Multi-locational Agronomic Trials with Unreactive Phosphate Rock. (A06-smithson063821-Poster)

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Abstract:

Phosphorus deficiency is widespread in East Africa, and local phosphate rocks (PRs) may be an affordable alternative to expensive imported fertilizers. Busumbu phosphate rock (BPR) is typical of the several hundred million tonnes of PR deposits in eastern Uganda: 5 to 10% total P (up to 14% P with magnetic Fe oxides removed), but with low (0.3%) neutral ammonium citrate solubility. We tested BPR on 26 farms at 5 locations in western Kenya, with the following treatments, all with 60 kg N and 60 kg K ha-1, and 80 kg P ha-1 for plus-P treatments: No P, BPR, Minjingu PR (a reactive Tanzanian PR), TSP, and a co-granulated BPR:TSP blend at 90:10 weight ratio. Yields were significantly ($p < 0.05$) increased by all P sources, in the order TSP (5.8 t ha-1) = MPR (5.2) > BPR:TSP blend (4.1) = BPR (4.0) > No P (2.7). Agronomic effectiveness relative to TSP averaged 48% (range 20 to 77%). At current prices and 48% average agronomic effectiveness, BPR is economically attractive in western Kenya. Co-granulated BPR:TSP blends showed no advantage over BPR alone.

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