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CURRENT STATUS OF RAINFED GRAY SOIL AND WAYS OF USING THEM

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ABSTRACT--*The results of the study on the efficiency of organic and mineral fertilizers, absorbents, and biologically active substances in the conservation of soil fertility in dehydrated rain-fed areas of our* ***Republic*** *after 2nd year of dew, nutritional management of soil moisture.*

Keywords--*irrigated lands, typical soil erosion, soil moisture, crop rotation, organic and mineral fertilizers, root nutrition, tillage, agrotechnology, yield increase, efficiency.*

I. INTRODUCTION

Today, the world 's agricultural land is estimated at 1.6 billion hectares of which 1.3 bln. hectares, account for 60% of agricultural output. The use of various agro-technologies is important for the effective use of rainfed land, preservation and enhancement of its fertility and high yields of crops.

A number of priority scientific researches are being carried out in the world on agricultural technologies of accumulation of natural moisture in rain-fed soils, using organic and mineral fertilizers and biological products. In particular, special attention is given to agro-technologies to determine the impact of agro-physical and agrochemical properties of rain-fed soils, biological activity and productivity of absorbents, organic and mineral fertilizers, and biological agents.

At present time in the Republic large-scale measures are being carried out in the country to identify the properties of rain-fed soils, to develop various agro-technologies for the preservation and restoration of soil fertility, application of organic and mineral fertilizers. As a result, optimization of agrochemical and agrophysical properties of soil, increase of soil fertility and increase of crop yields are achieved. However, insufficient attention has been paid to the development and implementation of agro-technologies for the use of absorbents, organic and mineral fertilizers in the accumulation of natural moisture in rain-fed soils. In the strategy of development of the Republic of Uzbekistan for 2017-2021 "... as the most important strategic objectives" is specified. Therefore, it is important to promote agrotechnical and agrochemical properties of

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typical rain-fed soils, development of agro-technologies for effective use of natural moisture, increasing soil fertility and crop yield

II. HOW WELL THE PROBLEM IS RESEARCHED.

Scientists of the Republic and foreign scientists on agrochemical, agrophysical properties, fertility, erosion, biological activity of mineralized soils, application of mineral fertilizers like, S.S.Nustruev, A.F. Bolshakov, M.N.Rubinstein, V.I.Kovalenko, S.N.Ryjov, B.V.Gorbunov, G.A. Lavronov, P.I.Fedotov, M.Y.Yunusov, A.S.Miloserdova, H.M.Maxudov, S.M.Mamaniyazov, V.I.Korobov, R.Kuziev, L.A.Gafurova, M.M.Tashkuziev, R.Kurvontoev, H.Yusupov, N.Y.Abdurakhmonov, A.A.Adilov, N.I.Shadieva, D.A. Kadirova, S.Rustamov and others carried out scientific researches. However, due to the long years of drought, it is more efficient in accumulating soil moisture.

The aim of the research is to develop the agricultural technology of the use of absorbents, organic and mineral fertilizers, biopreparators on the impact of erosion on the present condition of typical wetlands of Gallaaral district.

The tasks of the research: to study the impact of erosion processes on agrophysical and agrochemical properties of typical wetlands;to study the dynamics of changes in biological activity of wetlands typical for the season;to determine the effect of natural moisture accumulation on the soil and the effect on soft wheat yields using absorbents, organic and mineral fertilizersto determine the effect of various fertilizers on the natural soil moisture and the growth, development and productivity of wheat;to development of recommendations on optimal application of absorbents, organic and mineral fertilizers and agrotechnologies for the use of biofuels for typical wetlands.

The object of the study was the typical sierozem soils of Gallaorol district.

The subject of the research is the physical properties of wet soils, natural moisture, organic and mineral fertilizers, absorbents, biopreparations.

III. THE METHODS OF THE STUDY.

Methodical instructions for field experiments", soil analysis, E. Arrinushkina’s "Manual of chemical analysis of soils", F.Khaziev's "Methods of enzymology" in the activity of enzymes in soil, Dospekhov’s “Method of field experiment” and all other agrotechnological activities were carried out by the Research Institute of Methodical instructions on methodology and all agrotechnical activities are carried out on the basis of agrarian recommendations developed by Gallaorol scientific-experimental station of the Cereals Research Institute of Grain and Legumes.

IV. THE RESULTS OBTAINED

. Gallaaral district is bordered by Nurata in the north, Koytosh in the north-east, Turkestan in the south, Molguzar in the southeast and Gubdintag in the west.

