Distribution of salinity and nutrients in soils under recently environment change

Taha El-Maghraby and Mohamed Abdel-Wahab

Soils, Water and Environment Research Institute, Agricultural Research Center, Cairo, Egypt.
telmaghraby2005@yahoo.com

Abstract: Many countries are facing environment change. This study aims to study the distribution of salinity and some nutrient (*i.e.* N, P, Fe, Mn, Zn and Cu) under recently environment change "climate factors, soil factors and human factors" in soils adjacent to North Delta, Idku region, Behra Governorate, Egypt between year 1986 and year 2011, whereas about 900 000 ha suffer from salinization problems, 6 % of Northern Delta region are salt-affected. Fourteen profiles (thirty nine samples), these representative profiles were transects vertical to Idko Lake. The study area is located between 31^o 10' and 31^0 40' N, and longitudes 30^o 25' and 31^0 $20'$ E. The Idko Lake found on distance 1km the Mediterranean Sea.

The obtained results could be summarized as follows: Weight means to Electric conductivity (EC) in year 1986 were different the values in profiles. EC values of the studies soil were decrease with increase of soil depths. The highest values of EC were found in most profiles. The EC was between 1.30 to 51.70 dSm^{-1}, in comparison with year 2011 in all profiles were between 0.70 to 3.10 dSm^{-1} very slightly saline to non saline. In year 2011 available N in all profiles was medium whereas values were between 52.88 to 74.32 mg kg^{-1}. In comparison, in year 1986 available N was very lowest whereas values were between 1.20 to 10.6 mg kg^{-1}. In year 2011 was lowest available P in all profiles. In comparison with, year 1986 was between high and medium, whereas values were between 3.20 to 44.80 mg kg^{-1}. Available Fe in year 2011 increase in mostly profiles, whereas range was between 2.00 to 32.6 mg kg^{-1}. In comparison with, year 1986 was range was between 2.00 to 14.2 mg kg^{-1}. Available Mn in year 2011 increases in profiles, whereas range was between 2.10 to 5.50 mg kg^{-1}. In comparison with, year 1986 was range between 8.00 to 30.0 mg kg^{-1}. Data in year 2011 show that range available Zn was 0.45 to 5.60 mg kg^{-1}. In comparison with, year 1986 found profiles between 1.00 to 10.6 mg kg^{-1}. Available Cu is given in year 2011 show that highest value was all profiles. Available Cu of the studied profiles was range between 1.00 to 19.6 mg kg^{-1}. In comparison with, year 1986 all profiles were high, whereas range was between 3.20 to 11.8 mg kg^{-1}.

Keywords: Salinity, nitrogen, phosphorus, iron, manganese, zinc, copper and environment change.

Introduction

The world's population is estimated to increase from six billion about ten billion by 2050. To meet the food demand of the growing world population, a large increase in food production is required. Meanwhile, the increases in world population will result in a serious pressure on the existing agricultural land through urbanization and intensive cultivation (Ismail, 2002). FAO (2003) showed that the majority of salt-affected soils in Egypt are located in the Northern centralpart of the Nile Delta and on its Eastern and Western sides. About 900 000 ha suffer from salinization problems in cultivated irrigated areas, 6 % of Northern Delta region are salt-affected, 20 % of the Southern Delta and Middle Egyptian region and 25 % of the Upper Egypt region. Million hectares of arable land too saline for agriculture and hundreds of thousands hectares of agriculture productive land are land are lost annually for food production due to salinization (FAO, 2008). The factor affecting land are (climatic factors, soil factors and human factors). The three factors called natural or physical factors are affect natural vulnerability or potential degradation. The three factors affect the actual degradation (FAO, 1978). Dregne *et al*. (1995) reported that the land degradation processes occurring in the arid region of the world are vegetation, wind and water erosion, salinization and soil compaction. This mentioned that the geochemical land degradation processes especially salinization, alkalinization and sodification are broadly occurring in the areas like arid and semi-arid climatic zone. Gaddes (1997) found that the following human activities have main impacts; poor range management, which leads to over-grazing through overstocking. Cultivation practices on unsuitable land area as a result of constant population growth, there is an extension of cultivation to soils less and suitable for this purpose (saline). An increase in temperature coupled with reduced rainfall will lead to predominantly up word water movement in soils, as currently seen in the more arid parts of the world and this will result in the accumulation of salts in the upper soil layers. Such effects will be intensified if poor quality irrigation water is used on agriculture soils. Climate change will increase inundation and salinity along coastal regions worldwide, through the influence of sea level rise (Pezeshki *et al.*, 1990). The impact of climate change on soil nutrients other than nitrogen, such as phosphorus and micronutrients, has largely been neglected (Legros *et al.*, 1994).

