

Title	Evaluation of Agronomic Effectiveness of Activated Phosphate Rock
Authors	Agyin-Birikorang, S., Upendra Singh, Job Fugice Wendie D. Bible, Joaquin Sanabria, and V. Henry
Abstract	<p>Unlike water soluble phosphorus (P) fertilizers, most phosphate rocks (PRs) are non-reactive in agricultural soils, particularly in neutral to alkaline soils. One innovative and practical approach to enhancing PR agronomic efficiency is “activation” of the PRs with water soluble P (WSP) fertilizers. In greenhouse studies unreactive PR was activated with a modest amount of WSP at a ratio 20% WSP to 80% PR (4:1 PR/WSP ratio = “0.2 Activation”) and evaluated on three soils with varying acidity/alkalinity level (Hiwassee loam – 5.49, Greenville loam – 6.80, and Sumter – 7.57). Rice and soybeans were used as test crops during the spring/summer seasons, and wheat during the winter season. P uptake was determined at three growth stages (4 weeks after planting, anthesis, and grain filling). At maturity, the crops were harvested to determine grain and biomass yields, grain and straw P contents, and to calculate the relative agronomic effectiveness (RAE) of the P sources. Irrespective of the soil, crop and planting season, significant improvement in the agronomic effectiveness of the “activated” PR was observed, with an average RAE value greater than 80%. The combined results suggests that, combination of a modest amount of WSP with PR could be a cost effective means of enhancing P availability in PRs without the soil pH constraint on the agronomic effectiveness of PRs. Further studies will evaluate the effectiveness of the “activated” PRs under field conditions.</p>
Publication date	2016-11-07
Citation	Agyin-Birikorang, S., U. Singh, J. Fugice Jr., W. Bible, J. Sanabria, and V. Henry. 2016. “Evaluation of Agronomic Effectiveness of Activated Phosphate Rock,” Presented at the 2016 ASA, CSSA and SSSA International Annual Meetings, Phoenix, AZ, USA.
Publication link	https://scisoc.confex.com/crops/2016am/webprogram/Paper102241.html