



Concentration Area: Plant breeding

Use of mixed models in the selection of precocious carioca bean genotypes in the state of Pernambuco

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Common beans are one of the most important foods in the human diet, especially in underdeveloped and developing countries because they are a cheap source of protein. Brazil is the third largest producer and the largest consumer of beans in the world, which makes the culture of great socio-economic importance in the country. Despite the importance and tradition of this culture in Brazil, production is still not enough to supply the domestic market, which leads to imports mainly from Argentina. There are several biotic and abiotic problems that affect the bean culture that should be the subject of breeding programs, with emphasis on grain production. An ideal common bean genotype should combine high productivity, adaptability, and stability with desirable agronomic traits, such as plant architecture, resistance and / or tolerance to the main diseases, and grain quality such as cooking time, tegument browning and grain size, protein content. The objective of this work was to select the best genotypes of precocious carioca beans based on productivity, stability, and adaptability, using univariate mixed models and the method of harmonic mean of the relative performance of genetic values (MHPRVG). For that, the statistical model 54 of the computer program Selegen - REML/BLUP was adopted. The experiments were conducted in 2014 in three municipalities in Pernambuco: Araripina, Arcoverde, and Caruaru, with 11 precocious bean genotypes. The average heritability of the 11 genotypes of precocious carioca beans for grain yield showed a value of medium magnitude (43.90%), which indicates favorable conditions for the selection of superior genotypes. Genotypic variance and selective accuracy (66.26%) showed high values that are directly associated with experimental quality. The genotypes BRS Notável, CNFC 15502, CNFC 15874, CNFC 15875, and CNFC 15873 showed the best performances in all environments tested, considering simultaneously the grain yield, adaptability, and stability.

Keywords: *Phaseolus vulgaris*; MHPRVG; REML/BLUP.