SOIL GEOGRAPHY

ANALYSIS AND COMPARATIVE CHARACTERISTIC OF SOME PHYSICO-CHEMICAL COMPOSITIONS IN THE ALLUVIAL-MEADOW-FOREST SOILS ALONG THE KUR RIVER

M.A.Mammadov, F.V.Mammadova, Ch.A.Nasirova, R.A.Huseynov

Institute of Geography PLE, Ministry of Science and Education, Baku, Azerbaijan
mamed.1952@bk.ru

DOI: 10.59423/gnr.2026.23.99.002

Article history:

Received: June 24, 2025
Dispatched for revise:
September 05, 2025
Accepted: November 20, 2025

Keywords:

tugay forests,
meadow-forest,
humus, floodplain,
degradation,
salinization,
bogging

Abstract

The aricle deals with the subtype of the same name of the alluvial-meadow-forest (Mollic Fluvisols) soil type formed in the floodplain along the Kur river. Though the subtype doesn't surround a larger zone in the Kur river valley, it is formed in a long distance in the direction of river flow from west to east under different phytocenosis and intrazonal condition. Receiving many branches from the right and left in the middle flow of the river, changes in its chemical, fractional and phytocenotic composition of the Kur dependent materials led to quantitative and qualitative changes in physico-chemical and organic substances within the same subtype. A role of the relief and soilforming rocks is highly great in formation of alluvial-meadow-forest soils. Several physico-chemical indicators, including an amount and supply of total humus of the alluvial-meadow-forest soils have been compared with the soil monitoring. In recent years as a result of the Kur reduction of the Kur river, the water of the Caspean Sea enters the river delta and causes transformation of ecosystem in the surrounding areas.

1. Introduction

According to the information of UN experts (2015) 12 million hectares of arable land are degraded and come out of agricultural turnover. In the 70s and 80s of the XX century some ecosystems, including an area of the Tugay forests in the Kur-Araz valley reduced and degradation of the alluvial-meadow-forest soils formed under these forests accelerated in connection with the extensive agricultural development. The other important anthropogenic effect has been connected with the water storages built on the Kur river since the second half of the XX century. Along with the construction of reservoirs the Mingachevir, Shamkir, Yenikand, the hydrological regime of the area changed, large areas of land were flooded, and about 50.000 hectares of tugay forests were destroyed.

In the last century the surrounding natural components, including anthropogenic negative effects on soil cover was increasing. A basic purpose is to evaluate a modern state correctly and to work out complex fight measures to prevent the process. In this connection there is a need for research in protected and artificially planted forest areas on the banks of the Kur in 2017-2019.

2. Study area and method

The research object surrounds the Garayazi plain in the Middle Kur valley, Ishkhan forest in the Ashaghi Kur valley in Aghdash, Mamishlar village in the Sabirabad district. The soil cuts were applied at 0-100 m absolute height, less inclined plains. The soil samples were analyzed according to generally adopted methods in the laboratory. Total humus was fixed according to I.V.Turin, Ca^{2+} and Mg^{2+} to D.I.Ivanov, in pH water solution-with potentiometer, calcareous (CO_2) by Sheibler method in thr calcimeter device, granulometric composition by N.A.Kachinsky's pipet method, but the easily solved salts and total chemical composition of the soils was fixed according to E.V.Arinushkin. The soil monitoring was studied with the comparative-geographical method, total chemical composition and other analysis information of the fund and reference materials of the Geography Institute.

3.Analysis and discussion

The alluvial-meadow-forest soils spread under th coniferous and broad-leaved forests in the large

river valleys under different bioclimatic condition. The physico-chemical characters of these soils studied by Dobrovolsky [3, pp.32-36], Kovda [8, 255 p.], Kozlovsky, Korunblyom [9, 219 p.], Ziniyeva [25 p.], Kaydarov [7, pp.305-306], IUSS Working Group WRB [6, 181 p.] and others.

