SELECTION INDEX BASED ON FACTOR ANALYSIS AND IDEOTYPE-DESIGN ON PROGENIES OF CARIOCA BEAN FOR RECURRENT SELECTION PROGRAM.

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RESUMO

Recurrent selection is also an efficient strategy employed in the inbred species breeding programs. In this way, use to factor analysis and ideotype design (FAI-BLUP) allows simultaneal gains in different traits by using the genetic value instead frequently use of phenotypic values to estimate distance from to genotype to ideotype. 382 F2:3 and F2:4 progenies were assessed in two seasons, summer and winter 2020, along with 20 control group, in a 20-by-20 simple square lattice and triple-lattice design, respectively. Each plot consisted of two 2 m length rows spaced 0.5 m apart, with 15 seeds m–1.The trials were installed at the experimental station of Universidade Federal de Viçosa, in Coimbra (20˚45′ S, 42˚51′ W; 720 m), Minas Gerais, Brazil. The traits evaluated was yield and grain appearance at harvest time, all plants in the plot were harvested manually, and the grains were processed and weighed to determine grain yield in kg ha–1. The joint statistical analysis was performed using the software ASReml to estimate the BLUP for progenies in each season. The progenies genetic values were submitted to factor analysis and then the distance to ideotype design was estimated. 120 progenies were selected to recombination in next recurrent selection cycle. The predicted genetic gain was 13,14% for grain yield and -26,98% for grain appearance. The FAI-BLUP index was efficient for grain yield positive selection and grain appearance negative selection, whereas desirable smaller values for grain appearance. The FAI-BLUP made it possible to indicate the 120 carioca beans genotypes with the highest performance for grain yield and grain appearance, without assigning weights, free from multicollinearity, and balanced genetic gains were predicted in desirable sense for traits.

PALAVRAS-CHAVE: Genetic gain, FAI-BLUP, REML/BLUP

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