

EFFECT OF FOLIAR NUTRIENTS APPLICATION ON GROWTH AND YIELD OF COWPEA

R. A. S. Rathnayaka¹, R. L. Senanayake² and W. C. P. Egodawatta¹

¹Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

²Field Crops Research and Development Institute, Mahailuppallama, Sri Lanka.

Recently, application of foliar nutrients has been a common practice among pulse farmers for exploiting greater yields. Despite not having a recommendation for short-season legumes, farmers are using foliar nutrients in different forms even without knowing the effectiveness. A field experiment was conducted to assess the effectiveness of commonly used foliar nutrient applications on growth and yield of cowpea (*Vigna unguiculata* (L.) Walp.) with four supplementary inorganic fertilisers. The experiment was conducted at the Field Crop Research and Development Institute, Mahailuppallama (DL₁₈), during April – July (Yala), in 2018. The field experiment was arranged in a randomised complete block design with ten treatments in three blocks. Foliar nutrients; KNO₃ 5 gL⁻¹ and 7.5 gL⁻¹, Ca(NO₃)₂ 4.1 gL⁻¹ and 6.06 gL⁻¹, Albert solution 1 gL⁻¹ and 2 gL⁻¹, Urea 2.5 gL⁻¹ and 5 gL⁻¹ were coupled with basal nutrient and ratios of recommendation. The two control treatments were sole water spray with basal dressing and zero fertilisers. Foliar nutrient mixtures applied three weeks after planting and after the first harvest. Dry matter production and yield was observed at 50% flowering and harvesting. SPAD readings and leaf area index at 50% flowering stage was insignificant ($p < 0.05$) for all treatments. Total root length in KNO₃ 7.5 gL⁻¹ treated was significantly lower compared to the treatments with sole water with basal and urea 5 gL⁻¹ sprayed treatments, while other treatments were similar with the highest and lowest. Total plant N uptake at 50% flowering was significantly higher in Albert solution 2 gL⁻¹ treated plants and quantitatively it was 19.4 gkg⁻¹. The final yield of KNO₃ 7.5 gL⁻¹ treated plants was significantly higher compared to Urea 2.5 gL⁻¹ and Albert solution 2 gL⁻¹ treated plants. Highest seed yield was 3.12 tha⁻¹, whereas the lowest was 1.59 tha⁻¹, however, seed yield of the rest of the treatments remained insignificant to the highest and the lowest. Despite the highest performances of KNO₃ 7.5 gL⁻¹, rest of the foliar applications were similar ($p > 0.05$) indicating a low response to foliar nutrient application and adequacy of the current fertiliser recommendation for achieving higher yields from cowpea; probably for all short-season pulses too.

Keywords: Cowpea, Effectiveness, Foliar application