Chapter V

Phytomeliorative Events for Combat Desertification

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Abstract

This is one of the important problems. Soil erosion, causing enormous damage to agriculture. It's a negative effect, since it's losing their potential fertility, it's not a problem. As a result of the erosion processes, the upper fertile horizon is swept away under the influence of wind and water. It is a microscopic activity, and it is not a problem. Lack of oxygen and nutrients, which leads to a gradual degradation. On the other hand, abnormal livestock grazing also reduces the number of hayfields and pastures. Therefore, in today's market relations, it's possible to reduce the supply of land. However, it should be noted that, combined with environmental pollution, it intensifies pasture degradation. International Convention on Combat Desertification (UNCCD), adopted by the International Community, an integrated approach is needed to tackle the problem of dryland degradation.

Keywords: soil; Desertification; Erosion; Deflation; Pastures; Fertilizers; Mineral perennial grasses; Yield

Introduction

Under modern market relations, one of the important tasks of agricultural production is the rational use of soil cover, its protection from erosion processes and other negative factors leading to depletion, in order to raise the economy of the republic. As is known, soil erosion causes great damage to agriculture, being a natural factor of nature, in addition to anthropogenic stress, it reduces the productivity of pastures, hay fields, pastures.

Irrational use of pastures, pastures, irregular unsystematic grazing of livestock from year to year reduces the yield of valuable forage grasses and thereby creates conditions for increased erosion.

The degradation of soil and vegetation in the arid zone, together with environmental pollution, with additional human activities contributes to the development of the process of desertification.

Under the current situation, Professor B.H.Aliev[1] for the first time developed a mathematical modeling of the development of the desertification process on the Absheron Peninsula, on the basis of which it was proved that the process of desertification is spreading in this region. At the same time, an accurate assessment of natural and anthropogenic factors on the process of descending is given. It should also be noted that aridization of the climate on the Absheron Peninsula intensifies pasture degradation. According to the international community, an integrated approach is needed to address the problem of degradation of drylands.

Object and Research methods: Studies were conducted on the Absheron Peninsula on eroded gray-brown soils. Field experiments laid by the method of B. A. Dospekhov in 3 hours of a multiple replication according to the following scheme:

- Control without fertilizer natural herbage.
- Alfalfa + meadow fescue + pasture ryegrass.
- Sainfoin + meadow fescue + pasture ryegrass.
- Salmont + cereal + N30P30K30 kg / ha.
- Alfalfa + cereal + N30P30K30 kg / ha.
- Salmonkelet + cereals + N45P45K45 kg / ha.
- Alfalfa + cereal + N45P45K45 kg / ha.

The goal of the research is to study the development of the desertification process in the Absheron Peninsula and to develop measures to combat desertification.

Discussion and Results

Eroded gray-brown soils of the Absheron Peninsula[2] are characterized by a low content of humus, total nitrogen, nutrients, the absorption capacity of the studied soils is low, and carbonate soils boil in the presence of HCl. The results of the research showed that the humus content in the control without fertilizers in the 0-30 cm layer was 1.03 %, while under the alfalfa crops with cereal herbs it was 1.34 %, however, when the fertilizer was hovering at the rate of N30P30K30 kg per hectare, the humus content increased up to 1.46 %, and in the variant with the use of mineral fertilizers at the rate of N45P45K45 kg per hectare[3,4] was 1.48 % (Table 1). The same picture is observed when determining the content of gross nitrogen, i.e. in the control variant, the total nitrogen content was 0.044 %, and under the sowing of perennial and cereal grasses with the application of mineral fertilizers, the total nitrogen content increased from 0.044 % to 0.098 %.

Mineral fertilizers also affect the absorption capacity of the Sa “and” Mg exchange chestnuts, having a great influence on the soil properties and the living conditions of agricultural plants. When calcium is predominant in absorbed cations because it has a strong coagulating action, the soil colloids are in a coagulated state, which contributes to the formation of water-resistant aggregates and the creation of a good soil structure. Absorbed calcium, precipitating organic and mineral colloids helps to preserve and accumulate them in the soil and increase the absorption capacity[5]. From table 1 it can be seen that in the control version without fertilizers the sum of cations (Ca + Mg) was 19.5 m. Equ. per 100 g of soil, but when mineral fertilizers are applied for sowing of perennial and cereal grasses, the amount of exchange cations increases. (Table 1).