According to data from the Gallaorol weather monitoring, annual precipitation is 362.0 mm, average monthly temperature is + 13.4 ^{0}C, and average relative humidity is 62.7%. Warm days last for 170-250 days throughout the year. The lowest air temperature in January falls to -37 ^{0}C. The average relative humidity in July is 23-30%. The average number of days without cold days is 170 days. The last spring frost coincides with the first ten days of April, the first autumn frosts coincide with the third decade of September and the first ten days of October. Ephemeral plants, perennial herbs and shrubs form the basis of the riparian vegetation. By the agrochemical properties of the soil of the experimental field, the humus content in the plowing layer is 0.650-0,885%, with total nitrogen, phosphorus and potassium 0.055-0,110; 0.105-0,128; 1,280-1,480% phosphorus 15,8-18,5 mg / kg, potassium 218-248 mg / kg, the soil of the experimental field is inadequate with active phosphorus and replacement potassium. Soil density was 1.34 g / cm^3, specific gravity was 2.64 g / cm^3, and the porosity was 50.7%.

Field experiments on increasing moisture absorbers, fertilizers, biopreparations and organic fertilizers in the conditions of typical rainfed wetlands are carried out at the Central Experimental Station of Gallaarol Scientific-Research Farm of Grain and Leguminous Crops.

Field experiments were conducted in the following variants (Table 1). 0.83 hectares were allocated from the 16 hectares for the study. And the size of one piece is (25m x 3m) = 75 m^2.

In the experiment, “Bahmal-97” was sown at the end of October and early November at the rate of 120 kg / ha (3-3.5 million / s) of wheat variety. The soil moisture content was obtained from different layers (0–20, 20–40, 40–60, 60–80, and 80–100 cm) prior to sowing wheat and during the main development period (spawning, spraying, germination, and complete ripening).

Table 1: Wheat fertilizing system

Experiment 1

#	Options	Periods and norms of application of absorbers, fertilizers and biological preparations				
		In clean plow			Growing phase	Staging phase
		Ammophos, kg/ha	Potassium salt, kg/ha	Absorbent kg /ha and manure, t/ha	Carbamide, kg/ha	Biochemical, L / ha
1	Control	-	-	-	-	-
2	N40P40K40 (fon)	40	40	-	40	-
3	Fon+ Hydrogel 20 kg/ha	40	40	20	40	-
4	Fon + Aquasorb 20 kg/ha	40	40	20	40	-
5	Fon + Bionitrogen 1 L/ha	40	40	-	40	1,0
6	N40+ Bionitrogen 1,5 L/ha	-	-	-	40	1,5

7	Fon + Microgrower 1,5 L/ha	40	40	-	40	1,5
8	N40+ Microgrower 2 L/ha	-	-	-	40	2,0
9	Fon + 10 t/ha manure	40	40	10	40	-

Table 1: Wheat fertilizing system

Experiment 2

#	Experiment Options	Terms and norms of application of various forms of mineral fertilizers, kg/ha						
		Before dew				Growing phase		
		Ammophos	Superfos	PS-agro	Potassium	Ammonium nitrate	Carbamide	Ammonium sulfate
1	Control	-	-	-	-	-	-	-
2	P40K40	40	-	-	40	-	-	-
3	N40 P40K40–фон	40	-	-	40	40	-	-
4	N40P40K40	40	-	-	40	-	40	-
5	N40P40K40	40	-	-	40	-	-	40
6	P40K40	-	40	-	40	-	-	-
7	N40P40K40	-	40	-	40	40	-	-
8	N40P40K40	-	40	-	40	-	40	-
9	N40P40K40	-	40	-	40	-	-	40
10	P40K40	-	-	40	40	-	-	-
11	N40P40K40	-	-	40	40	40	-	-
12	N40P40K40	-	-	40	40	-	40	-

Soil samples obtained from soil incisions and field experiments were chemically analyzed in the laboratory by the following methods: Mechanical composition of soil-pipette method by N.A. Kachinsky; volume of soil weight by N.A. Kachinsky method (cylinder V-100 cm^3), the specific gravity of the soil was made by the picnometry method and the calculation of the soil pore. Chemical and agrochemical analyzes were carried out using the methods outlined in the books by E.V. Arrinushkina and UzPITI. The foundations were calculated by Pfeffera method by T.P. Kruger (1977), thermal method of natural soil moisture. Implementation of field

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experiments, calculations and observations were carried out by “Methods of field experiments” (UzPITI, 2007), statistical analysis of the results was carried out by B.A. Dospexov.

It describes the morphological signs, typical agrochemical and enzymatic properties of typical saline soils. In the crop rotation of the central experimental farm, some agrophysical features of typical gray soils have been altered by erosion and agrotechnical activities.

