

Surachet Aramrak 2007: Efficiency of Mehlich III and Ammonium Bicarbonate-DTPA Extractants in Evaluating Available Phosphorus and Potassium in Some Soil Series of Thailand.

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Thesis Advisor: Associate Professor Jongruk Chanchareonsook, D.Agr. 74 pages.

Efficiency of Mehlich III and ammonium bicarbonate - DTPA (AB-DTPA) in evaluating available phosphorus (P) and potassium (K) in Chai Badan, Lop Buri, Lum Narai, Chok Chai, Pak Chong, Khampaeng Sean, Tha Mai and Buri Rum soil series was studied. In addition, comparative study of their efficiencies with Bray II, Olsen and  $\text{NH}_4\text{OAc}$  was also elucidated. Corn hybrid (Suwan 4452) was used as the test crop. The design of the experiment was 8 x 3 factorial in CRD with three replicates. The eight soil series were the first factor while the three fertilizer treatments (NPK, complete; NP, -K; NK, -P) were the second factor. Relationship among amounts of P and K extracted with Mehlich III and AB-DTPA and those taken up by corn was determined.

The results showed that the amounts of P extracted with Mehlich III and Bray II were highly correlated ( $r = 0.863^{**}$  and  $0.989^{**}$ , respectively) while those extracted with AB-DTPA and Olsen were correlated ( $r = 0.754^*$  and  $0.803^*$ , respectively) with those absorbed by corn. The amounts of P extracted with Mehlich III, Bray II, AB-DTPA and Olsen could be used to predict the total-P uptake of corn with percentage of 74, 81, 57 and 64, respectively. The amounts of K extracted with Mehlich III, AB-DTPA and  $\text{NH}_4\text{OAc}$  was highly correlated ( $r = 0.930^{**}$ ,  $0.902^{**}$  and  $0.942^{**}$ , respectively) with those removed by corn. The amounts of K extracted with Mehlich III, AB-DTPA and  $\text{NH}_4\text{OAc}$  could be used to predict the total-K uptake of corn with percentage of 87, 81 and 89, respectively. The results indicated that both Mehlich III and AB-DTPA could be used efficiently to evaluate available P and K in soils. The efficiency of Mehlich III for assessing available P was similar to that of Bray II, but higher than those of AB-DTPA and Olsen. The efficiency of Mehlich III for evaluating available K was similar to that of  $\text{NH}_4\text{OAc}$ , but slightly higher than those of AB-DTPA. Therefore, both Mehlich III and AB-DTPA could be used as multi-element extractants to assess available P and K in soils with simultaneous extraction. However, the efficiency of Mehlich III was superior to AB-DTPA.

Surachet Aramrak.

Student's signature

Jongruk Chanchareonsook

Thesis Advisor's signature

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