

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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**STUDIES OF CERTAIN FACTORS AFFECTING THE
AVAILABILITY OF SOIL IRON IN AL-DHAHERA
AREA, SULTANAT OF OMAN.**

BY

HAMED BIN GAMEEL BIN HUMAID AL-SHANDOODY
B.Sc.Agric. Ain Shams Univ., 1989

*A thesis submitted in partial fulfillment
of
the requirements for the degree of*

MASTER OF SCIENCE

In

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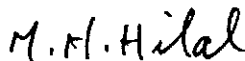


APPROVAL SHEET
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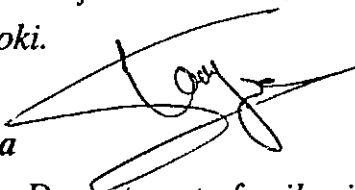
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ABSTRACT

Hamed Bin Gameel Bin Humaid Al-Shandoody, Studies of certain factors affecting the availability of soil iron in Al-Dhahera area, Sultanat of Oman. Unpublished Master of Science, Ain Shams University, Faculty of Agriculture, Department of Soil Science, 1997.

The aim of this work was to study iron status and factors affecting its availability in two representative soil collected from the Sultanat of Oman.

An incubation experiment was conducted to study the effect of CaCO_3 content, organic matter, forms of Fe application, sulphur and the time of incubation on the availability of Fe and other chemical properties of soil. Also, a greenhouse experiment was carried out to study the effect of organic matter and Fe-EDDHA soil or foliar application on the soil availability of N, P, K, Fe, Mn and Zn in the two soils and their effects on the dry weight, contents and uptake of some macro and micro nutrients of corn plants grown under different treatments. A factorial experiment in randomized complete block design was used in the two experiments. The data were analyzed statistically by analysis of variance and by multiple range test.

Results showed that the pH values were decreased from 8.27 and 9.15 to 7.88 and 8.47 for sand and sandy loam soil, respectively with 6 months of incubation. Total N and available P, Fe and Zn increased with organic matter applications for the two experiments soils. The same effect were observed for available K in incubated soils, but in the greenhouse soils, where plant grown, the available K and Mn decreased with application of O.M. This effects of O.M were higher for sandy loam soil (19% CaCO_3 and 1.4% O.M) than sand soil (28% CaCO_3 and 0.7% O.M) . Sulphur increased the availability of Fe and Mn in incubated soils treatments . With

increasing the time of incubation, the O.M, available P and Fe were decreased, but available Zn was increased. The treatments of incubated soils with Fe as chelated or mineral forms had no significant effect on the available content of Fe. On the other hand, the soil application of the Fe-EDDHA increased the availability of Fe in the greenhouse experiment soils. Organic matter applications increased the dry weight of corn and the concentration of P in the plants, and decreased the concentration of N, K and Mn in the corn plants . However, the plant uptake of all elemental nutrients were increased with O.M application. This effects were more pronounced for second soil than the first one . Plant content and uptake of Fe were slightly affected by soil or foliar Fe-EDDHA application .

Key Words

Iron chlorosis, CaCO_3 . Organic matter. Sulphur, Fe-EDDHA . FeSO_4 . Iron foliar. Available nutrients, Dry matter , Elemental content of corn plants .

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