

Physiological Analysis of Drought Stress Response in Groundnut (*Arachis hypogaea* L.)

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Groundnut (*Arachis hypogaea* L.) is an important legume widely cultivated in West Africa where it represents the main source of agricultural income, rich in protein and essential vitamins that compliments the diets of urban and rural people in the region. It is usually grown under rain fed conditions, most of the sub-Saharan countries were known to be particularly vulnerable to climate change and climate projections show closer frequencies of extreme weather events, higher temperatures, and increasingly scarce water resources leading to drought which is widely known as the major abiotic factor limiting global agricultural production.

The purpose of the study is to use physiological markers to screen some groundnut varieties as drought tolerant and sensitive using the physiological approach. The evaluation was conducted in a greenhouse at Texas A&M Agrilife research station with Nine groundnut varieties using a randomized complete block design with four replications under two water regimes; well watered and water stressed. Five drought tolerant traits; Spad chlorophyll meter reading(SCMR), Chlorophyll a fluorescence ratio (Fv/Fm), Stomatal conductance, Specific leaf area and Relative water content were measured and analyzed. All the drought sensitive varieties showed gradual and significant decrease with respect to the drought related indices, which showed that three of the varieties were drought tolerant(CV3, CV4 and CV9), while others are susceptible to drought.