Increase in volume was observed from the upper soil layer to the lower layer. In typical non-erosion soils, the density is 1.28-1.42 g / cm^3, on the eroded northern exposure soils 1.32-1.44 g / cm^3, and on the moderately eroded southern exposure soils 1.33-1.44 g / cm^3. According to the results of the study, the size of the typical dry soils varies according to the location and slope. As the soil density increases, air and water permeability deteriorates, which in turn prevents plants from accessing water and air.

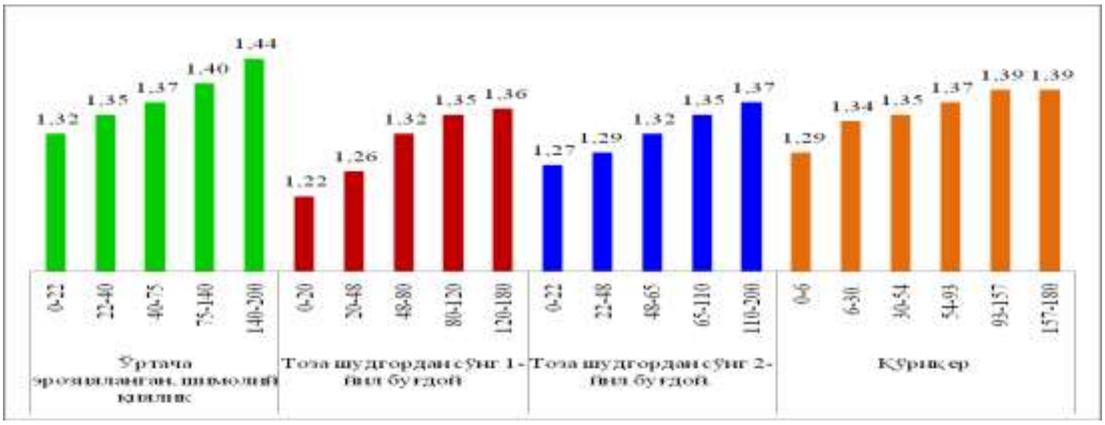

Figure 1: Density of typical saline soils, g / cm^3

Changes in some agrophysical features of typical gray soils in the crop rotation of the Central Experimental Farm (CEF) in 2015-2017 under the influence of agrotechnical measures. The density of the soil sown for 1 year in the sedimentary strata (0-20 cm) is 1.22 g / cm^3, and 1.26-1.36 g / cm^3 in the bottom layers, 1.27 g / cm^3 in the second year wheat field (0-22 cm), and 1.29-1.37 g in subsoil. (Figure 1).

On undeveloped reserve soil the soil weight is 1.29 g / cm^3, in the lower layers - 1.34-1.39 g / cm^3, and the specific weight is 2.62-2.70 g / cm^3, with a total porosity of 48.5. 52.7%.

According to the mechanical composition, the amount of physical sludge in the plowed area of wheat fields 1 and 2 years after the pure dew is 33.4-34.7% with the average sandy grade. Physical sludge content in wetland sludge stratum is 43.2%, and 42.7% - in sandy soils, according to classification. The amount of IL particles (<0.001) was found to be 7.0–13.7 in the plowing layer on the 1- and 2-year soft wheat soils after pure dew.In the mechanical composition of typical sandy soils formed on the loess and laminated sediments, the amount of physical sludge was reduced by erosion, and the amount of physical sludge in non-erosion soil was 35.4%, on moderately eroded soils 32.4%, and in the washed soil 38.5%. With the reduction of mechanical composition, the decline of the iliac and small dust fractions was observed, and the enrichment with large fractions (Pic. 2).

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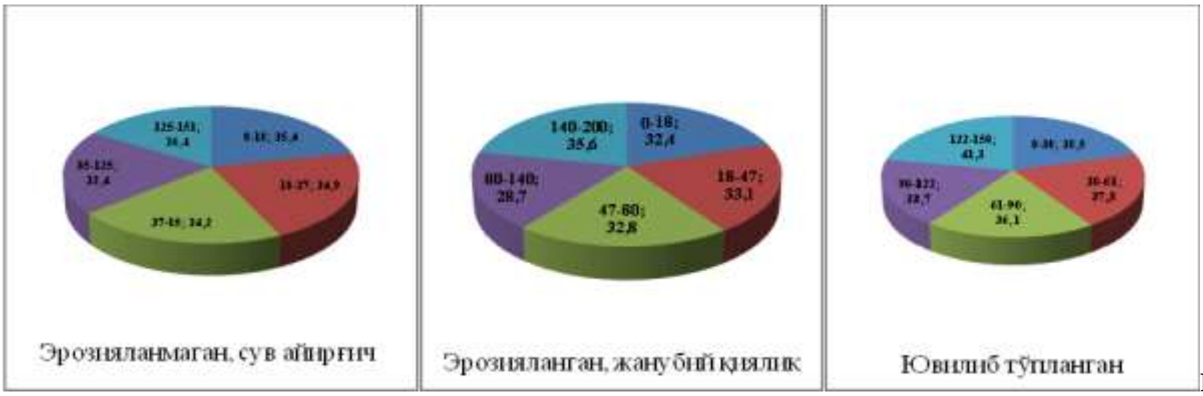

