Biggar Canada Prairie Spring Wheat.

Other Characteristics
SPIKES. Long, tapered and nodding at maturity; mid-dense and glaucous; chaff is white; awns are long, white and spreading at maturity.

KERNELS. Red, soft and of medium size; elliptical in shape with rounded cheeks; crease is of medium depth and narrow; brush hairs are of medium length; germ is large and oval in shape; phenol reaction is black.

Maintenance and Distribution of Pedigreed Seed
AC Certa has been released to Progressive Seeds Limited for multiplication, distribution and marketing. Breeder seed will be maintained by the Seed Increase Unit of the Research Farm, Agriculture and Agri-Food Canada, Indian Head, Saskatchewan, Canada S0G 2K0.

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