Table 1: The effect of perennial herbs and mineral fertilizers on nutrients elements and absorption capacity of gray-brown soils

Experience options	Depthincm	humus %	Nitrogen %	P_2O_5 mg / kgper 100 g of soil		Content (Ca + Mg) m.eq. 100 g of soil
				May	Jun	
1.Control b / fertilizer natural grass	0-30	1,03	0,044	7,8	3,5	19,5
2. Alfalfa + cereal + herbs	0-30	1,34	0,078	8,0	4,1	20,0
3.Esparcet + grass	0-30	1,26	0,070	8,0	4,0	22,0
4.Esparcet + cereals + $N_{30}P_{30}K_{30}$	0-30	1,40	0,084	8,3	4,2	22,5
5.Alfalfa + cereal + $N_{30}P_{30}K_{30}$	0-30	1,46	0,095	9,2	4,8	24,0
6.Esparcet + cereals + $N_{45}P_{45}K_{45}$	0-30	1,44	0,096	8,6	5,7	21,5
7.Alfalfa + cereal + $N_{45}P_{45}K_{45}$	0-30	1,48	0,098	9,4	6,0	25,0

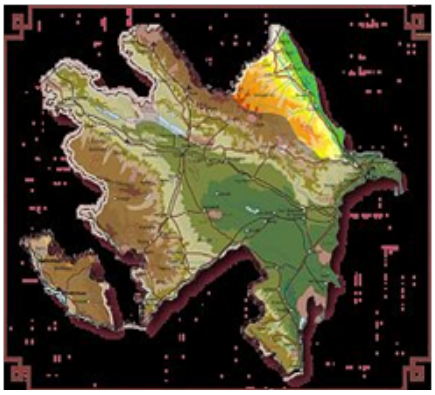
It should also be noted that the content of various forms of phosphorus in the soil depends on its content in the parent rock, on the degree of weathering, on the content in the soil of organic matter. Plants, on the other hand, absorb phosphorus in the form of the H_2PO_4 anion; therefore, the introduction of soluble phosphate fertilizers has a beneficial effect on the productivity of the seeding herbs. From the data in Table 1, it is clearly seen that in the unsuccessful counter in May-June, the P_2O_5 content ranged from 7.8 to 3.5 mg per 1 kg of soil.
However, under the crops of perennial and cereal grasses there is a tendency to increase.

Table 2: Influence of mineral fertilizers and perennial grasses on the structural and aggregative composition of eroded soils pasture

Experience options	Depthincm	Fractions%							
		>7	7-5	5-3	3-1	1-0,5	0,5-0,25	<0,25	>1
1.Control b / fertilizer natural grass	0-30	11,0 -	0,10 2,0	12,61 4,92	12,08 8,70	41,08 14,60	19,60 26,48	3,54 43,30	35,79 15,62
2.Alfalfa + cereal + herbs	0-30	18,00 2,0	7,00 2,6	11,56 4,2	11,65 9,2	25,89 19,00	18,96 21,00	6,94 42,00	48,21 18,00
3.Esparcet + grass	0-30	13,70 -	8,70 4,7	14,40 3,7	14,26 14,5	27,26 15,5	15,68 23,00	6,00 38,60	51,06 22,9
4.Salmont + cereal + N30P30K30	0-30	15,70 -	9,92 2,6	12,99 4,4	13,99 9,4	34,78 19,4	8,62 21,0	4,00 41,20	52,60 16,4
5.Alfalfa + cereal + N30P30K30	0-30	10,20 -	11,91 4,7	12,00 3,4	30,9 14,6	13,00 13,8	19,99 20,4	2,00 40,7	65,01 22,7
6.Salmont + cereal + N45P45K45	0-30	16,0 -	11,14 -	16,00 3,4	16,08 4,6	25,02 10,00	10,00 20,40	5,76 39,20	59,22 18,00
7.Alfalfa + cereal + N45P45K45	0-30	17,99 -	10,98 5,2	16,74 5,2	15,78 9,2	18,51 16,0	16,00 28,4	4,00 36,00	61,49 19,06

When studying the effect of mineral fertilizers and perennial grasses on the structural-aggregate composition of gray-brown soils, it was found that with natural herbage (control b / ud) the number of units larger than 1 mm was 35.79 %, water-resistant

15.62. However, in the variants with the sowing of perennial and cereal grasses and with the application of mineral fertilizers, the number of units larger than 1 mm increased, the same trend is observed with respect to water-carrying units.



Findings: Based on the results of studies conducted on the gray-brown soils of the Absheron Peninsula, it was found that perennial grasses in mixed crops with cereals and mineral fertilizers had a foreign influence on the improvement of the basic parameters of fertility of eroded soils. The content of humus increased from 1.03 % to 1.48 %, total nitrogen from 0.044 to 0.098 % of exchange chestnuts from 19.5 to 25.0 mEq / 100 g of soil. The number of units more than 1 mm increased from 35.79 % to 61.49 %, water-resistant ones from 15.62 to 19.6 %. It should also be noted that the roots of perennial and cereal grasses decomposing leave large amounts of organic material in the plow layer, which, through a cycle of biochemical processes, improve the nutritional regime of the soil, and have a beneficial effect on the productivity of agricultural pastures, which is regarded as a method of combating desertification.

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