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CULTIVAR RELEASE

BRS Timbaúva – new wheat cultivar for low input level

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ABSTRACT - Wheat cultivar BRS Timbaúva was developed by Embrapa (Brazilian Agricultural Research Institution). It resulted from the cross of PF 869120 and BR 32. BRS Timbaúva has high rusticity and a good resistance to spike diseases.

Key words: wheat, cultivar, crop breeding.

INTRODUCTION

The situation of wheat culture in Brazil leads the breeding programs to create new cultivars with more resistance characteristics and good development in adverse conditions. The genetic wheat improvement program of the Embrapa aims at making wheat cultivars available to the production chain which are competitive at the agronomic level and suitable for the different segments of the milling industry in quality and use. BRS Timbaúva is a cultivar released in partnership with the Fundação Pró-Sementes de Apoio a Pesquisa and is included in the process of experimentation, marketing and distribution of the cultivars of Embrapa. A main trait of BRS Timbaúva is its rusticity, making it recommendable for regions of lower soil fertility and of lower technological level owing to its spike sanity.

ORIGIN OF BRS TIMBAÚVA

BRS Timbaúva was derived from the crossing of cultivar BR 32 and PF 869120, realized by the Embrapa Wheat, in nursery, in winter 1991. The F₁ generation was grown in the nursery in summer 1991/1992, in Passo Fundo, RS, and originated seeds of the F₂ population. In the same county, selections were realized in the F₂ and F₃ populations in the crops of winter 1992 and 1993, under field conditions and F₄ in nethouse, in summer 1993/1994, using the pedigree method. The F₅ generation was selected for resistance to leaf rust in greenhouse controlled conditions, in winter 1994. In this generation, all plants presented resistance to this disease. The generation of summer 1994/1995 was grown in the nethouse of Embrapa Wheat. In the winter of 1995 the experimental field plot 589924 was selected and originated the line PF 950419 (BRS Timbaúva). At the different stages of the selection process, after the threshing of the selected plants, the seeds were selected

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visually and the SDS sedimentation test value determined. In this period, further observations were realized and the plants selected for resistance to powdery mildew and leaf rust. BRS Timbaúva was registered for cultivation in 2004 for the state of Rio Grande do Sul (Comissão 2004) and extended to the states of Santa Catarina (regions 4 and 5), of Paraná (regions 7 and 8) and Mato Grosso do Sul (regions 9 and 10) in 2005 (Comissão 2005a,b).

MORPHOLOGIC TRAITS

It has an upright growth habit, small amounts of wax on the sheath and slight anthocyanin pigmentation. In relation to the morphologic descriptors, the flag leaf is in intermediate position, the auricles are colorless or slightly colored, the ears fusiform and pale, the grain egg-shaped and glassy dark red. In the trials of Differentiation, Homogeneity and Stability (DHE), it presented variations in auricle coloration; less than 1% of colored auricles were detected.

AGRONOMIC TRAITS

BRS Timbaúva belongs to the bioclimatic group of spring wheat. It has a mean plant height of about 97 cm, a trait that classifies it as a tall cultivar for current standards; nevertheless it is moderately lodging-resistant. The use of growth reducers is an interesting practice in the management of this genotype, if there is an interest in a greater investment, mainly in relation to nitrogen in higher quantities in topdressing. The mean vegetative cycle (from emergence until ripening stage) is around 87 days, and the total cycle (from emergence to maturation) varies from 141 to 146 days, according to the region of cultivation and the climatic conditions of the year. It performs acceptably regarding resistance to shattering, as it is moderately resistant, however moderately susceptible to pre-harvest sprouting and frost during the vegetative phase of the crop development. BRS Timbaúva is tolerant to acid soil toxicity.

REACTION TO MAIN DISEASES

Its performance in relation to the complex of wheat crop diseases is varied. BRS Timbaúva is moderately resistant to glume blotch disease (*Stagonospora*

nodorum), fusarium head blight (*Fusarium graminearum*) and the wheat mosaic virus; moderately susceptible to leaf rust (*Puccinia triticina*); and susceptible to leaf spots (yellow - *Dreschlera tritici repentis* and brown spots - *Bipolaris sorokiniana*). There is no consistent information about the performance for stem rust (*Puccinia graminis* f. sp. *tritici*), head blast (*Magnaporthe grysea*) and barley yellow dwarf virus (BYDV).

