KIRKUK UNIVERSITY JOURNAL
FOR AGRICULTURAL SCIENCES

Studying the types of land Capability units and preparing the Capability map for some series of the North Tikrit Agricultural Project in Salah al-Din Governorate

Abdulsalam Mutar Hammad[1]
salammofaq9@gmail.com

Abdullah Azawi Rasheed[2]
abdullahazawi@gmail.com

[1] Ministry of Oil, North Refineries Company, Iraq.
[2] Department of Soil Science and Water Resources, College of Agriculture, University of Tikrit. Tikrit, Iraq.

- Part of Ph.D. dissertation for the first author.
- Date of research received 22/8/2023 and accepted 30/10/2023.

Abstract

The study aims to classify the land of the selected series to the types of land portability units and prepare a land portability map in the project north of Tikrit agricultural, where three series were selected by two hands for each series, namely the sdaeed series represented by pedon P 1 and P 2 , the Syneha series of p 3 and p 4 , and the Greesh series of p 5 and p 6 pedon, With an estimated area of (4,006.99) hectares, mostly Gypsium and limestone, permanent and temporary determinants have been adopted in the classification of the land Capability of study series. The climate factor, salinity and wind erosion are among the most influential determinants in determining an item under land susceptibility. Sub Capability land for the study series, and it was found through the results of the study that the Greesh series of p 5 .p 6 and an area (1379.62 hectares) was under the second class IIC4s, IIC4s3 for pedon 5 and 6 respectively , and the sadeed series represented by pedon P 1 and P 2 with an area (1255.86 h) under third class IIIC4s3 , IIIC4s2 for pedon 1 and 2 respectively , and the Syneha series of pedon p 3 and p 4 and an area (1371.51 hectares) under seventh class , V11C4s3e2 , V11C4s3e2 for pedon 3 and 4 respectively. Thus, most of the series of the study project are arable after taking some special administrative measures for soil reclamation based on their determinants, which can be addressed except for the Syneha series, which requires considerable effort and money to rehabilitate them.

Keywords: Land Portability, Portability Varieties, Scalability Map.
Citation: Hammad, A., & Rasheed, A. (2023). Studying the types of land Capability units and preparing the Capability map for some series of the North Tikrit Agricultural Project in Salah al-Din Governorate. Kirkuk University Journal for Agricultural Sciences, 14(4), 72-82. doi: 10.58928/ku23.14407
Correspondence Author: Abdul Salam Mutar Hammad - salammofaq9@gmail.com

Introduction

Land suitability can be defined as a process of estimating the potential of the land for various uses, including productive uses, and its suitability for agriculture, animal production, and forestry, as well as other uses of services and benefits that the land can provide, including tourism, wildlife conservation, water feeding areas, and others. It is a division of the natural system of soil aggregates into susceptibility and sub susceptible classes, as mentioned by [1], that soil quality is an indication of the extent of the land's ability to maintain its productivity and thus be an indication of its processes and characteristics.

Materials and Methods

The study area is characterized by varying temperatures in the months of the year and during the night and day and the lack of rain and the increase in evaporation during the summer month. The monthly averages of the minimum temperatures were 0-25.2 °C at an annual rate of 13.3°C and the maximum were 12.5-43.2 °C at an annual rate of 29.2 °C. It is characterized by a thermal soil system and is located within The classification is very hot due to the fact that the average annual temperature is more than 22 degrees Celsius and the humidity regime. [2]. The lands of the study area are characterized by a lack of vegetation cover and it is affected within the areas adjacent to the desert and in medium proportions in the northern regions of the project. The dominant natural plants in the area were Ceratonia siliqua , Rhagodia crassifolia, Artemisia jordanica , Alhagim aurorum , Aster tripolium.

