DROUGHT TOLERANCE IN UPLAND RICE: SELECTION OF GENOTYPES AND AGRONOMIC CHARACTERISTICS

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Most rice produced in the upland system occurs in the Brazilian Cerrado Region, where soils are characterized by having low water storage capacity. This region presents mostly irregular rainfall distribution, with the occurrence of dry spells, which are periods without rainfall during the rainy season. This situation should worsen with global warming. Increasing temperature andworsening distributionof rainfall is a great possibility, thusfurther restrictingthe areas withpotentialfor planting, if measures are not takento moderateits effects. The challenge forbreedersis to combinehighyield potentialof moderncultivarswithstrongdrought tolerance. This study aimed to identify the drought tolerance of cultivars and elites lines of upland rice and the agronomic traits associated with this tolerance. Forty-one genotypes were evaluated in a randomized block design with three replications in experiments with and without water deficit at the Experimental Station of Emater in Porangatu-GO, in 2011 and 2012. The firstwas well irrigated throughoutplant developmentand the other onlyup to40 days afteremergence,whenwater stress wasapplied. Irrigationswere performedin the first experimentand duringthe phasewithout water deficitin the secondexperiment tokeep thesoil waterpotentialat 0.15m depthabove-0.025MPa.During thewater deficit,irrigationswere appliedwhen thesoil waterpotentialreached-0.06MPa. Multivariate analysis using the Ward's method was applied and the genotypes were classified in six and seven clusters, considering the average yield in the two years of experimentation, with and without drought stress, respectively. The most productive cluster under drought was composed of the genotypes AB062041, Douradão, Guarani, BRS Aimoré, and Tangará. The first four genotypes of this cluster were also ranked in the second most productive cluster under well-irrigated conditions. Under drought stress, the number of days to flowering presented negative correlation with grain yield. Additionally, it was observed thatthe precocityof the mostproductive genotypesunderdrought stress wasassociated with lowerspikelet sterility and that the genotypes with fewer grains per panicle were the earliest. It was also foundthat the grain yieldwassignificantlycorrelated with the 100-grain weight, suggesting that the increase ingrain weightoffset the reductionin the number ofgrains per paniclein effecting rice grain yieldunderdrought stress. In the selection for drought stress conditions should be prioritized genotypes that evaluated under this conditions show precocity and less dense panicles, but with low sterility and greater 100-grain weight.

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