

UDC 631.43

AGROPHYSICAL INDICATORS OF THE MAIN SOIL TYPES OF THE SALYAN PLAIN.

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(Presented by Academician of ANAS G.Sh.Mammadov)

The expansion of the non-oil sector of our country is set as an important task in government documents. One of them is the acquisition and development of high labor productivity for agricultural workers. All this is possible on highly fertile soils. Therefore, in-depth study of soils is one of the important scientific researches. The most important problem in the context of agrarian reforms in our country is land reclamation, efficient use of soil resources, restoration of fertility, protection and agro-ecological basis, productivity management.

Currently, one of the main issues is a thorough study of intensively irrigated and cultivated lands in the lowland regions of the republic, conducting scientific research that meets new requirements, and increasing land productivity. In order to use land correctly and efficiently, these issues need to be studied from time to time.

Effective use of natural resources to increase the productivity of agricultural plants and obtain high yields from cultivated areas allows both to obtain additional yields and to provide feed through the development of livestock farming. The study of the agrophysical properties of soils and their regimes is of great importance. scientific and economic importance in increasing the productivity of various agricultural plants.

The purpose of the research is to increase the fertility of reclaimed lands through the effective use of land, regulate the agrophysical properties of lands and their regimes, as well as prepare a system of measures to optimize these properties. The water-physical properties of the soil under plants were studied.

As is known, the study of the agrophysical properties of soils under stationary conditions depending on the complexity of the soil under individual agricultural plants, crop rotation and mathematical analysis of the results obtained are of great scientific theoretical and practical importance in the effective use of soils, increasing productivity and improving the agrophysical properties of soils.

Keywords: porosity, humus, carbonization, absorbed bases, dry residue

Introduction

Undoubtedly, to successfully resolve issues in the field of agriculture in our country, it is very important to make the land suitable and put it into operation. In modern conditions, on the irrigated plains of Azerbaijan, there is a need for a thorough study of lands of anthropogenic origin, in particular intensively irrigated and cultivated lands, research work that meets new requirements, and increasing land productivity. In this

sense, the study of the agrophysical and chemical properties of soils and their regimes is of great importance in increasing the productivity of various agricultural plants.

The presented article presents the results of studies of the agrophysical properties of soils in the Salyan Plain of the Kura-Araz Lowland.

Object and methodology of research

As is known, in comparison with other

plains of the Kura-Araz Lowland, the agrophysical properties of the soils of the Salyan Plain have been studied practically little. Therefore, research work is being carried out in this direction. Research work was carried out on the basis of methods adopted in our republic[10].

Analysis and discussion

The Salyan Plain is part of the Kura-Araz Lowland and is located in its southeast. The occupied territory is located between the Kura River, its tributary Akusha and the coastline of the Caspian Sea, its area is 149,000 hectares. As a result of the rise and fall of the Caspian Sea, its area increases and decreases. The Salyan Plain is located almost significantly below ocean level. The general background is flat, with the exception of some depressions [1,2,3,7,8].

The climate of the region is of the soft semi-desert and dry desert type with dry summers. This type of climate is characterized by low and low humidity, mild winters and dry summers. The average annual air temperature is 14.9°. The annual precipitation is 250-350 mm, and the amount of possible evaporation reaches 900-1100 mm during the year [3]. The soil of an area depends on its geological structure, soil cover, cultivation, etc. it has different indicators depending on its characteristics [1,2].

A number of researchers have carried out scientific work to study the soils of the study area. According to these researchers, the flatness of the relief of the Salyan Plain and the proximity of groundwater to the surface determined the emergence of grass-gray, grass swamps, salt marshes and their species diversity [1,2,6]. Below are the results of its analysis to characterize the agrophysical properties of soils in the region.

As can be seen from the table, the amount of organic matter in grass-gray soils is low, the amount of humus in the upper layers is 2.13%, and in the lower layers sharply decreases to 0.96%. The amount of carbonates throughout the profile (CaCO_3) varies from 6.0 to 10.4%. The amount of absorbed bases ranged from 17.66 to 22.74 mg/eq throughout the profile. Of the absorbed bases, calcium cation (10.70-15.80 mg/eq), magnesium cation (5.51-6.68 mg/eq) and sodium cation (1.20-1.71 mg/eq) predominate.

The amount of dry residue in these soils sometimes decreases along the profile, and sometimes increases (1.024-2.232%). In terms of granulometric composition, they are medium- and heavy-grained, the amount of physical clay ranges from 34.00-47.70% along the profile. . The density of the physical properties of these soils is 1.20 g/cm³ in the upper layers and 1.39 g/cm³ in the lower layers. In grass-gray soils, the specific gravity ranged from 2.66-2.72 g/cm³ along the profile, within 48-54% depending on the pore density and specific gravity.

