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SUSTAINABILITY OF THE SOILS FOR ORCHARDS LAND USE OF AL-NAGAH AREA, BEHEIRA, EGYPT

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Abstract

The study area is about 38 km^2 located at the north western part of Egypt, and belongs to Kom-Hamada district in the south-east part of El-Beheira province. The aim of the study is to characterize the most soil and water limitations in order to cultivate orchard trees. Fifty soil samples represent 16 soil profiles have been taken from the study area. The area cultivated with wheat and vegetable crops. The obtained results show that the pH range from 7.4 to 8.9 and therefore tends to be alkaline. Salts distribution is not homogeneous and range from 3.85 dS m^{-1} to 2.58 dSm^{-1}. Total calcium carbonate is low as a general except profile 1, 5 and 15 calcium carbonates rich 13 in some layers. Gravel ranged from 20-46% which is heterogeneous distribution. The permeability rate of surface samples was low, ranging between 1.3 cm / h and 1.5 cm / h. The soluble salt content of irrigation water is low as 557 ppm. Citrus in particular can be grown in areas with calcium content less than 12%.

Keyword: Land suitability, sustainability, soil limitation, Orchards, Al-Nagah.

Introduction

The successful land use planning requires a characterization and comparative analysis of competing land uses to ensure that land use is correctly matched to the nature of land resources (Healey *et al.*, 1988). The essential objective of assess land suitability is to evaluate the fitness of a piece of land to provide the optimal ecological requirements for a specific kind of land use type. Indeed, the land capability assessment is achieved optimum crop development and maximum agricultural productivity (Voncir *et al*., 2006; Ande, 2011). A land characteristic is an attribute of land which can be measured or estimated, and employed as a mean of describing land qualities. By selecting a land use type, its requirements should be defined and then matched with land qualities to determine the suitability of the individual land quality for the given land use. Individual land quality is combined to obtain an overall suitability for a specific land use type (LUT) in a particular land map unit (LMU). Several approaches for land performance assessment have been developed such as MicroLEIS De la Rosa *et al*., 1981 and ALES (Rossiter, 1996). Agricultural sustainability was defined as the ability of a system to maintain stable levels of production and quality in the long term without compromising economic profitability or the environment. The conservation of soil quality is fundamental to agricultural sustainability White *et al*. (2014).

The economic importance of crops under test is due mainly to the export advantage on the one hand, and on the other hand, it is considered one of the crops with few water needs

Citrus is considered as the major fruit crops in Egypt, due to cultivated area reached to (204095 Hectare) representing about 29% of the total fruit area (700854 ha), the total fruitful area of Citrus reached about (175734 ha) approximately, which produce about 4272886 metric tons, from which around 1.34 million tons are exported according to Ministry of Agriculture (2016), Egypt ranking as the sixth biggest producer of orange throughout the world after Brazil, China, US, EU, and Mexico.

United States Department of Agriculture (USDA) (2015/2016) Statics.

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Citation: Waleed Fouad Abobatta. “Challenges for Citrus Production in Egypt”. Acta Scientific Agriculture 2.8 (2018): 40-41.

Increase in the processing capacity of citrus fruits.

Levy Y and Syvertsen J. “Irrigation Water Quality and Salinity Effects in Citrus Trees”. Horticultural Reviews 30 (2004): 37-82.

Egypt is well known for its excellent climate and fertile land. There is also adequate water for irrigation and wide variety of soils, as well as a dynamic human resource. These favourable characteristics permit the cultivation of almost all species of fruit trees known to the world, except perhaps those that have high chilling requirements. Underutilized fruits differ from one

country to another. A species which may be considered exotic in one country may be quite common in another. It is perhaps better to define underutilized fruits as those generally having less economic importance than the more popular ones, and also those usually grown in limited or very limited areas and are familiar only to very few people.

