Effect of Different Levels of Nitrogen Fertilizer on Growth and Yield Performance of Different Varieties of Groundnut (*Arachis hypogea* L.)

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Efficient utilization of applied fertilizer is essential to reduce the cost of fertilizer as well as environmental pollution. An experiment was conducted to assess the effect of different levels of nitrogen fertilizer on growth and yield performance of selected varieties of groundnut (*Arachis hypogea* L.) during the period of January to May 2020. Two factor factorial experiment was conducted in split plot design with three replicates. Nine levels of nitrogen fertilizer application; basal and topdressing N level 0% (control treatment (T_1), basal N level 0% and topdressing N level 50% (T_2), basal N level 0 % topdressing N level 100% (T_3), basal N level 50% and topdressing N level 0% (T_4), basal N level 50% and topdressing N level 50% (T_5), basal N level 50 % and topdressing N level 100 % (T_6), basal N level 100% and topdressing N level 0% (T_7), basal N level 100 % and topdressing N level 50% (T_8) and basal N level 100 % and topdressing N level 100% (T_9) were taken as the first factor and three groundnut varieties Tissa (V_1), Indi (V_2) and KCGN 1 (V_3) were used as the second factor. Groundnut varieties were planted at the spacing of 45 cm × 15 cm and all the other agronomic practices were carried out according to the recommendations of the Department of Agriculture except for fertilizer application. The soil properties, growth and yield parameters were recorded and shelling percentage was calculated. To find the significant differences among treatment combinations, ANOVA was performed by using SAS 9.1 package. The means were separated by using Duncan's Multiple Range Test (DMRT) at p= 0.05 to find out the best treatment combination. Plant height (cm) and yield parameters such as fresh weight of pods per plant, dry weight of pods per plant, matured pods number per plant, immature pods number per plant, 100 pods and seed weight, shelling percentage were recorded highest in treatment T_9 and non-significant difference was found between T_6 with T_9 treatment in Tissa variety. There was no interaction effect found among different levels of nitrogen fertilizer and varieties. Accordingly, it can be concluded that basal N level 50% and topdressing N level 100% (T_6) treatment and variety Tissa can be selected as a suitable treatment combination (T_6V_1) to achieve higher yields from groundnut for efficient utilization of nitrogen fertilizer while reducing cost.

Keywords: Groundnut, Nitrogen Level, Shelling percentage, Yield