BRS 154, a soybean cultivar of broad adaptation

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ABSTRACT

The soybean [*Glycine max* (L.) Merrill] cultivar BRS 154, originated from a crossing between Embrapa 1 x Braxton, was developed by Embrapa Wheat along with Embrapa Soybean. The cultivar BRS 154 was released in 1998 and designed to be cropped in southern Brazil. It has a high yield potential and good adaptation under no-tillage. It has field resistance to soybean stem canker, caused by *Diaporthe phaseolorum* f. sp. *meridionalis*, and is resistant to brown stem rot, caused by *Phialophora gregata*, frogeye leaf spot, caused by *Cercospora sojina*, powdery mildew, caused by *Microsphaera diffusa*, and bacterial pustule, caused by *Xanthomonas axonopodis* pv. *glycines*.

KEY WORDS: *Glycine max*, cultivar description, plant breeding.

INTRODUCTION

The soybean [*Glycine max* (L.) Merrill] breeding program under way at Embrapa Wheat of Passo Fundo, RS, has the objective of supplying farmers with new, productive soybean cultivars, resistant and adapted to different cropping systems. Pursuant with these objectives, an Embrapa 1 x Braxton crossing was made. Embrapa 1 is descendent from IAS 5 and Braxton from Bragg, two cultivars highly adapted to cropping in southern Brazil.

PEDIGREE AND BREEDING METHODS

The cross (Figure 1) between Embrapa 1 and the North American cultivar Braxton was made during the 1985/86 season, at Embrapa Soybean, Londrina, PR. The F_1 plants were grown in the greenhouse, the F_2 generation was cultivated in the field, and the harvest was carried out by single seed descent method (SSD). The F_3 generation plants were harvested in bulk, having the designation BRB 91-23. During the 1990/1991 season, in F_3, the plants were grown at Embrapa Wheat, using the bulk method to advance the generation. During the 1992/1993 season, in F_5, the individual plant was selected, being evaluated as a progeny in the 1993/1994 season, in F_6, with the name of PF 93123. From F_7 generation on, BRS 154 cultivar was included in several regional trials conducted in the states of Rio Grande do Sul (RS), Santa Catarina (SC), and Paraná (PR). The BRS 154 cultivar was released in 1998.

PERFORMANCE

In the state of RS, the cultivar BRS 154 was evaluated in five environments in the 1995/1996 season, in eight environments in the 1996/1997 season, and in six environments in the 1997/1998 season (Table 1). In these 19 environments, BRS 154 showed average yield of 3,270 kg/ha, reflecting a 8.0 % higher yield, compared to BR-16, which presented yield of 2,928 kg/ha and a 6.0 % increase, compared to RS 7-Jacuí. In SC state, BRS 154 showed average yield of 3,177 kg/ha, in 11 environments, indicating a 8.5 % higher yield, compared to BR-16, which presented yield of 2,928 kg/ha. In PR state, in 20 environments, during two years of experiments, BRS 154 reached a grain yield of 3,476 kg/ha, which corresponds to 1.0 and 3.0 % superior, respectively, to Embrapa 59 and Ocepar 13.

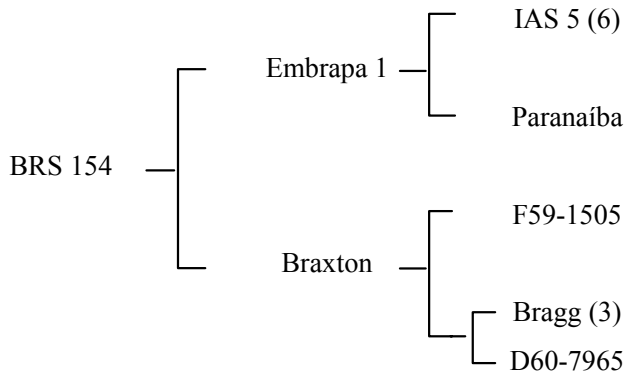

Figure 1. BRS 154 pedigree.

OTHER CHARACTERISTICS

BRS 154 has white flowers, tawny pubescence, determinate plant type, big seeds with good growing quality, shiny yellow seed coat, and black hila. Plant height exceeds 80 cm, with high resistance to lodging (Table 2). It presents adaptation under no-tillage. It is a medium-maturing cultivar. BRS 154 has resistance to brown stem rot, caused by *Phialophora gregata*, frogeye leaf spot, caused by *Cercospora sojina*, bacterial pustule, caused by *Xanthomonas axonopodis* pv. *glycines*, and powdery mildew, caused by *Microsphaera diffusa*, and it has field resistance to soybean stem canker, caused by *Diaporthe phaseolorum* f. sp. *meridionalis*. The resistance of BRS 154 to soybean stem canker was tested at Embrapa Wheat under field conditions during four consecutive seasons (Costamilan et al., 1998). According to Weaver et al. (1984), Braxton was virtually immune to soybean stem canker in natural infestation in the field. The soybean cultivar BRS 154 is indicated for sowing in RS, SC, and PR states. It is protected by the National Service for Cultivar Protection of the Ministry of Agriculture, under number CP 00061 (Ministério da Agricultura e do Abastecimento, 1999).

Table 1. Performance of BRS 154 and control cultivars in the states of Rio Grande do Sul, 1995/96 to 1997/98 seasons, Santa Catarina, 1996/97 to 1998/99 seasons, and Paraná, 1999/2000 to 2000/2001 seasons. Embrapa Wheat, Passo Fundo, RS, Brazil.

Cultivar	Yield (kg/ha)		
	RS	SC	PR
BRS 154	3,270	3,177	3,476
BR-16	3,031	2,928	-
RS 7-Jacuí	3,095	-	-
Embrapa 59	-	-	3,410
Ocepar 13	-	-	3,370
Number of environments	19	11	20

Table 2. Characteristics of soybean cultivar BRS 154 and control cultivars in the states of Rio Grande do Sul, 1995/96 to 1997/98 seasons, Santa Catarina, 1996/97 to 1998/99 seasons, and Paraná, 1999/2000 to 2000/2001 seasons. Embrapa Wheat, Passo Fundo, RS, Brazil.

Cultivar	Characteristic								
	Maturity (days)			Plant height (cm)			Lodging (notes 1-5)		
	RS	SC	PR	RS	SC	PR	RS	SC	PR
BRS 154	134	134	132	81	94	90	1.1	1.1	1.6
BR-16	132	128	-	81	86	-	1.2	1.2	-
RS 7-Jacuí	135	-	-	73	-	-	1.2	-	-
Embrapa 59	-	-	132	-	-	84	-	-	2.3
Ocepar 13	-	-	128	-	-	76	-	-	1.8

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Received: November 11, 2001;
Accepted: December 12, 2001.