

Yield stability of tropical soybean genotypes in selected agro-ecologies in Uganda

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Abstract

Differential yield response of a genotype is the result of its interaction with the prevailing environment. This makes the task of selecting widely adapted and best soybean genotypes challenging under varied target production environments. The objectives of this study were to; (i) determine the mean performance and stability of 30 elite soybean genotypes in eight different locations, (ii) determine soybean mega-environments in Uganda and (iii) assess the discriminating and representative power of the test environments for soybean seed yield. A field study was conducted for six seasons across eight locations in Uganda. Among the tested 30 soybean genotypes, BSPS 48A-9-2 had the highest mean grain yield of 1 277 kg ha⁻¹; followed by BSPS 48A-28 (1 256 kg ha⁻¹). The genotype and genotype-by-environment (GGE) biplot analyses indicated that the eight test locations can be classified into three mega-environments, while Bulindi was the most discriminating and representative test environment for soybean production in Uganda. Genotypes BPS 48A-9-2, BPS 48A-31 and Nam II × GC 44.2 are recommend for further evaluation under farmers' production conditions for selection and release as new soybean varieties in Uganda.

Keywords: biplot, GEI, GGE, yield stability