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Selection of sorghum hybrids aiming at earliness, smaller height and high grain yield

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The objective of this work was to identify short season hybrids of high specific combining ability (SCA) and that have adequate height for harvesting and high grain yield. Thirty-six hybrids derived from the cross between 12 sorghum lines (6x6) were evaluated in 2011/2012 at Sinop-MT and Sete Lagoas-MG in Brazil. The experimental design was a randomized complete block with two replicates. The traits evaluated were: days to flowering (DF); plant height (AP); and grain yield (PROD). For the diallel analysis, the model proposed by Geraldi and Miranda Filho (1988) was adopted, which consists of an adaptation of Griffing's model IV (1956). The SCA estimates of each group of lines were plotted, where the axes corresponded to the two environments analyzed. All analysis was performed with the Genes software. There was significance for the effects of crosses, environments (except flowering) and interaction between crosses and environments, indicating the diversity of the lines and their different responses to environmental variation. By the unfolding of the environment mean square in variations attributed to crosses, general combining ability (GCA I and II) and SCA, it was possible to verify significance for most of the traits, which reinforces the importance of conducting experiments in several environments for a more accurate evaluation of the main effects involved in controlling the traits. The hybrid 22 stands out due to its earliness, adequate height for mechanized harvest and the highest grain yield among all the hybrids obtained at Sinop (>5 t ha⁻¹). The SCA estimates of this hybrid negative effects for DF and positive for PROD in both environments, confirming that the allelic complementarity results in higher means for this trait.