

BRS EXPEDITO, A NEW BLACK SEEDED COMMON BEAN CULTIVAR

Irajá Ferreira Antunes¹, Expedito Paulo Silveira², Heloisa Torres da Silva³

EMBRAPA-Clima Temperado, Caixa Postal 403, CEP 96001-970, Pelotas, RS, Brazil¹; FAPEG, Postal 403, CEP 96001-970, Pelotas, RS, Brazil² EMBRAPA- Arroz e Feijão, Caixa Postal 179, CEP 75375-000, Santo Antônio de Goiás, GO, Brazil³. e-mail: iraja@cpact.embrapa.br

Plant breeding, as an applied science, has been efficient in offering solutions to world hungry to a point that the problem, nowadays, is thought to exist not due to lack of food, but to a bad distribution. The cultivar, or in other words, a population of plants with phenotypic uniformity, stability and distinct from others, is the concrete form of contribution from plant breeding.

In general, new cultivars result being more resistant or tolerant to a given biotic or abiotic stress, and usually with improved seed yield.

Brazil is a country in which the common bean (*Phaseolus vulgaris*) is a staple food. Besides being rich in proteins and carbohydrates, bean seed has high levels of calcium, iron, and manganese that are important chemical elements in bone physiology, hemoglobin production and anti-oxidation mechanisms, respectively.

Another important feature of the common bean, is its high level of fiber content that acts in cholesterol reduction and diabetes risk reduction.

This paper presents BRS Expedito, a new black bean cultivar for Southern Brazil. It results from the cross CNF 5491 x FT Tarumã, conducted at Embrapa Clima Temperado, Pelotas, Rio Grande do Sul State, in 1990. Both parental cultivars are black seeded, being the line CNF 5491 originated at Embrapa Arroz e Feijão and FT Tarumã at FT Sementes, a private company. At Embrapa Clima Temperado's experimental fields, were performed the F₂ to F₄ generation advances by single pod discent. In 1994, at the F₄ generation, was selected the plant that resulted in the line identified as TB 94-01. During 1995 and 1996 crop years, in preliminary trials, TB 94-01 has shown a favorable behavior and then was included in advanced State trials. From 1997/98 to 2004/05, from 20 experiments scattered through Rio Grande do Sul State, showed a mean seed yield of 2,359.3 kg ha⁻¹, 11.18% higher than check's yield (Table 1).

In comparison to cultivars available at State level, is highlighted by its resistance to anthracnose (whose agent is the fungus *C. lindemuthianum*) revealed in controlled experiments (Cruz and Balardin, 2001; Alzate-Marin et al, 2001; and results obtained at Embrapa), as well as in field experiments. At the Universidade Federal de Santa Maria showed resistance to nine from thirteen pathotypes, being the most resistant (Cruz and Balardin, 2001). At the Universidade Federal de Viçosa, among breeding lines from different common bean breeding programs, presented the highest number of markers linked to resistance genes, being three to anthracnose, three to rust and one to angular leaf spot.

The seeds of BRS Expedito are larger than most black seeded cultivars available in South Brazil market (28.0g per 100 seeds), and have an uniform black color. Its protein content (29%) is the highest among the cultivar released for cultivation in Rio Grande do Sul (12.8% higher than that of BR-Ipagro 35 Macotaço, the second highest). In tests conducted at the Universidade Federal de Santa Maria, was superior for nitrogen, phosphorus, potassium and calcium content among 19 cultivars released for cultivation in Rio Grande do Sul, being considered as promising

as parental cultivar for breeding proposes (Jost et al, 2006). Its total fiber content is similar to those of the best cultivars for this characteristic.

BRS Expedito is a type II plant architecture cultivar, with good lodging and shattering resistance, being suited to direct harvest. Its mean life cycle is 88 days and is protected at the National Service for Cultivar Protection under Cultivar Protection Certificate 00688.

Table 1. BRS Expedito and check cultivars mean seed yield (kg ha⁻¹) from 1997/98-2004/05 trials in Rio Grande do Sul State, Brazil.

Crop year	BRS Expedito (A)	Check mean yield (B)	Relative yield (A/B)100	Number of locations
1997/1998	1761	1586	111.0	3
1999/2000	2834	2582	109.7	6
2000/2001	2179	1879	116.0	4
2001/2002	2188	2278	96.0	1
2002/2003	1524	1318	115.6	2
2003/2004	3385	3186	106.2	1
2004/2005	2644	1944	136.0	3
Mean	2359.3	2110.5	111.8	20 (total)

Check cultivars: 1997/1998: BR-Ipagro 1 Macanudo and BR-Ipagro 3 Minuano; 1999/2000: BR-Ipagro 35 Macotaço and FTS Nobre; 2000/2001: FTS Nobre and Diamante Negro; 2001/2002: BRS Valente, FTS Nobre and Diamante Negro; 2002/2003: BRS Valente and FTS Soberano; 2003/2004: BRS Valente and FTS Soberano; 2004/2005: BR-Fepagro 44 Guapo Brilhante and Carioca.

References

ALZATE- MARIN, A.L., COSTA, M.R., SARTORATO, A., RAVA, C.A., BARROS, E.G., MOREIRA, M.A. Use of markers as a tool to investigate the presence of disease resistance genes in common bean cultivars. **Crop Breeding and Applied Biotechnology**, v. 1, n.2 p. 125-133, 2001

CRUZ, A.S.; BALARDIN, R.S. Resistência genética de cultivares de feijoeiro comum ao *Colletotrichum lindemuthianum*. **In: REUNIÃO DA COMISSÃO ESTADUAL DA PESQUISA DE FEIJÃO**. 34, Erechim, RS, 14 a 16 agosto 2001. p. 105-111, 2001

JOST, E.; RIBEIRO, N.D.; LONDERO, P.M.G.; CARGNELUTTI FILHO, A.; ANTUNES, I.F.; POERSCH, N.L.; ROSA, S.S.da; CERUTTI, T. Composição de macronutrientes em grãos de cultivares de feijão. **In: REUNIÃO SUL BRASILEIRA DE FEIJÃO**. 8, Londrina, PR, 11 e 12 de julho de 2006. p. 199-201, 2006