

# Polyhalite effectiveness as an alternative potash source in Tanzania

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## Abstract

Polyhalite, commercially known as POLY4, comprises potassium (14% K<sub>2</sub>O), magnesium (6% MgO), calcium (17% CaO) and sulphur (19% S) with the chemical formula (K<sub>2</sub>SO<sub>4</sub>.MgSO<sub>4</sub>.2CaSO<sub>4</sub>.2H<sub>2</sub>O). As an organic multi-nutrient fertilizer, polyhalite is a suitable alternative potash source in support of sustainable agriculture. Exploration by Sirius Minerals and characterization work by Kemp et al. (2016) identified a resource of over 2.5 billion tonnes of polyhalite in the UK with an estimated supply for over 50 years. Contemporary research, particularly in tropical environments, on polyhalite is limited; hence a requirement to conduct research trials to determine polyhalite fertilizer potential.

In the Southern Highlands of Tanzania, six trial sites growing corn (*Zea mays* L.) were established to assess potassium supply from polyhalite against potassium chloride (MOP) using micro-dosing to apply 20 kg K<sub>2</sub>O ha<sup>-1</sup>. Measured treatments were: 1) Control in which no fertilizer was applied; 2) Recommended practice of 120-60-0 (NP treatment, 120-60-0); 3) NP treatment + Muriate of Potash (MOP); 4) NP treatment + Polyhalite (POLY4); and 5) NP treatment + MOP + Kieserite (MOP + Kieserite).

Results from Tanzania indicated that all treatments outperformed control to demonstrate the need for potassium. Furthermore, the importance of sulphur was identified by yield improvements for both POLY4 and MOP+Kieserite treatments over MOP across all six sites (Pavuluri et al., 2017). POLY4 and MOP+Kieserite treatments offered similar yields indicating no response to magnesium in either treatment.

Research trials continue across Tanzania to validate polyhalite as an alternative potash source on a wider range of crops and soil environments.

## References

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