

ABSTRACT

COMPARATIVE STUDY OF SOME METHODS FOR NUTRIENT EXTRACTION IN SOME EGYPTIAN SOILS.

Purpose:

This work aims to study the evaluation of P, K, Fe, Mn and Zn availability in some Egyptian soils and test the suitability of some methods, which are used to extract these nutrients under Egyptian soils conditions. Also, stepwise regression analysis was run to define the indigenous soil parameters affect vigorously on the amounts of available P, K, Fe, Mn and Zn extracted by the different extractants used.

Materials and methods:

To carry out this study, 5 methods were chosen for extracting available phosphorus and potassium for the studied soils. Also, 5 methods were chosen for extracting available Fe, Mn and Zn.

Also, a pot experiment was carried out to study the correlations between the amount of available nutrients extracted by different extractants used and their concentrations in barley plants.

Results:

The obtained results could be summarized for nutrients under study as follows:

Phosphorus:

The powerful of the extraction solutions of available-P could be arranged in descending order: Warren & Cooke, (1962), Knudsen et al, (1982) and Soltanpour & Schwab,

(1977). Also Available – p extracted by Soltanpour & Schwab (1977) was highly correlated with P- concentration in barley plants ($r = 0.603^{**}$) than the other methods.

Potassium:

The powerful of the extraction solutions of available - k could be arranged in the order of: Knudsen et al, (1982) followed by Warren & Cook (1962). Also K-extracted by Knudsen et al (1982) and Warren & Cooke (1962) were highly correlated with k – concentration in barley plants followed by Soltanpour & Schwab (1977). While the best significant correlation was noticed with Bray & Kurtz method (1945) the r-values were 0.469^{**} , 0.467^{**} , 0.414^{**} , and 0.315^{*} , respectively.

Iron:

The powerful of the extraction methods of available -Fe could be arrange in the descending order: Lakenen & Ervio, 1971; Knudsen et al 1982 and Soltanpour and Schwab (1977). Also, the highest correlation between Fe- concentration by barley plants and Fe- extracted by Knudsen et al (1982) with $r = 0.350^{**}$, while the lowest correlation was noticed by using Lakenen & Ervio (1971) with $r = 0.262^{*}$.

Manganese:

So, the powerful of the extraction methods of available - Mn could be arranged in the descending order: Lakenen & Ervio, 1971 Olsen & Carlson 1950, Soltanpour and Schwab 1977, Lindsay & Norvell, 1978 and Knudsen et al, 1982. Also Mn-concentration in barley plants significantly correlated with all Mn – extractability in the following order: - Olsen & Carlson, 1950 ($r = 0.602^{**}$) > Lakenen & Ervio, 1971 ($r = 0.$

460**) > Soltanpour & Schwab, 1977($r=0.262^*$) > Lindsay & Norvell, 1978 ($r= 0.256^*$) = Knudsen et al (1982).

Zinc:

The powerful of the extraction methods of available- Zn could be arranged in the order of: - Lakenen & Ervio, 1971 followed by Knudsen et al, 1982. Also Zn -concentration in barley plants significantly correlated in positive trend with available -Zn extracted by all extractants used. The highest correlation was with Knudsen et al., (1982), with achieved $r= 0.527^{**}$, while the lowest correlation was found incase of Zn-extracted with Lakenen & Ervio., (1971) $r= 0.289^*$.

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* ARABIC SUMMARY	