



'BRS Campeiro': New black bean cultivar for the South of Brazil

José Eustáquio de Souza Carneiro¹, Luís Cláudio de Faria^{2*}, Pedro Antonio Arraes Pereira², Maria José Del Peloso², Carlos Agustín Rava², Joaquim Geraldo Cáprio da Costa², Geraldo Estevam de Souza Carneiro³, Dino Magalhães Soares², José Luiz Cabrera Díaz², Leonardo Cunha Melo², Airton Nonemacher de Mesquita⁴, Josias Correa de Faria², Heloísa Torres da Silva², Aloisio Sartorato², Priscila Zaczuk Bassinello², and Francisco José Pfeilsticker Zimmermann²

Received 30 March 2004

Accepted 15 May 2004

ABSTRACT - 'BRS Campeiro' is the result of a mutational program developed by Embrapa Rice and Beans and the Nuclear Energy Center for Agriculture of the University of São Paulo. This cultivar, with an upright growth, superior yield potential, black seeds, and excellent cooking quality was released in 2003 for cultivation in the southern region of Brazil.

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

INTRODUCTION

Common bean is an important protein source for Brazilian people, especially for those of low income, with a per capita consumption of 13.6 kg year⁻¹ and a total production of 2.37 million tons in 2001/2002. These numbers rank Brazil as the largest producer and consumer of common beans worldwide. There are regional preferences regarding seed color. The carioca type is predominant all over the country, while black beans cover 17% of the overall consumption, mainly in the State of Rio de Janeiro and the southern states.

CULTIVAR ORIGIN AND DEVELOPMENT

The cultivar BRS Campeiro is result of a mutational program aiming at an alteration of the tegument color of cultivar

Corrente, developed by Embrapa Rice and Beans. Seeds of the cream-colored cultivar Corrente were submitted to gamma radiation at the Nuclear Energy Center for Agriculture (CENA) at the University of São Paulo, Piracicaba, State of São Paulo. Progenies were then selected from M₁ to M₆ at Embrapa Rice and Beans for seed type and plant architecture by the pedigree method of breeding associated to bulk selection. Some breeding lines were selected at the initial steps and evaluated in replicated trials. Among these, line MT 95202057 (CNFP 8104) stood out with black seed, upright growth, and superior yield potential (Carneiro et al. 2003).

PERFORMANCE

In 34 field cultivar trials conducted in the South of Brazil, the average grain yield of MT 95202057 (CNFC 8104) was 32% greater than that of the control cultivars (Table 1).

¹Departamento de Fitotecnia, Universidade Federal de Viçosa, 36570-000, Viçosa, MG, Brasil

²Núcleo de Desenvolvimento de Cultivares de Feijão, Embrapa Arroz e Feijão, C.P. 179, 75375-000, Santo Antônio de Goiás, GO, Brasil.

*E-mail: lcfaria@cnpaf.embrapa.br

³Embrapa Soja, C.P. 231, 86001-970, Londrina, PR, Brasil

⁴Embrapa Trigo, C.P. 569, 99001-970, Passo Fundo, RS, Brasil

Based on these results, 'BRS Campeiro' was released in 2003 for cultivation in the South of Brazil for wet as well as for dry crop seasons.

OTHER CHARACTERISTICS

Technological and industrial grain quality.

The grain color of cultivar BRS Campeiro is perfectly uniform and 100 grains have a mass of 25.4 g, besides a high cooking quality (Table 2).

Reaction to diseases

Under artificial inoculation, 'BRS Campeiro' shows resistance reaction to the bean common mosaic virus (I gene) and intermediate reaction to the *Colletotrichum lindemuthianum* pathotypes 89, 89-AS, 95, and 453. Under field conditions, it showed intermediate reaction to rust and angular leaf spot, and susceptibility to common bacterial blight.

Plant type and resistance to lodging

The cultivar BRS Campeiro grew upright under all evaluated growth conditions. It was also remarkably resistant to plant lodging during its cycle of 85 days from emergency

to physiological maturity.

CONCLUSION

Due to its high yielding potential and excellent cooking quality, upright plant architecture, and resistance to lodging the cultivar BRS Campeiro is a new option for black bean growers in the States of Rio Grande do Sul, Santa Catarina, and Paraná, for wet and dry crop seasons.

SEED PRODUCTION

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

PARTNER INSTITUTIONS IN THE CULTIVAR ASSESSMENT

Embrapa Arroz e Feijão, Embrapa Trigo, Epagri - Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina, Coopercampos, Cefet-Pato Branco, Iapar - Instituto Agronômico do Paraná, Embrapa Negócios para Transferência de Tecnologia/Escritório de Negócios de Ponta Grossa.

Table 1. Grain yield of BRS Campeiro compared to the mean of two controls in field trials from 1999 to 2002

State	BRS Campeiro	Control means ¹	Relative yield	Number of trials
	kg ha ⁻¹	kg ha ⁻¹	%	
Rio Grande do Sul	1939	1550	125	5
Santa Catarina	2695	2060	131	17
Parana	2519	1857	137	12
Mean	2519	1907	132	—

¹Controls: Diamante Negro and FT Nobre

Table 2. Technological and industrial seed quality of the cultivar BRS Campeiro compared to other black bean cultivars

Cultivar	Cooking time	Soluble Solids	Broth Color	Protein	Fiber	Tegument
	minutes	%		%	%	%
BRS Campeiro	25.00	8.86	Dark	22.80	14.00	8.84
BRS Valente	28.10	10.91	Light ¹	19.25	9.70	11.75
FT Nobre	28.48	11.05	Light ¹	21.60	—	13.48
Rio Tibagi	36.00	12.40	Dark	20.00	12.50	13.10
Diamante Negro	34.02	11.20	Light ¹	20.00	10.00	11.40

¹Chocolate brown

REFERENCES

- Carneiro JES, Faria LC, Pereira PAA, Peloso MJ Del, Rava CA, Costa JGC, Carneiro GES, Soares DM, Díaz JLC, Melo LC, Mesquita AN, Faria JC, Silva HT, Sartorato A, Bassinello PZ and Zimmermann FJP (2003) **BRS Campeiro: nova cultivar de feijoeiro comum de grão preto, indicada para o sul do Brasil.** Embrapa Arroz e Feijão, Santo Antônio de Goiás, 4p. (Comunicado Técnico 62)