



## Selection indices to identify drought-tolerant grain sorghum cultivars

C.B. Menezes<sup>1</sup>, C.A. Ticona-Benavente<sup>5</sup>, F.D. Tardin<sup>1</sup>, M.J. Cardoso<sup>3</sup>,  
E.A. Bastos<sup>3</sup>, D.W. Nogueira<sup>2</sup>, A.F. Portugal<sup>1</sup>, C.V. Santos<sup>4</sup> and  
R.E. Schaffert<sup>1</sup>

<sup>1</sup>Embrapa Milho e Sorgo, Sete Lagoas, MG, Brasil

<sup>2</sup>Universidade Federal de Lavras, Lavras, MG, Brasil

<sup>3</sup>Embrapa Meio Norte, Teresina, PI, Brasil

<sup>4</sup>Universidade Federal de São João Del-Rei, Sete Lagoas, MG, Brasil

<sup>5</sup>Instituto Nacional de Pesquisas da Amazônia, Manaus, AM, Brasil

Corresponding author: C.B. Menezes

E-mail: cicero.menezes@embrapa.br

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**ABSTRACT.** Twenty-five cultivars of grain sorghum [*Sorghum bicolor* (L.) Moench] were examined under both drought stress and normal conditions in 4 experiments. In each condition, genotypes were evaluated in a factorial experiment using a randomized complete block design with 3 replications. Eight drought tolerance indices including stability tolerance index, mean productivity (MP), geometric MP, harmonic mean, stress susceptibility index, tolerance index, yield index, and yield stability index were estimated for each genotype based on grain yield under drought ( $Y_s$ ) and irrigated conditions ( $Y_p$ ). The results indicated that there were positive and significant correlations among  $Y_p$  and  $Y_s$  with geometric MP, MP, harmonic mean, and stability tolerance index, indicating that these factors are better predictors of  $Y_p$  and  $Y_s$  than tolerance index, stress susceptibility index, yield stability index, and yield index. Based on adjusted means at  $Y_p$  and  $Y_s$ , indices geometric

MP, MP, harmonic mean, and stability tolerance index, unweighted pair group method with arithmetic mean cluster and biplot analysis, the most tolerant cultivars were '9929020', '9929034', and 'N 95B'.

**Key words:** Abiotic stress; Drought stress; *Sorghum bicolor*; Sorghum breeding; Sorghum yield