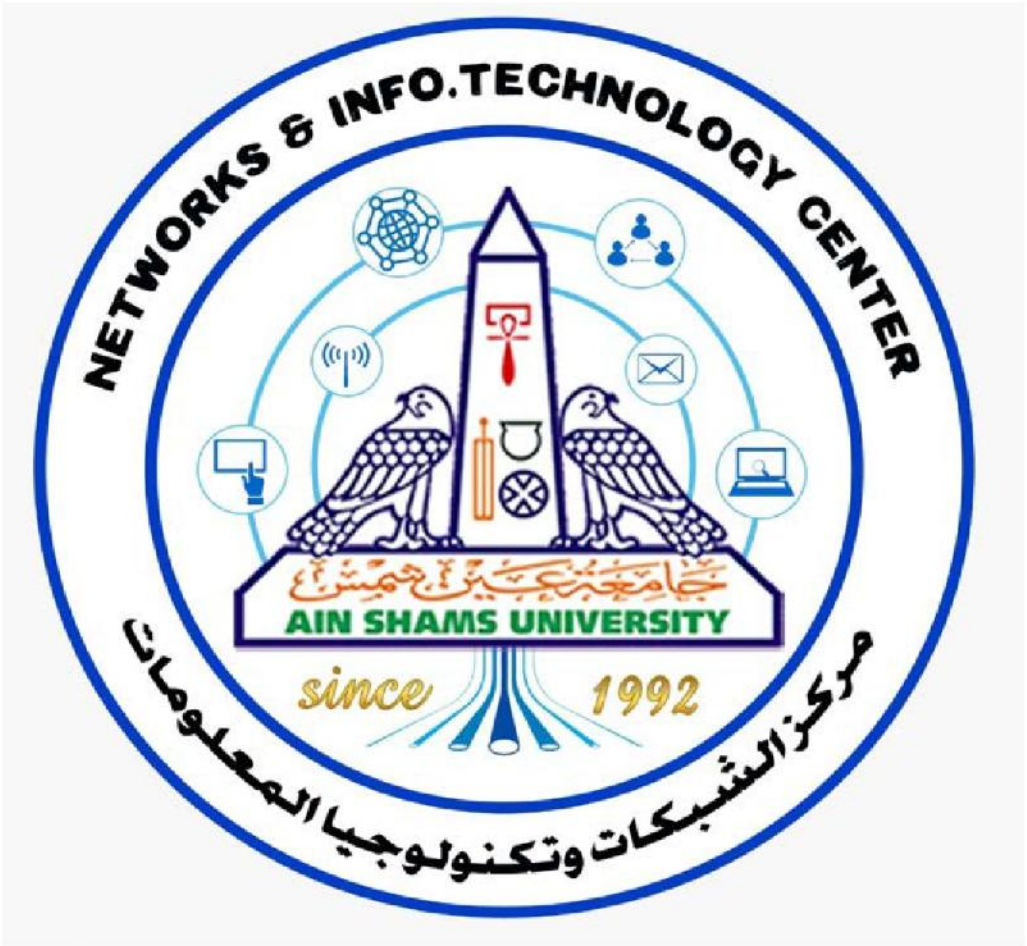
hossam maghraby

بسم الله الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



hossam maghraby

جامعة عين شمس

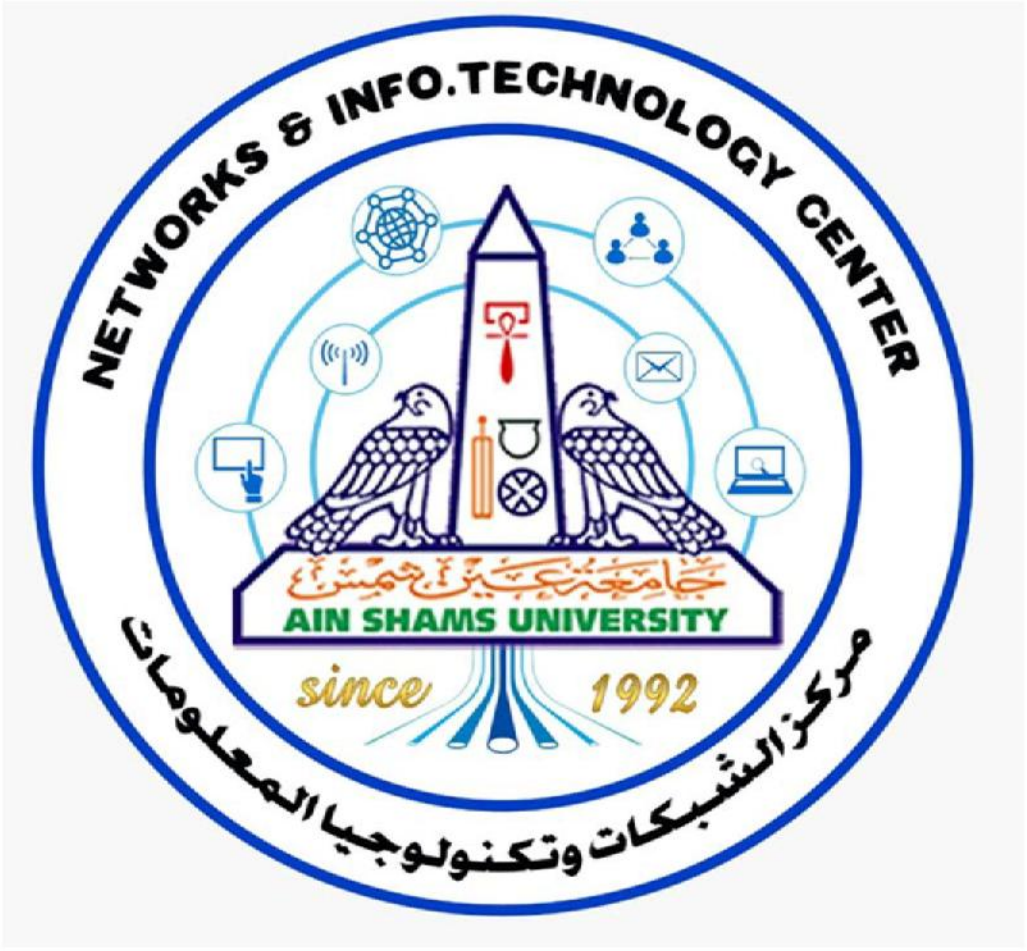
التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

