ABSTRACT

A comparative analytical study for the determination of some micronutrients (trace) elements (Zn, Fe, Cu, Mn, Co, Ni) was carried out in soil samples of middle and south of Iraq. Atomic absorption spectrophotometry was used through all study. Four extractants were used including nitric acid. Tthese extractants were chosed according to literature survey. The aim of using the four extractants (Ammonium acetate, Diethylene triamine penta acetic acid and Triethylen tetraamine hexa acitric acid and Nitric acid) were to establish soil tests for determination of bioavailability of cations under investigation.

To establish a relationship between the availability of trace elements and the amount absorbed by plants grown on same soil analysis were carried out for vegetables and plants in the same regions.

It is possible to summarise the results as follows:

1- For Zinc four extractants were used. TTHA gave (0.8-4.99) ppm Zinc. DTPA was found to extract (0.1-2.77) ppm. NH_4OAc gave (0.1-1.47) ppm. Nitric acid finally was capable for extracting (20.09-37.07)ppm.

2- For Iron four extractants were also being used and the levels of Iron in ppm were rang (3.37-10.38) (9.90-10.10) (10.09-10.9) and (52.4-298.6) ppm for TTHA, NH_4OAc, DTPA and HNO_3 respectively.

3- Copper: Four extractants were used and they gave different results according to the efficiency of complexion and availability of Copper: They were: (3.2-6.4), (1.99-3.2), (3.16-4.29) and (0-1.8) ppm for DTPA, TTHA, NH_4OAc and HNO_3 respectively.

4- Manganese: Three extractants were used; they were NH_4OAc, DTPA and HNO_3. These ectracts gave Manganese in ppm as (8.66-20.72), (3.62-10.2) and (0.09-6.6) ppm respectively.

5- Cobalt: Three extractants were used. The results were in ppm as follows: (0.08-0.89), (0.7-1.2) and (0.2-1.8) ppm for DTPA, NH_4OAc and HNO_3 respectively.

6- Nickel: Three extractants were used and gave the following results: (.2-1.97), (0.61-1.82) and (0.45-3.89) ppm for DTPA, NH_4OAc, HNO_3 respectively.

7- The levels of trace elements in selected plants grown in the same soils were determined using perochloric and nitric acids. They were found (0-6.4), (2.52-23.4), (2.1-17.5) and 1-1.97) ppm for Zinc, Iron, Manganese and Copper respectively.
The levels of trace elements in Iraqi soil indicate a deficiency; thus a continuous reclamation are always required in order to increase production and the levels of these micronutrients.