Field procedures

The study area was visited and surveyed successive times, as indicated above, to establish and collect information, take soil and water models, note the vegetation cover, the nature of agricultural use and cultivated crops, and start the stage of collecting soil samples. The initial information and its coordinates have been installed for the purpose of studying the homogeneity of the source material for the selected series by knowing the geographical coordinates of the pedon sites and referring to them using the GIS10.8 program to determine the coordinates of the field examination sites, while writing down all the descriptive and laboratory information for each field examination site and storing it in the computer for later use in this data. Comparison operations map production processes. Soil samples were collected from the sites of the study's six-pedons sites (three soil series for each soil series two beds were excavated) at the beginning of October of the year 2019. A GPS device was used in this process. Excited soil samples were obtained from the horizons that make up each pedons were placed in plastic bags for laboratory analysis purposes. Soil samples were also taken from all the horizons of the beds in their natural state, and placed in special boxes to estimate the bulk density. The samples representing the different soil Pedons were placed in the laboratory, dried by air, then ground with a wooden hammer and passed through a sieve with a diameter of (2) mm, and became ready for various analyses, and the topographical map (1, 2) showing the locations of the for pedons and the study series. Table (1) represents the locations of the coordinates of the study pedons on the ground.

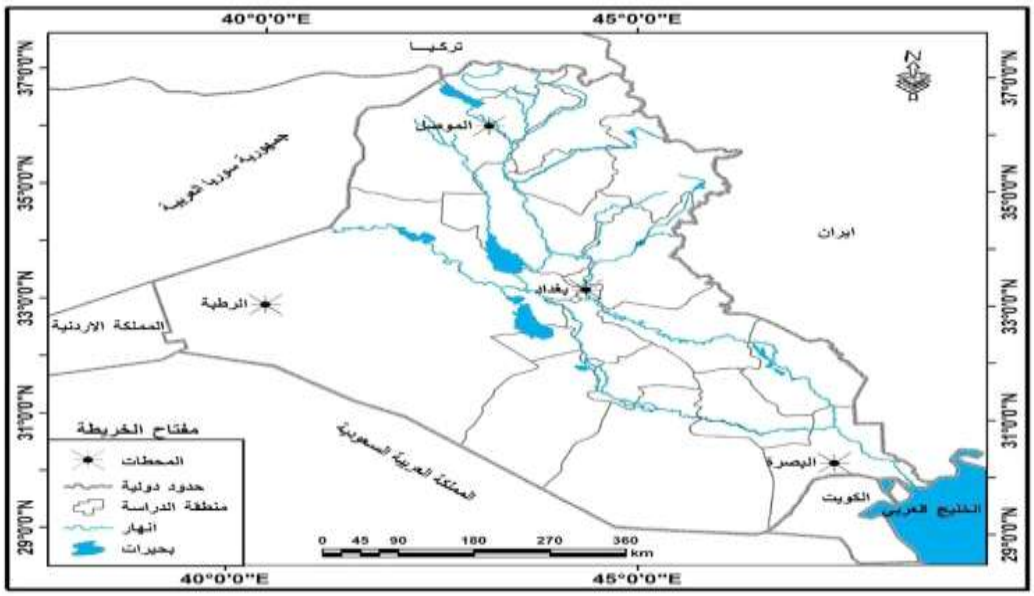


Figure1: map the Map of the North Tikrit project site study area on.

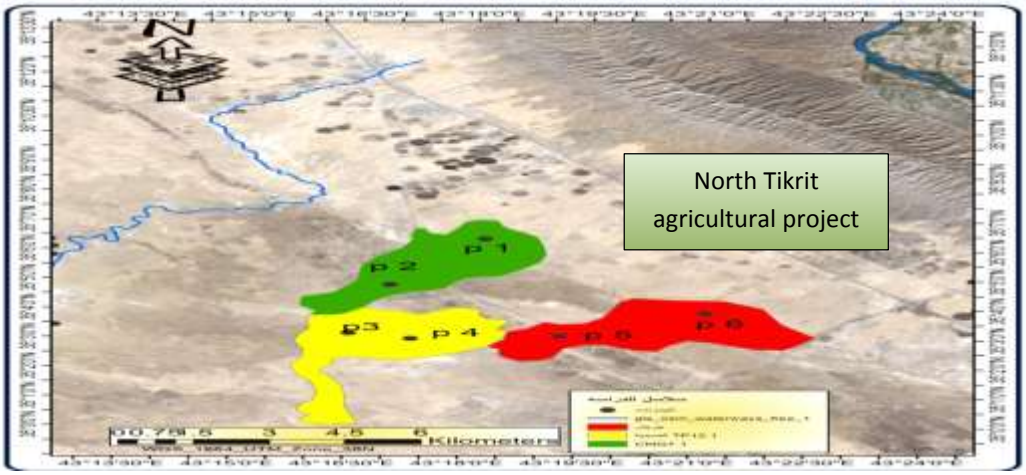


Figure2: Topographical map of the study series.