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Figure 2: Changes in the amount of physical clay in typical wetlands

According to the chemical indicators of typical wetlands in the semi-arid plain with rainfall, humus and nitrogen levels in the grassy and submerged sediments are significantly reduced, with 1.438-1.612% and 0.101-0.120%.

In the five-field crop rotation scheme of the CEF, the humus and nitrogen content of 0.885-0,704% and 0.105-0.110% was found to be less than in the eroded soils, following a moderate washed and cleaner dew, 1 year of wheat. There has been a gradual decline in humus and nitrogen content in the lower layers. The total phosphorus in the plowed layer was 0.128-0.255% and the potassium content was 0.964-1.420%, which was found to be inferior in all layers compared to non-eroded wastewater.

According to the results of a cross-section of the non-eroded water cut from the Kokbulak Farmers Association of Gallaaral District, humus content was 1.280% in the plow (0-18 cm) and 0.802-0.925% in the lower layers. If you compare this indicator with the humus content in the humid soils of the reserve, we see a decline of 0.332% (Figure 3). The amount of nitrogen in the erosion soils varies with humus content. The amount of nitrogen in this soil cross section was 0.138% in the plowed layer, with a slight decrease in the sedimentary strata at 0.108-0.115%. There has been a sharp decline in humus content in the soil cover from the reserve land, and a gradual decrease in the area under wheat. The total phosphorus content in the humid soils of the reserve was 0.260%, while in the plowed soil of the winter wheat it was found to be slightly less than 0.105- 0.128%. The total potassium content was highest in all soil. The total amount of potassium in the reserve land and winter wheat is between 0.692-1,044% with a slight prevalence on the reserve lands.

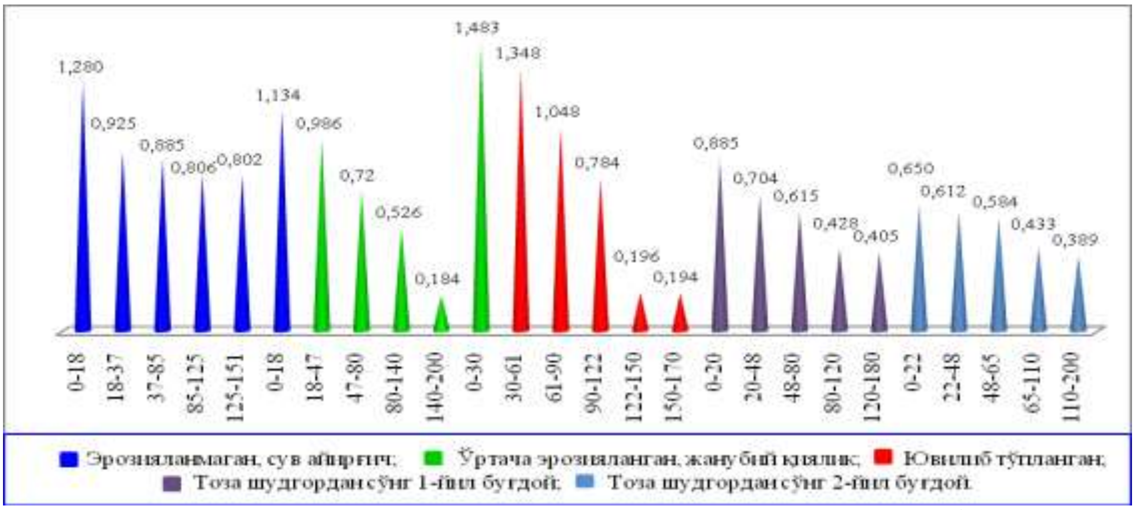

Figure 3: Changes in humus content in typical saline soils, depending on the degree of washing

In samples taken from various soil inclusions, there was a change in the amount of active nutrients (nitrogen, nitrogen, phosphorus and exchange potassium) depending on the nature of land use. If nitrogen levels in soil samples from the reserve were reduced to the lower layers (6.0-3.2 mg / kg), it was found that in the plowed area, its content was 4.2-3.0 mg / kg. This can be attributed to the absorption of nitrates by plants and washed away by precipitation. A nitrate content of 10.8–5.0 mg / kg was found in the cross section of the uncontrolled water.

