

Category	: International Rice Research Conference
Select Theme	: Genetic improvement
Endorsement email	:
Keyword 1	: Germplasm Enhancement
Keyword 2	: Genetic gain
Keyword 3	: Breeding Strategy
Title of Entry	: Progress in two decades of rice breeding for the tropical zone of Latin America and the Caribbean
Presenting author	: Eduardo Graterol
Presenting author email	: e.j.graterol@cgiar.org
Co author 1	: Maribel Cruz
Co author 2	: Juan Cuasquer
Affiliation presenting author	: Latin American Fund for Irrigated Rice
Affiliation 1	: Latin American Fund for Irrigated Rice
Affiliation 2	: International Center for Tropical Agriculture
Select only one type of presentation	: 15 minute oral presentation
Abstract	: The Latin American Fund for Irrigated Rice (FLAR) annually selects and distributes nurseries of improved lines (VIOFLAR) to 17 countries in Latin America and The Caribbean (LAC). Selection is made under two contrasting environments in Colombia, in CIAT-HQ (favorable) and in Villavicencio ("hot spot" for diseases). Using this strategy more than 60 rice varieties have been released in 14 LAC countries. The selection criteria throughout the years have consistently been yield, pest resistance, and grain quality. The objective of this research was to determine the progress attained by FLAR after two decades of breeding. To this end, 289 lines representing the phenotypic variability of 17 VIOFLARs (1999-2015), according to multivariate statistical techniques, were evaluated in four replicated field trials in 2016 and 2017. Greenhouse evaluations were made for resistance to Rice hoja blanca virus (RHBV) and to the mechanical damage of <i>Tagosodes orizicolus</i> using insects from virulent and non-virulent colonies, respectively. Image-based methods were used to score grain appearance and shape. Pasting properties of starch were assessed using Rapid Visco Analyzer. A total 38 phenotypic traits were scored in this study. Results were: linear increase in plant grains' weight (0.63 g.year ⁻¹ , R ² =0.65) and in plant height (0.3 cm.year ⁻¹ , R ² =0.70). No trend over years was seen for reaction to <i>Pyricularia</i> and grain discoloration, recording 9% and ≥ 48% of resistant lines to these constrains, respectively. No trend was found for improvement of resistance to <i>T. orizicolus</i> although ≥60% of lines were resistant. The incidence of RHBV symptoms decreased in 1.3% year ⁻¹ (R ² =0.60). Head rice recovery under delayed harvesting increased 0.4% year ⁻¹ (R ² =0.40). The frequency of lines with low white-belly grains increased from 9 to 33% and grain length-to-width ratio increased 0.01 year ⁻¹ (R ² =0.29). Frequency of lines with pasting

properties associated with loose and consistent grains after cooking went from 9% in the oldest nurseries to $\geq 25\%$ in nurseries from 2001 on. This research allowed to identify indicators of progress in the rice breeding program of FLAR for the tropical zone. This work is part of a large genetic association study aim to improve the efficiency of the program using molecular markers.

[Read Less»](#)

Uploaded Files »

No files found.