The fig grows successfully in Egypt and their fruits are one of the major fruits for local consumption. More than 50% of the total fig area is located along the north western coast of Alexandria as well as Sinai Governorates. Generally, these areas have a dry climate where the average water precipitation is about 120 mm. annually.

Salem. M.M. (1996): Evaluated of some fig cultivars under conditions of Sharkia Governorate. M.Sc. Thesis. Fac. of Agriculture, Zagazig Univ.

Mango ranks as the fifth most consumed fruit in the world, after citrus, banana, grapes and apple. Mango is a fruit with very special characteristics, including the distinctiveness and range of its flavour, its nutritional and dietary qualities, and its many industrial uses and derivatives. However, most man goes are consumed fresh.

Javier Calatrava-Requena , Mango: Economics and International Trade. April 2014. In book: Mango International Enciclopedia. Chapter: Mango: Economics and International Trade. Publisher: Sultanate Of Oman: Royal Court Affairs Ed.

Egypt has a competitive advantage in producing olive and olive oil because of its relatively stable climate and its commercial site which is distinctive for the areas of producing the crop, especially it occupies the eighth place in the global ranking of the countries producing olive and the third place among the countries producing table olive, as it contributes by about 11.5% of world production. Moreover, olive oil industry and pickling olives are considered transformational food industries that aim at increasing the added value of olives. The crop is planted for the purpose of producing olive by 10%, and about 90% are for pickling. Olive has a lot of economic and nutritional benefits, as olives are used in extracting oil or they are used as table olive in the form of green or black pickled olives. In addition, olives have a high nutritional value, as each 100 grams of green olives contain (144) calories, 13.5 grams of fats, 4 grams of carbohydrates, 5.8 grams of water, 1.5 grams of protein and 1.5 grams of fiber, in addition to 420 units of vitamin A and some mineral elements (such as phosphorus, calcium and iron).

An Economic Study of Olive Crop in North Sinai Governorate Haitham B. A. Hassan, Ezzat A. Zaghloul, Mahmoud R. Al-Gebaly and Salah S. Abd el-Ghani

The area under investigated is situated in the north western part of Egypt, and belongs to Kom-Hamada district in the south-east part of El-Beheira province. The main target of this study is to estimate the common land characteristics in the studied area in order to assessment soils for agricultural land suitability and crop diversification to reach the sustainable agriculture development using ASEL evaluation system. This model is used to evaluate land suitability for crops and assessing the main land use limitations that affect land productivity.

Materials and Methods

The study area is located at the north western part of Egypt, and belongs to Kom-Hamada district in the south-east part of El-Beheira province (Fig.1). The area is characterized by an agricultural basis in the sense that it was established to make it an important agricultural market in the region. The area is characterized by annual minimum temperature of 12°C, maximum of 35°C and mean of 22°C. Soil classification was carried out according to Key to Soil Taxonomy (Soil Survey Staff, 2010). Sixteen soil profiles were chosen to represent the studied area which covering about 38km^2. Fifty soil samples were collected air-dried, crushed, and sieved through 2 mm sieve. They were analysed for particle size distribution, gravel content, hydraulic conductivity in disturbed soil samples, soil reaction (pH), electrical conductivity(EC), was measured by Hanna Instruments(HI 2550 pH/ORP/EC/TDS/NaCl Bench top Meter), soluble cations and anions, calcium carbonate content (CaCO3%), organic matter and gypsum content were determined according to SOIL SURVEY STAFF (2014). Land suitability classification was performed area using applied system of land evaluation (ASEL) software, Ismail *et al*. (2001). Based on the soil physical, chemical and fertility properties as well as climatic data and irrigation water quality, land suitability indices, classes and limitations for seven varieties of orchard crops were calculated according to the matching between the crop requirements with land qualities, (FAO 1979; Ismail *et al*., 2001).