Some characters of alluvial-meadow-forest soils in our Republic were investigated by Volobuyev [12, pp. 197-223], Zeynalov [13, pp.107-110], Aliyev, Khalilov [2, 136 p.], Hasanov [4, pp.97-103], Salamov [11, 173 p.], Salayev [10, 240 p.], Aliyev [1, 310 p.], Hasanov [5, 46 p.]. According to the latest classification this soil type is divided into two subtypes: 1. lamellar alluvial-meadow-forest; 2. alluvial-meadow forest

Taking into account the width of the area, the research was only performed on the alluvial-meadow-forest soils. These soils develop under natural and artificial forest areas preserved in the form of fibers in both banks of the Kur river. These soils are in the zone of Garayazi State Nature preserve on the left bank of the Kur, in the initial stage of soilformation under tugay forests around Hunans and Yastiyol villages on fhe right bank of the Kur, they are characterized with covering of soil surface with new clayey-loamy and sandy-loamy sediments as a result of spring-autumn floods and strong differentiation of the profile.

Though the alluvial-meadow-forest soils spread in the large zone around Yastiyol village and Garayazi plain, its area decreases because the Kur valley narrows around the Hunans village (Fig. 1). The Kur valley is broadened and an area of the alluvial-meadow forest and alluvial-meadow soils is expanded beginnig from Mingachevir water storage. At present a total area of the alluvial-meadow-forest soils is 30684,1 h (2,54 % of the total zone), but an area of the alluvial-meadow soils is 66608,7 h (6,5 % of the total area).

As it is seen from table 1. an amount of total humus changes by 4,6-7,0 % in humus layer (40-45 cm) of the alluvial-meadow forest soils spreaded under the natural tugay forest, and its maximum quantity is 3,4-7,0 %, it is defined in accumulative layer under mixed forest. Its amount reduces in illuvial layers till 1,9-2,6%, but a minimum quantity is fixed in low layers 0,5-1,4% (Table 1).

