

## COMPARISON OF CHEMICAL EXTRACTION METHODS FOR DETERMINATION OF AVAILABLE PHOSPHORUS IN SOILS

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Unlike other macro nutrients, availability of phosphorus (P) to plants is low. Assessment of available P is complicated, as it is regulated by many soil related factors. Soil pH in particular, is important in selecting a chemical extraction procedure for available P in soil. Generally, the suitability of an extraction method will be evaluated by correlating available P fraction extracted by a given method with any biological parameters such as yield, dry matter production and plant uptake.

In present study, Olsen, Bray-1, Sodium Acetate and Acetic acid methods were compared for their suitability to extract available P in some Sri Lankan soils. A green house pot experiment was conducted with three soils viz. Red Yellow Podsollic, Reddish Brown Latosolic and Reddish Brown earth collected from Nuwara Eliya, Gannoruwa and Mahailluppallama using maize (var. Aruna) as the test crop. Graded amounts of P in the form of TSP fertilizer (0, 100, 200 and 300 ppm) were added to pots before planting maize to have four different treatment combinations. Nitrogen and Potassium fertilizers were applied as recommended by Department of Agriculture. All the other necessary cultural practices were performed. Plants were harvested at mid bloom stage and subject to total P analysis. Soil samples were also drawn before planting and analyzed for available P using four extraction methods. The correlation between available P and uptake P was estimated for the comparison of four methods.

Results showed that Olsen and Bray - 1 methods gave higher correlation estimates ( $r = 0.7$  and  $0.77$ , respectively) between extractable P and plant uptake P than the Sodium Acetate and Acetic acid methods ( $r = 0.47$  and  $0.54$ , respectively) for all soils. When correlating uptake P with extractable P of individual soils, the former two methods gave stronger correlation for Mahailluppallama and Gannoruwa soils but not for Nuwara Eliya soil. Therefore, it can be concluded that Olsen and Bray - 1 methods are much suitable to be used in extracting available P in Mahailluppallama and Gannoruwa soils than in Nuwara Eliya soil.