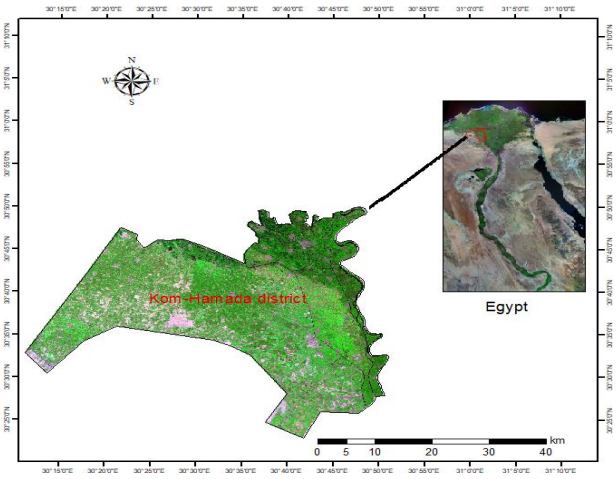

Fig.1: Location of the investigated area

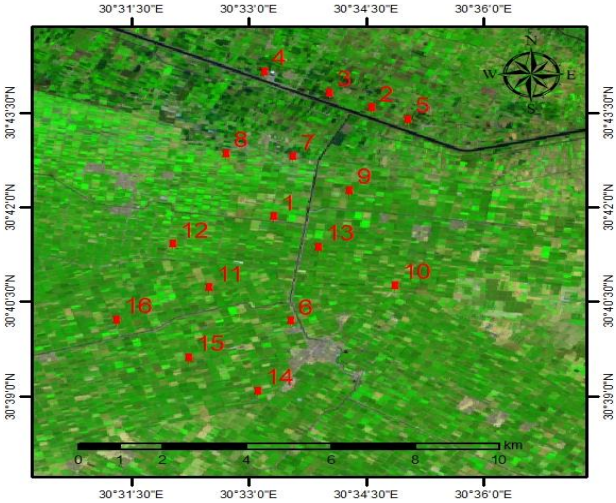

Fig. 2 : Location of the selected soil profiles

Results and Discussions

Soil Physical properties

Data in Table (3) show that the particle size distribution of the studied soil profiles, the soil texture was sandy, where the sand fraction more than 94%, with very low percent of clay and silt fractions. The studied soils in general are gravely in heterogeneous distribution and the gravels percent ranged between 9 – 46 % in all profiles. The soil texture and gravel content were the main limiting factors of agricultural land suitability in the studied area for all crops. Therefore, the soils of the area under investigated have low water retention, organic matter content, cation exchange capacity and water availability. So soil improvement may be applied to improve the soil physical properties.

Soil chemical properties

The data presented in Table (2) show that the soil salinity (EC/dS m^{-1}) in most profiles is non-saline and EC values ranged between 0.41 – 3.85 dS m^{-1} in the studied soil profiles, where the higher EC values are almost at the surface layer. pH value is slightly alkaline and ranged between7.4 to 8.9 and there is no specific trend with depth in the studied soil profiles. Calcium carbonate content have wide variation and it is less than 13% in all samples, except the deep layer of profile 1 and 7 and the surface layer of profile 5 rich 13%. Gypsum percent in studied profiles was ranged from zero % to 14% which is not considered as a limiting factor. The content of organic matter of the studied soils was low and it ranged from 0.06 to 1.1%.

Land Suitability Classification

The basic concept of land suitability is to estimate or calculate the matching of the soil properties or qualities and climatic characteristics with the crop requirements. It helps in establishing the most suitable cropping pattern of an area. Consequently, soil assessment is a tool for strategic land use planning. A specific agricultural use and management system on land that is most suitable according to agro-ecological potentialities and limitations would be the best way to maintain sustainability. Land suitability classes, indices, and limitations for citrus, Banana, Grape, Olive, Apple, Pear, and Fig crops were calculated by ASEL Software. The outputs of the land suitability software were input in ARC GIS to produce the land suitability map for crops based on the soil map of the area. The land suitability class is identified by assigning each land suitability index to confined category.

