INFLUENCE OF ROCK PHOSPHATE ON AVAILABLE PHOSPHORUS AS MEASURED BY PLANT UPTAKE AND SOIL EXTRACTANTS

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTERS OF SCIENCE

Department of Crop and Soil Science

1979

ABSTRACT

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A greenhouse and laboratory study was conducted to determine the response of corn grown in three sandy loam soils to application of five rock phosphates (RP). The ACS solubility index for the five RP ranged from 22.6 to 1.2

Addition of RP to the Marlette and Tracy soils increased plant growth slightly and markedly increased total P uptake. RP addition to the Granby soil produced very little response.

Solubility of the RP had a marked influence on the response observed. The most soluble RP, North Carolina and Central Florida, gave the best response. Idaho and Tennessee RP produced only slight responses while Missouri, the least soluble RP, gave a slightly negative response.

Yield and total P uptake correlated very well with the amount of P extracted by Bray - 1 solution, water and 0.5 M ammonium citrate when North Carolina and Central Florida RP were applied. The correlations were quite low when the less soluble RP were used. Each of the three extractants reflected reasonably well the rate of RP added to the

three soils. The highest correlation coefficients were obtained when the most soluble RP were applied. Water soluble P correlated with total P uptake as well or better than Bray - 1 and ammonium citrate extractable P.