REALIZED GAINS FOR RUST RESISTANCE IN SLASH PINE

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One relevant aspect to be executed in any breeding program is to have an evaluation of the realized gain obtained from selection of material for a specific trait. Most experiments that aim to select outstanding genotypes establish trials that are based in single-tree plots, which maximize the use of the area, and therefore, number of genotypes tested; and they are based in tree-level traits, such as tree height and DBH. However, operational deployment occurs in large blocks of genotypes of the same, or similar, genetic background with different levels of competition, and more importantly, they express stand-level traits, such as total volume and dominant height. Given this difference between selection and objective traits, it is critical in these programs to evaluate realized gains. For Slash pine, the CFGRP from the University of Florida has a program that concentrates in volume and rust resistance. In the current study we evaluated the genetic gains from rust using an array of experiments. Breeding values for rust incidence were calculated from a second breeding cycle of slash pine that established two polymix (PMX) single-tree plot trial series, and one series of full-sib block plots (FSBP). All three series had sites established in Florida and Georgia with 16 sites for the polimix series and 111 locations for the FSBP. We correlated the breeding values between these series which yielded correlations between PMX and FSBP greater than 0.954. In addition, within the FSBP, we compared improved vs unimproved genotypes to quantify realized gains, and we evaluate the reliability conditions for which, the common measure, R50 scores is a reliable indicator of rust resistance. We conclude that important agreements exist for the genetic rankings between the selection and objective traits for rust resistance in Slash Pine.

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