The land suitability index for crops of the study area recorded in table (1).The results revealed that the major limitation of orchard cultivation in the studied area were due to clay content, soil depth, gravel percent. Almost of the studied soils were moderately suitable S3 for citrus cultivated. While fig and olive trees had the same behaviour with the similar suitability class (moderately suitable S3, Suitable S2, and highly suitable in profile no10). Grape tress had a highest aptness where the suitability classes ranged from suitable S2 in almost of the area to moderately suitable S3 in profile no 7, 13, 15 1and 16 and highly suitable in profile no 10.

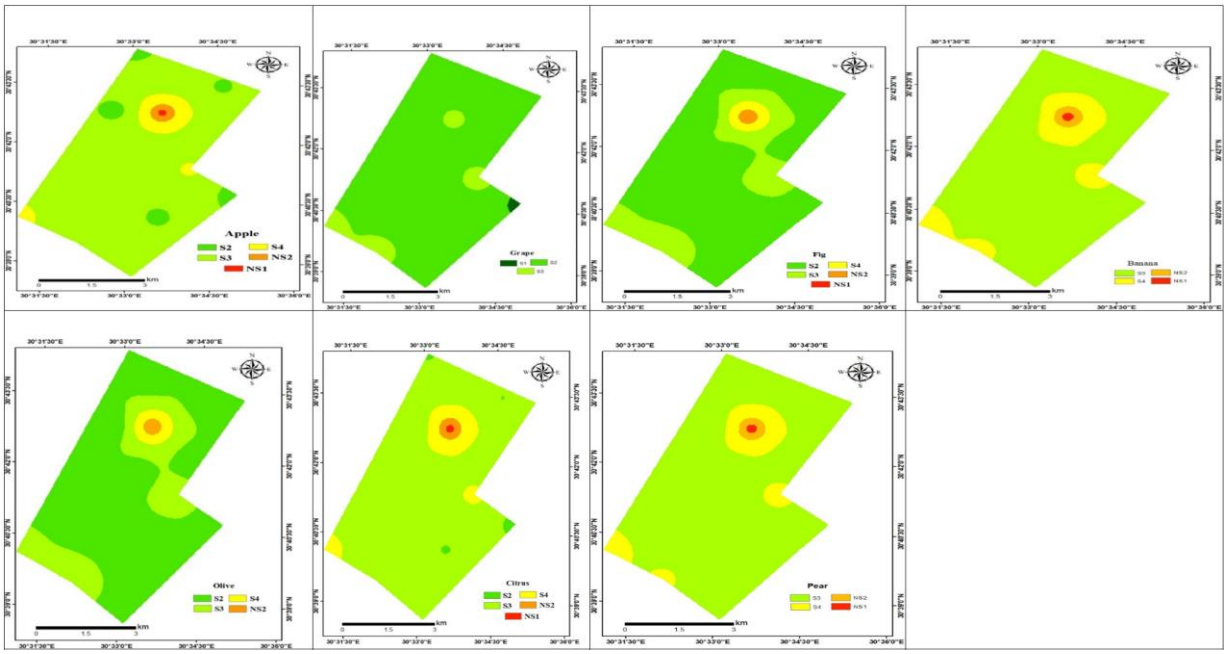

Fig. 3 : Mapping of orchard resulted of the studied area

Table 1 : Descriptive analysis of the selected

	Gravel	CS	MS	FS	Silt+ clay
Mean	12.70	9.51	73.19	25.63	3.52
Standard Error	2.21	1.41	12.43	2.85	0.37
Standard Deviation	15.65	9.97	87.89	20.17	2.65
Sample Variance	244.87	99.44	7724.17	406.90	7.03
Minimum	0.00	0.00	21.21	2.00	0.50
Maximum	46.00	30.80	650.50	68.84	11.50
Confidence Level (95.0%)	4.45	2.83	24.98	5.73	0.75

Table 2 : The land suitability index for crops.