The highest amount of phosphorus is in the upper layers of erosion, drainage and wastewater (54.0-58.0 mg / kg), and the lowest values are 1 and 2 years after the average washed south slopes and clean dew in the area under wheat (15.8-18.5 mg / kg).

The amount of calcium absorbed was 55-70% of the total cation absorption in the upper soil, and the magnesium content was 21%.

We can observe that Ca^{2+} content in the soil layer is 6.2 mg / eq, 8.1 mg / eq in the humid soil layer, and decreases with increasing subsidence. It was found that Mg^{+2} cation was 2.4 mg / eq in the plated layer and 5.0 mg / eq in the humidified layer. K^+ and Na^+ cations were 0.192-0.543 mg / eq in all soil.

In typical desert soils in the semi-arid plain with precipitation, catalase activity is 26.0 (cm^3 O_2 / min) in 0–15 cm in the spring and 25.3 (cm^3 O^2 / min) in the 15–30 cm layer. And in the 30-50 cm layer was 17.7 (cm^3 O^2 / min.). In summer, when moisture content is reduced, followings may be seen: 23.0 (cm^3 O^2 / min) in 0-15 cm layer, 18.3 (cm^3 O_2 / min) in 15-30 cm layer and 16.3 (cm^3 O^2) in 30-50 cm layer. / min.) By the autumn, the enzyme catalase was found to be in the range of 25.7 - 24.3 (cm^3 O_2 / min), respectively.

In typical gray soils, the polyphenoloxidase enzyme activity is characterized by high porosity in the spring and 0.124 mg purpurgallin / 100 g soil in the 0-15 cm layer with organic matter, 0.083 mg purpurgallin / 100 g in the 15-30 cm layer, and 0.064 mg in the 30-50 cm layer, purpurgallin / 100 g of soil, 0.072 mg of purpurgalline / 100 g of soil in 0-15 cm layer with reduced moisture content, 0.055 mg (mg purpurgallin / 100 g soil) in 15-30 cm layer and 0.019 mg purpurgallin / 100 g soil in 30-50 cm layer . By the autumn, the polyphenoloxidase enzyme was found to contain 0.098-0.023 mg of purpurgalline / 100 g of soil, respectively. The enzyme activity of peroxidase is 0.084 mg per 0-15 cm of soil purpurgallin / 100 g soil, 0.065 mg purpurgallin / 100 g soil in 15-30 cm layer, and 0.048 mg purpurgallin / 100 g soil in 30-50 cm layer, 0.054 mg of purpurgalline / 100 g of soil

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at 0-15 cm of soil with reduced moisture content, 0.046 mg of purpurgalline / 100 g of soil at 15-30 cm depth and 0.031 mg of purpurgallin / 100 g of soil. By the autumn, the activity of the peroxidase enzyme was found to be 0.071-0.057-0.021 mg of purpurgallin / 100 g of soil.

The results of research on the moisture content of different types of mineral and organic fertilizers, absorbents and the yield of wheat varieties "Bakhmal-97" and the effectiveness of leaf feeding on soft rainfed fields, combined use of chemicals against diseases, pests and weeds.

Effect of pure plow and absorbent on soil moisture regime, in the control version, the moisture content is 4.1–11.3% (133.1–309.9 m^3 / ha) in the soil layer, 5.7–13 in the lower soil layers (120–160 cm), 6% (310,1-775.4 m^3 / ha), these parameters are in the soil layer under a pure plume with variants of 40 kg / ha of phosphorus and potassium fertilizers and 20 kg of hydrogen and 20 kg of polymer absorbent polymer. 13.6-13.8% (331.8-336.7 m^3 / ha), 13.9 and 14.2% (755.4-761.9 m^3 / ha) in the 120-160 cm layer. Total moisture content in the 160 cm layer was 14.2–14.5% (3058.5–3099.7 m^3 / ha) (Figure 4).

It was noted that the soil moisture reserves in the 0-160 cm layer with the hydrogel absorbent variants (94,4-145.0 m^3 / ha) were higher than the control variants at the time of sowing wheat.

It should be noted that prior to plowing, the soil moisture reserves in the 0-160 cm layer were found to be greater than the other options in the fertilizer version of 40 kg / ha under phosphate and potassium fertilizers. The moisture content of the soil of this variant in the lower layers (120-160 cm) is 8.5-15.2% (455.6-833.0 m^3 / ha) during the season and 8.2-15.0 cm in the 0-160 cm layer).

