

Growth, Physiological Attributes and Yield of Selected Groundnut (*Arachis hyogaea* L.) Cultivars Affected by Moisture Stress during the Flowering Stage

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Drought being the most important environmental stress severely impairs plant growth, limits plant production and the performance of crop plants more than any other environmental stress factors. An experiment was conducted at the Agronomy farm of the Eastern University, Sri Lanka during the *Yala* 2017 to determine the effects of drought on the growth physiology and yield of selected groundnut cultivars. Indi, Lanka jumbo and Tissa groundnut cultivars were used for this study. Polyethylene bags were filled with topsoil, red soil and compost and one hundred and ninety-two bags were used. Moisture stress was imposed for a period of ten days by withholding the water continuously during the flowering stage. The control plants were watered to Field Capacity at two days interval. This experiment was laid out in the Randomized Complete Block Design with six treatments (T₁, T₃ and T₅ were control, T₂, T₄ and T₆ were moisture stressed) and four replications and the treatments were arranged in 3×2 factor factorial design. Moisture stress has significantly ($p < 0.05$) reduced the measured physiological growth attributes in terms of chlorophyll content, Leaf Area Index and yield compared to the control treatment. The highest values of chlorophylls a (0.98 mg g^{-1}), b (0.79 mg g^{-1}) and total chlorophyll (1.7 mg g^{-1}) were obtained in the groundnut cultivar Indi and the lowest (Chl. a- 0.5 mg g^{-1} , Chl. b- 0.3 mg g^{-1} and total Chl.- 0.9 mg g^{-1}) were found in Tissa. The highest Leaf Area Index (0.58) was obtained in the groundnut cultivar Indi and the lowest (0.33) was found in Tissa. The highest yield (0.8 t ha^{-1}) was recorded in the cultivar Indi and the lowest (0.3 t ha^{-1}) was found in Tissa under moisture stressed condition. Hence, this study revealed that Indi groundnut cultivar has shown better growth performance and yield than the others when exposed to moisture stress during the flowering stage. As such, this cultivar could be suggested in the arid parts of the Eastern province.

Keywords: Chlorophyll content, Groundnut, Leaf area index, Moisture stress, Yield