ARE COMMON BEAN BREEDING LINES AS VARIABLE AS LAND RACES?

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INTRODUCTION

Common bean breeding programs usually exploit a narrow range of the species available germplasm. The main reason is that efforts are directed towards market types, generally limited in number of classes. As a result, less variability is expected to be found at breeding programs than at land race germplasm. The present article uses the picture found at the Embrapa Temperate Climate (CPACT) breeding program to bring a factual view on this subject.

MATERIALS AND METHODS

Thirty four representative CPACT common bean program breeding lines (BL) and 107 land races (LR) available at its germplasm bank were characterized for stem anthocianine presence, flower color, growth habit, plant type, vine length, pod string presence and growth cycle according to Silva (2005). Experimental plots comprised an individual 4m row, 0.5m apart, with 12 plants per meter, with no replication. Data were transformed to percent and frequency for each germplasm group, as defined, compared.

RESULTS AND DISCUSSION

It can be observed from the figure that for the traits stem anthocianine presence, vine length and pod string presence, both germplasms were similar for number of classes and intraclass magnitude. For flower color, growth habit, plant type, and growth cycle, however, LR displayed a greater number of classes. Specifically for stem anthocianine presence, 82% of the land races did not fulfill the characteristic whereas for the breeding lines, 82% did so. All BL presented purple flowers, whereas LR revealed the presence of white and pink flowers besides purple ones. At the same time, LR with determinate habit were found (18%) and all BL had indeterminate one. LR presented plant types I, II, III and IV, whereas 94% of the BL had type II plants. As related to pod string presence, no relevant difference between the two germplasms was detected since the marketable product is the dry bean for which the presence of pod string is a positive fact. For growth cycle only for LR was detected variation, with the presence of cultivars in all three classes defined. BL were all within the long cycle class (above 81 days to maturity). Despite the fact that the larger number of LR studied increased the possibility of detecting more variable genotypes as compared to BL, the results suggest that the germplasm used in family agriculture is really more diverse than that under development at CPACT, a situation similar to that found in other Brazilian common bean breeding programs. This fact support the strategy adopted at CPACT that, through the use of Biodiversity Scores (Partitura de Biodiversidade - PBio, that are LR collections), make available to family farmers this important source of new lines for own use or for marketing.

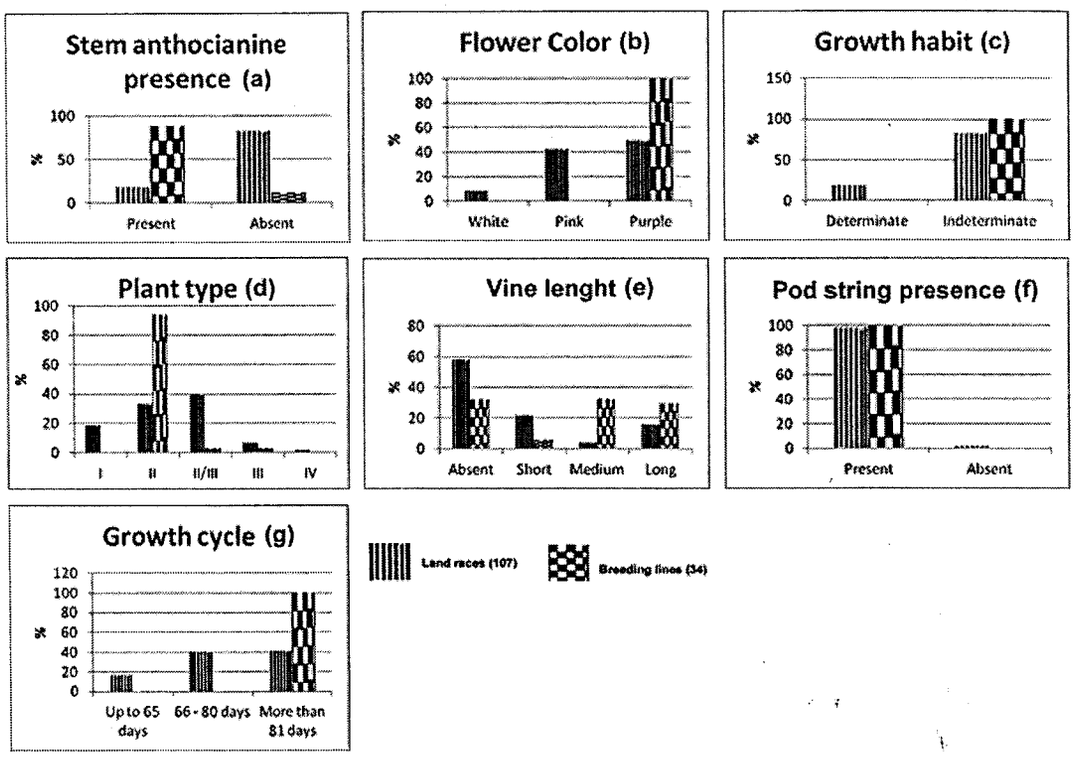

Figure 1. Stem anthocianine presence (a), flower color (b), growth habit (c), plant type (d), vine length (e), pod string presence (f) and growth cycle (g) frequency in common

CONCLUSIONS

Greater variation for the set of characteristics studied was detected in land races as compared to the CPACT common bean breeding lines. The results support the use of Biodiversity Scores under way by the CPACT common bean breeding program to make available more diverse germplasm to family farmers from which new food and market sources can be obtained.

REFERENCE

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