Table(1) The coordinates of the sites and the area of the study series

Series	Series symbol	Bedoon	longitude	Altitude/meter	Area/ hectare	% area
sadeed	CMG 7.1	P1	345,290,031	3,885,553,599	1255.86	31.34
		P2	343,533,823	3,883,257,018		
syneha	TP12.1	P3	342,642,209	3,880,744,289	1371.51	34.23
		P4	343,885.06	3,879,852,675		
jereesh	TP 11.1	P5	346,776,054	3,879,987,768	1379.62	34.43
		P6	349,558,969	3,881,122,549		
Total. Hectare					4006.99	100%

Assessment of the chemical properties of the soil :

1- Measuring the electrical conductivity of a soil sample extract with distilled water The ratio is1:1 using an EC electrical conductivitymeter.

2 - Measurement of the pH saturated soil . . paste extract

3- Determination of organic matter according to the methodof Black and Walkely.

4- Estimation of the exchange capacity of positive ions (CEC) by the leaching method.

5-Determination of carbonate minerals, calcium carbonate in the soil with a calcemeter device.

The basis of the method is to calculate the volume of carbon dioxide from the reaction of dilute 3-gauge hydrochloric acid with carbonates.

6- The Exchangeable Sodium Percentage (ESP) was estimated: stated in, and was calculated according to the following relationship:

$$ESP = \frac{100\ (-0.0126 + 0.01475\ \mathrm{SAR})}{1 + (-0.0126 + 0.01475\ \mathrm{SAR})}$$

The Results and Discussions.

Chemical characteristics of the study series:

1- Soil reaction degree pH:

The results showed in Table (2) that the highest value of the soil reaction degree was 7.92 in the horizon C_{k1} of pedon 1 in the sadeed chain, and the lowest value was (7.09). On the horizonof A_{11} they look like p_4 In the syneha series these results reachedthe same conclusion when studying the nature of the marshy soil in central and southern Iraq, as it was found that the high to medium content of gypsum and lime for all the pedons of the study area had a clear effect on the degree of soil interaction being between neutral to low basal.

Table (2) mical properties of the soils of the studied series

Series	pedon	horizon	depth cm	PH	EC ds.m $^{-1}$	O.M gm.kg $^{-1}$	CEC Cmol.kg $^{-1}$	gypsum gm. Kg $^{-1}$	Lime gm.Kg $^{-1}$	ESP
sadeed	P1	A_P	0-9	7.89	23.97	0.78	13.00	21.22	122.11	8.56
		B_K	9-25	7.69	25.12	0.81	15.82	12.55	156.23	8.32
		C_{k1}	50-76	7.92	20.22	0.66	8.5	32.98	295.34	9.47
		C_{k2}	76-115	7.91	25.19	0.53	3.10	104.34	395.12	9.67
	P2	A	0-9	7.67	8,621	0.86	15.91	40.22	142 15.	8.62
		B_K	9-33	7.88	19.48	0.80	11.23	42.34	172 .43	8.92
		C_{k1}	33-68	7.81	13.20	0.71	8.12	53.87	289.73	9.24
		C_{k2}	68-112	7.70	15.50	0.59	5.20	27.74	351.22	9.52
sayneh	P3	A_{11}	0-11	7.09	21.87	0.78	13.43	10.32	150.32	8.71
		A_{12}	11-35	7.29	22.32	0.70	11.12	10.11	156.11	8.03
		C_K	35- 66	7.59	21.32	0.62	5.88	10.20	232.18	9.43
		C_{k1}	66 -90	7.16	24.56	0.41	4.51	9.64	287.22	9.30
		C_{k2}	90–110+	7.42	23.11	0.32	4.21	10.11	345.54	9.75
	P4	A_{11}	0 – 5	7.61	22.32	0.86	16.93	19.21	90.15	8.33
		A_{12}	5 -17	7.41	22.88	0.82	11.21	23 .91	120.00	8.16
		C_{K1}	17–33	7.37	23.12	0.72	13.32	21 .32	281.2	9.18
		C_{K2}	33–52	7.33	24.22	0.66	10.21	20 .32	364.41	9.12
		C_{K3}	52-110	7.14	23.92	0.29	8.29	26 .23	382.25	9.97
jereesh	P5	A_P	0-8	7.18	1.18	0.95	12.29	20.21	122.32	8.30
		C_{K1}	8-16	7.22	2.62	0.80	4.21	22.11	221.13	8.77
		C_{k2}	16-55	7.31	3.51	0.77	11.5	32.23	232.12	9.98
		C_{k3}	55-111	7.19	3.85	0.64	8.3	30.22	206.21	8.66
	P6	A_{11}	0 - 12	7.67	16.11	0.75	9.01	19.21	111.15	8.33
		A_{12}	12–25	7.85	18.31	0.71	8.17	19.11	155.13	9.56
		C_{K1}	25–47	7.36	19.14	0.51	8.20	21.23	248.21	8.39
		C_{k2}	70 - 85	7.44	19.45	0.46	7.55	20.12	271.43	9.24
		C_{k3}	85- 120	7.65	20.01	0.39	7.12	16.33	226.12	9.57

