

BIOLOGICAL MEANS OF IMPROVING PHOSPHATE  
AVAILABILITY FROM EPPAWALA APATITE

The work reported in this thesis is the  
results of my own investigations carried out in the  
Plant Science Department of the Research Institute  
of Sri Lanka.

by

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I certify that this statement is correct.  
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ABSTRACT

Limited use is made of Eppawala apatite still because of the low availability of P from it. This study was made to find out the role of several biological processes known to affect the availability of P from low soluble rock phosphates.

Pueraria, Centrocema, Stylosanthus, Paspalum and Panicum differed in their ability to uptake P from apatite. Grasses utilized P from apatite more efficiently than the legumes.

VA mycorrhiza did not influence the utilization of P from apatite, instead they greatly increased the growth and uptake of P from the soil pool.

Presence of phosphate dissolving bacteria in the rhizosphere also improved the utilization of P from apatite by Pueraria.

Application of apatite with leaf litter did not improve the uptake of P from it. Leaf litter itself improved plant growth and P uptake by the indicator crop.

Indirect mobilization of P from apatite through litter of apatite fertilized Panicum and Stylosanthus was also investigated. Most of the P provided in the litter was not available to the indicator crop during a 6 month period.

Incorporating apatite sulphur mixtures in soil quickly released P which became available to the test crop. The lowest proportion of 10:2 of apatite and sulphur was the most effective. Infact the effect of these mixtures did not last long.

Pelletizing apatite and sulphur with an inoculum of sulphur bacteria delayed the release of P and probable fixation of released P. Highest cumulative effects were obtained from the pellets of 20:1 proportion. Coating these pellets with rubber to increase stability decreased the P availability.