CULTIVAR DESCRIPTION

AC Copia spring triticale

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McLeod, J. G., Townley-Smith, T. F., DePauw, R. M. and Clarke, J. M. 1994. **AC Copia spring triticale.** Can. J. Plant Sci. **74**: 811–813. AC Copia, a cultivar of spring triticale (*X Triticosecale* Wittmack), was developed at the Research Station, Research Branch, Agriculture and Agri-Food Canada, Swift Current, SK. It is widely adapted to the Prairie Provinces of Western Canada. AC Copia represents an improvement in test weight over other currently available Canadian cultivars of triticale. It is very resistant to the prevalent races of leaf rust, stem rust and common bunt, and moderately resistant to common root rot.

Key words: Cultivar description, test weight, triticale (spring), *X Triticosecale* Wittmack

McLeod, J. G., Townley-Smith, T. F., DePauw, R. W. et Clarke, J. M. 1994. **Cultivar de triticale de printemps AC Copia.** Can. J. Plant Sci. **74**: 811–813. AC Copia, cultivar de triticale de printemps (*X Triticosecale* Wittmack) a été créé à la station de recherches du ministère de l'Agriculture du Canada à Swift Current, Saskatchewan. Doté d'une large adaptabilité dans la région des Prairies canadiennes, AC Copia présente une amélioration du poids spécifique sur les autres cultivars canadiens actuellement en usage. Il est très résistant aux races dominantes de la rouille des feuilles, de la rouille de la tige et de la carie commune et possède une résistance modérée au piétin commun.

Mots clés: Description de cultivar, poids spécifique, triticale (de printemps), *X Triticosecale* Wittmack

AC Copia spring triticale (*X Triticosecale* Wittmack) was developed at the Research Station, Research Branch, Agriculture and Agri-Food Canada, Swift Current, SK as part of the Arid Prairie Wheat Program. Registration no. 3784 was issued for AC Copia in April 1993 by the Plant Health and Plant Products Directorate, Food Production and Inspection Branch of Agriculture and Agri-Food Canada.

Pedigree and Breeding Methods

AC Copia was selected from the progeny of a cross made in 1984 between T 33 (Juanillo 'S') and an entry number 169 from the 12th International Triticale Screening Nursery (W74.103-ADX/Beagle 'S'-M2A//IRA).

AC Copia was developed using modified pedigree and early generation yield testing procedures. The F_1, F_3, F_5, and F_7 generations were grown in a winter nursery near Brawley, CA to multiply seed for early generation tests. The F_2 generation was grown near Swift Current as individual plants in a leaf and stem rust disease nursery. The F_4, F_6, and F_8 generations were evaluated for agronomic performance in replicated yield trials at two locations. An F_6-derived F_9 line, designated 8432-B1E, was evaluated for agronomic performance and end-use suitability in the Triticale 'A' test at 4 locations in 1989, and subsequently in the Western Spring Triticale Cooperative test as T 111 from 1990 to 1992.

In 1991, 144 F_{11} head rows were established in the field. Uniform rows were identified and harvested individually. In 1992, 15.2-m rows were grown at the Indian Head Experimental Farm, SK. Uniform lines (133) were bulked to form breeder seed. A seed sample from each uniform line was retained as a source for each breeder line. The 133 breeder lines originated from plants from an F_6-derived F_{11} single plant progeny row.

Performance and Adaptation

AC Copia is a conventional height triticale line adapted to the soils of the Prairie region with a possible exception of the Black soils of Alberta. AC Copia has large kernels to meet the criteria of the Canada Triticale class.

In 33 station-years of data, AC Copia outyielded the triticale checks (Wapiti and Frank) by 4%, and Canada Prairie Spring, Biggar wheat by 25% (Table 1). In the Black soil zone of Manitoba and Saskatchewan, AC Copia outyielded the best triticale check by 3%, and Biggar by 44%. In the Brown and Dark Brown soil zone of Saskatchewan and Alberta, it has outyielded the best triticale check by 7%, and Biggar by 22%. However, in the Black soil zone of Alberta, AC Copia yielded 4% less than the triticale checks, and 5% less than Biggar. Under irrigated Brown soil conditions of Alberta, AC Copia outyielded the best triticale check by 6%, and Biggar by 9%.

Table 1. Mean grain yield of AC Copia compared with Wapiti and Frank triticales and Biggar CPS wheat, based on data from Western Spring Triticale Cooperative tests (1990–1992)

Cultivar	Yield (t ha^{-1})				
	Zone 1[z]	Zone 2	Zone 3	Zone 4	Mean[y]
AC Copia	5.96	5.12	7.55	6.23	5.86
Wapiti	5.80	4.80	7.82	5.52	5.61
Frank	5.80	4.80	7.86	5.88	5.66
Biggar	4.15	4.20	7.92	5.70	4.70
LSD ($P \leq 0.05$)	0.58	0.49	0.96	0.52	0.36
No. of tests	15	11	3	4	33

[z]Zone 1, Black soils of Manitoba and Saskatchewan; Zone 2, Brown and Dark Brown soils of Saskatchewan and Alberta; Zone 3, Black soils of Alberta; Zone 4, Irrigated Brown soils of Alberta.
[y]All means are weighted by the number of tests within a zone.