2- Electrical conductivity (EC).

The results showed in Table (2) the electrical conductivity values that ranged between 1.18 - 19 25 dSiemens.m-1 for all the soil horizons of the study series. It is noted that the electrical conductivity values were at their peak within the pedon No. P1 of the subsurface horizon Ck_2 25.19 dSi.m -1 in the jereesh series, while the lowest value was 1.18 dSi. m^{-1} Salts and electrical conductivity towards depth, and the reason for this may be attributed to the activity of the salt leaching process in the horizon Ap with the effect of agricultural exploitation and rainwater and its high solubility (despite its scarcity) as well as its relatively high content of gypsum whose solubility is usually greater than the rate of dissolution of calcium carbonate b 183 times at a temperature of 25 °C, according to what was showed [1].

3- Organic matter

The results in Table (2) of the aforementioned chemical analyzes showed a decrease in the percentage of organic matter in the soil of the project in general, as its percentage decreases with increasing depth due to the lack of vegetation cover and long periods of drought in the summer period. Where it ranged between 0.29 g. kg^{-1} in the horizon Ck3 in the al-Siniyah series within the pedon (4) and the highest value of 0.95 in the horizon AP for the jereesh series in the pedon (5), and the percentage of organic matter decreases with depth until it becomes very little in the deep subsurface layers. This is because arid and semi-arid regions are characterized by low soil content of organic matter as a result of its oxidation due to high temperatures in summer, in addition to its biological decomposition, and it decreases irregularly with depth, was showed [1], [3].

4- Cation Exchange Capacity(CEC).

The results showed that the values of cation exchange capacity were low in all pedons of the soil of the study area, as shown in Table (2) mentioned above, as the highest values were in the surface horizons, and decreased with depth in the subsurface horizons of all pedons, as the highest values were 16.93 cmol. shipment. Kg-1 in horizon A11 in pedon 4 of the syneha series and the lowest value is 3.10 centmol. shipment. 1 kg of horizon CK2 in pedon 2 within the jereesh series. The reason for the higher values of cationic exchange capacity for surface horizons than those in other horizons may be due to the relative increase of organic matter in the surface horizons of a number of pedons. As for the reason for the low values of cationic exchange capacity for all soil paedons of the study area, it may be due to the low content of clay and organic matter, as indicated by [4].

5- Gypsum content in the -soil.

The proportion of gypsum ranged between 9.64-104.34 $gm.kg^{-1}$ for the pedons of the study soil. The lowest value of gypsum was in the horizon Ck1 of the Syneha series in the pedon (3) and the highest value was in the horizon C_{k2} of the pedon (1) in the sadeed series, respectively. Low level of gypsum in all pedons except for the C_{k2} horizon. The reason for the decrease in the proportions of gypsum in the surface horizons may be due to the occurrence of leaching by irrigation water or rain, which may contribute relatively to washing it from the surface horizons during the rainy season and over successive periods, and then redepositing it in the subsurface horizons. It leads to an increase in the soil content of it in those horizons, and that the high percentage of gypsum in some horizons may be due to the original soil constituent material. **[**4**]**

6- Lime content inthe soil.