YIELD POTENTIAL

BRS Timbaúva presented a high grain yield mean in the years and sites when it participated in the VCU trial (determination of the Value for Cultivation and Use) of 3301 kg ha⁻¹, i.e., 13% superiority in relation to the mean of the controls BR 23 and CEP 24 in the same period and attained 16% superiority in 1999 (Table 1). Only in one of the evaluated environments did the cultivar present an inferior percentage to the control genotypes (county of Cruz Alta), where it attained 97% of the reference value (mean of the two controls). All trials taken into consideration presented a coefficient of variation below 20%, adequate for the use of the information for registration. Table 2 presents the data means obtained by the cultivar in the states of Santa Catarina, Paraná and Mato Grosso do Sul, which were used for the extension of cultivation. In the three years of evaluation, BRS Timbaúva presented 4% superiority over the mean of the cultivars Ônix and CEP 24 in Santa Catarina. In the state of Paraná and Mato Grosso do Sul it was superior by 8% and 2%, respectively; in these cases compared with the means of cultivars BR 18 and CD 104. Only in the adaptation region 5 (SC) did BRS Timbaúva not perform better than the considered controls.

QUALITY AND END USE

BRS Timbaúva was preliminarily classified as wheat of the Soft class ("Brando"). In alveography tests it presented a mean value of 157 10⁻⁴J, with a variation between 91 and 249 10⁻⁴J. In the electrophoresis for glutenins of high molecular weight (GHMW) it presents the bands 1, 2+12 and 7+9. The tenacity/extensibility of gluten (P/L ratio) is in the mean 1.25. It is indicated for the fabrication of crackers, cookies, dough of the home-made type and, in blends

Table 1. Mean grain yields of cultivar BRS Timbaúva in the years when it participated in the Use and Cultivation Value trial in the different environments of evaluation, using the controls BR 23 and CEP 24 as reference for its indication for cultivation.

Region ⁵	County	Year	BRS Timbaúva	Controls (kg ha ⁻¹)			% ³	CV ⁴
			kg ha ⁻¹	T ₁ ¹	T ₂	T _M ²	%	
1	Vacaria	1999	4109	3734	3488	3611	114	12.0
1	Cruz Alta	1999	3077	3356	3012	3184	97	8.7
1	Passo Fundo	1999	3282	3574	2912	3243	101	8.2
2	São Luiz Gonzaga	1999	3069	2340	2191	2266	135	10.4
2	São Borja	1999	3602	3368	1699	2534	142	11.8
Mean 1999				3428	3274	2660	2968	116
1	Vacaria	2000	3151	2617	2421	2519	125	11.6
1	Cruz Alta	2000	3230	2784	2827	2806	115	9.5
1	Passo Fundo	2000	3397	3217	3530	3374	101	8.1
2	São Luiz Gonzaga	2000	3108	2532	3027	2780	112	7.4
2	São Borja	2000	2982	2863	2981	2922	102	10.8
Mean 2000				3174	2803	2957	2880	110
General Mean			3301	3039	2809	2924	113	

¹T₁ = Wheat BR 23 and T₂ = Wheat CEP 24²T_M = Control means³Percentage of cultivar BRS Timbaúva in relation to the control means⁴CV = Coefficient of variation of each trial⁵Adaptation region for registration by the Ministry of Agriculture, Supply and Animal Husbandry**Table 2.** Mean grain yields (kg ha⁻¹) of the cultivar BRS Timbaúva in the years from 2002 to 2004, in the different adaptation regions outlined by the Ministério da Agricultura, Pecuária e Abastecimento (for each state), control means of reference in each state and relative percentage of the cultivar, used for an extension of the cultivation for the states of Santa Catarina, Paraná and Mato Grosso do Sul

Year	Santa Catarina (SC)			Paraná (PR)			Mato Grosso do Sul (MS)		
	Region	Region	Mean	Region	Region	Mean	Region	Region	Mean
	4	5	SC	7	8	PR	9	10	MS
2002		3199	3199	2173	1042	7952		9392	939
2003	2880	3966	3423	4346	5483	4725	2740	1852	2444
2004	3858	4948	4403	3698	5674	4357	2838	2371	2682
Mean BRS Timbaúva	3369	4037	3770	3666	4608	4058	2789	2387	2617
Control Means	3203 ¹	4131 ¹	3610 ¹	3407 ²	4264 ²	3764 ²	2722 ²	2334 ²	2555 ²
%*	105	98	104	108	108	108	102	102	102

¹ Mean of the controls Ônix and CEP 24² Mean of the controls BR 18 and CD 104

* Relation in percent between the mean grain yield of cultivar BRS Timbaúva and the mean of the controls considered in each state

with bread wheat, it can be used for bread baking and domestic use.

MAINTENANCE AND SEED DISTRIBUTION

BRS Timbaúva is registered and protected by

Ministry of Agriculture, Supply and Animal Husbandry (Ministério de Agricultura, Pecuária e Abastecimento - MAPA), respectively, labeled by numbers 12269 and 00573. Embrapa is responsible for the genetic seed of cultivar BRS Timbaúva, the Embrapa Foundation Seed (Serviço de Negócios para Transferência de Tecnologia

da Embrapa - SNT) is in charge of the basic seed and the Pró-Sementes Foundation (Fundação Pró-Sementes de Apoio à Pesquisa), in partnership with Embrapa, are responsible for certified seed.

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