Increasing atmospheric CO_2 alone will increase soil organic matter (Loiseau *et al.*, 1994 and USDA, 2009). Abou El-Eneni *et al*. (2008) found that available nitrogen in soil after wheat plant cultivated in clay and calcareous soil were presented. The values of available nitrogen in soil after wheat in clay soil increased. Borhamy (2001) found that the distribution pattern of available P was almost similar to the obtained for the total amounts. *i.e*., the highest value was obtained from the Nile alluvium, while the lowest one was obtained from the old lacustrine sediment, probably due to the relatively high content of bound P-$CaCO_3$ in the old locustrine sediment. Mortvedt (2008) showed that iron deficiencies are found mainly on calcareous (high pH) soils. Cool, weather enhances Fe deficiencies, especially on soils marginal levels of available Fe. El-Maghraby *et al.* (2010) found that on study in the Northern West of Nile Delta available Fe varied from 1.8 and 22 mg kg^{-1}. He found negative correlations occurr available Fe and soil pH. Available Mn varied from 3.0 to 35.4 mg kg^{-1}. Aavailable Zn varied from 0.2 to 4.6 mg kg^{-1}. Available Cu varied from 1.0 to 32.2 mg kg^{-1}. This study aims to study the distribution of salinity and some nutrient (*i.e.* nitrogen, phosphorus, iron, manganese, zinc and copper) under recently environment change in some soils adjacent to Idko lake, Behra Governorate, Egypt between year (1986) and year (2011).

