STUDY SOME ENVIRONMENTAL AFTERMATHES AS THE LOSS OF CULTIVATED LAND IN NILE DELTA, USING REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

Submitted By

MOKHTAR NAGUIB ABDEL SHAHEED

B.Sc. (Agric.), Fac. Of Agriculture, Cairo University 1980

Diploma of Environmental Sciences, Institute of Environmental Studies & Research, Ain Shams University, 1986

M.Sc. (Agric.), Institute of Environmental Studies and Research 2007

A Thesis Submitted in Partial Fulfillment

Of
The Requirements for the Doctor Of Philosophy Degree

In

Environmental Science

Department of Environmental Agriculture Science
Institute of Environmental Studies and Research
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Approval Sheet

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This thesis Towards a Doctor of Philosophy Degree in Environmental Sciences Has Been Approved by:

Name Signature

Prof. Dr. Hassan Ahmed Abdel Aziz Ismail----------
Professor Emeritus of Soil & Water Sci. Dep.,

Fac. of Agric., Alexandria Univ.

Prof. Dr. Alaa El Din Hassan El Nahry----------
Vice President of the National Authority for

Remote Sensing and Space Sciences and Prof. of Soil Sci.

Prof. Dr. Ezzat Mohamed Suliman
Prof. of Soil & Water Science. Department of Agriculture Science,
Institute of Environmental Studies and Research Ain Shams University

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Under the Supervision of :

Prof. Dr. Ezzat Mohamed Soliman

Prof. of Soil & Water Science. Department of Agriculture Science, Institute of Environmental Studies and Research Ain Shams University

Prof. Dr. Afify Abbas Afify

Head of Research Emeritus of Soil Science. Soils, Water and Environment. Research Institute. Agricultural Research Centre.

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ABSTRACT

This study aims at highlighting the rate of the urban encroachment on the fertile cultivated land, which disturb the integrated components of the environment in the region of Nile Delta. Also to use remote sensing data and GIS techniques for well monitoring and mapping the land use changes. The area of Kafr El Zayat district in Nile Delta, El Gharbiya Governorate was selected to represent the alluvial deposits of Nile Delta. Remote sensing data Enhanced Thematic Mapper (ETM) acquired in the year 2001and Egypatsat-1data, acquired in the year 2010 were analyzed for that purpose. The land cover classes were identified within a total area of arable land that covers 49138 feddans. The urban area covered about 4132 feddans (8.41 %) of the total area in the year 2002 but became in the year 2014 as 6535 feddans (13.30 %) of the total area. On other hand a secondary change that related in the linear features as main roads and water canals was scanned in the year 2002 representing 11.06 km^2 to be 13.23 km^2 in the year 2014. The cultivated land was decreased from 43900 feddans in the year 2002 to 41280 feddans in the year 2014. The total increase of urban encroachment with the linear features changes were 26.20 km^2 within duration of 12 years resulting in losing 2620 feddans from the cultivated area. The loss of the cultivated was annually averaged to be 217 feddans per year. This rate of the cultivated area retreatment will be rapidly integrated on the residual cultivated land in the year 2014 (41280 feddans) based on what is become closely aligned to the concreted land will be rapidly denatured. According to this rate of cultivated land retreatment, the cultivated land in the study area will be entirely denatured within 189 years ahead of the catching up year 2014. Most of the urban encroachment denatured the fields of annual crops, which decreased by 2474 feddans, while 146 feddans were lost from the fields of horticultures. As this cultivated land has been denatured and

retreated, cotton cultivation in Egypt is being decreased and its specific quality " extra long staple cotton" will be surely collapse. This retreatment of cultivated land is characterized by unique attributes of *Vertic Torrifluvents, fine*; *Typic Torriorthents, fine loamy;* and *Typic Torriorthents*, *coarse loam* in the deltaic plain, levees, and point bar mapping units.

Most of these soils are highly suitable land for agricultural use.In Deltaic plain, banana, date palm, guava, alfalfa, green pepper, cotton, maize, rice, soya, sweet potato, tomato and wheat are highly suitable (S1), while citrus, cabbage, green pepper, onion and white potato are moderately suitable (S2). In levees, banana, citrus, date palm, guava, alfalfa, green pepper, cabbage, cotton, maize, onion, potato, soya, sweet potato, tomato and wheat are highly suitable (S1), while white potato and rice are moderately suitable (S2). In point bars, banana, citrus, date palm, guava, alfalfa, green pepper, cabbage, maize, onion, potato, soya, sweet potato, tomato and wheat, while Cotton, white potato, and rice, are moderately suitable (S2).

Key words: Urban expansion, Nile Delta and Remote sensing data.

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