	Land suitability index						
Profile no	**Citrus**	**Banana**	**Grape**	**Olive**	**Apple**	**pear**	**Fig**
1	44.49	41.56	68.70	66.01	48.72	45.51	66.01
2	60.08	56.13	75.74	74.23	61.49	57.44	74.23
3	53.22	49.71	70.34	68.97	55.83	52.15	68.97
4	60.90	56.88	75.23	75.23	63.89	59.67	75.23
5	49.69	46.42	71.72	65.68	54.41	50.83	65.68
6	60.39	56.41	72.57	74.61	61.80	57.74	74.61
7	8.17	7.63	55.71	10.59	8.36	7.81	10.59
8	58.82	54.95	79.34	77.75	64.41	60.17	77.75
9	55.25	51.64	78.19	71.62	56.55	52.85	71.62
10	63.27	59.12	83.68	82.00	66.38	62.30	82.00
11	52.76	49.28	67.83	65.18	51.47	48.08	65.18
12	54.80	51.18	72.11	67.70	56.43	52.70	67.70
13	36.71	34.22	51.94	45.35	37.57	35.02	45.35
14	55.75	52.08	73.74	68.88	57.06	53.30	68.88
15	40.56	37.80	54.70	50.10	41.51	38.68	50.10
16	36.14	33.73	54.71	56.25	36.98	34.52	56.25

Where: C= coarse; F= fine; M= medium; S=sand

By applying some improvements such as leaching salinity of soils that have EC values > 4dS/m, about 24.2% (26891 fed.) of the soils appear as suitable (II) in their potential conditions. Potential slightly suitable class (III) covers an area of about 19890 fed. (about 15.2% of the study area).

Table3 : Particle size distribution of the studied soil profiles

Profile No.	Depth (cm)	Particle size distribution %					Texture class
		Gravel	CS	MS	FS	Silt+ clay	
1	0-20	39.00	13.56	32.34	50.58	3.25	Sandy
	20-60	46.00	12.00	33.32	51.21	3.47	Sandy
	60-150	20.00	22.44	40.35	34.90	2.31	Sandy
2	0-50	21.00	11.20	30.23	56.25	2.32	Sandy
	50-70	23.00	4.29	23.12	68.84	3.75	Sandy
	70-150	21.00	11.27	33.24	51.24	4.25	Sandy
3	0-60	41.00	23.56	37.21	36.00	3.23	Sandy
	60-150	38.00	15.87	21.21	58.68	4.24	Sandy
4	0-70	9.00	30.80	32.03	34.45	2.72	Fine sand
	70-150	18.00	17.76	30.23	47.70	4.31	Coarse sand
5	0-50	43.00	23.44	34.32	39.79	2.45	Sandy
	50-93	32.00	19.50	37.22	39.56	3.72	Sandy
	93-125	31.00	9.57	27.21	59.40	3.84	Sandy
6	0-20	22.00	23.46	28.32	45.01	3.21	Sandy
	20-50	25.00	21.38	29.22	45.86	3.45	Sandy
	50-120	24.00	23.89	30.22	41.68	4.21	Sandy
	120-150	16.00	18.34	33.34	44.54	3.78	Sandy
7	0-40	10.00	21.56	37.22	38.99	2.23	Sandy
	40-80	21.00	19.68	38.33	38.87	3.12	Sandy
	80-150	43.00	20.08	40.11	35.70	4.11	Sandy
8	0-40	38.00	30.59	32.23	35.01	5.17	Sandy
	40-65	30.00	21.53	35.23	40.11	3.13	Sandy
	65-150	24.00	19.58	36.24	40.02	4.15	Sandy
9	0-15	0.00	0.00	84.00	7.70	8.30	Sandy
	15-25	0.00	0.00	80.00	8.50	11.50	Sandy
	25-90	0.00	0.00	78.00	11.90	10.10	Sandy
10	0-20	0.00	0.00	85.00	10.00	5.00	Sandy
	20-40	0.00	0.00	80.00	9.10	10.90	Sandy
	40-80	0.00	0.00	77.60	15.00	7.40	Sandy
	80-120	0.00	0.00	84.00	8.50	7.50	Sandy
11	0-15	0.00	2.50	90.00	6.00	1.50	Sandy
	15-30	0.00	0.00	82.00	11.00	7.00	Sandy
	30-50	0.00	0.00	93.30	4.60	2.10	Sandy
	50-100	0.00	0.00	60.50	36.20	3.30	Sandy
12	0-50	0.00	5.00	650.50	30.20	4.30	Sandy
	50-75	0.00	5.50	90.00	3.10	1.40	Sandy
	75-120	0.00	0.00	94.20	4.90	0.90	Sandy
13	0-20	0.00	6.00	90.10	3.10	0.80	Sandy
	20-60	0.00	0.00	96.00	3.30	0.60	Sandy
	60-90	0.00	0.00	96.00	3.00	0.90	Sandy
14	0-30	0.00	7.00	90.00	2.00	1.00	Sandy
	30-50	0.00	0.00	96.00	3.10	0.90	Sandy
	50-80	0.00	0.00	96.00	3.10	0.90	Sandy
	80-120	0.00	0.00	97.00	2.50	0.50	Sandy
15	0-40	0.00	7.00	90.00	2.40	0.60	Sandy
	40-50	0.00	0.00	95.30	4.10	0.60	Sandy
	50-70	0.00	0.00	95.00	4.30	0.70	Sandy
	70-100	0.00	0.00	89.40	8.50	2.10	Sandy
16	0-30	0.00	7.00	80.70	10.90	1.30	Sandy
	30-50	0.00	0.00	66.30	30.20	3.50	Sandy