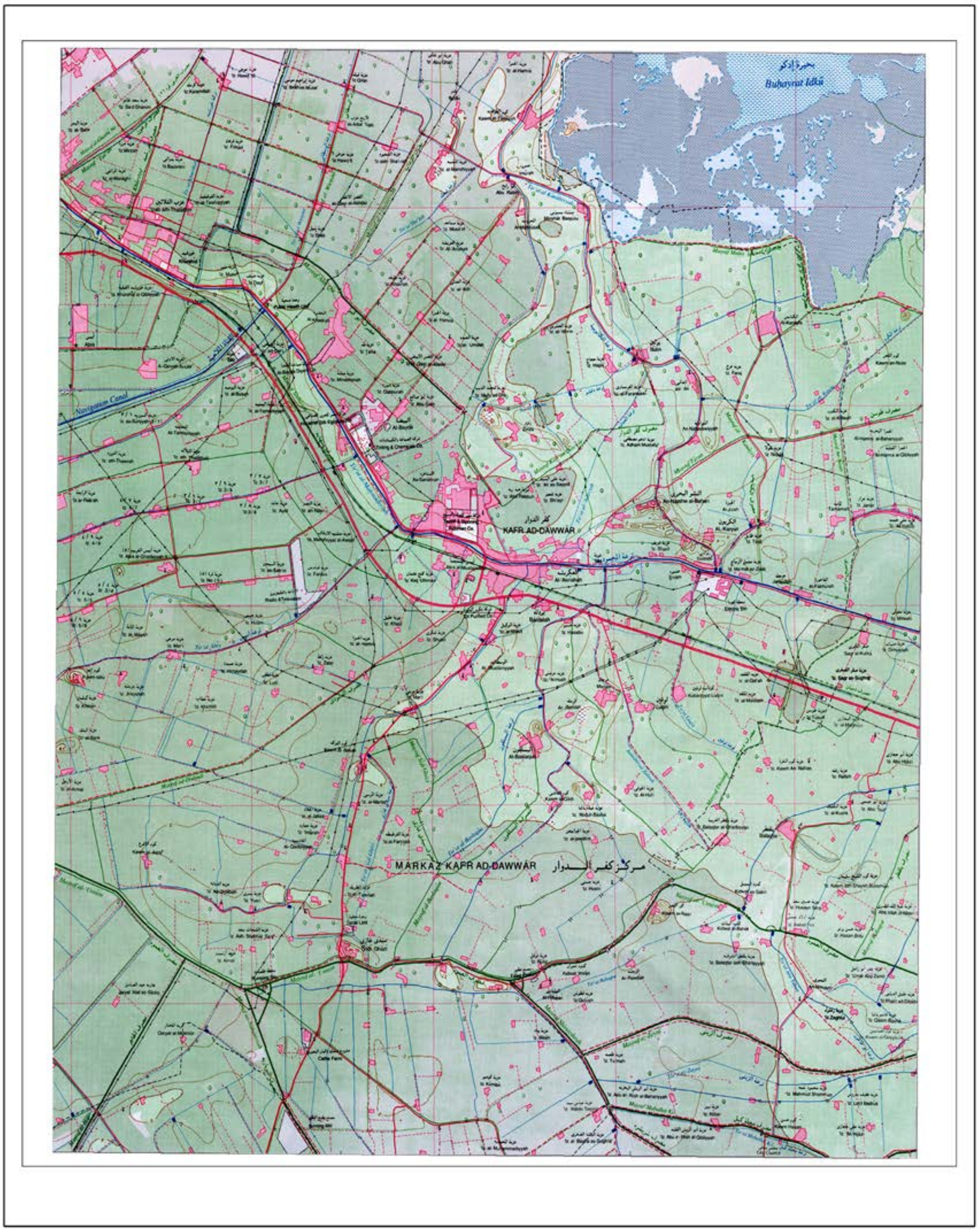
Materials and method

The current study was carried out to investigate the distribution of salinity and some nutrient (*i.e.* nitrogen, phosphorus, iron, manganese, zinc and copper) under recently environment change in some soils adjacent to Idko Lake, Behra Governorate, Egypt between year (1986) and year (2011)**.** To fulfill this purpose, fourteen profiles (thirty-nine samples, according to different layers "Table 3") were dug at different locations to represent physiographic units in the area according on a previous study in 1986 (Map 1). The collected soil samples were air dried, crushed, sieved to pass a 2mm sieve and preserved for further analyses. The sites of these deposits situated between 31^o 10' and 31^0 40' N, and longitudes 30^o 25' and 31^0 $20^'$ E. The Idko drain on the east, Abou Keir drain on the west, in the north found the Idko Lake, the Lake found on distance 1km the Mediterranean Sea and in the south El-Mahmodia canal. Meteorological data for the 1986 and 2011in study period are given in Table 1. Electrical conductivity in soil paste extract and soluble cations and anions according to Page *et al*. (1982). Available micronutrients Fe, Mn, Zn and Cu were extracted with "NH_4HCO_3-DTPA" according to Soltanpour(1985) and determined by using Atomic Absorption Spectrophotometer apparatus, Perkin Elemer, Model 969AA. Nitrogen was determined by micerokjeldahl method as described by Chapman and Pratt (1978). Available phosphor was eastimated colorimetrically according to Olsen *et al.* (1954). Particle size distribution (Table 2) was carried out by pipette method by Gee and Bauder (1986). Statistical analysis for soil properties according to Snedecor and Cochran (1980). Oertal and Gille (1963) suggested three measures for parameter, namely the weighed mean (W). The weighed mean was calculated as parameter of each layer of the solum multiplied by the thickness of the layer and dividing the sum of these products by the total thickness of all analyzed layers. According to those authors the weighed mean is the most satisfactory measure of the parameter status of a soil profile. The weighed mean concentration of a parameter is probably determined by pedogenic processes (except where the parent material is markedly heterogeneous in element content).

Table 1: Mean monthly temperature, rainfall, relative humidity, evaporation in the studied area to year (1986 and 2011)

Months	Temperature (C^0)						Rainfall (mm/month)		Relative humidity (%)		Evaporation (mm/day)		Wind Speed (Km)	
	1986			2011										
	Max	Min	Mean	Max	Min	Mean	1986	2011	1986	2011	1986	2011	1986	2011
Jan.	22.00	11.30	16.65	19.60	6.10	12.80	20.25	14.20	47.69	83.00	7.16	2.20	0.772	1.30
Feb.	22.60	11.96	17.28	20.40	6.30	13.40	18.60	12.90	47.76	83.00	7.32	2.70	0.772	1.40
Mar.	24.95	13.60	19.28	23.00	7.90	15.40	12.73	6.70	49.17	79.00	8.13	3.50	0.772	1.70
Apr.	26.10	15.20	20.65	30.10	10.40	20.25	8.66	2.60	53.63	71.00	9.80	5.00	0.824	1.50
May.	32.70	20.42	26.56	35.20	14.20	24.70	3.64	2.90	57.98	66.00	7.83	6.50	0.824	1.50
Jun.	33.00	19.93	26.47	38.00	17.00	27.50	0.00	0.00	59.02	69.00	6.97	6.70	0.721	1.50
July.	31.88	19.12	25.50	43.00	19.00	31.00	0.00	0.00	60.66	75.00	5.50	5.70	0.721	1.30
Aug.	32.55	18.36	25.46	45.60	18.40	32.00	0.00	0.00	61.38	77.00	4.44	5.00	0.721	1.30
Sep.	30.61	17.09	23.85	44.90	17.71	31.31	0.17	0.15	55.85	77.00	4.30	4.80	0.824	1.10
Oct.	31.00	14.96	22.98	33.70	15.60	24.65	0.30	0.21	60.38	78.00	4.23	3.80	0.830	1.00
Nov.	24.65	13.90	22.00	25.90	12.60	19.25	12.33	6.90	54.33	83.00	3.30	2.80	0.856	1.10
Dec.	21.11	12.00	16.56	21.70	8.30	15.00	23.60	13.60	54.56	86.00	3.18	2.10	0.877	1.10