As can be seen from the table, the amount of humus in grassy-gray soils gradually and naturally decreases along the profile. Thus, its amount is 1.54% in the upper layer and decreases to 0.60% in the lower layers. The studied grass-gray soils belong to low- and medium-carbonate soils. The amount of CaCO_3 sometimes increases and sometimes decreases depending on the genetic layers. The amount of absorbed cations in grass-gray soils is 22.90-26.56 mg/eq., distributed unevenly along the profile in 100 g of soil. Among the absorbed cations, Ca^{+2} (12.90-18.29 mg/eq), Mg^{+2} (6.17-7.20 mg/eq), absorbed in 100 g of soil predominate, and the amount of absorbed Na is 2 and varies from 10 to 3.10 mg/eq.

Table

Some physical and chemical indicators of the main soil types of the Salyan Plain

Physical indicators		Grass-gray soils (section 2)			
Depth, cm		0-17	17-46	46-79	79-120
Humus in %		2,13	1,65	0,96	0,96
CaCO ₃ in %		6,6	10,1	6,0	9,0
Amount of absorbed bases per 100g of soil. with mEq.	Ca	13,15	10,7	15,80	14,39
	Mg	5,51	5,76	5,43	6,28
	Na	1,71	1,20	1,51	1,31
Amount of absorbed bases, mEq		20,37	17,66	22,74	21,98
Dry residue, %		1,024	1,643	2,232	1,570
Grading	<0,001mm	13,60	10,88	9,68	8,80
	<0,01mm	47,70	46,00	38,24	34,00
Density, g/cm ³		1.20	1.27	1.29	1.39
Special weight		2.66	2.69	2.72	2.69
Porosity, %		54.9	52.80	52.57	48.33
Grass-gray soils (section 32)					
Depth, cm		0-22	22-41	41-63	63-96
Humus in %		1,54	0,81	0,74	0,60
CaCO ₃ in %		10,7	9,1	12,6	16,1
Amount of absorbed bases per 100g of soil. with mEq.	Ca	18,29	12,90	14,39	16,40
	Mg	6,17	7,10	7,20	6,30
	Na	2,10	2,90	3,10	2,11
Amount of absorbed bases, mEq		26,56	22,90	24,69	24,81
Dry residue, %		0,580	1,032	0,840	0,845
Grading	<0,001mm	11,92	11,04	4,24	4,20
	<0,01mm	51,04	30,54	38,54	38,50
Density, g/cm ³		1.24	1.35	1.31	1.30
Special weight		2.67	2.67	2.72	2.74
Porosity, %		53.56	49.45	51.84	52.55
Meadow-wetlands (section 50)					
Depth, cm		0-35	35-50	50-95	-
Humus in %		4,82	2,15	1,90	-
CaCO ₃ in %		7,34	13,90	5,34	-
Amount of absorbed bases per 100g of soil. with mEq.	Ca	21,80	17,33	11,29	-
	Mg	13,40	9,25	5,35	-
	Na	3,50	5,50	7,12	-
Amount of absorbed bases, mEq		38,10	32,08	23,76	-
Dry residue, %		1,937	2,345	1,557	-
Grading	<0,001mm	19,23	26,54	17,05	-
	<0,01mm	39,56	55,76	37,27	-
Density, g/cm ³		1.19	1.31	1.35	-
Special weight		2.74	2.67	2.73	-
Porosity, %		56.36	50.90	50.55	-
Saline soils (section 20)					
Depth, cm		0-23	17-46	62-87	87-141
Humus in %		1,65	1,80	0,70	0,65
CaCO ₃ in %		10,7	11,6	6,4	12,5
Amount of absorbed bases per 100g of soil. with mEq.	Ca	15,24	18,33	17,91	17,00
	Mg	9,36	9,25	8,27	8,34
	Na	6,50	6,30	5,70	5,60
Amount of absorbed bases, mEq		31,10	33,88	31,88	30,94
Dry residue, %		3,260	2,930	3,755	4,005
Grading	<0,001mm	10,42	6,43	2,89	2,90
	<0,01mm	44,08	41,46	40,08	39,22
Density, g/cm ³		1,36	1,38	1,40	1,50
Special weight		2,70	2,72	2,74	2,75
Porosity, %		49,60	49,30	48,90	45,50

As can be seen from the table, the amount of dry residue in the grass-gray soils along the profile either decreases or increases, as in the grass-gray soils in the second section. Due to the granulometric composition, the distribution of various fractions of these soils along the profile has its own characteristics.

