

Improvement of a popcorn population using selection indexes from a fourth cycle of recurrent selection program carried out in two different environments

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ABSTRACT. We estimated genetic gains for popcorn varieties using selection indexes in a fourth cycle of intrapopulation recurrent selection developed in the campus of the Universidade Estadual do Norte Fluminense. Two hundred full-sib families were obtained from the popcorn population UNB-2U of the third recurrent selection cycle. The progenies were evaluated in a randomized block design with two replications at sites in two different environments: the Colégio Estadual Agrícola Antônio Sarlo, in Campos dos Goytacazes, and the Empresa de Pesquisa Agropecuária do Estado do Rio de Janeiro (PESAGRO-RIO), in Itaocara, both in the State of Rio de Janeiro. There were significant differences between families within sets in all traits, indicating genetic variability that could be exploited in future cycles. Thirty full-sib families were selected to continue the program. The selection indexes used to predict the gains were those of Mulamba and Mock, Smith and Hazel. The best results were obtained with the

Mulamba and Mock index, which allowed the prediction of negative gains for the traits number of diseased ears and ears attacked by pests, number of broken plants and lodging, as well as ears with poor husk cover. It also provided higher gains for popping expansion and grain yield than with the other indexes, giving values of 10.55 and 8.50%, respectively, based on tentatively assigned random weights.

Key words: *Zea mays*; Intrapopulation selection; Genetic gains; Selection indexes