Source: Meteorological survey department, Egypt.



Map 1: Location of soil profiles in the studied soil

Table 2: The weight mean to partical size distribution and saturation precent of the studied soils between year (1986 & 2011)

Location. No.	C. Sand%		F. Sand%		Silt %		Clay %		SP	
	1986	2011	1986	2011	1986	2011	1986	2011	1986	2011
1. Shebl.Iz	3.99	1.23	26.46	12.11	25.69	22.37	43.11	64.50	84.00	79.70
2.AlkaserAlh	9.62	2.89	46.72	17.04	17.53	37.58	26.16	42.48	51.00	81.80
3.Hawad 6	6.20	1.17	43.02	3.79	21.56	18.21	29.22	76.83	61.00	97.60
4. Zoqalih.Iz	11.83	4.00	41.48	16.60	15.57	46.80	30.86	32.60	61.00	80.00
5.Mini.Ba(1)	8.46	1.70	36.12	6.00	23.29	36.80	31.55	55.50	58.00	76.70
6.Mini.Ba(2)	6.90	1.90	25.66	10.90	22.13	21.20	45.31	66.00	86.00	77.50
7. Alashrin.Iz	1.31	1.70	28.72	11.90	29.62	26.30	40.36	60.10	62.00	87.90
8.Alno. Alba	1.26	2.72	42.64	21.58	14.95	36.54	41.50	41.07	80.00	77.92
9. Sherf.Iz	1.74	1.17	42.13	10.97	23.36	29.00	32.24	59.05	53.00	77.48
10.Bawadi	0.96	2.40	20.15	9.10	32.14	34.20	46.40	54.30	78.00	79.90
11. farag.Iz	1.38	0.70	21.39	2.70	33.97	19.30	43.26	77.30	64.00	85.90
12.Alkanayes	0.92	2.10	16.62	16.10	31.36	32.20	48.77	49.60	74.00	81.80
13.Idku(1)	3.67	1.60	17.99	9.90	33.32	30.40	45.06	58.10	93.00	83.70
14.Idku(2)	7.88	1.20	21.97	5.70	20.83	22.20	47.30	70.90	82.00	91.00

Table 3: Location, depth of grand water and cultivated plants of the studied soil profiles

Location. Name	Profile No.	Depths cm	Cultivated plant	Depth of grand water (cm)	
				1986	2011
Shebl.Iz	1	0-30, 30-120, 120-150	Wheat	120	150
Alqasr Alkhdr	2	0-30, 30-120, 120-150	Wheat	120	150
Hawd.6	3	0-30, 30-120, 120-150	Wheat	120	150
Zoqalih.Iz	4	0-30, 30-80	Wheat	120	80
Minishit Basuone 1	5	0-30, 30-70	Wheat	150	70
Minishit Basuone 2	6	0-30, 30-60	Wheat	150	60
Al ashrin.Iz	7	0-30, 30-100, 100-150	Wheat	100	150
ALnoshio Albahri	8	0-30, 30-120, 120-150	Wheat	110	160
Sherf.Iz	9	0-30, 30-120, 120-160	Wheat	150	160
Bawadi	10	0-30, 30-120, 120-160	Wheat	150	160
Farag.Iz	11	0-30, 30-120, 120-160	Wheat	150	160
Alkanays	12	0-30, 30-120, 120-150	Wheat	85	150
Idku 1	13	0-30, 30-80, 80-150	Wheat	150	150
Idku 2	14	0-30, 30-70, 70-150	Wheat	150	150

