



## CD 114 - Wheat cultivar for colder regions

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**ABSTRACT** - Developed by COODETEC CD 114 was indicated for cultivation in the states of Paraná and Rio Grande do Sul. The plant height is low, sanity conditions and industrial quality good. It averages a grain yield of 3,269 kg ha<sup>-1</sup> in the state of Paraná and of 3,087 kg ha<sup>-1</sup> in the state of Rio Grande do Sul.

**Key words:** grain yield, wheat cultivar, CD 114.

### INTRODUCTION

The yield increase is result of the use of improved cultivars, favorable environment conditions and the implementation of appropriate technologies for the different wheat-growing regions. According to Carvalho et al. (2003), the development of new cultivars that meet the demand of a greater genetic potential for yield is the main goal of any breeding program. In this sense, the wheat breeding program of COODETEC targets the development of cultivars adapted to the main wheat-producing regions of Brazil. The excellent grain yield potential, low plant height, as well as good sanity conditions and industrial quality indicate the new cultivar CD 114 for the southern region of Brazil.

### PEDIGREE AND BREEDING METHODS

The new wheat cultivar CD 114 was developed by COODETEC (Figure 1). F<sub>1</sub> seeds were obtained by a

crossing of the parents PF 89232 and OC 938. The F<sub>2</sub> population underwent mass selection and the populations F<sub>3</sub> and F<sub>4</sub> modified mass selection, which consists in the selection of the best plants. The seeds of these plants are mixed and used to establish the next generation. The F<sub>5</sub> and F<sub>6</sub> populations were selected by the pedigree method, which consists in the selection of plants whose seeds are used to establish a new population in the following generation. The F<sub>7</sub> populations were selected by the mass method, which originated several sib lines. Cultivar CD 114 was derived from the best one (pedigree CO13460-00P-00P-00V-8T-0T).

### PERFORMANCE

Upon evaluation in preliminary trials, trials to determine the Value for Cultivation and Use (VCU) were realized in 2001, 2002 and 2003, at different places and in different seasons of the regions of adaptation 6

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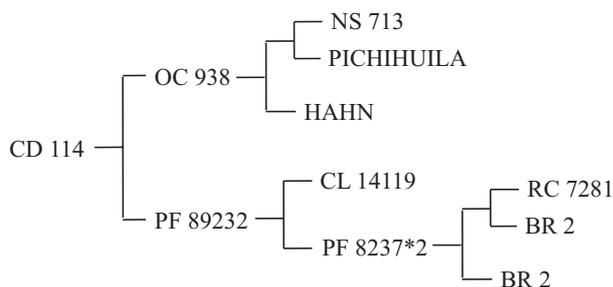


Figure 1. Pedigree of the new cultivar CD 114

(North), 7 (Central West) and 8 (Central South) of the state of Paraná (Figure 2), with the acronym CD 200132. The design used in the VCU trials consisted in randomized blocks with three replications. The 25 treatments were sown on plots of 6 rows spaced 0.2 cm apart, 5 m long, making up 6 m<sup>2</sup>. Values that were 26% and 18% higher than the control means were found for grain yield in the regions 2 and 3 of the state of Rio Grande do Sul, respectively (Table 2). Table 3 shows the mean grain yield in the regions 6, 7 and 8 of the state of Paraná, where the new cultivar CD 114 presented 10%, 13% and 15% higher grain yields than the control means, respectively, in the three regions. The good performance of the new cultivar CD 114 indicated it for



Figure 2. Regions of adaptation for trials that determine the Value for Cultivation and Use (VCU)

cultivation in the wheat-growing regions 2 and 3 of the state of Rio Grande do Sul and 6, 7 and 8 of the state of Paraná (Rcsbpt, 2005; Rccsbpt, 2005). The cultivar was, registered by the Serviço Nacional de Proteção de Cultivares do Ministério da Agricultura, index nr. 00553, as of February 18, 2004 (Mapa, 2005). In 2005, the recommendation for cultivation was extended to the regions 1 of the state of Rio Grande do Sul and 4 and 5 of the state of Santa Catarina (Figure 2).

