

ABSTRACT

This study was done to determine the effects of varying soil moisture regimes on CO₂ assimilation of soybean [*Glycine max* (L.) Merrill] in pots under greenhouse conditions during 2017 and 2018 cropping seasons. The experiment was conducted as a Randomized Complete Block Design (RCBD) in a 4 x 6 factorial treatment arrangement and replicated 3 times. Soil moisture regimes (80, 60, 40 and 20% of field capacity) and cultivars (Gazelle, Nyala, EAI 3600, DPSB 8, Hill and DPSB 19) were first and second factors, respectively. Collected data were subjected to Analysis of Variance (ANOVA) using Linear Mixed Model in GENSTAT. Significantly different treatment means were separated using Tukey's test at 0.05 significance level. Leaf relative water content, stomata conductance, photosynthesis rate and sub-stomatal CO₂ concentrations significantly ($P < 0.001$) declined with increasing soil moisture stress. Total leaf chlorophyll content increased ($P < 0.001$) with increased soil moisture stress. Cultivars DPSB 19 and DPSB 8 had relatively higher leaf relative water content and stomata conductance at reduced soil moisture regime at 20% moisture from field capacity indicating moisture stress tolerance potential of the cultivars.