Table 2. Agronomic performance of AC Copia compared with Frank and Wapiti triticales and Biggar CPS wheat, based on Western Spring Triticale Cooperative Tests (1990–1992)

Cultivar	Maturity (d)	Height (cm)	Lodging (1-9)[z]	Test wt. (kg hL^{-1})	Kernel wt. (mg)
AC Copia	112	106	2.4	73.3	44.2
Wapiti	111	107	2.3	68.4	42.8
Frank	112	102	2.3	70.1	38.7
Biggar	107	80	1.4	77.0	35.2
LSD ($P \leq 0.05$)	1.2	1.7	0.6	1.1	1.5
No. of tests	27	32	10	33	33

[z]1, all plants are standing vertically; 9 all plants are lying horizontally.

The test weight of AC Copia is 4% greater than that of Frank, the best triticale check cultivar, and 5% less than Biggar wheat (Table 2). The kernel weight of AC Copia is greater than the check cultivars (Table 2). Maturity of AC Copia is equal to Frank, 1 d later than Wapiti, and 5 d later than Biggar. AC Copia is equal to Wapiti in plant height, and taller than Frank and Biggar. AC Copia is slightly more susceptible to lodging than the check cultivars (Table 2).

Disease Reaction

AC Copia is very resistant to the prevalent races of stem rust (caused by *Puccinia graminis* Pers. f. sp. *tritici* Eriks, and E. Henn.) and leaf rust (caused by *P. recondita* Rob. ex. Desm. f. sp. *tritici*); highly resistant to common bunt (caused by *Tilletia foetida* (Wallr.) Liro and *T. caries* (DC) Tul.), and moderately resistant to common root rot caused primarily by *Bipolaris sorokiniana* (Sacc. in Sorok.) Shoem (Table 3).

End-use Suitability

AC Copia is on average 0.5–1.0% lower in protein concentration than Frank and Wapiti. AC Copia is over 2.4% lower in protein concentration than Biggar wheat. Grain hardness of AC Copia is similar to that of Frank and Wapiti but softer than Biggar. Flour yield of AC Copia is greater than Frank, and less than Wapiti (Table 4). AC Copia is eligible for grades of Canada Triticale.

Table 3. Disease reactions of AC Copia compared with Frank and Wapiti triticales and Biggar CPS wheat, based on Western Spring Triticale Cooperative Tests (1990–1992)

Cultivar	Year	Type of reaction[z]			Common root rot (% infection)
		Leaf rust	Stem rust	Common bunt	
AC Copia	1990	5VR	VR	VR	52
	1991	5VR	--	--	36
	1992	10VR	VR	--	31
Wapiti	1990	5VR	TR	VR	32
	1991	5VR	--	VR	26
	1992	10VR	VR	VR	19
Frank	1990	5VR	VR	VR-	65
	1991	5VR	--	VR-	51
	1992	10VR	VR	VR-	56
Biggar	1990	5VR	20MR	S	57
	1991	5VR	----	S	44
	1992	40RMR	40RMR	S	2

[z]Types of reaction: TR = trace resistant; VR = very resistant; R = resistant; MR = moderately resistant; S = susceptible. Numbers indicate percent infection.

Table 4. Mean grain quality parameters of AC Copia compared with Frank and Wapiti triticales and Biggar CPS wheat, based on Western Spring Triticale Cooperative Tests (1990–1992)[z]

Cultivar	Grinding time (s)	Grain protein (%)	Flour yield (%)	Mixing development time (min)	Hagberg falling number (s)
AC Copia	32	8.3	43.5	1.4	89
Wapiti	35	8.8	45.9	2.2	132
Frank	34	9.2	38.4	2.3	126
Biggar	28	10.7	52.9	2.7	367

[z]Quality parameters were determined on two samples from each of two locations in each year; 1990 — Stewart Valley and Floral; 1991 — Indian Head and Stewart Valley; 1992 — Indian Head and Floral.

Other Characteristics

SPIKES. The spikes are long and tapered and slightly inclined at maturity. They are mid-dense and glaucous. The chaff is white, and the awns are long, white and spreading at maturity.

KERNELS. The kernels are large in size, red (NaOH reaction), and soft. The kernel cheeks are rounded with a narrow crease of medium depth. The brush hairs are of medium length. The germ is large in size and oval in shape. The phenol reaction of kernels ranges from ivory to brown.

Maintenance and Distribution of Pedigreed Seed

AC Copia has been released to Value Added Seeds for multiplication and distribution. Breeder seed originating from 133 breeder lines will be maintained by the Seed Increase Unit of the Experimental Farm, Indian Head, SK, S0G 2K0.

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