Calcium carbonate is one of the main components in Iraqi soils, originally within the soils of arid and semi-arid regions. The results indicated in Table (2) that the amount of calcium carbonate for the study pedons was 90.15 – 395.12 g/kg $^{-1}$ The lowest value was in the horizon A11 of the P_4 pedons of the Syneha series, and the highest value was in the horizon C_{K2} of the P1 pedons of the jereesh series. An increase in lime scale was observed in the subsurface horizons. This is an indicator of the effect of the calcareous origin material on the rise in the values of calcium carbonate, that is, by increasing the activity of decalcification processes in the surface horizons (A_P) and the calcification process in the subsurface horizons (calcification) and the formation of the calcareous horizon (B_K) as in Table (2) despite the harsh current conditions and the possibility of

variation climate about the current reality during the formation period. And that the relationship between the increase in gypsum levels is opposite to the behavior of salinity and lime because of its accumulation and transport by dissolution or air erosion, especially since the solubility of gypsum is higher than that of lime during the old formation period, which causes it to be washed to great depths during that particular period, as the solubility of gypsum is greater than the rate of dissolution of calcium carbonate. by 183 times at a temperature of 25 °C [1], which helped to increase the electrical conductivity. The results of the studies carried out by [1], [5], [6], and [3]in Iraq indicated that there is an inverse relationship between lime and gypsum.

7- The percentage of exchangeable sodium - (ESP).

The results indicated in Table (2) that the lowest value was 8.03 in horizon A12 for pedon (3) in the syneha series, and its highest value was 9.97 for pedon 4 for horizon CK3 in the syneha series. mutual in soil colloids. These results agreed with the results of the researchers, namely [3], and [4].

Table (3) Sub - class Capability for the study series

Series	pedons	Categories classes	subclass selectors	Class Capability Unit	The space. Hectare	% wipe _ _	Notes
je-reesh	P5 _	II	IIws	IIC4s	1379.62	34.23	Soil low erosion Undeveloped sedimentary soil
	P6 _	II	IIws	IIC4s3			
sadeed	P1 _	III	IIIws	IIIC4s3	1255.86	34.43	lands suffering from wind erosion
	P2 _	III	IIIws	IIIC4s2			
syneha	P3 _	v11	V11ws	V11C4s3e2	1371.51	18.35	Medium wind erosion with a rough sandy texture, poor in material membership
	P4 _	v11	V11ws	V11C4s3e2			

8-Varieties of land Capability and their determinants: -

The US Department of Agriculture has established the USDA system in 1961, which is reliable in agricultural use, taking into account the risks of mismanagement that cause land degradation and erosion, [7]as follows:

9-specific levels of agricultural land susceptibility

1. The class.
2. Under the sub class.
3. the unit of production capacity capability unit.

According to this global system, lands are classified into eight classes, usually written in Roman numerals, starting from Class I, which is the best, to Class VIII, which is very poor. These classes are described according to their productive capacity as follows:

Varieties suitable for cultivation of different types: -

The first class, I, is excellent land for all types of agriculture. The color of this class on the land usability map is light green.

Class II good lands for agriculture., and this variety is symbolized on the map of land capacity in yellow.

Class III Medium quality land for agriculture and symbolizes this class in red.

The fourth class is land for specific use for agriculture, and this class is symbolized in light blue.

Land types not suitable for cultivation include: -

Class V: Very good lands for grazing and forests, and this variety is symbolized by dark green.

Class VI: Good lands for grazing and forests. The color of this variety on the land usability map is light brown

Class VII Medium quality land for grazing and forests.

Lands unsuitable for cultivation, grazing and forests, including:

Class VIII. It is only suitable as reserves for wild animals and rainwater catchments, or for tourism and sports purposes. The color of this species on the land accessibility map is purple. [2] and [8] This system depends on: -

First: Capability.

It means the exploitation of lands by growing crops without maintenance requirements as much as possible and by using successful administrative methods to reduce future land degradation, as well as taking care of pastures, forests, natural reserves, recreation and water harvesting.

Secondly - limitation determinants. [9]

It includes all the characteristics that affect the productive capacity or ability of the land, including:

-•permanent limitations permanent limitation. These are the characteristics that cannot be easily changed, such as climatic characteristics, texture, mineral composition, soil depth, land slope, and flood risk.