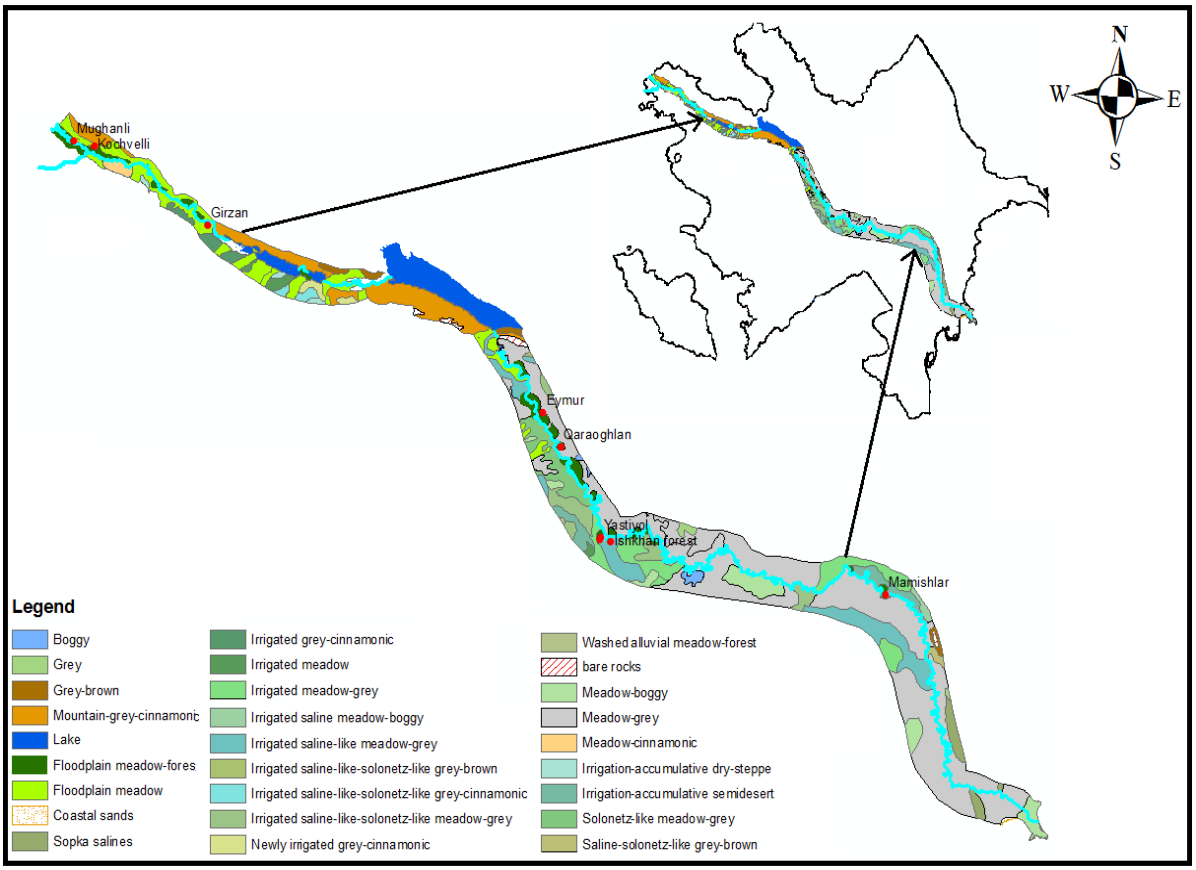

Figure 1. Land map-scheme of the floodplain part of the Kur river

Table 1

Physico-chemical composition of the floodplain meadow forest soils (100 g in the absolute dry soil, by %)

Soil cut, №	Depth, Cm	Total humus, %	$CaCO_3$ %	Ph	Dry residue %	Absorbed bases, mg/ekv			Granulometric structure, %	
						Ca^{2+}	Mg^{2+}	Sum of cations	<0,001	<0,01
Girzan K-1	0-20	3,42	6,20	7,6	0,15	39,5	11,5	51,0	16,38	55,66
	20-45	2,61	6,20	7,5	0,18	41,0	8,5	49,5	26,56	54,0
	45-80	1,63	9,3	7,3	0,24	29,5	15,5	45,5	10,40	45,7
	80-100	1,35	8,5	7,6	0,21	35,5	10,5	45,0	19,18	38,34
Girzan, K-2 (2017)	0-20	2,57	12,4	7,6	0,85	31,0	11,5	42,5	4,48	28,86
	20-42	2,13	9,3	7,5	0,51	25,5	14,5	40,0	1,2	24,96
	42-75	1,24	10,6	7,6	0,82	29,5	14,5	44,0	5,2	27,02
	75-110	1,13	10,6	8,0	0,44	30,5	13,5	44,0	15,62	28,48
Garayazi, K-3 (2017)	3-25	3,75	4,4	6,3	0.11	42,5	6,0	48,5	32,80	73.0
	25-50	3,21	6,2	8,4	0.09	39,5	4,0	43,5	44,40	75,6
	50-75	1,81	10,6	8.2	0.13	32.5	7.5	40,0	43,60	71,4
Garayazi, K-5 (2017)	0-20	7,02	10,6	7,2	0,22	31,5	18,0	49,5	31,14	68,84
	20-45	2,23	15,1	7,3	0,27	25,0	20,5	.45,5	28,34	69,88
	45-70	1,77	25,7	8,1	0,26	24,0	13,5	37,5	21,72	61,86
Aghjabadi, K-08 (2018)	0-12	4,6	22,5	7,4	0,50	30,5	10,5	41,0	24.4	55,1
	12-24	1,9	24,6	7,3	0,23	20,0	6.0	26.0	16,4	34,1
	24-50	1,4	26.6	7,5	0,22	24,0	9,5	33,5	16.1	29,7
	50-75	0,5	24,6	7,5	0,20	27,5	6.5	34,0	-	-
Aghjabadi, K-09 (2017)	0-20	2,0	24,6	7.4	0,9	30,0	11,0	41,0	24,5	57.7
	20-45	1,2	26,5	7,5	0,22	26,0	17,5	43.5	24.1	51.2
Aghdash, K-06 (2018)	0-20	3,7	26,6	7,8	0,08	32,5	12.0	44,0	25,4	67,4
	20-45	2,0	27,7	7,9	0,09	28,0	9,5	37.5	19,7	63,4
	45-70	1,1	29,7	8,0	0,09	30,0	17.0	37,0	22.0	55,6
	70-90	-	27,7	8,1	1,0	37,5	4,0	31.5	-	-
Aghdash, K-07 (2018)	0-17	2,0	20,6	7,7	0,25	33,0	13,0	46,0	38,7	73,0
	17-35	1,6	27,7	7,9	0,07	32,5	7,0	42,0	31,3	78,5
	35-65	1,3	23,7	7,8	0,28	32,5	12,0	39,5	36,6	79,9
	65-100	0,9	24,6	7,9	0,46	28,5	17,0	44,5	26,2	56,8
Sabirabad, K-17 (2019)	0-12	2,39	30,1	7,8	0,14	32	9	41	20.12	51.38
	12-32	1,67	29,1	8,4	0,25	27	12	39	8.8	45.18
	32-58	0,/64	24,1	8,4	0,19	20	3	23	0.52	17.82
	58-80	0,32	31,2	8,2	0,18	21	11.5	32.5	3.64	14.4