Results and discussions

1. Weight mean of electric conductivity (EC) of the studied soils 1986 and 2011.

The presented data in Table (4) showed that the weight means to EC dSm^{-1} values of the studies soil samples in year 1986 were different the values in profiles. The highest values of EC were found in profile Idku 2, Idku 1 very saline whereas the values were 51.70 and 47.80 dSm^{-1} respectivly, profile Minishit Basuni 2 was EC vales saline whereas values 9.00 dSm^{-1}, in profiles Alnoshio Albahri, Shebl Izba, Hawad 6 were EC moderately saline whereas values 7.80, 6.70, 4.50dSm^{-1} respectivly, and profiles Bawadi, Minishit Basuni 1, Alashrin Izba, Alkanayes and Zoqalih Izba were EC slightly saline whereas values 3.20, 3.10, 3.10, 2.70 and 2.40 dSm^{-1}, respectively, according to Richards (1954).

The profiles "Idku 1 and Idku 2" in year 1986 not cultivation, these profiles cultivated in year 1993 and increase human activity along time. The environmental conditions (temperature, evaporation, humidity, groundwater table (its depth and salinity) and activity human affect the salt balance of the soil and this is refelected directly on the exchangeable sites in soil complex. The range EC due to the long cultivation periods and increasing agriculture activity of Idku area, rainfall the rate of in year 1986 was 100.28mm/year, temperature the mean range to in year 1986 was 24.0C^{o} and evaporation mean found range in year 1986 was 6.97mm/day.

In comparison with, data in Table (5) were the weight means to EC dSm^{-1} values of the studies soil samples in year 2011 were different the values in profiles. The highest values of EC were found in profile "Idku 1, Sherf Izba, Alnoshio Albahri, Shebl Izba" 2.60, 2.40, 2.30 and 3.10 dSm^{-1} respectively, this data direction to profiles is very slightly saline. Other profiles values EC 0.70, 1.90, 0.70, 0.90, 1.50, 0.70, 1.30, 1.40, 1.80 and 1.60 dSm^{-1} "Alkaser Alakhdar, Hawad 6, Zoqalih Izba, Minishit Basuni 1, Minishit Basuni 2, Alashrin Izba, Bawadi, Farag Izba, Alkanays and Idku 2" respectively, this profiles is non saline. The range EC was due to the long cultivation periods and increasing agriculture activity of Idku area, rainfall the rate of in year (2011) 62.40 mm/year, Temperature the mean range to in year (2011) 26.56 C^o and evaporation mean found range in year (2011) 4.85 mm/day. Areas were classified as non-to slightly-saline. This is probably due to it's relatively clay textured grade and well drainage conditions that enhanced the removal of the excess salts. Soil salinity is more associated with the inherited accumulations due to the intensive weathering, shallow water table, continuous lateral seepage from the relatively high areas and absence of adequate soil drainage system. **Nadi *et al.*, (2010)** showed that EC_e values in the Nile alluvial soils were ranged from 0.80 to 12.26 dSm^{-1} indicate that the soils are non saline to moderately saline.

Table 4: The weight mean to electric conductivity and soluble ions of the studied soils (1986)

Location. No.	ECe dSm^{-1}	Soluble cations (mmolc L^{-1})				Soluble anions(mmolc L^{-1})		
		Ca^{2+}	Mg^{2+}	Na^+	K^+	HCO_3^-	Cl^-	SO_4^{2-}
1.Shebl.Iz	6.70	28.2	23.9	30.3	0.80	2.20	24.8	56.2
2.Alqasr Alkhdar	2.10	7.40	7.40	8.30	0.50	3.50	6.00	14.2
3.Hawad 6	4.50	7.20	10.9	26.7	0.60	3.30	25.3	16.9
4.Zoqalih. Iz	2.40	6.50	8.70	13.0	0.60	4.90	7.50	16.4
5.MinishitBasuni(1)	3.10	19.7	13.2	6.90	0.40	2.30	3.80	40.2
6.MinishitBasuni(2)	9.00	24.1	20.0	71.0	1.50	2.40	14.4	99.9
7.Alashrin.Iz	3.10	8.60	6.70	18.7	0.40	3.80	12.6	18.0
8.Alnoshio AlBahri	7.80	5.90	9.40	63.4	0.90	4.00	45.1	30.6
9.Sherf.Iz	1.60	5.30	4.30	6.20	1.00	2.30	4.00	9.60
10.Bawadi	3.20	4.30	4.60	18.7	0.20	4.30	8.80	21.6
11.Farag.Iz	1.30	5.80	3.50	6.50	0.20	3.90	4.20	7.90
12.Alkanays	2.70	4.10	4.50	21.7	0.20	3.40	7.30	19.9
13.Idku(1)	47.8	34.8	111	432.9	9.20	2.30	478.4	87.2
14.Idku(2)	51.7	49.5	76.8	480.6	8.20	1.00	493.6	120.5