•temporary limitation**.**

It is represented by the characteristics that can be controlled and changed using appropriate administrative methods, including soil fertility, salinity and alkalinity, the degree of interaction, and the state of the earth's tapping. And table(7) Shows the types of soil Capability to pedoons of the study seriesand their areas.

Second - a level under the sub class. Soils that fall under one specific category are reclassified into sub-groups according to selected taxonomic factors related to production and its management. These factors, according to the American system, are four:

• Erosion and symbolized by the letter e.

• Water surplus or waterlogging and symbolized by the letter w.

• Salinity is symbolized by the symbol S.

Climate extremes are extremes of cold or drought and are symbolized by the letter (C). These traits have fertility implicate ions, so erosion has fertility, waterlogging has aeration, salinity and shallowness indicate the correctness of the size of the root system and the available plants. As for climatic extremes, it has effects on both the soil and the plants. After diagnosing the level of the variety, the quality of the main impediment to production is determined from the taxonomic factors mentioned above, and it is usually one of them. in the first category. Permanent determinants include texture, minerals, soil depth, slope, climate, and parent material.

First - permanent determinants. These include.

1. **The erosion**: It is the process of the amount of removal of the surface horizon and sometimes of the subsurface horizons in the case of severe erosion, whether it is water erosion or air erosion. For the soils of the study series, water erosion was not one of the effective determinants, but there is an effect of wind erosion, especially in the sand dune soils represented by P3, P4 and below characteristics. And stripping symbols, as indicated by [1], [7].

2. **The effective depth of the soil, or the so-called soil root zone**, Soil depth. It is the effective depth at which the roots of plants extend completely freely. It is considered one of

the important indicators of the suitability of land for agricultural use. It is noted that the study series have very deep soil, more than 100 cm, and there is no specific soil depth. The effective depth was determined depending on the presence of the gypsum and limestone horizon and the appearance of the solid or pebble layers.

3. **The climate**: The climate factor represented by temperature and humidity is one of the very important determinants that affect the productive capacity of the land and the need to take it into account when exploiting and managing the soils. Therefore, the climate factor within the study area is considered one of the very important factors for production because all the study series fall within the dry climate under the Hyper thermic system and the Aridic moisture system. The climate is very influential on the environment and other soil characteristics, and since it is the most affected by drought and lack of rain is salinity, so it has been adopted as one of the important and determining factors for the production of [8], [9].

Second: Temporary determinants. Such as: Electrical conductivity and salinity.:

High electrical conductivity values were noted for most of the syneha pedons, and the reason is attributed to the nature of the parent material and the hot, dry climate mainly. Salinity varieties approved by [10] were relied upon, so the salinity factor is considered one of the severe determinants of most pedons except P1, P2, P5 salinity was very low to low as shown in Table (2), (ground water (deep) and is not considered a determining factor for production.

Capability unit level:

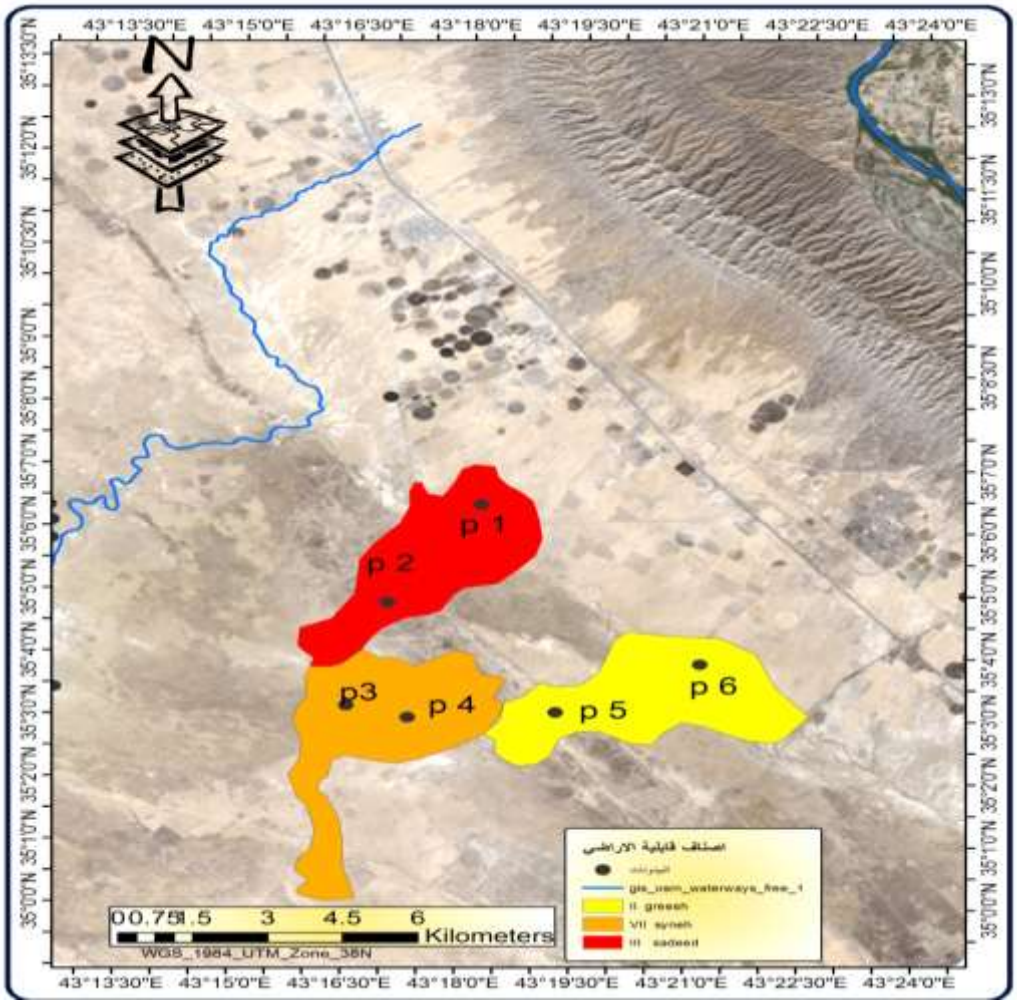
After defining a specific soil subclass level and documenting their code, the taxonomist continues to divide, fragment, and classify the soil or soils in his hands into groups, parts, or sub-classifiers of a subclass level, according to the same taxonomic factors that were used in the subclass level, but instead From our use of the type of handicap, we aim to determine the severity of the handicap and then use it and document it in one of the degrees 1,2,3,4. The study series can be placed within the classification table of land susceptibility and then draw a map showing the land susceptibility class of susceptibility, class under susceptibility, and susceptibility unit in Table 3, which shows under the susceptibility class of lands for the study area series, the table (3) showed the Sub-class Capability of the study series.

e: erosion, s: salinity, c: climate

The table shows (3) The presence of three Capability classes are the second class 11 Class, the third class 111 Class, and the seventh class V11 Class. As for the classes of the Capability unit, they were IIC4s IIC4s3 IIIC4s2 IIIC4s3 V11C4s3e2 V11C4s3e2 and the climate factor is one of the most severe factors represented by high intensity of drought and high temperatures and for all Capability classes, which directly affects Or indirectly on soil characteristics and for all series of the study and it is denoted by c4 and that salinity is the most affected by climate and determinant of production with a value of S1, S2, S3, S4 followed by erosion e1, e2. For the purpose of ascertaining the most important determinants that significantly affect production, the Coefficient Variation (CV) was measured for some chemical properties (organic matter, gypsum, lime, soil interaction, salinity, cationic exchange capacity). The results appeared in Table (4) that the largest characteristics The gypsum was different as it reached the coefficient of variation (CV) his 73.46 And the least of it is for the characteristic of soil interaction, as the coefficient of variation (CV) is 3.47 As in Table (4) , which shows the values of the coefficient of difference for the studied characteristics and according to the rule, as gypsum > lime > CEC > EC > OM > pH and Figure 3 It shows the land Capability map, including the series Schedule of the study area, as follows :

Table (4) coefficient of variation for some chemical properties of the study soil.

lime	gypsum	CEC	O.M	EC	pH
40.13	73.46	39.83	26.20	39.57	3.47



figure(3) Land Capability map on the spatial topographical visualization of all pedons of the study series.

References

[1] -Adhami, Raad Atta MahmoudAl. (2006). The effect of the physiographic site on the genetic and evolutionary status of some gypsum soils inIraq. PhD thesis, College of Agriculture, University of Baghdad.

[2] Al-Akidi, Walid Khalid (1990). Soil management and landuse, University of Mosul, Iraq.