An amount of humus changes 2,1-3,4 % in upper layer (0-40 sm) of the alluvial-meadow-forest soils around the Hunans village 2,1-3,4 % and its high quantity is 2,6-3,4 % under mixed forest, but minimum amount is 2,1-2,6 % in deciduous poplar forest (Table 1). An amount of total humus gradually reduces till 1,13-1,35 % in low layers of these soils. A supply of total humus in one-metre layer is 191,2-268,0 t/h and the highest quantity is 268,0 t/h under mixed forest, but a minimum quantity (191,2 t/h) is defined under thin deciduous poplar forest.

An amount of total humus is 1,8-7,0% under mixed forest, but it is 1,8-3,7 % under artificial oak forest in the Garayazi State Nature preserve. A quantity of tutal humus strongly reduces along the soil profile in the Preserve zone, it is connected with the quickness of washing process in the floodplain regime condition of the forest.

A quantity of total humus gradually decreases on soil profile under field protective oak forest constructed in 1950 (Table 1). An amount of total humus in low layers of the meadow-forest soils is 1,77-1,88% in the Preserve zone. A supply of total humus vibrates by 213,5-295,9 t/h in one-metre soil layer of these soils and its maximum supply - 295,9 t/h under mixed forest of the reserve zone.

An amount of total humus under Ishkhan forest in Aghjabadi is 0,5-4,6%, it is 1,1-3,7% in the mixed forest around the Eymur village of Aghdash, in the artificial plane-tree forest of the Garaoghlan village (Aghdash) is 0,9-2,0 %, under the poplar forest of Sabirabad changes by 0,32-2,39% and its high amount is 2,0-4,6% in the upper humus layer. A quantity of total humus under the pomegranate garden is 1,2-2,0% in the zone of Aghjabadi, its highest amount is (2,0%) in the upper layer. A supply of total humus in one-metre soil layer in the pomegranate garden and under the mixed forest of Aghjabadi is 135,0-279,2 t/h, its high supply in the Ishkhan forest is 279,2 t/h. But its supply in the pomegranate garden is 135,0 t/h.

Table 2

The physico-chemical composition of the floodplain meadow-forest soils (in 100 g of absolute dry soil, by %)

Soil cut, №	Depth, cm	Total humus, %	Total nitro-gen, %	Ca-CO_3 %	pH	Dry resi-due %	Absorbed bases, mg/ekv			Granulometric structure, %	
							Ca^{2+}	Mg^{2+}	Sum of cations	<0,001	<0,01
K-225,	0-5	1,9	-	-	-	-	-	-	-	-	-
Tovuz district	5-16	1,4	0,10	3,0	7,2	0,10	13,8	4,4	18,7	8,1	29,3
(undertillage)	16-45	0,8	0,06	2,9	7,5	0,08	15,6	5,1	21,6	6,4	26,9
V.G.Hasanov	45-70	0,5	-	2,4	7,9	0,15	13,8	3,1	18,0	7,9	25,3
1978	70-100	0,3	-	2,8	8,1	0,20	9,9	3.5	13,0	0,6	2,6
K-8003	0-2	4,1	0,31	-	7,0	0,10	19,5	8,5	28,5	15,5	55,2
Garayazi	2-15	2,6	yox	1,8	7,2	0,15	23,0	9,0	33,0	19,6	60,5
(mixed forest)	15-55	1,5	-	2,4	7,3	0,10	18,0	7,5	27,0	20,1	60,1
G.A.Salamov	55-90	1,0	-	4,5	7,5	0,20	15,5	8,0	24,5	18,2	58,3
1983	90-135	0,6	-	2,6	7,7	0,20	17,0	6,5	24.0	11,2	50,6
	0-3	5,4	-	-	-	-	-	-	-	-	-
K-8006	3-14	4,2	0,35	1,6	7,2	0,20	20,0	10,59	30,5	17,1	47,2
Floodplain	14-25	3,6	0,30	3,8	7,6	0,10	15,5	9,0	24,5	12,5	48,8
meadow-forest	25-44	3,0	-	5,3	7,8	0,18	8,5	7,5	23,5	10,2	40,1
G.A.Salamov	44-91	2,1	-	3,6	7, 5	0,20	12,3	4,2	16,0	7,3	36,3
1983	91-130	-	-	6,7	7,8	0,20	15,4	5,4	20,8	0,5	40,9
K-8011	0-18	3,25	-	-	7,8	0,93	10,5	2,7	13,2	20,5	72,5
Garayazi	18-31	2,10	-	-	7,9	1,48	21,0	4,0	25,0	24,3	75,6
(open area)	31-48	1,80	-	-	7,7	0,92	15,0	6,0	21,0	23,0	66,0
G.A.Salamov	48-80	1,70	-	-	8,0	0,28	17,5	3,5	21,0	26,6	65,4
1983	80-105	1,0	-	-	8,3	0,84	16,0	2,5	18,5	22,0	60,3
	3-16	3,4	4,1	-	7,5	0,1	30,5	8,5	39,0	40,0	75,0
K-10	16-32	2,6	6,1	-	8,4	0.1	27,0	11,0	37,0	36,0	74,0
İ.A.Guliev	32-43	1,5	15,7	-	8,6	0,4	26,5	13,2	39,7	41,0	71,6
2015	43-75	0,6	20,3	-	8,8	1,2	22,4	14,0	36,4	40,0	70,0
	75-120	0,4	22,4	-	8,4	1,0	24,0	13,5	37,5	34,0	63,9

