

'BRS Valente' - black common bean

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ABSTRACT

'BRS Valente', developed by Embrapa Rice & Beans, has been indicated since 2001 for cropping in the states of Goiás/Distrito Federal, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Espírito Santo, Rio de Janeiro and Rio Grande do Sul. In 2002, the indication was extended to the states of São Paulo, Paraná and Santa Catarina. The grain is commercially classified as solid colored seed coat (black turtle soup) 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

The demand for higher yielding cultivars with better grain quality and resistant to the main diseases has directed the common bean breeding program at Embrapa Rice & Beans to develop, assess and indicate improved and adapted varieties for different edaphic and climatic conditions encountered in the bean production regions. The utilization of new improved cultivars is a low cost input in the production system and consequently it is a technology easily adopted by producers.

The common bean breeding program at Embrapa Rice & Beans developed LM 93204217 line, with black seed coat, trade name of 'BRS Valente' and recommended for cultivation in the states of Goiás/Distrito Federal, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Espírito Santo, Rio de Janeiro and Rio Grande do Sul, since 2001. In 2002, the indication was extended to the states of São Paulo, Paraná and Santa Catarina.

CULTIVAR ORIGIN AND DEVELOPMENT

'BRS Valente' is derived from the triple cross involving Emgopa 201-Ouro and Ônix cultivars with AN 512586 line. It was obtained using the breeding method called

'population' or 'bulk', harvesting all plants together in the population until the F₃ generation. In F₄ and F₆, after inoculation with the *Colletotrichum lindemuthianum* 89 pathogen (race Alpha Brazil), the susceptible plants were eliminated. Also, in the F₄ generation one pod per plant was harvested from the remaining population; in F₆ generation plants were collected individually, based on commercial grain type, to compose the F₇ progeny. From this point on the progeny was assessed in experiments with intercalated controls and selection was performed based on grain yield and plant architecture. From 1994, LM 93204217 was included in the assessment experiments conducted in diversified environments and exhibited superior behavior in terms of plant type (erect), yield and disease resistance. This line was assessed in 1995 among 44 lines and two controls in the National Trial. The experimental design was a randomized complete block with four replications and the plots were composed of two 4m rows spaced by 0.50 m and a sowing density of 15 seeds per meter. This trial was conducted by the Common Bean Technical Commission in a total of 13 environments in the states of Goiás (1), Mato Grosso (1), Mato Grosso do Sul (1), Minas Gerais (1), Espírito Santo (2), Santa Catarina (1), Paraná (5) and Rio Grande do Sul (1). According to the joint analysis of the grain yield data and other agronomic characteristics, the line was promoted to the Regional Trial (currently

named Cropping and Use Value Experiment - VCU) 1997-1998 crop season.

In VCU 1997-98, line LM 93204217 was assessed with ten additional lines and three controls in a complete randomized block design with four replications and plots of four 4 m rows, using the technologies recommended for the different crop systems in a total of 49 environments in the states of Goiás (9) Distrito Federal (1), Minas Gerais (6), Mato Grosso do Sul (9), Mato Grosso (7), Rio de Janeiro (7), Espírito Santo (5), and Rio Grande do Sul (5). Based on the joint analysis of these experiments and on results obtained in observation units in several environments, the LM 93204217 line was indicated as 'BRS Valente' for commercial planting in the above referred states, due to its outstanding characteristics such as erect plant type, reaction to diseases, grain yield and grain quality. In 45 VCU experiments, conducted in São Paulo (23), Paraná (13) and Santa Catarina (9), LM 93204217 average grain yield was 12% superior as compared to the controls. Based on these data the indication of the 'BRS Valente' cultivar was extended in 2001 to São Paulo, Paraná and Santa Catarina (Table 1).

OTHER CHARACTERISTICS

Technological and industrial grain quality

An important factor for the success of a new cultivar concerns the technological and industrial grain characteristics. A preference evaluation performed on 'BRS Valente' cultivar classified it as very well

accepted by consumers, with excellent appearance, good cooking performance and producing a thick, chocolate brown colored sauce (Table 2).

Reaction to diseases

'BRS Valente' cultivar was resistant to common mosaic under artificial inoculation. It presented resistance reaction to 19 out of 21 pathotypes tested for the anthracnose causing agents. Under field experimental conditions it presented intermediate reaction to rust, common bacterial blight and angular leaf spot.

Plant type and resistance to lodging

'BRS Valente' presents erect plant type and resistance to lodging under any production system, soil type or climate conditions in which it was evaluated, with a growth duration cycle varying from 80 to 94 days from emergence to physiological maturity.

CONCLUSION

The black bean cultivar 'BRS Valente' due to its superior yield potential, wide adaptation, grain quality, erect plant type and resistance to lodging has been an additional alternative to producers interested in black bean production in the states of Goiás/Federal District, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Espírito Santo, Rio de Janeiro, Rio Grande do Sul, São Paulo, Paraná and Santa Catarina.

Table 1. 'BRS Valente' grain yield compared to average values obtained for 11 controls in the National VCU trials from 1995 to 2001.

Region	State	BRS Valente (kg/ha)	Controls ^{1/} average yield (kg/ha)	Relative yield (%)	Number of locations
Sudeste	ES	2.206	1.790	123.2	5
	RJ	1.946	1.540	126.4	7
	MG	2.998	2.461	121.8	6
	SP	2.464	2.372	103.9	23
Centro-Oeste	GO/DF	3.014	2.544	118.5	10
	MS	1.918	1.682	114.0	9
	MT	1.932	1.670	115.6	7
Sul	RS	2.398	2.156	111.2	5
	SC	2.161	1.910	113.1	9
	PR	2.382	1.996	119.3	13

^{1/} Controls: Iapar 44, Rio Tibagi, Capixaba Precoce, Serrano, Xamego, Diamante Negro, FT 120, FT Nobre, IAC Una, Macotaço and Macanudo.

Table 2. Grain technological and industrial characteristics of 'BRS Valente'.

Cultivar	Cooking time (minutes)	Water absorption (%)	Solid solutes (%)	Whole grains (%)	Broth color	Protein (%)	Fiber (%)	Hulls (%)
BRS Valente	28.10	95	10.91	78	Claro ^{1/}	19.25	9.7	11.75
FT Nobre	28.48	104	11.05	70	Claro ^{1/}	21.60	-	13.48
Rio Tibagi	36.00	102	12.40	97	Escuro	20.00	12.5	13.10
D. Negro	34.02	104	11.20	97	Claro ^{1/}	20.00	10.0	11.40
Iapar 44	37.00	104	11.00	-	-	-	10.5	-

^{1/}Chocolate brown color.

SEED PRODUCTION

Genetic seed of 'BRS Valente' 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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- Embrapa Milho e Sorgo
- Embrapa Cerrados
- Embrapa Trigo
- Embrapa Clima Temperado
- Embrapa Agrobiologia
- Embrapa Soja
- Embrapa Negócios para Transferência de Tecnologia/ENT Ponta Grossa
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- Instituto Capixaba de Pesquisa, Assistência Técnica e Extensão Rural (Incaper)
- Empresa de Pesquisa Agropecuária do Rio de Janeiro (Pesagro)
- Empresa Matogrosse de Pesquisa, Assistência e Extensão Rural (Empaer)
- Instituto da terra (Idaterra)

- Agência Goiana de Desenvolvimento Rural e Fundiária (Agenciarrural)
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- Tec-Agro Tecnologia em Agricultura Ltda
- Instituto Agrônômico de Campinas (IAC)
- Instituto Agrônômico do Paraná (Iapar)
- Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina (Epagri)

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