



CULTIVAR RELEASE

MN 721 - barley cultivar

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Received 28 February 2005

Accepted 19 April 2005

ABSTRACT - 'Barley cultivar MN 721' was developed by Bebidas das Américas (American Beverage Company -AmBev) and released in 2004. It was result of the lines MN 657 x BR 2 in a single cross, shows broad adaptation and performs well in low fertility environments. It is recommended for southern Brazil.

Key words: malt, crop breeding, pedigree.

INTRODUCTION

The genetic improvement program of the Cia. Brasileira de Bebidas (Brazilian beverage company) has the aim of developing novel barley cultivars to promote the supply of this cereal in Brazil; target genotypes are productive and of high malt quality. Cultivar MN 721 represents a notable contribution to barley production in Brazil. Our study had the objective to provide the scientific community with information on the performance of this novel cultivar.

PEDIGREE AND IMPROVEMENT METHOD

'MN 721' was derived from a cross of line MN 657

and cultivar BR 2 by the Cia. Cervejeira Brahma in 1989. The genealogy pedigree of this cultivar combines genetic constitutions of good agronomic and qualitative traits, derived from cultivars developed by Embrapa and Brahma (Figure 1). The segregating generations until homozygosis were performed at the Estação Experimental de Encruzilhada. Mass selection was used until the F₄ generation and the genealogical method in the F₅ and F₆ generations. Line CEV 96033 was selected which originated cultivar MN 721. This line was evaluated in a preliminary trial in 1997, intermediary trial in 1998 and a VCU (Value for Cultivation and Use) trial in 1999, 2000 and 2001. In 2002, the cultivar underwent a qualitative evaluation at industrial scale (requirement for the release and acceptance by beer

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industries) at the malt house Maltaria Navegantes, in the district of Porto Alegre. In 2003, malt produced in this process was sent to the Centro de Desenvolvimento Tecnológico (CDT) in Guarulhos, state of São Paulo, for a sensorial and organoleptic evaluation of the beer. The cultivar was approved for commercial cultivation in 2004.

PERFORMANCE

Best yields of cultivar MN 721 were obtained in regions of high soil fertility and mild temperatures, such as Vacaria and Piratini in Rio Grande do Sul state. The cultivar however adapts smoothly to other regions, such as the Gaúcho tableland (Passo Fundo, Sertão, Tio Hugo, Não-Me-Toque) or center-state (Cachoeira do Sul) as well

– Table 1. In the four years of evaluation (1998 to 2001) in the different competition trials that included 13 environments, the cultivar obtained a mean grain yield of over 3.000 kg ha⁻¹, with 85% grains of over 2.5 mm. Its qualitative performance is appropriate for the industrial process regarding most of the considered items (Table 2), although the germination period for complete grain dissolution during the malting process is longer. The sensorial analysis of the beer produced with the malt obtained from seeds of the cultivar presented no limiting factor for industrial use. In 2004, the cultivar covered an area of 1800 ha. The favorable climate conditions boosted the expression of its productive potential and it was well-accepted by producers.

Table 1. Grain yield means (kg ha⁻¹) of cultivar MN 721 in the different evaluated environments, compared to the controls ‘MN 698’ (2000 and 2001) and ‘BR 2’ (1998 and 1999)

	2001		2000		1999		1998		Mean	
	MN 721	% C	MN 721	% C	MN 721	% C	MN 721	% C	MN 721	% C
V. Graeff	2.607	96							2.607	96
Control	2.715	100							2.715	100
Passo Fundo	2.359	100							2.359	100
Control	2.359	100							2.359	100
Ipiranga	4.617	118							4.617	118
Control	3.912	100							3.912	100
Sananduva	4.204	90	2.606	97	3.954	94			3.588	93
Control	4.671	100	2.686	100	4.206	100			3.858	100
Vacaria	3.515	107							3.515	107
Control	3.285	100							3.285	100
Piratini			3.669	105	4.472	97	5.335	108	4.294	99
Control			3.494	100	4.610	100	4.939	100	4.337	100
Encruzilhada					2.990	103	2.824	89	2.907	96
Control					2.902	100	3.173	100	3.028	100
Cachoeira					3.241	91			3.241	91
Control					3.561	100			3.561	100
Mean	3.460	102	2.841	92	3.664	96	4.080	100	3.391	100
Control	3.392	100	3.088	100	3.816	100	4.080	100	3.391	100

% C = proportion of cultivar in relation to control



Figure 1. Pedigree of MN 721

OTHER CHARACTERISTICS

Cultivar MN 721 is sensitive to soil acidity. Its growth habit is semi-prostrate, with narrow leaves (1 cm) and an intermediary tillering capacity (2 to 3 tillers). The vegetative cycle lasts on average 85 days with approximately 135 days from emergence to maturation. The plant structure presents moderate lodging resistance. The plant ears are characteristically lax, very similar to those of cultivar BR 2. The inflorescence is smaller than that of cultivar MN 698, and the calibre of the basal differs from

Table 2. Quality data of cultivar MN 721 observed in the industrial process at the malt house Maltaria Navegantes, Porto Alegre

Trait	Unit	MN 721	Specification
Protein content	%	11.5	from 10.5 to 12.5
Extract	%	80.6	Minimum 80.5
Diastatic power	Wk	230	Minimum 220
B-Glucanase	mg 100g ⁻¹	281	Maximum 180
Friability	%	76	Minimum 75

the apical grains. The cultivar attains a plant height of about 70-80 cm. In respect of diseases, 'MN 721' presents

moderate susceptibility to seedling blight (*Bipolaris sorokiniana*), susceptibility to powdery mildew (*Blumeria graminis* f. sp. *hordei*) and net blotch (*Pyrenophora teres*) and moderate resistance to leaf rust (*Puccinia hordei*).

MAINTENANCE AND SEED DISTRIBUTION

The Cia. Brasileira de Bebidas (AmBev) is in charge of the genetic seed of cultivar MN 721. The company itself commercializes the policed seed, besides grain producers and Cooperatives that supply barley in Brazil.