



## BRS 7762 Supremo - A black common bean cultivar with erect plant type

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**ABSTRACT** - The black bean cultivar BRS 7762 Supremo developed by Embrapa Rice and Beans was released for cultivation in the States Santa Catarina, Paraná, Goiás and the Federal District. This cultivar is resistant to several rust pathotypes, to bean common mosaic virus and to four pathotypes caused by the anthracnose agent.

**Key words:** *Phaseolus vulgaris*, plant breeding, cultivar description, reaction diseases.

### INTRODUCTION

During the 2003/2004 crop season, about 2.7 million tons of common bean were produced in Brazil on an area of 2.7 million hectares, i.e., a national average productivity of 1.000 kg ha<sup>-1</sup>. Although the average productivity has increased, the average per capita consumption has been decreasing attaining an annual consumption of only 12.7 kg inhabitant<sup>-1</sup>. In Brazil, the national production of black beans does not meet the internal consumption demand, which is particularly true for the states in the south as well as Rio de Janeiro and Espírito Santo. An annual import of about 100 thousand tons is necessary to meet this demand. The common bean genetic improvement program of Embrapa Rice and Beans is focused on cultivars that are more productive, more disease resistant and have an erect plant type enabling mechanical harvest, offering the final consumer a better product quality and the farmers a higher revenue.

### CULTIVAR ORIGIN AND DEVELOPMENT

BRS 7762 Supremo is a black bean originated from the single cross of W22-34 and VAN 163, performed at Embrapa Rice and Beans in 1988. The bulk method was used in the F<sub>2</sub> generation. In F<sub>3</sub> and F<sub>4</sub>, after inoculation with the pathotype 89 of *Colletotrichum lindemuthianum*, the 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. The F<sub>5</sub> and F<sub>7</sub> plants were selected by the bulk method and the modified mass selection was used in the F<sub>6</sub> and F<sub>8</sub> generations. In F<sub>8</sub>, susceptible plants were eliminated after inoculation with pathotype 95 of *Colletotrichum lindemuthianum* and the remaining plants harvested originating individually the F<sub>9</sub> lines from which line AN 9310960 was selected based on grain yield, erect plant type and disease resistance. In 1999 this line was

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evaluated along with additional 31 lines and two controls in the National Trial in six different environments (states Goiás (1), Mato Grosso do Sul (2), Minas Gerais (1), Rio de Janeiro (1) and Espírito Santo (1)). The joint analysis of the grain yield data and other agronomic traits distinguished AN 9310960 to be promoted to the Regional Trial under the pre-commercial name CNFP 7762.

## PERFORMANCE

Line CNFP 7762 was evaluated in a field trial for cultivar release with twelve lines and two controls in a randomized complete block design with four replications in 30 different environments in the States Goiás (13), Federal District (2), Paraná (7) and Santa Catarina (8). In the field trials conducted during the wet and dry seasons in the States of Santa Catarina and Paraná and in field trials during the wet and winter seasons in the State of Goiás and Federal District, line CNFP 7762 presented a 2% superior average grain yield over cultivars IPR 88 -Uirapuru and BRS Valente in the States Santa Catarina and Paraná and Diamante Negro and BRS Valente in Goiás and the Federal District (Table 1).

## OTHER CHARACTERISTICS

### Industrial and technological grain quality

**Table 1.** Yield of cultivar BRS 7762 Supremo during the wet and dry seasons in the states Santa Catarina and Paraná and in wet and winter seasons in Goiás and the Federal District, obtained from 2001 to 2004 and compared to yields of two controls

Region	State	Season	BRS 7762 Supremo (kg ha <sup>-1</sup> )	Mean for Control <sup>1</sup> (kg ha <sup>-1</sup> )	Relative yield (%)	Nr. of environments
South	SC/PR	wet	2464	2438	101	10
		dry	2499	2263	110	5
Center-West	GO/DF	wet	2322	2355	99	11
		winter	2401	2285	105	4
Mean			2410	2358	102	

<sup>1</sup> IPR 88 - Uirapuru and BRS Valente in Santa Catarina and Paraná, and Diamante Negro and BRS Valente in Goiás and the Federal District

**Table 2.** Industrial and technological grain qualities of the black bean cultivar BRS 7762 Supremo

Cultivar	Cooking time (min.)	Soluble solids (%)	Protein (%)	100 grain weight (g)
BRS 7762 Supremo	31.0	12.1	23.3	24.6
BRS Valente	28.1	10.9	19.2	21.5
Diamante Negro	34.0	11.2	20.0	21.3

Cultivar BRS 7762 Supremo presents uniform grain size and color, excellent cooking qualities (cooking time of 31 minutes), and a chocolate brown broth (Table 2).

## Reaction to diseases

Cultivar BRS 7762 Supremo, under artificial inoculation, was resistant to bean common mosaic virus and to the pathotypes 55 (lambda), 89 (alfa-Brazil), 95 (kappa) and 453 (zeta) of *Colletotrichum lindemutianum*. The cultivar reacted resistant to several rust pathotypes, moderately resistant to angular leaf spot and susceptible to bean golden mosaic virus and common bacterial blight in field trials.

## Plant type

BRS 7762 Supremo presents an erect growth habit with high yield potential in all tested crop systems under different soil and environmental conditions. It also has good lodging resistance and a growth cycle of 83 days from emergency to physiological maturation.

## SEED PRODUCTION

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

## PARTNER INSTITUTIONS IN THE CULTIVAR ASSESSMENT

Embrapa Arroz e Feijão; Embrapa Cerrados; Embrapa Soja; Embrapa Negócios Tecnológicos - Escritório de Negócios de Ponta Grossa/PR; Agência Goiana de Desenvolvimento Rural e Fundiário; Universidade de Rio Verde/Fesurv; Avena S/C Ltda.; Cooperativa Regional Agropecuária de Campos Novos (Coopercampos); C. Vale Cooperativa Agroindustrial; Escola Agrotécnica Federal de Concórdia; Cooperativa dos Produtores de Sementes de Laranjeiras do Sul Ltda. (Coprossel); Sementes Campo Verde; Universidade Estadual de Londrina; Cooperativa Agrícola Mista de Prudentópolis (Camp); Detec Assessoria Técnica S/C

Ltda.; Anastácio Ceregatti Sanchez Ltda. (Holambra Agrícola II); Cooperativa Regional Agropecuária de Taquarituba (Coreata).

#### **CONCLUSION**

BRS 7762 Supremo is a new option for bean producers interested in the black bean grain type for cultivation in the wet and dry seasons in the States Santa Catarina and Paraná and wet and winter seasons in Goiás and the Federal District.