hossam maghraby



بعض الوثائق الأصلية تالفة
وبالرسالة صفحات لم ترد بالأصل

THE EFFECT OF THE DRIED SEWAGE SLUDGE APPLICATION ON THE POPULATION ECOLOGY OF CERTAIN SOIL FAUNA

THESIS

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE (ZOOLOGY)

BY

Roiat Mohamed Abd El-Hady Ali

DEPARTMENT OF ZOOLOGY
FACULTY OF SCIENCE
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6-radiobiology
7-Biostatistics.
8-Instrumental analysis.
9- Comparitive anatomy
10- Immunology
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12- Endocrinology
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CONTINENTS

INTRODUCTION

GENERAL INTRODUCTION AND AIM OF THE WORK

The successive increasing numbers of human population in the whole world with their activities in agriculture and industries le d to enormous amounts of residuesand wastes. The disposal of their wastes into the aquatic or soil ecosystems as waterfall or into the atmosphere by incinerations are restricted due to environmental considerations. As a result, the soil offers an alternative disposal sink in some instance which may be worth considering. Now wastes can reach the soil for two main purposes. First as agricultural nutrients and soil conditioners; the second, the soil will be exclusively used as waste disposal site, (*El-Keiy, 1983)*

On the other hand soil-bound invertebrate animals which play an important role in soil formation. They increase fertility by adding orgainc matter to it in the form of excrements and dead bodies. The Acarina and the Collembola are the most abundant soil arthropods, both individual numbers and species.

The dried organic material obtained after treatments of waste water or sewage is defind as sewage sludge.

In general according to *El Keiy (1983)*, sewage or waste water could be divided into water as a bulk volume and other three

categories includes suspended solids, colloidal materials, and dissolved materials. These can be summarized in the following :

1-Water represent 99.9% from washing, rensing, flushing and leaking faucets.

2-Contaminating materials represent 0.1%, and include :

a) Suspended solids, inorganic grit, sand, silt and clay.

b) Colloidal material, organic faecal matter (undigested material, cellulose, bacteria) garbage from disposal, clothes fibers from loundry and paper fibers from tissues.

c) Dissolved material (inorganic nutrients) phosphate, ammonium nitrate, potassium, sodium, calcium, sulfate, as well as toxic wastes (heavy metals mostly from industry Cu, Zn,Hg, Pb, Cr, Co, As .... etc) and non biodegradbable organic chemicals.

In order to gain informations of the influence of dried sewage sludge application on the population ecology of the most abundant soil arthropod groups (Acari) the present study was designed with special reference to:

1) Physico - chemical characters of treated and untreated habitats .

2) Relative importance.

3) Seasonal flactuations .

4) Vertical distribution.

HISTORICAL REVIEW

As for sewage sludge are often major contributors of metals; *Sommers and Nelson (1979)* showed that sewage is a general term used to describe a variety of materials commonly suspension containing 1 to 10% solids produced during treatment of waste water. When water usually undergoes a primary treatment and settleable solids are removed by some forms of physical separation e.g. gravity settling but the dissolved and colloidal material are removed by form of chemical or biological treatment process. The solids removed during these processes are usually high in organic mater and are biologically unstable.

Chumbley (1971) proposed a general statement about the relative toxicity of three common metals, however copper is more toxic to plant than that of the same weight of zinc and Nickal. Moreover it has been recomended that a total of 250 µg. zinc equivalent/g soil in the maximum range can be safely added to the soil. This means that maxiumum rate of sludge to be added to the soil is 88.7 tone/acre before the safe limite is exceeded.

Epstein (1973) reported that the addition of sludge affects the physical and chemical proprties of soil by increasing the water content and water retention of soil.

Epstein (1973) & Burns (1977) proved that addition of sludge provide a more favourable enviroment for microbial growth thereby