

## 'BRS Radiante' - sugar common bean

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### ABSTRACT

'BRS Radiante', developed by Embrapa Rice & Beans, has been indicated for cropping in the states of Goiás/Distrito Federal, Mato Grosso do Sul and Minas Gerais since 2002. It can be commercially classified as striped colored grain type and presents superior agronomic traits such as yield potential, wide adaptation, good grain quality, erect plant type and resistance to lodging.

**KEY WORDS:** *Phaseolus vulgaris*, cultivar recommendation, seed production.

### INTRODUCTION

Common beans are an important protein source in the Brazilian diet and represent a *per capita* consumption of 16 kg *in natura*/year. Brazil traditionally consumes small grains of the commercial carioca, rosinha, roxinho, mulatinho and black grain types. Beans with large and colored grains are cultivated on a smaller scale and the demand is limited to regional levels, reaching prices higher than the small seeded varieties. Advantages presented by the production of large grain types may contribute to diversify market opportunities to the Brazilian consumer as well as to allow exportation of production surplus, which is not possible for the predominant small grain types presently cropped in the country.

Developing, assessing and indicating new common bean cultivars that widen the offer of varied grain types may represent interesting value added alternatives and has been considered among the priorities focused by the genetic breeding program at Embrapa Rice & Beans. As a consequence, PR 93201472 line has been developed, presenting large grains, belonging to the sugar bean group, referred to by the trade name 'BRS Radiante' and recommended to the states of Goiás/Distrito Federal, Mato Grosso do Sul and Minas Gerais, since 2002.

### CULTIVAR ORIGIN AND DEVELOPMENT

The 'BRS Radiante' derived from the biparental cross between Pompadour and Iraí, made at Embrapa Rice

& Beans. The bulk method was used during the F2 and F3 generations. In F4, after inoculation with the *Colletotrichum lindemuthianum* 89 pathogen (race Alpha Brazil), modified mass selection was performed and susceptible plants were eliminated. One pod per plant was collected from the remaining resistant plants to reconstitute the population. In the F5 generation the same selection procedure was used, plants were harvested individually originating the F6 families from where the PR 93201472 line was selected based on grain yield and erect plant type. In 1995 this line was assessed together with additional 16 lines and four controls in the National Trial, conducted under six environments, in the states of Goiás (2), Mato Grosso do Sul (1), Minas Gerais (1) and Espírito Santo (2). The joint analysis of the grain yield data and other agronomic characteristics provided the elements to promote PR 93201472 to the Regional Trial during the 1997/98 crop season, known as the Crop and Use Value Experiment (VCU). This time, PR 93201472 was assessed with eight additional lines and four controls in a randomized complete block design with four replications. Plots were composed of four 4 m rows using the technologies recommended for the different cropping systems, in a total of 14 environments in the states of Goiás (4), Distrito Federal (1), Minas Gerais (4) and Mato Grosso do Sul (5).

In 14 VCU experiments, PR 93201472 average grain yield was 4.6% superior than the controls (Table 1). Based on these data it was indicated with the trade name of 'BRS Radiante' for the states of Goiás/Distrito Federal, Mato Grosso do Sul and Minas Gerais.

**Table 1.** Grain yield of 'BRS Radiante' as compared to average values obtained for the two best controls in the VCU experiments 1997-1998.

Region	State	BRS Radiante (kg/ha)	Controls <sup>1/</sup> average yield (kg/ha)	Relative yield (%)	Number of locations
Sudeste	MG	2.601	2.559	101.6	4
Centro Oeste	GO/DF	2.877	2.720	105.8	5
	MS	1.697	1.586	107.0	5
Média	-	2.440	2.332	104.6	

<sup>1/</sup>Controls: Iraí and Roxo 90.

## OTHER CHARACTERISTICS

### Grain technological and industrial qualities

'BRS Radiante' has uniform grain size and color, average 100 grain mass of 43.5g (large grains), excellent cooking quality and good grain appearance after cooked (Table 2).

### Reaction to diseases

'BRS Radiante' is resistant to common mosaic under artificial inoculation. It also presents resistant reaction to the following anthracnose pathotypes: 89 (Alpha Brazil) 585 (Alpha Brazil TU susceptible) and 95 (Kappa). In the field trials, it presented intermediate reaction to rust, oidium tolerance, susceptibility to common bacterial blight and angular leaf spot.

### Plant type and resistance to lodging

'BRS Radiante' presented erect plant type in any crop system and under a variety of soil and climate conditions where it was evaluated. It also presented good lodging resistance throughout its cycle of 80 days, in average, from emergence to physiological maturity.

## CONCLUSION

The colored stripped bean cultivar 'BRS Radiante'

due to its superior yield potential and large grains, associated to excellent cooking performance, erect plant type and resistance to lodging, is an interesting option for producers involved with specialty sugar bean grain type production, providing a value added commodity for commercialization in the states of Goiás/Distrito Federal, Mato Grosso do Sul and Minas Gerais.

## SEED PRODUCTION

The genetic seed of the 'BRS Radiante' cultivar is produced by Embrapa Rice & Beans and the basic seed is commercialized by Embrapa Negócios para Transferência de Tecnologia.

## PARTNER INSTITUTIONS IN THE CULTIVAR ASSESSMENT

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**Table 2.** Grain technological and industrial qualities of cultivar 'BRS Radiante'.

Cultivar	Cooking time (minutes)	Water absorption (%)	Solid solute (%)	Whole grains (%)	Broth color	Protein (%)
BRS Radiante	38.10	103.9	9.4	98	Brown	19.4

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9. Cooperativa Agropecuária da Região do Piratinga Ltda. (Coopertinga)
10. Fundação de Ensino Superior de Rio Verde (FESURV/ESUCARV)

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Received: December 18, 2002;

Accepted: May 16, 2003.