EFFECT OF TREATED NATURAL SEDIMENTS ON NUTRIENTS AVAILABILITY AND PLANTS GROWN IN NEWLY RECLAIMED LANDS

By

NAIMA ABD EL-FATAH ABD EL-RAZEK ISMAIL

B. Sc. Agic.Sc. (Soil Science), Ain Shams University, 1980

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This thesis for M.Sc. degree has been approved by:

Dr. Hatem Abdel – Wahab El – Attar…….
Prof. Emeritus of Soil Science, Faculty of Agriculture, Alexandria University

Dr. Adel El-Sayed El-Leboudi……..
Prof. Emeritus of Soil Science, Faculty of Agriculture, Ain Shams University

Dr. Abdel -Smad Salem Ismail Hegazy……
Prof. Emeritus of Soil Science, Faculty of Agriculture, Ain Shams University

Date of Examination: 5 / 10 / 2010

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Under the supervision of:

Dr. Abdel -Smad Salem Ismail Hegazy

Prof. Emeritus of Soil Science, Department of Soil Science, Faculty of Agricultur, Ain Shams University (Principal Supervisor)

Dr. Shaban Mohamed Abdel -Rasuol

Head of Research of Soil Science, Soil and Water Research Institute, Agricultural Research Center

جامعة عين شمس
كلية الزراعة

رسالة ماجستير

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لجنة الإشراف:

د. عبد الصمد سالم إسماعيل حجازي
أستاذ الأراضي المتفرغ ، قسم الأراضى ، كلية الزراعة ، جامعة عين شمس (المشرف الرئيسي)

د. شعبان محمد عبد الرسول
رئيس بحوث الأراضى ، معهد بحوث الأراضى والمياه ، مركز البحوث الزراعية

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رسالة مقدمة من

نعيمة عبد الفتاح عبد الرازق اسماعيل

بكالوريوس علوم زراعية **(أراضي)** ، جامعة عين شمس ، ١٩٨٠

للحصول على

درجة الماجستير فى العلوم الزراعية

(أراضي)

وقد تمت مناقشة الرسالة والموافقة عليها

اللجنة:

د. حاتم عبد الوهاب العطار.....

أستاذ الأراضى غير المتفرغ ، كليه الزراعة ، جامعه الأسكندرية

د. عادل السيد اللبودي.....

أستاذ الأراضي المتفرغ ، كلية الزراعة ، جامعة عين شمس

د. عبد الصمد سالم إسماعيل حجازى.....

أستاذ الأراضي المتفرغ ، كلية الزراعة ، جامعة عين شمس

تاريخ المناقشة: ٥ / ١٠ / ٢٠١٠

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نعيمة عبد الفتاح عبد الرازق إسماعيل
بكالوريوس علوم زراعيه (أراضي) ، جامعة عين شمس ، ١٩٨٠

للحصول على
درجة الماجستير فى العلوم الزراعية
(أراضي)

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كلية الزراعة
جامعة عين شمس

٢٠١٠

ABSTRACT

Naima Abd-Elfatah Abd-Elrazek Ismail: Effect of Treated Natural Sediments on Nutrients Availability and Plants Grown in Newly Reclaimed Lands. Unpublished M. Sc. Thesis, Department of Soil Science, Faculty of Agriculture, Ain Shams University, 2010.

This study was carried out to indicate the effect of application of different types and rates of Egyptian natural sediments either loaded or unloaded by certain micronutrients on plant growth in calcareous and sandy soils. Therefore, three raw natural sediments, bentonite, vermiculite and rock phosphate were collected and cleaned from their impurities. The behavior of these sediments in water was evaluated through their subjection to swelling, different times, along with variable temperature and pH values. Also, these sediments were chemically loaded by Cu, Mn and Fe ions from $CuSO_4$, $MnSO_4$ and $FeSO_4$, respectively, under different concentrations, temperature and pH values. Moreover, a pot experiment was carried out to evaluate the effect of application for different rates of these unloaded and loaded sediments by the studied heavy metals. The study of the effect of heavy metal ions on the growth and total uptake by Zea-maize plants grown on sandy and calcareous soils will be cleared. The main results indicated that the highest swelling, adsorption and release of the studied heavy metal ions along with different sediment swelling in water took the following order:

bentonite> vermiculite > rock phosphate

Moreover, the growth and total micronutrients uptake of the studied sandy and calcareous soils; under investigation; were highly affected positively.

Key Words: bentonite, vermiculite and rock phosphate sediments; iron, manganese and copper ions; zea maize,

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