Table 4 : Some chemical properties of the studied soil profiles

Prof. No	Depth	$CaCO_3$	Gypsum	OM	pH	EC dS/m	Soluble cations& anions (Meq/L)							
	cm	%					Ca^{++}	Mg^{++}	Na^{+}	K^{+}	CO_3^{-}	HCO_3^{--}	Cl^{-}	SO_4^{--}
1	0-25	10.0	0.0	1.10	7.80	3.90	13.0	8.5	15.0	1.8	0.0	1.5	23.0	14.0
	25-50	11.0	0.0	0.20	7.70	3.30	8.0	7.2	16.0	1.5	0.0	1.0	18.7	13.0
	50-100	13.0	0.0	0.00	7.80	2.60	8.0	7.0	9.7	1.2	0.0	0.9	15.0	9.8
2	0-30	7.0	0.0	1.10	7.60	2.40	7.8	4.1	10.8	1.3	0.0	1.6	14.1	8.3
	30-50	6.0	0.0	0.40	8.10	0.70	2.2	1.2	3.3	0.2	0.0	0.1	4.5	2.2
	50-120	6.0	0.0	0.00	8.20	0.60	1.6	1.0	3.2	0.4	0.0	0.3	3.7	2.2
3	0-30	10.0	9.0	0.30	7.80	2.30	7.3	4.0	10.6	1.3	0.0	1.5	13.5	8.2
	30-100	9.0	12.0	0.40	7.90	2.70	8.5	7.0	9.7	1.2	0.0	0.9	15.7	9.8
4	0-70	8.0	14.0	1.10	7.60	0.80	2.3	1.6	4.0	0.5	0.0	0.1	5.8	2.5
	70-120	9.0	13.0	0.10	8.30	0.40	1.3	0.8	2.0	0.1	0.0	0.1	2.7	1.4
5	0-25	13.0	0.0	1.10	7.80	1.90	5.2	3.6	9.0	1.0	0.0	0.8	12.0	6.0
	25-50	9.0	0.0	0.10	8.00	0.60	1.8	1.5	2.3	0.1	0.0	0.1	3.5	2.2
	50-100	8.0	0.0	0.20	8.10	0.40	1.2	0.7	2.0	0.1	0.0	0.1	2.7	1.3
6	0-30	7.0	0.0	0.20	8.30	0.40	1.3	0.6	2.1	0.1	0.0	0.1	2.6	1.4
	30-60	8.0	0.0	0.10	7.80	2.10	6.5	2.9	9.0	1.7	0.0	1.7	11.1	7.2
	60-100	7.0	0.0	0.10	7.80	2.00	6.0	3.1	9.5	1.4	0.0	1.4	11.5	7.4
	100-120	7.0	0.0	0.00	7.80	2.20	5.2	2.9	8.8	1.9	0.0	1.8	12.0	6.3
7	0-30	7.0	7.0	0.18	7.40	1.68	4.6	3.5	7.5	1.0	0.0	0.6	9.2	6.9
	30-40	8.0	7.0	0.10	7.71	1.83	5.0	3.5	8.8	1.0	0.0	0.7	11.8	5.9
	40-70	13.0	0.0	0.00	7.91	0.84	2.2	1.6	4.0	0.5	0.0	0.1	5.8	2.5
8	0-30	12.0	0.0	0.14	8.01	1.84	5.2	3.5	8.7	1.0	0.0	0.5	10.6	7.2
	30-85	11.0	8.0	0.12	8.08	0.68	2.3	1.7	4.0	0.5	0.0	0.1	5.9	2.5
	85-110	10.0	8.5	0.00	8.14	0.51	1.7	1.0	2.3	0.1	0.0	0.1	3.1	1.8