The amount of physical clay ranges from 30.54-51.04%. In the upper layer (0–22 cm) the density was 1.24 g/cm³, and in the middle layer (63–96 cm) it was 1.30 g/cm³. The specific gravity increased in the lower layers (2.67-2.74 g/cm³). The total porosity is 53.56% in the top layer and decreases to 52.55% in the bottom layer.

Meadow-bog soils are well supplied with humus. Its amount in the upper layers is 4.82%, in the lower layers it gradually decreases to 1.90%. The carbonate content is distributed unevenly along the profile and varies little. Its amount in the upper layer (0-35 cm) was 7.84%, in the middle layer (35-50 cm) 13.9%, and in the lower layer it decreased to 5.34%.

Among the absorbed cations in meadow-marsh soils, absorbed Ca⁺² is 11.29-21.80 mg.eq., absorbed Mg⁺² is 5.35-13.40 mg.eq., the amount of absorbed Na is 3.50-7 varies. within <12 mg. .eq. The soil we characterized is predominantly saline, the amount of dry residue is 1.557-2.345%, depending on the profile. The top layer has a heavier clay composition. The amount of physical clay is 37.27-55.76%. Density ranges from 1.19-1.35 g/cm³ along the profile in meadow-bog soils. In contrast to density, specific gravity varies along the profile in the range of 2.73-2.74 g/cm³. Depending on the density and specific gravity, the total porosity ranges from 50.55-56.36%. The highest total porosity is observed in the upper layer (0-35 cm) 56.36%.

In saline soils, the amount of humus gradually naturally decreases along the profile. The largest amount of humus in the upper layer is 1.65%, in the lower layer – 0.65%. Carbonate

in the studied soils is unevenly distributed. CaCO₃ (0-17) is 10.7% in the upper layer, 11.6% in the 17-46 cm layer, 6.4% in the 62-87 cm layer, increases to 12 in the lower layer (87-141 cm), 5%. The total amount of absorbed bases in saline soils is 15.24-18.33 mg/eq per 100 g of soil. Ca⁺² and Mg⁺² are the most predominant cations. Absorbed Ca⁺² in the upper layer of soil (0-17 cm) is 15.24 mg.eq., increasing in the lower layers. Between 17.00 mg/eq is exchanged in the 87-141 cm layer. The amount of absorbed Na decreases towards the lower layers and ranges from 6.50-5.60 mg/eq. The amount of dry residue is distributed unevenly along the profile and ranges from 2.930- 3.260%. The granulometric composition of these soils is different. The amount of physical clay is high in the upper layers (44.08%), in the lower layers it decreases to 39.22%. The density of these soils does not change much along the profile and is 1.36-1.50 g/cm³. the specific gravity gradually increases with the lower layers and ranges from 2.70-2.75 g/cm³. The total porosity decreases in the upper layers (49.60-49.30%) and reaches 44.90% in the lower layers.

Result

Thus, taking into account the above, we can conclude that each type of soil has its own characteristics. This can be seen from the indicators given in the article. Thus, for this purpose it is necessary to study the soil fertility of the territory, its rational use, optimal use, including agrotechnical, agro-reclamation, etc. carrying out activities, as well as studying the genetic characteristics of the soil, are of great scientific and practical importance

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SALYAN DÜZÜNÜN ƏSAS TORPAQ TIPLƏRİNİN AQROFİZİKİ GÖSTƏRİCİLƏRİ

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Ölkəmizdə qeyri-neft sektoru sahələrinin genişləndirilməsi dövlət sənədlərində mühüm vəzifə kimi qarşıya qoyulmuşdur. Bunlardan biri də kənd təsərrüfatı zəhmətkeşləri qarşısında yüksək məhsuldarlığın alınması və inkişaf etdirilməsini təşkil edir. Bunların da hamısı yüksək məhsuldarlıqlı torpaqlarda mümkündür. Ona görə də torpaqların dərin-dən öyrənilməsi vacib elmi tədqiqat işlərindən biridir. Ölkəmizdə aqrar islahatlar şəraitində ən vacib problem torpaq meliorasiyası, torpaq ehtiyatlarından səmərəli istifadə, münbitliyin bərpası, mühafizəsi və məhsuldarlığın idarə olunmasının aqroekoloji əsaslarıdır.

