



# XIII SIGM

International symposium on  
genetics and breeding

## ESTIMATING GENOTYPE X ENVIRONMENT INTERACTION FOR GRAIN YIELD IN SOYBEAN

XIII International Symposium on Genetics and Breeding, 13ª edição, de 25/10/2022 a 27/10/2022

ISBN dos Anais: 978-65-5465-014-4

**COSTA; Ana Lucia Aranha da <sup>1</sup>, ARAÚJO; Maurício dos Santos <sup>2</sup>, ALVES; Andressa Kamila Souza <sup>3</sup>, PEREIRA; Guilherme Rodrigues <sup>4</sup>, CHAVES; Saulo Fabrício da Silva <sup>5</sup>, BEZERRA; André Ricardo <sup>6</sup>, DIAS; Luiz Antônio dos Santos <sup>7</sup>**

### RESUMO

Soybean (*Glycine max*) crop is of great importance worldwide due to its high protein and oil content. Brazil is leader in world production with 135 million tons. Plant breeding aims to select productive genotypes with predictable performance over the years. However, genotype x environment interaction (GEI) can difficult the recommendation of cultivars. This problem occurs due to the differential performance of genotypes in the environments, especially in the context of cross-over interaction. Here, we selected soybean genotypes with general performance and high stability via REML/BLUP approach. We evaluated sixty-eight genotypes in a randomized complete block design with three repetitions, in three locations in Mato Grosso do Sul state (E01 = Sindrolândia; E02 = Anaurilândia; and, E03 = Antônio João) conducted in the crop years 2019/2020 and 2020/2021. We evaluated grain yield and collected data on the basis plot area which was converted to kg/ha <sup>-1</sup>. We used the Mean Harmonic Relative Performance of Genotypic Values (MHRPGV) and the Weighted Average of Absolute Scores (WAASB) in order to select genotypes based on overall performance and weighted for stability. All analyses were performed in R software, by using Metan package. By the MHRPGV parameter the genotypes G51 (2854.33 kg/ha <sup>-1</sup>), G34 (2662.55 kg/ha <sup>-1</sup>), G22 (2791.91 kg/ha <sup>-1</sup>), G35 (2608.42 kg/ha <sup>-1</sup>), G45 (2779.92 kg/ha <sup>-1</sup>) performed better than the general average (2443.45 kg/ha <sup>-1</sup>). By the WAASB index the genotypes G51 (2633.00 kg/ha <sup>-1</sup>), G22 (2587.00 kg/ha <sup>-1</sup>), G45 (2578.00 kg/ha <sup>-1</sup>), G02 (2545.00 kg/ha <sup>-1</sup>) and G03 (2543.00 kg/ha <sup>-1</sup>) were superior to the general average. The genotypes G51, G22 and G45 performed similarly in both analyses. G51 stood out, even though it was not the most stable, it was the most productive.

**PALAVRAS-CHAVE:** Soybean, genotype x environmental interaction, REML/BLUP

<sup>1</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br

<sup>2</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br

<sup>3</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br

<sup>4</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br

<sup>5</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br

<sup>6</sup> Fundação MS, Mato Grosso do Sul, ana.costa15@ufv.br

<sup>7</sup> Universidade Federal de Viçosa, ana.costa15@ufv.br