

ENVIRONMENT CLASSIFICATION FOR UPLAND RICE PRODUCTION REGION IN BRAZIL

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Key words: breeding; modeling; target population environment; *Oryza sativa*

The upland rice (UR) cropped area in Brazil has decreased in the last decade. A portion of this can be attributed to the UR breeding program strategy adopted since the 1980s, according to which direct grain selection is targeted primarily to the most suitable areas. New strategies for an improved breeding under non-optimal conditions for UR require detailed characterization of spatial, inter-annual and sub-seasonal climate variability, particularly in relation to types, intensity and timing of drought events during the cropping cycle. This paper used a process-based crop model to support the Brazilian UR breeding program in efforts to adopt a new strategy that accounts for the varying range of environments where UR is currently cultivated. Crop simulations based on more than 30 years of historical climate data were conducted for representative locations within the UR Target Population of Environments (TPE, Central Brazil, Savannah region) for a commonly grown cultivar, BRS Primavera. Results suggests that the UR TPE can be divided in three environments: highly favorable environment (HFE), favorable environment (FE) and less favorable environment (LFE). Two drought stress patterns were found in the HFE, whereas three patterns were found for the other two. A dominant stress pattern was found for two (HFE, LFE) of the three environments, whereas for the other environment (FE) two out of the three stress patterns were found almost equally likely. For the best and worst environment, specific adaptation should be applied focus on the representative stress and for FE wide adaptation to drought is suggested.

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