Hazırda respublikanın düzənlik ərazilərində intensiv suvarılan və becərilən torpaqların dəqiq öyrənilməsi, yeni tələblərə cavab verən elmi tədqiqat işlərinin aparılması, torpaqların məhsuldarlığının artırılması əsas məsələlərdəndir. . Torpaqlardan düzgün və səmərəli istifadə etmək üçün bu məsələlər vaxtlı-vaxtında öyrənilməlidir.

Kənd təsərrüfatı bitkilərinin məhsuldarlığını artırmaq, əkin sahələrindən yüksək məhsul götürmək üçün təbii ehtiyatlardan səmərəli istifadə həm əlavə məhsul götürməyə, həm də heyvandarlığı inkişaf etdirməklə yem təminatına imkan verir. Torpaqların aqrofiziki xassələri və onların rejimlərinin öyrənilməsi müxtəlif kənd təsərrüfatı bitkilərinin məhsuldarlığının artırılmasında böyük elmi və təsərrüfat əhəmiyyətinə malikdir.

Aparılan tədqiqatın məqsədi torpaqlardan səmərəli istifadə edərək meliorasiya olunmuş torpaqların münbitliyinin artırılması, torpaqların aqrofiziki xassələrinin və onların rejimlərinin nizamlanması və bu xassələri optimallaşdırmağa imkan verən tədbirlər sistemi hazırlamaqdan ibarətdir. Bu məqsədlə müxtəlif stasionar təcrübə sahələrində respublikanın təbii-ekoloji vəziyyətini nəzərə alaraq müxtəlif torpaq tipləri və kənd təsərrüfatı bitkiləri altındakı torpaqların aqrofiziki xassələrindən olan su- fiziki xassələrində baş verən dəyişikliklər stasionar şəraitdə öyrənilmişdir.

Bildiyimiz kimi torpaqların aqrofiziki xassələrinin, ayrı-ayrı kənd təsərrüfatı bitkiləri altında torpaq kompleksliyindən, növbəli əkin sistemindən asılı olaraq stasionar şəraitdə öyrənilməsi, alınan nəticələrin riyazi təhlili torpaqlardan səmərəli istifadə edilməsində, məhsuldarlığın artırılmasında və torpaqların aqrofiziki xassələrinin yaxşılaşdırılmasında elmi nəzəri və praktiki cəhətdən böyük əhəmiyyət kəsb edir.

Açar sözlər: məsaməlilik, humus, karbonatlıq, udulmuş əsaslar, quru qalıq

АГРОФИЗИЧЕСКИЕ ПОКАЗАТЕЛИ ОСНОВНЫХ ТИПОВ ПОЧВ САЛЪЯНСКОЙ РАВНИНЫ

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Расширение ненефтяного сектора нашей страны поставлено в качестве основной цели экономической политики государства. Одна из важных задач – получение и развитие высокой производительности труда работников сельского хозяйства, которое возможно достичь на высокоплодородных почвах. В связи с чем углубленное изучение почв является одним из насущных научных проектов. В условиях аграрных реформ в нашей стране важнейшей проблемой является агроэкологическая основа их мелиорации, эффективное использование земельных ресурсов, восстановление плодородия, защита и управление продуктивностью почв.

В настоящее время одним из главных вопросов является тщательное изучение интенсивно орошаемых и обрабатываемых земель на орошаемых равнинных территориях республики, научно-исследовательская работа, отвечающая новым требованиям, изучение продуктивности почв. Чтобы правильно и эффективно использовать земли, их следует время от времени изучать. Повышение урожайности сельскохозяйственных культур и эффективное использование природных ресурсов для получения высоких урожаев с обрабатываемых полей позволяет как получить дополнительный урожай, так и обеспечить животных кормами за счет развития животноводства. Изучение агрофизических свойств почв и их режимов имеет большое научное и хозяйственное значение в повышении продуктивности различных сельскохозяйственных растений.

Цель исследований – повышение плодородия мелиорированных земель за счет эффективного их использования, регулирование агрофизических свойств почв и их режимов, а также разработка системы мероприятий по оптимизации этих свойств. С учетом природно-экологической ситуации республики на различных стационарных опытных площадках в стационарных больницах изучались изменения гидрофизических свойств и агрофизических свойств почв под разными типами почв и сельскохозяйственными растениями.

Как известно, математический анализ результатов, полученных при изучении агрофизических свойств почв в зависимости от их сложности под отдельными сельскохозяйственными растениями и системой севооборота, в стационарных условиях имеет большое научное теоретическое и практическое значение в эффективном использовании почв, повышении продуктивности и улучшении агрофизических свойств почв.

Ключевые слова: пористость, гумус, карбонизация, поглощенные основания, сухой остаток