*No detected CO_3^{2-}

Table 5: The weight mean to electric conductivity and soluble ions of the studied soils (2011)

Location. No.	EC_e dSm^{-1}	Soluble cations(mmolc L^{-1})				Soluble anion(mmolc L^{-1})		
		Ca^{2+}	Mg^{2+}	Na^+	K^+	HCO_3^-	Cl^-	SO_4^{2-}
1.Shebl.Iz	3.10	7.23	8.15	13.3	0.69	3.92	15.78	9.69
2.Alqasr Alkhdar	0.70	1.72	1.45	2.90	0.20	1.33	3.28	1.66
3.Hawad 6	1.90	4.92	3.89	6.91	0.46	2.22	9.67	4.29
4.Zoqalih.Iz	0.70	1.44	1.07	3.70	0.31	1.13	3.10	2.29
5.MinishitBasuni(1)	0.90	2.11	2.01	4.58	0.50	1.77	5.19	2.28
6.MinishitBasuni(2)	1.50	3.52	3.60	5.44	0.22	2.15	6.92	3.70
7.Alashrin.Iz	0.70	1.40	1.30	3.33	0.34	1.09	3.38	1.91
8.Alnoshio AlBahri	2.30	4.75	3.58	9.12	0.20	2.30	14.0	4.35
9.Sherf.Iz	2.40	6.90	6.02	8.60	0.23	3.08	12.8	5.91
10.Bawadi	1.30	3.44	2.23	5.21	0.43	2.69	5.08	3.54
11.Farag.Iz	1.40	3.63	3.64	5.75	0.18	2.06	7.41	3.73
12.Alkanays	1.80	4.84	3.27	8.19	0.16	2.45	10.2	3.86
13.Idku(1)	2.60	5.71	6.46	9.19	1.90	4.05	13.8	7.35
14.Idku(2)	1.60	3.01	3.81	4.63	0.52	1.40	6.87	3.69

*No detected CO_3^{2-}

2. Statistical analysis the weight mean of soil electric conductivity.

The presented data in Table (6) show that some statistical parameters of electric conductivity of weight mean of the some location in studied soils. Electric conductivity (EC) in mean year (1986) 10.57 increase from year (2011) 1.64.

Also, stander deviation (stDev) to electric conductivity EC in year (1986) 16.77 increase from year (2011) 0.76. Stander deviation (SE) to electric conductivity (EC) in year (1986) 4.48 increase from year (2011) 0.20.

Table 6: Statistical analysis the weight mean of soil electric conductivity

Variable	Mean		Minumim		Maximum		
	1986	2011	1986	2011	1986		2011
EC dSm^{-1}	10.57	1.64	1.30	0.70	51.70		3.10
	StDev		SE		SE	T	
	1986	2011	1986	2011	Different	Test	Tabulated
	16.77	0.76	4.48	0.20	4.43	2.02	2.16

3. Distribution availability of macronutrients (N and P) in surface layer of the studied soils 1986 comparison with 2011

Data presented in Table (7) show that of studied soils available macronutrients in years (1986 and 2011), in year (2011) available nitrogen was improved on all profiles, the results indicated that the available nitrogen in all profiles were medium. In comparison with, year (1986) available nitrogen was very lowest, because the farmers changed the fertilization strategies whereas now farmers added NH_4NO_3 (N 33%) and Urea (N 46.5%) fertilizers throw through year in soil and cultivation crops which help on catch nitrogen on roots for example, clover and bean, these results agreement with Abou El-Eneni *et al*. (2008).

Also, to satisfy and meet the objectives of the present study, Table (7) showed that of the studied area in year (2011) was lowest available phosphor in all profiles except profile "Alnoshio Albahri" was medium available phosphor. In comparison with, year (1986) was between high and medium, because carelessness in phosphor fertilizer, poor range management to agriculture the cycle, misuses of irrigation, high temperature help on fast analysis to organic matter and cultivation practices were unsuitable land so a cause of consumed of available phosphor (Gaddes, 1997), according to be critical level of the studied available plant nutrient (Lindsay and Norvell, 1978). Shalabbi (1977) studying the effect of soluble divalent cations Ca^{2+} and Mg^{2+} individually on available phosphorus in Egyptian soils (Idku region).