A supply of total humus in one-metre layer of soil of Aghdash is 186,3-261,7 t/h. and its high quantity is in the Eymur forest (261,7 t/h), but it is 186 3 t/h under the artificial plane-tree forest. A supply of total humus in 214 t/h in one-metre layer of the alluvial-meadow forest soils spreaded in the zone of Sabirabad.

It is seen fron table 1. the alluvial-meadow-forest soils are heavy loamy and light clayey for granulometric composition (exception section №2) and a quantity of physical clay in the soil profile is 38,3-75,6 %.

As it is seen from table 1. the alluvial-meadow-forest soils witg light-clayey (physical clay is 61,9-75,6%) granulometric composition spread in the large areas. And it is related to the presence of clay in soilforming rocks composition. The similar situation is noted in research information Hasanov [4, pp. 97-103], Salamov [11, 173 p.]. The light-clayey granulometric composition is characteristic for the soils spreaded under the mixed forest in the Garayazi plain The alluvial-meadow-forest soils in Aghjabadi, Aghdash and Sabirabad is heavy loamy for granulometric composition and a quantity of physical clay is 51,2-57,7 % (Table 1). As it seen from table 1. the light clayey granulometric composition is noted under the artificial plane-tree forest around the Garaoghlan village in Aghdash, and it is connected with the presence of soilforming clayey rocks and frequent occurrence of floods. The light loamy granulometric composition was fixed under the white deciduous poplar forest in the form of park around Hunans village (Table 1). The similar situation is noted in V.H.Hasanov`s [4, pp. 97-103] researchs performed in the Hunans village of the Tovuz, and in G.A.Salamov`s [11, 173 p.]

researches carried out in the mixed forest of Garayazi (Table 2.)

As it is seen from table 1. A quantity of $CaCO_3$ changes by 4,4-31,2 %. Its minimum amount is 4,4-12,4 %. It was defined in the artificially planted oak field protective forest zone and under poplar forest in the park form around the Hunans village. A maximum quantity of $CaCO_3$ (22,5-31,2 %) was determined under the artificial forest in Aghdash and Sabirabad, but under the natural forest in Aghjabadi (Table 1.). The highest quantity of $CaCO_3$ (24,6-31,2 %) was found under the white deciduous poplar forest in Aghdash and Sabirabad, but the least quantity (6,2-10,6 %) was found under the artificially planted field protective oak forest in Garayazi.

