



'BRS Requite': new common bean Carioca cultivar with delayed grain darkness

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ABSTRACT - BRS Requite was derived from the cross Carioca MG//POT 94/AN 910523 by Embrapa Rice and Beans. It was released in 2003 for dry and winter season cultivation in the States of Goiás/Distrito Federal, Mato Grosso, Mato Grosso do Sul and Minas Gerais, for its distinguishing properties in productivity, plant architecture, and disease resistance.

Key words: *Phaseolus vulgaris*, plant breeding, cultivar description, seed production.

INTRODUCTION

Common bean constitutes the basic vegetal protein food in the Brazilian's daily diet, with a *in natura* consumption of 16 kg inhabitant⁻¹ year⁻¹. This leguminous crop is cultivated all year long, in several diverse ecosystems, covering about 2.69 million ha, producing 2.34 million tons. These data classify Brazil as the largest common bean producer and consumer of the world. Usually, the Brazilian production has been sufficient to feed the internal market, with exception of the black and white beans, which are imported by an average 80 and 20 thousand tons year⁻¹, respectively.

Brazil has well-defined regions regarding the population's preference for a certain grain type, including traits such as size, color, form, shining, darkening, and cooking quality. The favorite grain type is carioca, which makes up

around 70% of the total bean consumption. One of the main problems faced by the carioca grain type producers is the fast darkening of the grain tegument, economically depreciating the product and impeding its storage over long periods, which is a great drawback for farmers.

CULTIVAR ORIGIN AND DEVELOPMENT

The cultivar BRS Requite was derived from the cross Carioca MG//POT 94/AN 910523 by Embrapa Rice and Beans. The F₂ to F₄ population was advanced in bulk. The F₅ population was planted at Embrapa Rice and Beans and inoculated with the pathotype 89 of *Colletotrichum lindemuthianum*. Plants were selected individually, based on earliness, plant vigor, and disease reaction. From the F₆ families, line LM 95102682 was selected for its productivity, architecture, and disease resistance.

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PERFORMANCE

In 1997, LM 95102682 and 42 other lines were evaluated in the National Bean Trial carried out in 11 environments, in the Brazilian States of Goiás (2), Mato Grosso (1), Mato Grosso do Sul (3), Minas Gerais (1), Bahia (1), Pernambuco (2) and Espírito Santo (1).

The joint analysis of yield and other agronomic traits distinguished the line LM 95102682, which was promoted to the Regional Bean Trial of 1999/2000. The line was evaluated with 12 others and five checks in this trial, in a randomized complete block design with four replications using the recommended technologies for the different cultivation systems, in a total of 29 environments in the States of Goiás (10), Distrito Federal (1), Minas Gerais (13), Mato Grosso (2) and Mato Grosso do Sul (3).

In the 29 regional trials, line LM 95102682 outstripped the checks by 8.4% (Table 1). Based on these results it was released in 2003 under the trade name BRS Requite, for cultivation in the States of Goiás/Distrito Federal, Mato Grosso, Mato Grosso do Sul, and Minas Gerais, during the dry and winter seasons (Faria et al. 2003).

OTHER CHARACTERISTICS

Technological and industrial grain quality

BRS Requite has a very regular grain color, excellent cooking quality (Table 2), and a mean seed weight of 24.0 g 100 seed⁻¹. BRS Requite has the advantage of maintaining the grain tegument color without major alterations for a longer period than the checks.

Reaction to diseases

Under artificial inoculation, the cultivar BRS Requite showed to be resistant to the common bean mosaic virus and resistant to 9 (1, 55, 69, 73, 87, 89, 95, 102, 117), intermediate to 7 (23, 65, 71, 79, 81, 97, 343), and susceptible to 7 (7, 64, 77, 97, 321, 453, 2047) *C. lindemuthianum* pathotypes, respectively. In the field trials, it was susceptible to angular leaf spot, rust and common bacterial blight.

Plant type and resistance to lodging

This cultivar has a semi-prostrate growth habit, low resistance to plant lodging in most tested bean production systems, and grows from the seedling stage to physiological maturity within 87 days.

Table 1. Yield of the cultivar BRS Requite compared to the mean of control cultivars in the years 1999 and 2000

Region	State	BRS Requite	Mean of controls ¹	Relative yield	Number of sites
		— kg ha ⁻¹ —	— kg ha ⁻¹ —	— % —	
southeast	Minas Gerais	3069	2820	110.3	13
	Goiás/Distrito Federal	2797	2818	100.5	11
	Mato Grosso	1381	1259	114.7	2
center west	Mato Grosso do Sul	1997	1735	120.7	3
Mean		2709	2574	108.4	

¹Controls: Pérola and Iapar 81

Table 2. Technological and industrial grain quality of the common bean cultivar BRS Requite compared to other cultivars of carioca grain type

Cultivar	Cooking time minutes	Soluble solids %	Protein %
BRS Requite	22.0	10.0	20.1
Pérola	29.0	9.6	21.3
Iapar 81	29.0	9.4	21.0

CONCLUSION

Due to its high yielding potential, excellent grain quality with delayed grain darkness and resistance to some important diseases, BRS Requite is a new option for carioca bean growers in the States of Goiás, Distrito Federal, Mato Grosso, Mato Grosso do Sul and Minas Gerais, during the dry and winter seasons.

SEED PRODUCTION

Genetic seed stocks are maintained by Embrapa Rice and Beans and foundation seed is available at Embrapa Technology and Transfer.

PARTNER INSTITUTIONS IN THE CULTIVAR ASSESSMENT

Embrapa Arroz e Feijão; Embrapa Milho e Sorgo; Embrapa Cerrados; Empaer-MT; Agenciarrural-GO; Universidade Federal de Viçosa; Universidade Federal de Lavras; Fesurv/Esucarv; Idaterra-MS and TecAgro - Tecnologia em Agricultura Ltda.

REFERENCES

Faria LC, Costa JGC, Rava CA, Del Peloso MJ, Melo LC, Carneiro GES, Soares DM, Cabrera Díaz JL, Abreu AFB, Faria JC, Sartorato A, Silva HT, Bassinello PZ and Zimmermann FJP (2003) **BRS Requite: nova cultivar de feijoeiro comum de tipo de grão carioca com retardamento do escurecimento do grão**. Embrapa Arroz e Feijão, Santo Antônio de Goiás, 4p. (Comunicado Técnico 65).