

EFFECT OF GYPSUM APPLICATION ON GROWTH, YIELD AND QUALITY OF GROUNDNUT (*ARACHIS HYPOGAEA* L.) VAR. TISSA IN RED-YELLOW LATOSOLS OF KILINOCHCHI DURING THE MAHA SEASON

Nerusha R¹, Ekanayaka A.H¹, Nayanarangani M.D.P^{2*}

¹Department of Urban Bioresources, Faculty of Urban & Aquatic Bioresources, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka

²Regional Agriculture Research and Development Centre, Kilinochchi, Sri Lanka

*Corresponding author: dimuthunayanarangani@gmail.com

Groundnut (*Arachis hypogaea* L.) is an important oilseed crop in Sri Lanka, but its productivity in the Kilinochchi District is often limited by calcium and sulphur deficiencies in red-yellow latosol. This study was conducted at the Regional Agricultural Research and Development Centre, Kilinochchi, during the Maha season to evaluate the effects of different gypsum application rates and timings on the growth, yield and quality of groundnut (var. *Tissa*). The experiment was arranged in a Randomized Complete Block Design with five treatments (T₁ (control + recommended NPK), T₂ (20 kg gypsum/acre at 30 days), T₃ (20 kg gypsum/acre at 30 days + NPK), T₄ (20 kg/acre gypsum as basal + 20 kg/acre top dressing + NPK/acre at 30 days), and T₅ (40 kg gypsum/acre at 30 days + NPK)) and three replications. Data were analyzed using ANOVA, and means were separated using Tukey's HSD test at $p \leq 0.05$. Results showed that gypsum applications positively influenced growth and yield parameters. At 60 DAS, T₅ showed the highest plant height (39.36 ± 1.09 cm) and branches per plant (4.67 ± 0.58) compared to the control (37.53 ± 2.44 cm and 3.67 ± 0.58). Treatment T₅ recorded the highest number of pods per plant (42.00 ± 7.51), fresh pod weight (57.00 ± 7.81 g/plant), dry pod weight (41.67 ± 6.98 g/plant), and pod yield (2.31 ± 0.06 t/ha), with increases of 48.2%, 25.7%, 35.9%, and 28.4%, respectively, over the control. Pod yield ($p = 0.020$), kernel weight ($p = 0.003$), and shelling percentage ($p = 0.011$) were all significantly improved by gypsum application, with T₅ showing the highest values and increases of 28.4%, 19.8%, and 12.4% over the control, respectively. In conclusion, the application of 40 kg/acre of gypsum at 30 days after sowing along with the recommended NPK is the most effective treatment for increasing groundnut production in red-yellow latosol of Kilinochchi district during the Maha season.

Keywords: pod development, shelling percentage, soil amendments, soil chemical properties, yield enhancement