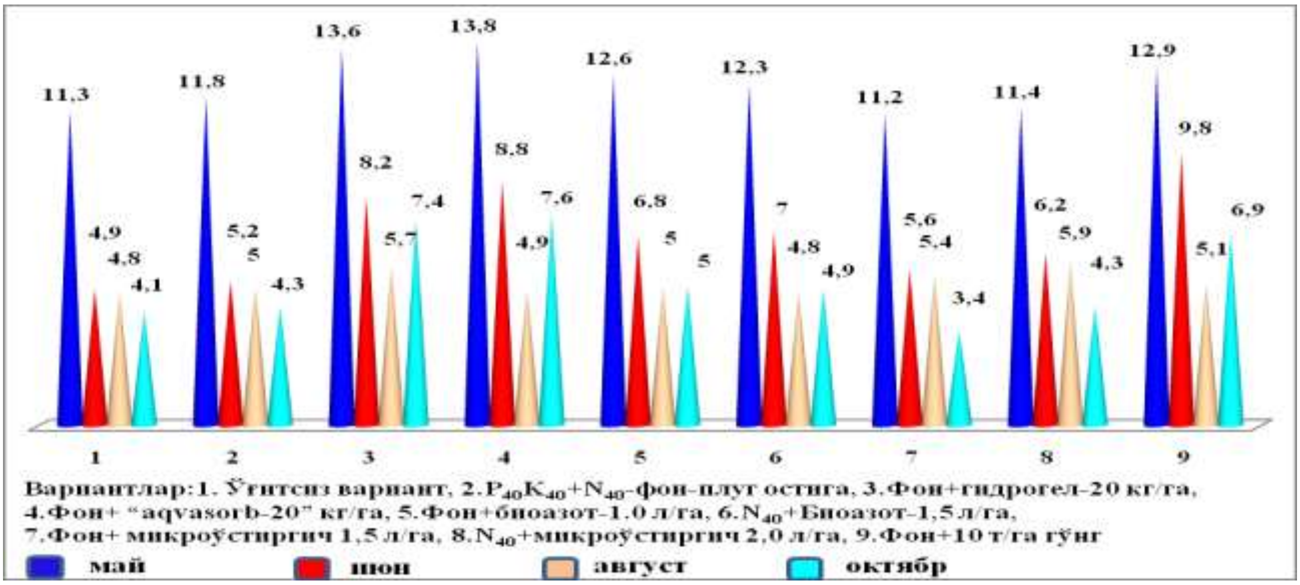

Figure 4: Effect of mineral and organic fertilizers and absorbents on soil moisture dynamics in pure dew (0-20 cm)

According to calculations, from the pure dew to the winter sowing, physical moisture evaporated from the soil was 5.6-7.8%. The amount of moisture lost from pure dew due to physical evaporation was 48.1- 56.8% compared to its original amount.

In summary, it has been reported that more than 50% of the natural moisture accumulated in the arable dew as a result of atmospheric precipitation on rainfed areas is lost through evaporation.

20 kg / ha Hydrogel given under pure tillage at the stage of wheat germination (May) during the growing season of wheat moisture in “Bahmal-97”.

The absorbent increased the moisture content by 1.2% in the soil layer and 0-100 cm in the soil relative to the control. In the same year, the French Aquacorbate absorbent, $R_{40}K_{40}$, sprinkled under a clean plow, recorded 0.5-1.2% more moisture in the cultivated soil and 0-100 cm layer than in the control stage and 0.3-2.3% at the germination stage. In the other options, it was found that mineral fertilizer growth stimulants sprinkled under a clean plow were more than 200-540 m3 / ha in the 0-100 cm layer compared to the control variant.

Due to the long-term rainfall in 2017 (397.0 mm), the rainfall in February and March resulted in sufficient moisture accumulation in the soil for cereals and other crops.

The moisture content of the soil in the 0–20 cm layer before the sowing of wheat “Bahmal-97” was 8.9–11.4% (208.8–270.3 m^3 / ha). By the stage of drainage, the maximum value was determined in Option 4 (0-100 cm) with application of Fon + Aquasorb (France) - 20 kg / ha with a moisture content of 2535.0 m^3 / ha. This year, the most important stage of germination of cereal crops is the experimental control at 8-20% (200 m^3 / ha) in the 0-20 cm layer, and 8.7% (1153.8 m^3 / ha) on the 0-100 cm layer. however, in Experiment 9, the figure was 10.3% (257.5 m^3 / ha) and 9.8% (1324.6 m^3 / ha).

