

EVALUATION OF BLACK BEAN LINES IN THE NORTH OF MATO GROSSO DO SUL STATE, BRAZIL

Brito, O.R.¹, Otsubo, A.A.², Zuffo, N.L.³, Faria, L.C.², Otsubo, V.H.N.⁴, Mercante, F.M.² and Brito, R.M.²

¹State University of Londrina, PR, Brazil; ²EMBRAPA, Brazil; ³ZF Pesquisa e Consultoria, MS, Brazil; and ⁴Graduate student, State University of Londrina.

INTRODUCTION

In Brazil, the bean plant (*Phaseolus vulgaris*, L.) cultivation is done in all regions and in different periods: "waters time", "droughts time" and "autumn-winter". The culture occupied, in the agricultural crop 2004/2005 an area of 3.8 million of hectares, with a medium productivity of 798 kg ha⁻¹ (AGRIANUAL, 2006). The introduction of new cultivars with higher genetic potential of production and resistance to the diseases and pests gave conditions to increments in culture productivity. This work was led out with the objective to evaluate the grains production of different lines of black bean cultivated in the droughts period in north of Mato Grosso do Sul state, Brazil.

MATERIALS AND METHODS

This experiment was led out during the agricultural crop 2007/2008, at São Gabriel do Oeste city, MS, Brazil (latitude: 19°23'S; longitude: 54°23'W). The following commercial lines of black bean were used: CNFP 10025, CNFP 10214, CNFP 10221, CNFP 10793, CNFP 10794, CNFP 10799, CNFP 10800, CNFP 10805, CNFP 10806, CNFP 10807, besides the control cultivars, such as, BRS Valente, BRS Grafite, BRS Supremo and IPR Uirapuru. The experimental design was in randomized blocks with 14 treatments and three replications. It was used the conventional tillage and the sowing was done in 16/03/2007 (the droughts time) with 0,45 m of row spacing and 15 seeds m⁻¹. For soil fertilization was applied 250 and 150 kg ha⁻¹ of the 08-20-20 (0 day) and 20-00-20 (30 days after sowing), respectively. It was necessary the use of complementary irrigations due to the low precipitations. The experimental plots was constituted by a group of four lines with four meters length, but only the two central lines were considered in the evaluation. The following variables were evaluated: mass of 100 grains; crop productivity and grain quality (notes: 1 = very good to 5=bad). The obtained data were submitted to the variance analysis and the averages compared by the Scott-Knot test at 5%.

RESULTS AND DISCUSSION

The irregular precipitations influenced negatively in the flowering period and the grains filling. The mass of 100 grains that depends directly of size and grains filling, presented significant variations among the lines, forming three different groups, and CNFP 10793 lines was superior when compared to the others. Interactions among genotypes and environmental conditions affect the bean productivity (Carbonell et al., 2007, Melo et al., 2007 and Ribeiro et al., 2008). However, in this study were not observed significant differences of productivity among the lines (Table 1).

Visual aspects (format, size and shine) and grain quality (time of cooking, sensorial aspects and nutrient contents) of beans are important factors to define the acceptance by consumers and the success of new lines selection program. In spite of was not observed grains of very bad quality, any

material of high quality was not observed. The low precipitations and the bad distribution must have contributed to obtaining of these results.

Table 1. Mass of 100 grains, productivity and grain quality of different black bean lines in São Gabriel do Oeste, MS, Brazil, cultivated in the period of droughts, 2007.

Lines	Mass of 100 grains (g)	Productivity (kg ha ⁻¹)	Grain quality (note)
* BRS Valente	18.03 c	779	3.0
* BRS Grafite	22.57 b	914	2.0
* BRS Supremo	20.10 b	1,191	2.0
* IPR Uirapuru	19.33 c	721	2.0
CNFP 10025	14.87 d	953	2.0
CNFP 10214	22.30 b	1,025	2.0
CNFP 10221	15.43 d	852	2.5
CNFP 10793	25.60 a	992	2.5
CNFP 10794	20.63 b	1,007	2.0
CNFP 10799	18.30 c	694	2.0
CNFP 10800	19.07 c	865	2.0
CNFP 10805	18.47 c	943	2.0
CNFP 10806	18.13 c	813	2.0
CNFP 10807	21.07 b	1,004	2.0
C.V. (%)	9.62	19.96 ns	-

Averages followed by same letter in the columns do not differ by Scott-Knot test at 5%.

* Control cultivars. **ns**= not significant. Grain quality (note: 1 = very good to 5 = bad)

CONCLUSIONS

- . The line CNFC 10214 presented the largest value for the mass of 100 grains.
- . There is no significant difference of productivity among the different lines.
- . The line CNFC 10214 was more close to the control variety BRS Supremo in productivity and grains quality.

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