### OTHER TRAITS

The new CD 114 cultivar is moderately resistant to lodging, moderately susceptible to pre-harvest sprouting and moderately tolerant to aluminum soil toxicity. The analysis of industrial quality, based on 4 samples of experimentation in the state, attained mean general gluten strength (W) value of 244, which included CD 114 in the group of bread wheat cultivars, with a mean hectoliter weight of 77 kg.hL<sup>-1</sup> and weight of 1000 grains of 36 g (Table 1). The strong points of the new cultivar CD 114 are the excellent grain yield potential, low plant height, good sanity conditions and good industrial quality. (Franco et al. 2004). The plant height of the new cultivar CD 114 is low, varying between 65 and 85 cm, and the cycle is mean, between 62 to 86 days from emergence to flowering and 110 to 136 days from emergence to maturation (Table 1). The means of these traits were 73 cm, 69 days and 125 days, respectively, which vary according to climate conditions, sowing season and soil type. The field experiments of 1999 through 2003 allowed us to record information about the occurrence of different wheat diseases in Brazil. Powdery mildew (*Erysiphe graminis tritici*) attack was observed with mean to low severity which expresses moderate susceptibility. The cultivar was further susceptible to head blight (*Fusarium graminearum*), spot blotch (*Bipolaris sorokiniana*) and speckled leaf blotch (*Septoria tritici* and *S. Nodorum*). Severity indices of leaf spot and glume blotch were determined, which classified the new cultivar as moderately susceptible. The mean severity, in the evaluation of leaf rust (*Puccinia recondita* f. Sp. *Tritic*), was low in field conditions, indicating that the new cultivar is moderately

**Table 1.** Means of days from emergence to flowering (EF), days from emergence to maturation (EM), plant height (PH), hectoliter weight (HW), weight of 1000 grains (WG), general gluten strength (GW), leaf rust (LR), leaf spot (LS) and powdery mildew of the leaf (PM) of the new cultivar CD 114 and the controls, in the VCU trials conducted in the Regions 6, 7 and 8 of Paraná between 2001 and 2003

Cultivar	EF (days)	EM (days)	PH (cm)	HW (kg.hL <sup>-1</sup> )	WG (g)	GW (10 <sup>-4</sup> J)	LR (%)	LS (score) <sup>1</sup>	PM (score) <sup>1</sup>
CD 114	69	125	73	77	36	244	2	2.2	1.1
T. BR 18 T.	64	120	75	77	41	266	10	2.6	1.0
IAPAR 53	74	126	79	76	38	230	39	3.4	1.1
CEP 24	73	129	96	75	39	248	9	1.5	0.9
Mean (T)	70	125	83	76	39	248	19	2.5	1.0

<sup>1</sup>Score scale of 1 to 9

**Table 2.** Mean grain yield (kg ha<sup>-1</sup>) of the new cultivar CD 114 and the controls in the wheat-growing regions 2 and 3 of the state of Rio Grande do Sul, from 2001 to 2003

Cultivar	Region 2				Region 3			
	2001	2002	2003	Mean	2001	2002	2003	Mean
CD 114	2213	2881	4068	3054	2859	2479	4021	3120
Mean (T)	1887	2059	3319	2422	2707	1814	3440	2654

\*The controls used in the comparison were CEP 24 and FUNDACEP 27

resistant. CD 114 was classified as moderately resistant to wheat mosaic virus. This disease occurs, according to Reis et al. (2001), mainly in the colder regions of Rio Grande do Sul and the Campos Gerais region of Paraná, where it can be detected on entire plantations or most commonly in thickets.

## SEED MAINTENANCE AND DISTRIBUTION

COODETEC (BR 467 - km 98 - Caixa Postal 301 - CEP.85813-450 - Cascavel/PR, Brazil) is licensor of protected cultivars according to law nr. 9456/97. The institution contracts seed companies for multiplication and trade. Besides, regional representatives work under the supervision of specific administration to promote seed commercialization and distribution.

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