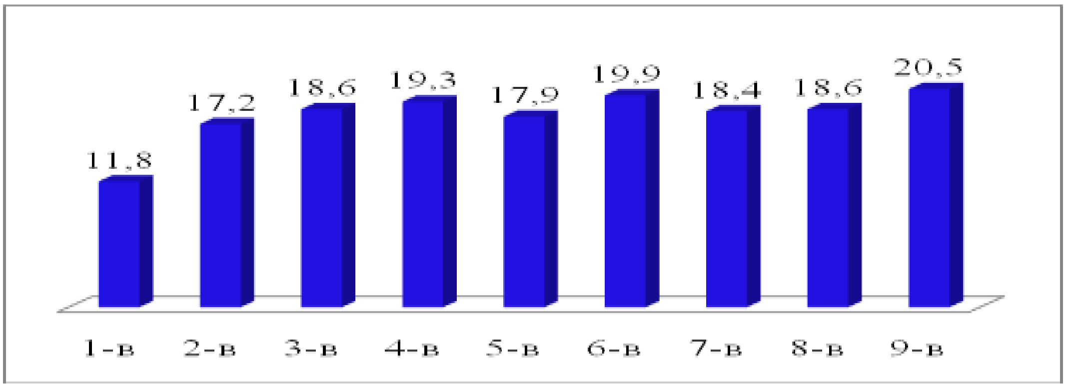

Figure 5: Effect of absorbents on yield of pure plow, absorbents on yield of wheat variety "Bahmal-97", t / ha

The average yield was 11.8 c / ha in the control variant, while $R_{40}K_{40}$ was 17.2 c / ha in the background feed fed at N_{40}. The highest yield of 10 t / ha was obtained with a yield of 40 kg / ha of phosphorus and potassium fertilizers with a yield of 20.5 centners / ha, with additional grain yield of 8.7 c / ha or 174% compared to control (Figure 5).

In the second experiment, called moisture dynamics of rain-fed typical soils and variation in yield of “Bahmal-97” depending on the type of mineral fertilizers, the moisture content in the soil layer (0-20 cm) in various variants prior to planting is 8.8-9.8%, or 225, 3-258.7 m3 / ha. The moisture content in the lower soil layers was 12.9–16.4% (888.9–1023.8 m^3 / ha) in the control sample, and 14.3% (1912.7 m^3 / ha) per 1 m layer.

11.5% (1499.1 m^3 / ha) moisture content of 14.5-17.3% (1960,4-2317.9 m^3 / ha) in the wheat tube stage in the 0-100 cm layer of soil prior to experimentation in 2017 recorded. In the control sample of the experiment, it was 11.5% (1499.1 m^3 / ha). In all variants, since the wheat germination period, there has been a decrease in humidity.

In all variants of mineral fertilizers used, the “Bakhmal-97” wheat yield was 10.8-15.9 centners per hectare, with the highest yield 11 variants $N_{40}R_{40}K_{40}$- (RS-agro) + N_{aa}40, 7 c / ha (172.8%).

The third experiment on the impact of leaf feeding, combination of disease, pest and weed chemicals on soil moisture dynamics on rainfed areas is 9.8–14.3%, 0–100 cm before the experiment in autumn 2015 the moisture content of the deposit was 13.9-15,6% or 1793,5-2068,0 m^3 / ha.

By 2016, the wheat germination stage had 8.6% (221.0 m^3 / ha) moisture in the 0-20 cm layer, with 11.9% (1565.0 m^3 / ha) moisture in the 0–20 cm layer, while only 40 kg / ha had a moisture content of 13.0% (332 m^3 / ha) and 12.8% (1746 m^3 / ha) in the background version of nitrogen, phosphorus and potassium fertilizers, respectively. This year, when the spring was the much rainier, there was an average of 10.0% (1389 m^3 / ha) of moisture in the 0-100 cm layer, and 13.3% (1788.4 m^3 / ha) in the tube phase of wheat. During this period, the average yield of wheat is 8.7% (1186 m3 / ha), while leaf feeding also has an average moisture content of 9.0-9.5% (1227-1302 m^3 / ha) in the sprayed version of chemicals.

In 2017, the experimental options of 9.2% (230 m^3 / ha) before planting, and 15.5% (1499 m^3 / ha) of moisture in the 0-100 cm layer were sufficient to allow the seeds to fully germinate. Wheat tube-sprouting stages also played an important role in increasing productivity by 14.5% (365.4 m^3 / ha) in 0-20 cm of soil, and 16.5% (2211 m^3 / ha) on 0-100 cm.

Average grain yield of soft wheat varieties of “Bahmal-97” was 9.0 c / ha in the control variant and additional yield of nitrogen and phosphorus potassium fertilizers at the rate of 40 kg / ha was 3.3 t / ha (137%). The highest average yield (15.6 centners / ha) was obtained in the form of sprayed with a mixture of herbicides and Gumimax biopreparation (4 l / ha) in the background of fertilizer given to the substrate. The additional grain yield obtained in this variant was found to be 6.6 c / ha (173%) more than the control variant, i.e., 3.3 c / ha (127%) compared to the substrate ($N_{40}R_{40}K_{40}$).