9	0-15	3.0	9.0	0.12	8.10	1.98	6.1	3.9	8.2	1.1	0.0	0.8	12.1	6.5
	15-25	4.0	8.3	0.10	8.10	1.84	5.4	3.8	7.7	1.0	0.0	0.6	11.0	6.4
	25-90	2.0	0.0	0.00	8.30	0.54	1.6	1.2	2.5	0.1	0.0	0.1	3.4	2.0
10	0-20	6.0	13.1	0.52	8.10	2.83	8.5	5.3	13.0	1.2	0.0	0.7	17.8	9.5
	20-40	5.0	10.2	0.13	8.10	2.23	6.3	3.8	10.7	1.8	0.0	1.2	14.7	6.2
	40-80	5.0	0.0	0.00	8.40	0.68	1.8	1.2	3.8	0.1	0.0	0.1	4.5	2.3
	80-120	4.0	0.0	0.00	8.30	0.70	2.2	1.1	3.5	0.3	0.0	0.2	4.2	2.6
11	0-15	1.0	6.0	0.10	7.90	2.06	6.5	2.9	9.0	1.7	0.0	1.7	11.1	7.2
	15-30	0.0	11.3	0.11	7.90	2.23	6.5	4.0	9.7	1.8	0.0	1.2	13.7	7.1
	30-50	0.0	10.7	0.00	8.10	1.72	5.3	3.6	7.0	1.0	0.0	0.7	10.0	6.5
	50-100	0.0	5.0	0.00	8.20	0.78	2.3	1.3	3.9	0.2	0.0	0.1	4.8	2.8
12	0-50	3.5	0.0	0.19	8.20	0.60	1.9	0.9	3.3	0.2	0.0	0.1	4.4	1.7
	50-75	3.5	0.0	0.10	8.40	0.27	1.2	0.3	1.0	0.1	0.0	0.3	1.5	1.0
	75-120	3.5	0.0	0.00	8.50	0.21	0.4	0.3	1.2	0.1	0.0	0.1	1.5	0.7
13	0-20	7.0	0.0	0.22	8.40	0.30	1.1	0.5	1.3	0.1	0.0	0.1	1.8	1.0
	20-60	6.5	0.0	0.10	8.60	0.32	1.2	0.6	1.4	0.1	0.0	0.1	2.0	1.2
	60-90	6.5	0.0	0.00	8.70	0.16	0.4	0.2	0.8	0.1	0.0	0.1	1.0	0.5
14	0-30	8.0	0.0	1.00	8.60	1.34	3.0	2.0	6.8	1.1	0.0	0.5	8.0	4.4
	30-50	10.5	8.5	0.40	8.60	1.45	4.3	3.0	6.0	0.7	0.0	0.5	9.6	4.3
	50-80	10.5	0.0	0.00	8.40	0.80	2.4	1.2	4.2	0.1	0.0	0.1	5.7	2.1
	80-120	10.0	0.0	0.00	8.50	0.40	1.3	0.5	2.2	0.1	0.0	0.1	3.0	1.0
15	0-40	6.3	14.0	0.80	8.70	1.53	4.2	2.4	7.4	1.0	0.0	0.7	8.1	6.2
	40-50	5.9	0.0	0.10	8.50	1.19	3.8	2.0	5.5	0.7	0.0	0.5	7.0	4.5
	50-70	6.0	0.0	0.00	8.50	0.62	1.8	0.8	3.4	0.1	0.0	0.1	4.2	2.0
	70-100	6.0	0.0	0.00	8.60	0.39	1.3	0.7	2.0	0.1	0.0	0.1	2.6	1.4
16	0-30	8.9	14.0	0.40	8.90	5.34	1.7	0.5	2.9	0.1	0.0	0.1	3.3	1.6
	30-50	9.2	0.0	0.20	8.50	6.78	18.3	11.4	36.0	1.7	0.0	1.6	42.3	23.6

