PERFORMANCE OF BLACK BEAN BRAZILIAN GENOTYPES IN 2005 AND 2006

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INTRODUCTION

In the last years, Brazil has ranked first in production and consumption of common beans, *Phaseolus vulgaris* L., which is a basic food and one of the main sources of proteins in the diet of Brazilian population. Among the different common beans types of grain, the black one occupies 20% of the consumption market (Del Peloso & Melo, 2005). The breeding programs have supplied the demand of Brazilian market with new cultivars with desirable characteristics, such as yield stability and also contributed to increase yield. The common bean breeding program of Embrapa Rice and Beans Research Center systemize the evaluations of lines developed in the program in a national network in regions responsible for 90% of the national production, estimated in 2,8 t (IBGE, 2008). The final evaluation of the lines is done in a network of evaluation trials, in several environments, which should represent the diverse environmental conditions that bean cultivars can be grown.

The indication of new cultivars has contributed for increase of yield in 40% in the last ten years. So, the program looks for new lines with better phenotypes that can be indicated as new cultivars.

MATERIALS AND METHODS

In 2005 and 2006, a network of trials were conducted during rainy, dry and winter growing seasons, in 57 environments in 11 states: Goiás, Distrito Federal, Mato Grosso, Mato Grosso do Sul, Paraná, Santa Catarina, Rio Grande do Sul, São Paulo, Sergipe, Bahia, and Alagoas. The experimental design was randomized complete blocks, with three replications and plots of four rows measuring four meters. The yield data were collected in the two center rows. Each trial was constituted of 12 genotypes of common beans with black grain type (Table 1). Evaluations of plant architecture, resistance to disease and lodging tolerance, were made using a grate scale where the note 1 indicates a desirable genotype and note 9 the undesirable genotype. Yield data were submitted to analyze of variance and joint analyze grouping all trials. The Duncan test (0.05) was used to compare treatment means.

RESULTS

The joint analyze showed a good experimental precision (CV=14.1 %) and it were detected significant difference (P<0.01) among genotypes, environments and interaction genotypes x environments. It was identified one line CNFP 10104 that can be indicated as a new cultivar. This line was the most promissory line for yield (Table 1), with erect plant architecture, high insertion of the first pod, closed ramifications and few vines like the control BRS Valente. CNFP 10104 was more resistant to causal agent of anthracnose when compared to BRS Valente (control).

The line CNFP 10104 will be first indicated for Goiás State and Distrito Federal for rainy and winter growing seasons (with irrigation) and for Santa Catarina State for the rainy season. For the other States, new trials will be conducted to complete the minimum number of trials required to register the cultivars.

Table 1. Yield (kg ha^{-1}), average grades[1] and e highest grades[2] for evaluations of plant architecture (ARQ), lodging (ACA), and reaction to common bacterial blight (CBC), angular leaf spot (MA), mildew (OI), rust (FE) and anthracnose (AN), of 12 genotypes of black common beans, evaluated in 57 environments in Brazil, in 2005 and 2006.

Genotype	Yield	ARQ	ACA	CBC	MA	OI	FE	AN
CNFP 10104	2,584 a	4[1]/5[2]	4/7	5/8	5/8	4/7	1/2	1/1
BRS Valente	2,454 b	4/5	4/6	5/9	5/8	4/7	4/4	6/7
CNFP 10103	2,452 b	5/5	3/5	4/7	6/8	7/8	2/3	1/1
IPR Uirapuru	2,415 bc	4/6	3/7	3/6	5/8	4/6	2/3	3/6
CNFP 10035	2,381 bc	4/5	3/7	5/8	7/8	4/6	2/3	5/7
CNFP 10206	2,365 c	4/5	4/7	3/7	7/9	6/8	2/3	2/5
CNFP 10093	2,362 c	4/6	4/7	4/8	6/8	7/8	3/4	1/1
CNFP 10109	2,285 d	5/6	4/7	3/6	6/9	6/8	1/2	1/1
BRS Grafite	2,257 d	5/6	4/7	4/6	5/8	4/6	2/3	3/4
CNFP 10076	2,246 d	4/6	4/8	4/7	6/8	5/7	2/4	2/6
CNFP 10120	2,227 d	5/6	3/5	3/7	5/8	7/8	1/1	1/1
FTS Soberano	2,136 e	4/6	4/7	6/9	6/8	3/6	2/3	1/1

[1]Means followed by the same letter do not differ by Duncan test 0.05 of probability.

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