

Use of Embrapa germ plasm in Brazilian wheat breeding programs.

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Embrapa has about 25% of wheat seed market in Brazil. The wheat breeding program of Embrapa started in 1974 and, since that time, more than 100 new cultivars have been released. Since 2005, the number of recommended wheat cultivars in Brazil is over 100; only in 2009 was the number lower (Table 8). The number of cultivars that use Embrapa germ plasm (NCWEG) in this period range according to new releases and retry of materials. The relationship between indicated cultivars and NCWEG was 65.4%, 65.4%, 64.9%, 62.3%, 64.9%, 65.0%, 71.3%, and 71.8%. In 2012, more than 71% of the wheat cultivars recommended to producers had at least one Embrapa's genotype in your genealogy.

Table 8. Wheat cultivars indicated by Brazilian breeding institutions for cultivation, from 2005 to 2012; number of cultivars indicated with Embrapa germ plasm (NCWEG) in the genealogy and percent of use (% USE). Passo Fundo, RS, Brazil, 2013.

	2005	2006	2007	2008	2009	2010	2011	2012	Mean
Indicated cultivars	104	104	111	106	94	100	101	110	104
NCWEG	68	68	72	66	61	65	72	79	69
% UGE	65.4	65.4	64.9	62.3	64.9	65.0	71.3	71.8	66.4

Pyramiding genes for tolerance to preharvest wheat sprouting by backcrossing.

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A study of gene pyramiding for tolerance to preharvest sprouting into new wheat lines began in July 2011, at Embrapa Trigo, through the backcross method. The study obtained and evaluated the first generation backcross (BC_1) originated from a cross between contrasting wheat germ plasm for tolerance to preharvest sprouting. The study was conducted at Embrapa Trigo in Passo Fundo, RS. The recurrent parental was the cultivar BRS Pardela. As parental donors, we used the cultivars Lagoa Vermelha and Syrimex. Crosses were made between the recurrent and the donors, and then the F_1 was backcrossed with the recurrent parent to produce the BC_1 . Seeds of the BC_1 were evaluated for tolerance to preharvest sprouting by a germination test. For this test, the seeds were sown on RC1 germitest paper moistened and placed in a Mangelsdorf germination chamber at $20^\circ\text{C} \pm 2^\circ\text{C}$. On the third and fourth day after sowing (72 and 96 hours), counts were performed and germinated seeds removed. The remaining seeds were sown in plastic pots under greenhouse conditions in order to give rise the next generation of backcrossing. The methodology applied in this study was effective for discriminating BC_1 populations with regard to the level of tolerance for preharvest sprouting. By this method, 20% to 40% of the BC_1 seeds were eliminated (Fig. 1). Removing a greater number of seeds enhances the probability of making the next backcross with plants with good tolerance to preharvest sprouting. Thus, the cross 'Pardela BRS/Syrimex' was more efficient in selection; more than 40% of the seeds were eliminated. On the other hand, the cross 'BRS Pardela/Lagoa Vermelha' proved to have promising cross-tolerance to preharvest sprouting, because approximately 80% of the seeds did not germinate, even after 96 hours of germination treatment.

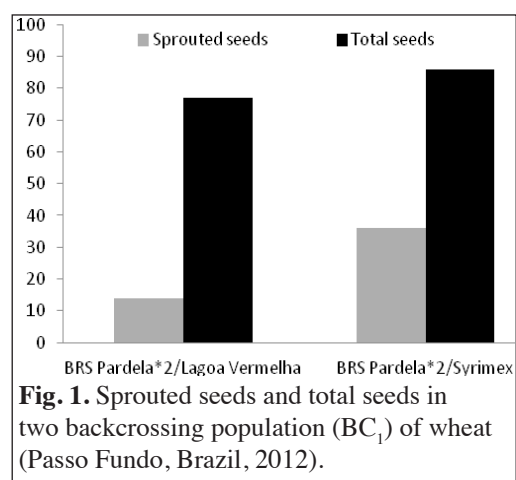


Fig. 1. Sprouted seeds and total seeds in two backcrossing population (BC_1) of wheat (Passo Fundo, Brazil, 2012).