Table 7: Available of nitrogen and phosphor (mg kg^{-1}) in surface layer of the studied soils (1986 & 2011)

Location No.	N				P			
	1986		2011		1986		2011	
	AV.*	Clas.*	AV.*	Clas.*	AV.*	Clas.*	AV.*	Clas.*
1.Shebl.Iz	3.80	Low	52.88	Medium	5.00	Low	4.00	Low
2.Alqasr Alkhdar	10.3	Low	65.61	Medium	21.5	High	3.50	Low
3.Hawad 6	9.60	Low	63.64	Medium	16.0	High	2.80	Low
4.Zoqalih.Iz	10.6	Low	64.11	Medium	12.2	High	4.30	Low
5.MinishitBasuni(1)	6.10	Low	61.12	Medium	12.7	High	2.10	Low
6.MinishitBasuni(2)	5.50	Low	64.06	Medium	3.20	Low	2.70	Low
7.Alashrin.Iz	8.30	Low	72.15	Medium	18.4	High	3.10	Low
8.Alnoshio AlBahri	8.30	Low	59.01	Medium	8.40	Medium	7.00	Medium
9.Sherf.Iz	4.20	Low	64.16	Medium	12.4	High	2.70	Low
10.Bawadi	7.60	Low	65.11	Medium	10.4	High	3.00	Low
11.Farag.Iz	7.40	Low	73.00	Medium	8.00	Medium	2.80	Low
12.Alkanays	8.30	Low	74.32	Medium	44.8	High	2.80	Low
13.Idku(1)	1.30	Low	61.66	Medium	4.90	Low	2.00	Low
14.Idku(2)	1.20	Low	67.13	Medium	6.10	Medium	1.90	Low

Note: AV.=available, Clas.*=classification. Critical level of the studied available plant nutrients (mg/kg), after Lindsay and Norvell (1978),[N <40.0 Low, 40.0-80.0 Medium, >80.0 High; P <5.0 Low, 5.0-10.0 Medium, >10.0 High.

4. Distribution of micronutrient availability in surface layer of the studied soils 1986 comparison with 2011

Data in Table (8a&b) showed the AB-DTBA extractable of some micronutrient in surface layers of the studied soils in year (2011) and year (1986), the amount of available Fe extracted with DTPA in the studied soils year (2011) increase in mostly profiles, whereas range was between 2.00 to 32.6 mg kg^{-1}. In comparison with, year (1986) was range between 2.00 to 14.2 mg kg^{-1} it could be attributed that the most soil was farms tree guava, it greedy iron fertilizer so farmers add iron compounds to collect increase mass production. Also, other layers were range between 1.80 to 4.60 mg kg^{-1} amounts of available Fe increased by increasing clay (Nadi *et al*., 2010).

The presented data in year (2011) show that standard available Mn in surface layers of studies soils. All surface layers in the studies soils were high between range 2.10 to 5.50 mg kg^{-1}. In comparison with, year (1986) was range between 8.00 to 30.0 mg kg^{-1}. Data showed that ratio of Mn in year (2011) were decrease in comparison year (1986). It could be attributed that the because carelessness in organic matter, poor range management to agriculture the cycle, misuses of irrigation, high temperature help on fast analysis to organic matter and cultivation practices were unsuitable land. The obtained resultes are in agreement with Nadi, *et al.* (2010) as she found that Mn values in the sand, silt and clay fraction in the Nile alluvial soils highest values are detected in the surface layer, while the lowest values are associated with the deepest layers.

Data in year (2011) show that standard available Zn in surface layers of studies soils. Found standard Zn is low in some profiles "Hawad 6, Alnoshio Albahri, Sherf Izba and Bawadi" whereas range between 0.45 to 0.71 mg kg^{-1}. Also found profiles standard Zn was medium in profiles "Farag Izba and Idku 1" whereas range 0.98 and 2.20 mg kg^{-1} respectively, ever lasting the profiles is high content whereas range between 1.83 to 5.60 mg kg^{-1}. In comparison with, year (1986) found profiles between medium and high, whereas range between 1.00 to 10.6 mg kg^{-1}. It could be attributed that the lowest amount of silt and organic matter.

