Response of sorghum to soil and foliar application of potassium fertilizers under sandy clay loam conditions

P Naga Malleshwaramma, I Usha Rani, Y SudhaRani and S Bharathi
Department of Soil Science & Agricultural Chemistry,
Acharya N G Ranga Agricultural University,
Agricultural College, Bapatla-522101, Andhra Pradesh, India

ABSTRACT

This study investigates the potential of potassium-releasing bacteria (KRB) and foliar application of potassium fertilizers—potassium nitrate (KNO*f*) and potassium humate (KH), as alternatives to conventional muriate of potash (KCl) in sorghum cultivation. Potassium, a vital macronutrient, plays a critical role in various physiological functions, yet its availability in sandy clay loam soils is often constrained due to leaching and fixation, necessitating effective potassium management strategies. A field experiment was conducted in a randomized block design to evaluate the impact of KRB and foliar potassium sources in combination with varying levels of inorganic fertilizers on crop yield and soil fertility. The treatment receiving 100% recommended dose of potassium (RDK) + KRB recorded the highest grain yield and available potassium. Treatments with 100% RDK and 75% RDK + foliar spray of 1% KNO*f* at 30 and 45 days after sowing (DAS) were statistically on par with 100% RDK + KRB in terms of grain yield. Similarly, 75% RDK + KRB was comparable to 100% RDK + KRB for available potassium. The findings suggest that both KRB and foliar KNO*f* application can effectively enhance crop performance and soil potassium availability. Integrating biofertilizers with inorganic fertilizers and employing foliar nutrition offers a viable strategy for reducing chemical fertilizer use, minimizing nutrient losses, and promoting sustainable sorghum production.

Keywords: *Potassium releasing bacteria (KRB), Potassium nitrate (KNO_3), Potassium humate (KH) and potassium.*