[3] Al-Bayati, Mahmoud Ahmed Lati (2010). Inheritance and classification of gypsum soils in the fields of the College of Agriculture, University of Tikrit. Master Thesis, College of Agriculture, Tikrit University.

[4] AL-janabi, Yasser HammoudAjrash. (2010). Management of gypsum soils under different irrigation systems and the content and distribution of gypsum in Salah Al-Din Governorate . Master's thesis, College of Agriculture.

[5] Al-Mashhadani, Ahmed Salih Muhaimid (1994). Soil Survey and Classification, Ministry of Higher
Education and Scientific Research, University of Mosul, Iraq. Ministry of Irrigation. Investigation Department

[6] Florea,N . And Al- Joumaa, KH. (1998). Genesis and Classification gypsiferous soil of the middle Euphrates Flood plain Syria Geoderma 87:67-85.

[7] National Center for Water Resources (2010). Soil Survey and Classification Map- North Tikrit Project(2002), scale1:50000..

[8] Salloum ,Iyad Jihad and Elias ,Raouf Maarouf (2002)Soil study of the North Tikrit Agricultural Project

[9] Schjonning , P.,S. Elmholt , and BT Christensen (2004). Soil quality management. Concepts and terms. Managing soil quality: challenges in modern agriculture. 1-16.

[10] Webster,R.(2000).Is soil variation random,Geoderma Vol.97:149-163.

دراسة أصناف وحدات قابلية الأراضي وإعداد خارطة القابلية لبعض سلاسل مشروع شمال تكريت الزراعي في محافظة صلاح الدين

عبدالسلام مطر حماد[1]
salammofaq9@gmail.com

عبدالله عزاوي رشيد[2]
abdullahazawi@gmail.com

[1]وزارة النفط، شركة مصافي الشمال.
[2] قسم علوم التربة والموارد المائية، كلية الزراعة، جامعة تكريت.

- تاريخ استلام البحث 22/8/2023 تاريخ قبول البحث 30/10/2023
- البحث مستل من أطروحة دكتوراه للباحث الأول .

الخلاصة

تهدف الدراسة الى تصنيف أراضي السلاسل المختارة الى أصناف وحدات قابلية الأراضي وإعداد خارطة قابلية الأراضي في مشروع شمال تكريت الزراعي اذ تم اختيار ثلاثة سلاسل بواقع بيدونين لكل سلسلة وهي سلسلة صديد المتمثلة بالبيدون P_1 وP_2 وسلسلة الصينية المتمثلة بالبيدون P_3 وP_4 وسلسلة جريش المتمثلة بالبيدون P_5 وP_6 وبمساحة تقـــدر بـــ 4006.99)هكتار (اغلبها جبسيه وكلسية , تم اعتماد المحددات الدائمة والمؤقتة في تصنيف قابلية أراضي سلاسل الدراسة ,ان عامل المناخ و الملوحة والتعرية الريحية هي من اكثر المحددات تأثيرا في تحديد صنف تحت قابلية الأراضي Sub Capability land.لسلاسل الدراسة ,وتبين من خلال نتائج الدراسة ان سلسلة جريش المتمثلة بالبيدون P_5 وP_6 وبمساحة 1379.62)هكتار (كانت تحت الصنف الثاني IIC4s , IIC4s3البيدون P_5 وP_6 على التوالي ,وسلسلة صديد المتمثلة بالبيدون P_1 وP_2 وبمساحة1255.86)هكتار (تحت الصنف الثالث IIIC4s2 , IIIC4s3البيدون P_1 وP_2 على التوالي ,وسلسلة الصينية المتمثلة بالبيدون P_3 وP_4 وبمساحة 1371.51)هكتار (تحت الصنف السابع V11C4s3e2 , V11C4s3e2البيدون P_3 وP_4 على التوالي .وبهذا تكون اغلب سلاسل مشروع الدراسة صالحة للزراعة بعد اتخاذ بعض الإجراءات الإدارية الخاصة لاستصلاح التربة معتمدة على محدداتها التي يمكن معالجتها باستثناء سلسلة الصينية التي تتطلب جهدا ومالا كبيرا لتأهيلها.

الكلمات المفتاحية :قابلية الأراضي ,أصناف القابلية ,خارطة القابلية.