The similar state is noted in V.H.Hasanov`s [4, pp. 97-103] researches performed under sowing in Tovuz, and in G.A.Salamov`s [11, 173 p.] researches carried out under the mixed Garayazi (Table 2). An amount of dry residue in the profile of the alluvial-meadow-forest soils changes by 0,08-1,01 %. Its high quantity (0,44-0,85 %) was found in the white deciduous poplar forest in the form of park around the Hunans village, in the Ishkhan forest (0,44-1 %) of Aghjabadi, and in the low layers of the newly planted artificial forest areas of Aghdash. This is connected with conducting irrigation in the same forests. It is seen from table 2. a quantity of dry residue in the alluvial-meadow-forest soils is 0,2-1,2 %. Because the same zones are surrounded by saline grey soils the flood regime weakens in the white deciduous poplar forest in the form of park and it is connected with biogenic collecion. It is washed out from surface and is collected in the low layers as irrigation is conducted in the forests of Aghdash (Table 2).

The weak alkaline soil environment (pH 7,2-7,5) in humus layer of the alluvial-meadow-forest soils was defined under tugay forests in Garayazi, Hunans, but under the pomegranate garden and Ishkhan forest in Aghjabadi. The alkaline environment (pH 7,8-8,1) was found in the low layers under the natural forests, under artificial planted oak forest in Garayazi, around Eymur in Aghdash, under poplar-plane-tree around Gara-oghlan villages and under the white deciduous poplar forest in Sabirabad (Table 1).

It is seen from table 1. a sum of the absorbed bases vibrates by 41,5-51,0 mg/eq in the profile of the alluvial-meadow-forest soils and its high quantity was 36,0-51,0 mq/eq in the humus layer under the mixed and artificial oak forest, but a minimum amount was 23,5-32,5 mq/eq in the low layers. Ca cation dominates in absorbing complex and its quantity changes by 31,5-41,0 mq/eq and it is consentrated in humus layer. And this is connected with its biogen concentration. Minimum quantity of Ca cation (20,0-25,0 mq/eq) was defined in low layers (Table 1). It is clear from table 1. a quantity of Mg cation is 3,0-20 mq/eq in these soils. And a regularity isn`t observed in its distribution. Its minimum amount was fixed in illuvial layers under artificial forests (3,0-6,0 mq/eq) in Sabirabad and Garayazi. This slows that the same zones were under sowing.

A thickness of humus layer in these soils is 0-40 cm and it possesses granular and ball-like structure clayey and heavy loamy granulometric composition and good physico-chemical composition, therefore it indicates existence of condition for planting of the forest trees.

4.Conclusion

1. A quantity of total humus in the humus layer of the alluvial-meadow-forest soils is 2,0-7,0 %, and a supply of total humus at 0-100 cm of layers is 186,3 – 295 t/h. Its maximum supply was 295,0 t/h around the Hunans village. Its minimum supply was under the artificial plane-tree forest in Aghdash (186,3 t/h). The humus supply in the other forests lands was determined 261,7 t/h in the poplar forest around Eymur; 214,0 t/h under the poplar forest in Sabirabad; 213,5 t/h under the oak forest in Garayazi.
2. The alluvial-meadow-forest soils are medium loamy and light clayey for granulometric composition. These soils possess clayey granulometric composition under the mixed forest in Garayazi and Aghdash. The alluvial-meadow-forest soils with heavy and medium loamy granulometric composition were defined under poplar forest in Hunans, Aghjabadi, Sabirabad.
3. Leaching of $CaCO_3$ along the profile in the alluvial-meadow-forest soils under the artificial oak and mixed forest in Garayazi, but increase of calcareous along the profile under the forests (20,6-30,1 %) was observed in Aghjabadi, Aghdash and Sabirabad.
4. Salinization isn`t observed (dry residue 0,09-0,24 %) in the profile of the alluvial-meadow-forest soils under the tugay forests near the Kur, but only salinization to an average degree (dry residue 0,50-0,85 %) was observed in the soils used under the pomegranate garden in Aghjabadi and sparse deciduous poplar forest in Hunans. There is a good soil condition for establishement of tugay forests in the zones near the Kur.

5. A strong degradation process in the alluvial-meadow-forest soils was defined under the white deciduous poplar forest in the form of park. But the degradation process is very weak in the mixed forests in the zones near the river. Improvement of the physic-chemical features of soil, increase of the absorbed bases quantity was observed under artificial oak, elm, ash-tree and blackberry, rose-hip bushes.