The cost-effectiveness of the use of absorbers, organic and mineral fertilizers is 11.8 centners / ha in the control variant, 18.6 centners per ton of Fon + hydrogel 20 kg / ha, net profit is 448860 sums / ha, Fon + 10 tons / ha. When applied, the net profit was 520,686 sums / ha.

It is noted that the cost-effectiveness of the application of various mineral fertilizers is 6.7 c / ha, net profit is 331,991 sum / ha compared to the control variant N (aa) $_{40}P_{40}K_{40}$ (RS agro).

The cost-effectiveness of root and leaf feeding of soft wheat in the background version $N_{40}P_{40}K_{40}$ has been achieved with an average yield of 13.3 c / ha, net profit of 234768 Soum. With a yield of 31.9%, background + 5% Nm + herbicide + Gumimax, the yield was 17 c / ha, net profit 353,205 sum / ha, and profitability rate 39.7%.

Thus, the amount of humus and nutrients in the semi-arid zone of the rain-fed areas decreases with the degree of soil erosion. The effectiveness of feeding wheat in winter varies considerably, depending on the amount of rainfall and its distribution during the growing season, its type, amount, timing and application of fertilizers.

V. CONCLUSIONS

As a result of morphology of typical rainfed gray soils, clear deposition, richness and abundance of plant roots, carbonation of the substrates, high carbonation of the upper and lower layers, the moisture, color and hardness of the other layers except the sedimentary layer are observed.

Depending on the erosion processes and use methods of soil, rainfall has also adversely affected the agrochemical properties of typical gray soils. The amount of humus and nutrients in the soils has decreased as the erosion rate increases. From the non-eroded soils the humus content to moderately eroded soils decreases from 1.28% to 1.13%. There is a decline of 0.88% in the first year sown field wheat to 0.65% in the second year sown area.

The relief of semiarid zone of the rain-fed lands is low, with the formation of soils with small gravelly proluvial beds, it's often less than the limestone beds.

The content of the sludge is mainly moderately sandy, 31.1-43.2%, and in some cases the lower layers are 28.1-28.7%, and are slightly sandy.

It has been monitored that the general physical properties of soils have changed under the influence of erosion processes, which affect soil fertility and agronomic properties. Depending on the slope exposure, the specific weight varies across the profile from 2.56 to 2.70 g / cm^3, with a volume weight of 1.18-1.44 g / cm^3. According to the specifications and volume weights, the porosity varies from 45.9% to 54.4%. The density of soil under wheat for the first year after the clean dew is 1.22 g / cm^3 in the sedimentary stratum (0-20 cm) with a porosity of 52.3%, and 1.26-1.36 g / cm^3 in the soil.

In the rainfed semi-flat region, before raising a pure plow in the scheme of crop rotation, fertilizer of 10 t / ha and 40 kg / ha phosphorus fertilizer, 20 kg / ha "Hydrogel" absorbent reduces physical evaporation of natural moisture content in soil by 170.0-171.3 m3 / ha.

Before raising a fresh plow (under a plug), "Hydrogel" (Uzbekistan) polymer absorbent (20 kg / ha), 10 t / ha fertilizer and 40 kg / ha phosphorus fertilizer and feeding 40 kg / ha of nitrogen fertilizer during the spawning period will increase the yield of wheat "Bakhmal-97" comparing to clean dew by 3.9-5.4 c / ha.

In the year when the amount of precipitation exceeds the perennial norm, 40 kg / ha RS-agro phosphorus, potassium fertilizers and the same amount of urea fed in early spring 4.6 t / ha higher crop has been gained comparing to the control. This result has been reached comparing to the same amount which was achieved by 1.6 t / ha more compared to the variants fed with ammophos, potassium.

Based on the combined use of mineral fertilizers and biologically active preparations for winter wheat feeding, it cost 604,000 sums per hectare and received a total income of 734,000 sums per hectare, net income has comprised 130,000 sums, and profitability rate has been 20-21%.

On typical rainfed soils, under the influence of absorbents and organic fertilizers, as a result of agrotadbiri accumulation of natural moisture during the period from pure dew to winter grains, the soil moisture reserves in the 0-160 cm layer was collected as 94.4-145.0 m^3 / h compared to the traditional method.

It has been observed that feeding wheat in the rain-fed fields in autumn when applying various forms of mineral fertilizers in the $N_{40}R_{40}K_{40}$- (RS-agro) + $Naa_{40,}$12.4 c / hectare, or 3.8 c more than conventional fertilizer, which is more effective than using traditional fertilizer.

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