SUS-TERRA ENHANCED EFFICIENCY PHOSPHORUS FERTILIZER ON POTATO GROWN IN CALCAREOUS SOIL

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ABSTRACT

Potato (*Solanum tuberosum* L.) has a relatively high demand for phosphorus (P), especially on calcareous soil where the availability of P is hindered by poor solubility. Sus-Terra is claimed to be an enhanced efficiency fertilizer compared to other P sources. The objective of this trial was to evaluate the differences in uptake efficiency and yield for multiple P sources compared to a no P control applied to Russet Burbank potato. Field trials with six replications in a RCBD were performed in calcareous loamy sand soil in Provo, Utah during 2021 to evaluate various rates and blends of Sus-Terra fertilizer (The Mosaic Company, Tampa, FL, USA) compared to traditional P sources and an untreated control. Traditional P sources included MAP and MES10 (The Mosaic Company). The residual soil test P was low (15 mg P kg^{-1}). Petiole P was measured four times in July and August and yields were measured in September. There was a significant increase compared to the untreated control for most parameters as a result of P fertilization, but there were no significant differences between any of the P fertilizer treatments. However, an orthogonal comparison of three combined Sus-Terra treatments to three combined monoammonium phosphate (MAP) treatments resulted in significant differences, with Sus-Terra resulting in highly significant increases in US No. 1 and Marketable (US No. 1 + 2) yields as compared to the untreated control. The MAP treatments resulted in a significant difference for US No. 1 yield, but not for Marketable yield. Both Sus-Terra and MAP treatments resulted in significant increases in total yield and highly significant increases for petiole P concentration over the control. Sus-Terra is an effective source of P fertilizer, with a slight advantage over MAP in this trial. An additional study was completed in 2022 with results pending.