

PERFORMANCE OF EMBRAPA'S ELITE POPULATIONS OF SUBTROPICAL LOWLAND RICE IN THE 2013/14 CROP YEAR

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Obtaining genotypes with high grain yield (GY) is the main goal of the rice breeding program of Embrapa and its partners. The program has been using recurrent selection in two levels: base populations (BP) and elite populations (EP), where BP are the main source of parents for crossings, focusing on increasing average performance and genetic variability of the EP; and EP are a recurring source of lines for cultivar development. In addition to GY, other important traits are analyzed to select the best parents in the next cycle. One four-year selection cycle is used to improve EP, ending with $F_{2:4}$ families yield trials (FY) carried out in target environments. This study aimed to estimate GY genetic progress expected in the FY from the 2013/14 crop year. The trials were carried out in Goianira and Alegrete, respectively in the Center and Southwest of Brazil. They were composed of 97 $F_{2:4}$ families from 58 crossings and three elite cultivars as checks. The observed absence of significant family-location interaction means that selection made in either location can be effective for both. The estimate of genetic variance among $F_{2:4}$ family was significant ($p < 0.0001$) by F test, and the adjusted means for GY ranged from 6,182 to 10,967 kg ha⁻¹, while the checks mean was 8,637 kg ha⁻¹. No significant difference was observed between averages of families and checks, showing that EP families have the same GY potential as the cultivars. In addition, there was still heterozygosity within $F_{2:4}$ families. The estimate of heritability was 52.9%. The response to selection for GY was 9.07% with selection of 17 best families, representing an annual gain of 2.26% for GY. This value was 42% higher than the average annual gain observed between 2002/03 and 2010/11 crop years from previous study.

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