

# POTENTIAL PRODUCTIVITY OF SEED COLOR CLASSES OF COMMON BEAN LANDRACE

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## INTRODUCTION

The common bean (*Phaseolus vulgaris* L.) is the primary protein source in the Brazilian diet (Silva, 2003). It was originated in the Americas and is currently cultivated on all continents (Gepsts; Debouck, 1991), as it adapts to different soil and climatic variations and to the various production systems. New functional and nutritional characteristics have been demanded by modern society and may be present in the landrace. The characterization and conservation of these will meet the demands and will avoid genetic erosion.

To broaden the genetic basis and maximize the gains from selection of a crop, it is essential to accumulate favorable alleles present in wild populations, cultivated and related species (Gepsts; Debouck, 1991), Land varieties have been used as a source of favorable alleles and at the same time, for direct consumption of both rural populations and, more recently, urban.

The aim of this study was to evaluate the potential productivity of landrace varieties of beans, grouped by seed color.

## MATERIAL AND METHODS

The cultivars were obtained from or through collections made on the spot in bean producing properties throughout the State of Rio Grande do Sul, or through donations from rural extension organs, producers or collaborators.

The experiment consisted of a single 3m row of each of the 153 landraces, 0.5 m apart, with a population of 12 plants.m<sup>-1</sup>. The experimental design was intercropped check cultivars. The checks were BRS Guerreiro and BRS Campeiro for black bean cultivars and Carioca and Iraí for other grain colors. The block was characterized by the presence of ten test lines, with check cultivars at the beginning and at the end of the block. A comparative assessment of cultivars to the checks was made by graphic method. Cultivars that surpassed the line that connects the average mean productivity of the checks in each block was considered superior. The seeds were sown on 2009/10/28 and harvest was variable, according to the cycle of each material, starting on 2010/09/02 and concluded on 2010/02/20 and no disease control was performed. At the base were applied, 250 kg ha<sup>-1</sup> of NPK fertilizer, 5:20:20 formula. Weeding with was conducted animal traction. For purposes of assessing the productivity potential, cultivars were grouped by grain color identifying black, green, purple, red, pink, yellow and "mouro", as in Table 1.

## RESULTS AND DISCUSSION

It is considered suitable to form the next stage of the breeding program of Embrapa Temperate Climate, cultivars that exceed the average production of checks, located at the beginning and end of each block.

It can be seen that, except for the group of cultivars of green seeds in all groups there were cultivars that exceeded the checks, demonstrating the high potential of the groups black, purple and "mouro", of the cultivars that exceed the checks where 48.3%, 52.7% and 40.0% respectively. Equally important is the potential productivity of the red group, whose cultivars that exceeded the average of the checks reached an average of 114.5% of superiority, with a maximum value of 230.3%. In the yellow group noted the potential for productivity is low by offering a very favorable outlook for this class of seeds.

Table 1. Productivity performance of materials in Creole evaluated Preliminary Test Procedure I.

GCG <sup>1</sup>	NCG <sup>2</sup>	PCT(%) <sup>3</sup>	VCT (%) <sup>4</sup>	PSP (%) <sup>5</sup>
Black	59	48.3	47.0	109.9
Green	4	0.0	-	-
Purple	20	40.0	54.0	81.6
Red	27	18.5	114.5	230.3
Pink	13	23.1	28.1	57.2
Yellow	11	27.2	2.6	4.9
"Mouro"	19	52.7	51.2	104.5

<sup>1</sup> Group of grain color.

<sup>2</sup> Number of cultivars in the group.

<sup>3</sup> Percentage of cultivars that exceeded the average of the witnesses.

<sup>4</sup> Average percentage value of the cultivars that exceeded the average of the witnesses.

<sup>5</sup> Percentage superiority of cultivar maximum productivity within the group over the average of the local cultivars.

## CONCLUSION

There are different yield potential between groups of color in seed germplasm Creole. Simultaneously, we detected promising cultivars in all groups, except that on cultivars of green seeds.

## REFEREMCES

SILVA, H. T. da.; *Caracterização Botânica de Espécies Silvestres do Gênero Phaseolus L. (Leguminosae)*. Santo Antônio de Goiás: EMBRAPA Arroz e Feijão, 2003. 40 p. (Embrapa Arroz e Feijão. Documento 156).

GEPTS, P.; DEBOUCK, D. *Origin, domestication, and evolution of the common bean*. In: SCHOONHOVEN, A. van; VOYSEST, O.; *Common beans: research for crop improvement*. Cali: Centro Internacional de Agricultura Tropical, 1991. 980p.