Data of available copper are given in year (2011) show that highest value was all profiles. Available copper of the studied profiles were range from 1.00 to 19.6 mg kg^{-1}. In comparison with, year (1986) all profiles were high, whereas range between 3.2 to 11.8 mg kg^{-1}. These values are relatively higher than those of El Sayed (1983) and Rashad (1986) may be due to seepage from Idko lake. Too the availability of soil copper may be due to the presence of hydroxyl acid produced by microorganisms from the organic material present in the soils (El Damaty *et al*., 1973). According to the deficiency limits of available Fe, Mn, Zn and Cu given by Soltanpour (1985) all the studied soils contained adequate to high levels of Fe, Mn, Zn and Cu to support normal plant growth.

Table 8a: Available of some micronutrients (mgkg^{-1}) in surface layers of the studied soils (2011)

Location. No.	Fe		Mn		Zn		Cu	
	Av.	Clas.	Av.	Clas.	Av.	Clas.	Av.	Clas.
1. Shebl.Iz	15.6	High	4.30	High	2.32	High	6.20	High
2.Alkaser AlKdar	32.6	High	3.20	High	1.83	High	9.00	High
3.Hawad 6	23.6	High	3.50	High	0.46	Low	3.20	High
4. Zoqalih.Iz	27.4	High	4.40	High	5.60	High	19.6	High
5.Minishit Basuni (1)	7.40	High	2.10	High	1.83	High	4.60	High
6.Minishit Basuni (2)	20.8	High	5.50	High	2.61	High	3.80	High
7. Alashrin.Iz	5.20	High	3.90	High	1.83	High	1.80	High
8.Alnoshio Albaahri	12.8	High	4.50	High	0.45	Low	2.20	High
9. Sherf.Iz	14.4	High	3.80	High	0.63	Low	2.20	High
10.Bawadi	6.20	High	3.90	High	0.71	Low	1.00	High
11.farag.Iz	2.00	Low	3.90	High	0.98	Medium	1.20	High
12.Alkanayes	10.6	High	3.90	High	1.83	High	1.00	High
13.Idku(1)	2.40	Low	3.80	High	1.41	Medium	2.20	High
14.Idku(2)	4.20	Medium	4.20	High	2.16	High	4.20	High

Note: *Av.=Available /Clas.=Classification " mg kg-1" (Fe 0-3.0 Low, 3.1-5.0 Medium and > 5.0 High; Mn 0-0.5 Low, 0.6-1.0 Medium and > 1.0 High; Zn 0-0.9 Low, 1.0-1.5 Medium and > 1.5 High; cu0-0.2 Low,0.3-0.5 Medium and >0.5 High)According to Soltanpour(1985).

Table (8b): Available of some micronutrients (mg kg^{-1}) in surface layers of the studied soils (1986)

Location. No.	**Fe**		**Mn**		**Zn**		**Cu**	
	Av.	**Clas.**	**Av.**	**Clas.**	**Av.**	**Clas.**	**Av.**	**Clas.**
1. Shebl.Iz	4.80	Medium	12.0	High	1.40	Medium	5.00	High
2.Alkaser AlKdar	4.60	Medium	16.0	High	6.40	High	11.8	High
3.Hawad 6	8.60	High	30.0	High	10.6	High	11.2	High
4. Zoqalih.Iz	13.4	High	18.3	High	5.40	High	10.3	High
5.Minishit Basuni (1)	8.80	High	10.0	High	1.60	High	6.50	High
6.Minishit Basuni (2)	10.8	High	14.5	High	1.00	Medium	6.70	High
7. Alashrin.Iz	5.00	Medium	13.8	High	1.20	Medium	4.60	High
8.Alnoshio Albaahri	9.20	High	18.1	High	1.80	High	5.80	High

9. Sherf.Iz	3.00	Low	10.3	High	1.60	High	4.50	High
10.Bawadi	10.5	High	16.0	High	1.40	Medium	5.80	High
11. farag.Iz	2.00	Low	14.0	High	1.60	High	4.40	High
12.Alkanayes	14.2	High	8.00	High	1.00	Medium	7.80	High
13.Idku(1)	5.00	Medium	12.0	High	1.20	Medium	3.20	High
14.Idku(2)	11.2	High	24.0	High	2.40	High	7.80	High

Conclusion

The results obtained in the study showed that:
1-The electric conductivity in year 2011 decreased in compares with 1986
2-Available nitrogen in year 2011 increased in compares with year 1986. However available phosphors in year 2011 decreased in compares with 1986.
3-Available iron in year 2011 increased in compares with year 1986. However available manganese, zinc and copper in year 1986 increased in compares with 2011.

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