

P-Solubilizing inoculants

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Abstract: In the low-input cropping systems of Sub-Saharan Africa SSA, phosphorus P deficiency in crops is common due to the tendency of P to complex with iron and aluminum oxyhydroxides in acidic tropical soils. While applying high rates of P fertilizer and intercropping with crops that exude P-solubilizing organic acids most notably pigeonpea can increase P uptake, the scale-up potential of these two options is limited. Certain microorganisms, however, also release P-solubilizing organic acids. If applied as inoculants, these microorganisms could increase crop P uptake throughout SSA. Most research conducted on these microorganisms has been lab-based this has limited applicability to field conditions as it is not known which of the microorganisms isolated in the lab is active in the field. Moreover, inoculants currently on the market are not financially feasible for most farmers in SSA. The proposed project seeks to quantify the crop response to a P-solubilizing inoculant via field experiments in Western and Central Kenya and determine which of the applied microorganisms are actively solubilizing P via bioinformatics. The project aims to evaluate the potential of P-solubilizing inoculants to increase P uptake in SSA and use genomics to further optimize their production and reduce their cost.