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CULTIVAR REALEASE MN 610 - barley cultivar

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ABSTRACT - Barley cultivar 'MN 610' was developed by Bebidas das Américas (American Beverage Company -AmBev). It was derived from a cross of the lines PFC 85104 x PFC 85106. 'MN 610' presents good adaptation and performs well in low-fertility environments. It is recommended for southern Brazil.

Key words: barley, cultivar, crop breeding.

INTRODUCTION

The genetic improvement program of the Cia. Brasileira de Bebidas aims at the development of new barley cultivars to back the supply of this cereal in Brazil. It therefore focuses on the achievement of productive cultivars in combination with a high malting quality. Cultivar MN 610 represents a noteworthy genetic progress in the productive chain of barley due to its association of favorable phenotypes with various important agronomical traits. Our study had the objective to provide the scientific community with information on the performance of this novel cultivar.

PEDIGREEAND IMPROVEMENT METHOD

MN 610 was result of crossing the lines PFC 85104 and PFC 85106, as realized by the Cia. Antárctica Paulista in 1991. The pedigree of this cultivar combines genetic constitutions of good agronomical and qualitative traits from the companies Embrapa and Brahma (Figure 1). The segregant generations up to homozygosis were conducted at the Experimental station of Lapa. Up to the F4 generation we used the mass method. In the F5 and F6 generations, the pedigree method was adopted. Line CEV 96010 was selected which originated cultivar MN610. This line was evaluated in a preliminary trial in 1999, in a regional trial in



Figure 1. Pedigree of MN 610

2000 and then for its Value of Cultivation and Use (VCU) in 2001 and 2002. Also in 2002, the cultivar underwent a qualitative evaluation at industrial scale (condition for the release and acceptance by the beer industries) in the brewery Maltaria Navegants, in Porto Alegre. The malt produced during the malting 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 approval of the cultivar for commercial cultivation came in 2003.

PERFORMANCE

Cultivar MN 610 attains best yields in cold regions above 600m asl, although it adapts very well to different environments, principally those considered marginal for the crop. In the different evaluation years its mean grain yield was superior to control MN 698 throughout. The general mean of superiority was 5% (Table 1). The cultivar presents a mean percentage of grains over 2.5 mm of around 85%. At the qualitative level, the cultivar presents an adequate performance for the malting process (Table 2), despite its beta-glucanase contents are superior to the specification and need to be adjusted for the process. The tests of all phases of the experiment (500 g), micromalting (800 kg) and industrial scale (150 t), attest the beer standard of the cultivar. The data of the line/cultivar are presented in studies referring to competition trials of the Comissão Brasileira de Pesquisa de Cevada, published annually (Antoniazzi et al. 1999, 2000, Sperotto and Caierão 2001, Caierão 2002). In 2004, the cultivar covered an area of 500 ha. The favorable climate conditions favored the

Table 1. Means of grain yield of cultivar MN 610 in the differentenvironments of evaluation with cultivar MN 698 (control) asreference

	VCU - 2002		VCU - 2001		Regional - 2000	
	MN	MN	MN	MN	MN	MN
-	610	698 t	610	698 t	610	698 t
Ipiranga do Sul (RS)	3266	3274	4829	4657	2988	2900
Victor Graeff (RS)	3151	3152	2858	3085	3693	3127
Lagoa Vermelha (RS)	3830	3945	3692	3905	3441	2686
Lapa (PR)	2733	2600	3061	2500	3216	3000
Overall mean	3245	3243	3610	3537	3335	2928

 Table 2. Qualitative data of cultivar MN 610 during in the industrial process realized in the brewery Maltaria Navegants, Porto Alegre

Trait	Unit	MN 610	specification
Protein content	%	11.3	from 10.5 to 12.5
Extract	%	80.6	Minimum 80.5
Diastatic power	Wk	268.2	Minimum 220
â-glucanase	mg/100g	345.5	Maximum 180
Friability	%	75	Minimum 75

expression of the productive potential and it was wellaccepted by the producers.

OTHER TRAITS

Cultivar MN 610 is recommended for the states Rio Grande do Sul, Santa Catarina and Paraná. It has a semiupright growth habit, narrow leaves and an intermediate tillering capacity. Its vegetative cycle lasts on average 90 days with, approximately, 130 days from emergence to maturation. The plant architecture ensures a moderate lodging-resistance so qualitative loss only occurs under highly adverse conditions (rain, low light incidence and wind). The ear is characterized by laxa. Compared to the inflorescence of cultivar MN 698, it is smaller, with a difference in the size of the basal in relation to the apical grains. Its height is intermediate (70-80 cm) and it stands out for its remarkable adaptation capacity to the different regions of the states Rio Grande do Sul and Paraná, where it is recommended. Towards diseases, cultivar MN 610 presents moderate resistance in the case of powdery mildew (Blumeria graminis f. sp. Hordei) and leaf rust (Puccinia hordei); and susceptibility to Fusarium head blight (Fusarium sp.) and Common root rot and seedling blight caused by Bipolaris sorokiniana.

SEED MAINTENANCE AND DISTRIBUTTION

The Cia. Brasileira de bebidas (AmBev) is in charge of the genetic seed of cultivar MN 610. The seed trade is

supervised by the Company itself, furthermore by grain producers and cooperatives that supply barley in Brazil.

REFERENCES

- Antoniazzi N, Arias G and Minella E (2000) Ensaio Intermediário de Cevada. In: 20th Reunião Anual de Pesquisa de Cevada. Embrapa-CNPT, Passo Fundo, p. 168-184.
- Antoniazzi N, Arias G and Minella E (1999) Ensaios CEV de Cevada, Lapa, PR - 1998. In: 19 th Reunião Anual de Pesquisa de Cevada. Embrapa-CNPT, Passo Fundo, p. 138-148.
- Caierão E (2002) Ensaios finais conduzidos pela AmBev em 2001, 2002. In: 22 th Reunião Anual de Pesquisa de Cevada. Embrapa-CNPT, Passo Fundo, p. 281-299.
- Sperotto A and Caierão E (2001) Ensaios finais de cevada conduzidos pela Ambev em Piratini, Sananduva, Papanduva, Campos Novos e Lapa - 2000, 2001. In: 21 th Reunião Anual de Pesquisa de Cevada. Cooperativa Agrária, Guarapuava, p. 295-308.