



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



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بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات

لم ترد بالأصل

Use of Improved Organic Fertilizers as Nutrients Sources

By

Laila Korany Mohamed Ali

B.Sc. (Soil Sci.), Ain Shams University, 1982

M.Sc.(Soil Sci.), Ain Shams University, 1994

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

DOCTOR OF PHILOSOPHY

in

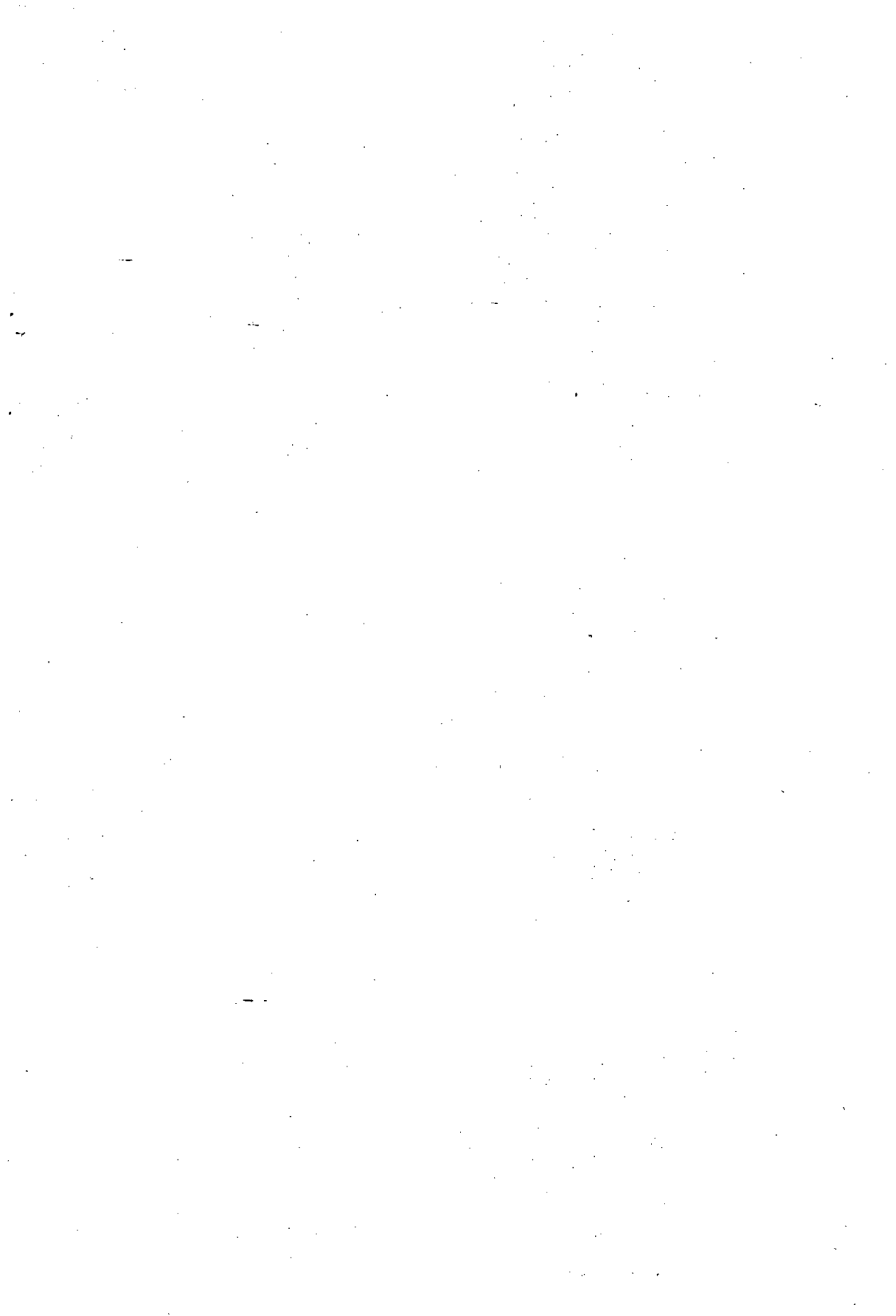
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(SOIL SCIENCE)

**Department of Soil Science
Faculty of Agriculture
Ain Shams University**

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ABSTRACT

Laila Korany Mohamed Ali, Use of improved organic fertilizers as nutrients sources. Unpublished Doctor of Philosophy dissertation, University of Ain Shams, Faculty of Agriculture, Department of Soil Science, 2001.

This work aim: to study the possibility of composting cotton stalks and rice straw and determination of their physical and chemical changes occurred during decomposition process. Also, the study involved the use of improved FYM with straw and chemical materials as soil manure. However, the use of non-improved organic manure for fertilizations in comparison with commercial inorganic fertilizers was evaluated.

In all cases, physical and chemical properties of the sandy soil in the experimental farm of Ismaillia, Agriculture Research Station as affected by organic manure application were determined after wheat and/ or corn harvestings. So, yield of wheat and corn crops as well as concentrations of macro and micronutrients in the leaves at flowering stage and in the wheat and corn grains were determined.

The obtained results from monitoring of the composting process showed that, EC and pH values were increased with increasing composting time of cotton stalks and rice straw heaps. Total nitrogen and chemically available P and K values were significantly increased during the decomposition process of rice straw as compared with cotton stalks; organic matter and C/N ratio were significantly decreased during the composting process. Rice straw compost, as manure, was better than cotton stalks one. Humic and fulvic acids isolated from rice straw piles were higher than those of cotton stalks. However, total micronutrients contents were significantly increased by advancing composting process; also, these elements were associated with fulvic acids relatively higher than with humic acids.

Improved FYM (FYM with soil and straw bedding and enriched with rock phosphate), followed by that enriched with superphosphate, resulted in lowest organic matter content and C/N ratio but highest CEC, total nitrogen and chemically available phosphorus and potassium. Application of cotton stalks or rice straw composts and improved farmyard manure significantly increased the chemically available N, P and K in the cultivated soil; rice straw was better than cotton stalks. Similarly, DTPA-extractable Fe, Mn, Zn and Cu were significantly increased due to the application of such composts after either wheat or corn harvestings. However, physical properties of the tested soil i.e, bulk density, hydraulic conductivity and moisture constants namely, field capacity, wilting point and available water were improved in all cases. Yield of wheat and corn crops and concentrations of N, P, K, Fe, Mn, Zn and Cu either in plant leaves at flowering stage or in grain yields of wheat and corn were increased in all manuring treatments. Generally, rice straw compost was the best organic manure followed by cotton stalks and FYM enriched with rock phosphate or superphosphate under the conditions of sandy soil.

FYM enriched with micronutrients produced the highest amounts of the extractable Fe, Mn, Zn and Cu as compared with other treatments of FYM. On the other hand, application of non-improved plant residues or FYM to the tested soil increased chemically available P, K, Fe, Mn, Zn, Cu and organic matter content as compared with inorganic fertilizer. Also, P, K and micronutrients concentrations in leaves or grains of wheat or corn crops were significantly higher in all manuring treatments (except of nitrogen) as compared to these of inorganic fertilizer, especially after corn harvesting.

Key words: compost, rice straw, cotton stalks, humic and fulvic acids, FYM, wheat, corn, soil properties.

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