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ABBREVIATIONS

dS/m	"deciSiemens/meter"
EC	"Electric Conductivity"
ERS-1	"the European space Remote Sensing"
ERTS	"Earth Resources Transmission Satellite"
ESP	"Exchangeable Sodium Percent"
ETM	"Enhanced Thematic Mapper"
FAO	"Food and Agriculture Organization.", of the United Nations.
FIR	"Far InfraRed"
GIS	"Geographic Information System"
ha	"Hectare"
HRV	"High Resolution Visible."
IFOV	"Instantaneous Field Of View."
IKONOS	"satellite was built by Lockheed Martin in Sunnyvale, California"
IRS-1 ISRO	"the Indian Space Research Organization satellite"
JERS-1	"the Japanese Earth Resources Satellite"
Km	"Kilometre = 10^3 m"
LANDSAT	"LAND Remote-Sensing SATellite."
MCNC	"Multi-temporal Colour NDVI Composition"
me/L	"millie-equivalent/Liter"

MIR	"Middle InfraRed"
mm	"millimetre = 1/1000 m"
MSS	"Multi-Spectral Scanner."
NASA	"National Aeronautics and Space Administration.", of USA.
NDVI	"Normalized Difference Vegetation Index."
NIR	"Near InfraRed"
nm	"nanometre = 1000 μm"
NOAA	"National Oceanic and Atmospheric Administration."
O.M	"Organic Matter"
PA	"PAnchromatic mode."
PIXEL	"PIcture ELement."
QuickBird	"satellite was launched from Vandenberg, California"
RADARSAT-SAR	"the Canadian Satellite (Synthetic Aperture Radar)"
SAR	"Sodium Adsorption Ratio"
SP	"Saturation Percent"
SPOT	"Le' Systeme Propatoire d'Observation de la Terre."
SSP	"Soluble Sodium Percent"
SWERI	"Soil, Water & Environment Research Institute"
SWIR	"Short Wave InfraRed band"

SWRI	"Soil & Water Research Institute"
TM	"Thematic Mapper."
µm	"micrometer = 1/1000 mm"
USDA	"United States Department of Agriculture."
XS	"SPOT multi-spectral mode."

6. SUMMARY

The primary objective of this research is to provide to-date data on the extent changes in land use in East Delta of Egypt and study the agriculture expansion over non arable lands versus urbanization over arable lands.

15 soil profiles were dug and soil samples were collected in 2 major areas. 10 in old agricultural area (collected as surface layers) and 5 in new reclaimed area (collected as complete profile). The soil profiles were described and soil samples were analyzed. Maps of urban areas were prepared.

The soils were mainly Nile alluvium. $CaCO_3$ ranged from 0.39 to 3.70%. Gypsum ranged form 0.19 to 0.82%. Organic matter ranged from 0.59 to 1.74% and high contents were in the top layers. EC (of paste-extract) ranged from 0.75 to 8.48 dS/m.

The current study data was compared with data collected on the same area in 60s by the Soil Survey Department of the Ministry of Agriculture (SWRI, 60s). Multitempral images were processed using topographic maps. Comparative assessment of 12 urban expansion area during the 48 years (from 1952 to 2000) show the nature of this expansion up to year 2000 and its direction in the studied areas. The study concern maps in 1952, and recent Landsat TM images in 1989, 1995 and 2000. Manipulation and processing were done using Imagine Software program version 8.4. There were considerable urban expansion between 1952 and 2000. In 1952 the urban area of selected settlements (little and medium size towns) varied between 27 fed

(in El-Tell El-Kebir) to 2009 fed (in Ismailia). In 2000 urban area increased, ranging from 228 fed (in El-Tell El-Kebir) to as high as 7286 fed (in Ismailia). The magnitude of increase in 2000 compared with 1952 was 2.6 to as high as 11.1 folds. Urban area for each urban location in 1952 and 2000 (area in fedans and times of increase since 1952) were as follows:

Settlement / Year	El-Huseiniya	Faqus	Kafr Saqr	Abo Kibeer	Hihya	Zagazig
1952 (fed)	54	230	66	181	54	735
1989 (fed)	389	885	458	685	309	2374
1995 (fed)	476	1097	550	821	414	2911
2000 (fed)	553	1221	606	947	462	3398
Times of icrease (fold)	9.1	4.3	8.1	4.2	7.5	3.6

Settlement / Year	Minya El-Qamh	Abo Hammad	El-Tell El-Kebir	Bilbeis	El-Salhiya	Ismailia
1952 (fed)	106	107	27	312	36	2009
1989 (fed)	487	355	131	889	312	5719
1995 (fed)	600	455	173	1154	381	6099
2000 (fed)	672	513	228	1292	440	7286
Times of icrease (fold)	5.3	3.8	7.4	3.1	11.1	2.6

The areas in the new reclamation desert land had categories obtained by supervised classification in year 2000. These categories were: (1) densely cultivated land "150948 fed", (2) sparsely cultivated land "43149 fed", (3) bare land "110386 fed", and (4) water bodies and submerged land "27637 fed".

The changes in land use in a pilot area were designated as area loss to urbanization within the old agricultural Delta land to about 22400 fed and the area gain within the new reclamation desert land to about 63700 fed. Thus the net result is on the side of area-gain, a gain of about 41300 fed. However, the quality of lost land exceeds and is far superior than that of the gained land from the agricultural view point.