REFERENCE

1. Aliev, G.A. (1994) Soils of the Great Caucasus. Baku: Elm, 310 p. (In Russian).
2. Aliev, G.A. Khalilov, M.Y. (1976) Turgai forests in the Kur surrounding of Azerbaijan. Baku: 136 p. (In Russian).
3. Dobrovolskiy, V.A. (1988) Meaning of teaching V.R.Vilyamsa about soiformation in the river floods and development of agriculture // Journal Soil Science, No9, pp. 32-36 (In Russian).
4. Hasanov, V.G. (1978) To the diagnostics and systematics of floodplain meadow soils of the drysteppe zone of the Kur valley. Baku: Pub: AS Azerb. SSR, ser. biol.sci. No 6. pp. 97-103 (In Russian).
5. Hasanov, V.H. (2018) Morphogenetic diagnostic, classification and rational use of alluvial-hydromorph soils in Azerbaijan. Doctor of Agrarian Sciences. Baku: 46 p. (In Azerb.)
6. IUSS Working Group WRB. World Reference Base for Soil Resources (2014). International soil classification system for naming soil and creating legends for soil maps. Word Soil Resources Reports No.106. FAO, Rome, 181 p.
7. Kaydarov, Kh.K. (2012) Ecology and rational use of Tugay vegetation in Uzbekistan. Works IG. Named after acad. H.A.Aliyev. Baku: p.305-306 (In Russian)
8. Kovda, V.A. (1950) Caspean lowlands (northwest part). M.L: 255 p. (In Russian).
9. Kozlovski, F.I., Korunblyom, E.A. (1972) Meliorative problems in development of flood plains of the steppe zone. M: 219 p. (In Russian).
10. Salayev, M.E. (1991) Soil diagnostics and classification in Azerbaijan // Elm, Baku: 240 p. (In Russian)/
11. Salamov, G.A. (1983) Study of distribution and genetic characteristics of forest soils. North-west part of the Little Caucasus. Account of IG. AS. Repub. Azerb. 173 p. (In Russian)
12. Volubuyev, V.R. (1953) Soils of the Kur-Araz lowland // Soils of Azerb. SSR. Baku: pp. 197-223 (In Russian)
13. Zeynalov, A.K. (1953) Turgai (floodplain-forest) soils // Soils of Azerb. SSR. Baku: pp.107-110 (In Russian).
14. Ziniyeva, I.I. (2006) Factors determining of ecosystem formation in floods of upper and Middle Don. synopsis. cand. agricult. sci. Voronezh, 25 p (In Russian).

.

KÜR BOYU ALLÜVİAL-ÇƏMƏN-MEŞƏ TORPAQLARININ BƏZİ FİZİKİ-KİMYƏVİ TƏRKİBİNİN TƏHLİLİ VƏ MÜQAYİSƏLİ SƏCİYYƏSİ

M.Ə.Məmmədov, F.V.Məmmədova, Ç.A.Nəsirova, R.Ə.Hüseynov

Xülasə. Məqalədə Kürboyu subasarlarda formalaşmış allüvial-çəmən-meşə (Mollic Fluvisols) torpaq tipinin eyni adlı yarımtipindən bəhs olunur. Kür çayı vadisində bu yarımtip çox geniş ərazini əhatə etməsə də, fərqli intrazonal şəraitdə və fərqli fitosenozlar altında qərbdən şərqə doğru çayın axını istiqamətdə uzun bir məsafədə formalaşmışdır. Çayın orta axınında sağdan və soldan çoxlu qollar qəbul etməsi onun kimyəvi, Kürdə asılı materialların fraksion və fitosenoz tərkibin dəyişməsi eyni yarımtip daxilində fiziki-kimyəvi və üzvi maddələrinin kəmiyyət və keyfiyyət dəyişməsinə səbəb olmuşdur. Allüvial-çəmən-meşə torpaqlarının formalaşmasında ərazinin relyefinin və torpaqəmələgətirən süxurların rolu əhəmiyyətli dərəcədə böyükdür. Məqalədə həm də allüvial-çəmən-meşə torpaqların bir sıra fiziki-kimyəvi göstəriciləri, o cümlədən ümumi humusun miqdarı və ehtiyatı torpaq monitorinq nəticələri ilə müqayisə edilmişdir. Son illərdə Kür çayının suyunun azalması nəticəsində Xəzər dənizinin suyu çayın deltasına daxil olur və ətraf ərazilərdə ekosistemin transformasiyasına səbəb olur.

Açar sözlər: tuqay meşələri, çəmən-meşə, humus, subasar, deqradasiya, şoranlaşma, bataqlaşma.