Potential almost suitable class (IV) covers an area of about 45670 fed. (about 41.1% of the study area). The current subclasses of IIIxn, IVxn, IVxn and IVdxn could be improved by leaching salinity to IIx, IIIx, IVx and IIIdx.

Ten crops were selected to assess their convenience for cultivation in the study area. These crops include field crops (wheat, barley, sorghum, maize, alfalfa, and peanut); Vegetables (potato); and Fruits (date palm, fig and olive).

Table 5 : Some chemical properties of artesian irrigation water

pH	EC (dS/m)	TSS (ppm)	Soluble cations& anions (Meq/L)						
			Ca^{++}	Mg^{++}	Na^{+}	K^{+}	HCO_3^{--} $+CO_3^{-}$	Cl^{-}	SO_4^{--}
7.42	0.87	557	2.4	1.7	4.1	0.5	0.2	5.9	2.6

Conclusion

Soil texture of the study area is generally sand to gravely sandy loam. Soil depth ranges from 30 to >120 cm. Soil pH ranges from 7.5 to 8.3. The electrical conductivity (EC) values vary between 2.7 and 89dS/m. Calcium carbonate content ranges from 4.5 to 29.7%. Gypsum content ranges from 1.2 to 12.2 %. The soils of the study area are classified as Aridisols (Typic Calcigypsids, Typic Haplosalids, Typic Haplogypsids, Typic Haplocalcids) and, Entisols (Typic Torriothents and Typic Torripsamments).

It could be concluded that the Agriculture Land Evaluation System for arid and semi-arid region (ASLEarid) was very effective in evaluating land capability and suitability in ……. According to that model, soils in the studied area were set in three capability classes, which are good (C2), fair (C3) and poor (C4). Poor land capabilities were mainly associated with poor soil texture, high salinity, low available water, high hydraulic conductivity and low fertility. Land suitability for the selected field crops and vegetables varied from highly suitable (S1) to conditionally suitable (S4). On the other hand, land suitability for the selected fruit trees ranged from highly suitable (S1) to unsuitable (NS2). In conclusion, soils in the studied area could have a promising future for agricultural expansion projects. These limitations can be improved if both suitable reclamation methods and appropriate management practices were applied.

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