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FROM RAIN AND SMALL FLOOD WATERS USE EFFICIENCY.

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Abstract.
The article describes the possibilities of increasing soil productivity by effectively using rain and small flood waters to increase crop productivity in arable lands, studying the impact of soil moisture depth on the growth and development of agricultural crops by analyzing long-term weather conditions, introducing scientifically based optimal farming systems, crop rotation schemes for grain, clean and closed plowing, taking into account the land conditions, soil and weather conditions of farms, and the field of farming.

Keywords.
Arable lands, rain and small flood waters, typical gray soil, weather conditions, soil moisture, productivity.

Relevance. Today, arable lands in the world account for 1.4 billion hectares or 85-87% of the total agricultural land. These areas are found in the arid desert and desert regions of almost all continents. The world's arid lands account for 95% of agricultural land in the Asian continent, particularly in the Sahara, 75% in the Middle East and North Africa, 65% in East Asia, and 60% in South Asia.[1]

One of the important tasks of the day is to rationally use available resources to raise agriculture to a higher level, to introduce scientifically based, resource-saving, improved agrotechnologies for growing crops, and to produce high and high-quality crops with minimal investment. The Decrees of the President of the Republic of Uzbekistan No. PF-5742 dated June 18, 2019, and No. PF-5853 dated October 23, 2019, indicate that special attention should be paid to organizing a competition for scientific research projects on "...increasing soil fertility of irrigated and fallow lands, mountain and steppe and pasture areas, conducting scientific research on the

[1] https://www.fao.org/3/i1688r/i1688r.pdf

effective use of water and other natural resources, developing and introducing scientifically based effective technologies for the use of fallow lands".

Analysis of weather conditions of fallow areas of Uzbekistan over 44 years. The frequent changes in the weather in the autumn-winter and spring months in the arable areas in different years are due to the inflow of cold air currents from the north and warm tropical air currents from the southwest.

According to long-term data, the average annual rainfall in this arable area during the vegetation period of autumn cereal crops (October-June) is 361.9 millimeters and is distributed as follows: in the autumn grain sowing season (October) 17.1 mm (4.7%); in the late autumn and winter months (November, February) 182.4 mm (50.5%) and in the spring months (March-May) - 154.0 mm (42.5%); in the summer month (June) 8.4 mm (2.3%).

One of the urgent tasks is the cultivation of cereals, legumes and other fallow crops in unfavorable soil and weather conditions, which forms the basis for stable high yields in all weather conditions in fallow areas, based on resource-saving agrotechnologies.

Experimental results and discussions. According to long-term data (G.A. Lavronov, 1979), the amount of precipitation in October fluctuated around 0-65 mm, in November 0-89 mm, and in December 3-110 mm, while in recent years the amount of precipitation in October was 0-109.3 mm; 0-73.1 mm and 2.6-142.5 mm, respectively.

In the semi-moisture-rich mountainous region of the Lalmikor fields, in years when the amount of precipitation was around the multi-year norm (362 mm), the even distribution of precipitation in the late autumn, winter and spring months resulted in soil moisture at a depth of 0-100 cm of

5.8-10.2% in autumn and 9.5-10.8% in spring, which made it possible to mitigate the negative effects of air drought during the important phases of the growth period of winter grain crops (flowering and milk-wax ripening). It was observed that the wheat yield in the unfertilized area was 11.0-14.7 c / ha, and when N40P40 was applied, it was 15.5-21.8 c / ha.

In years with abundant rainfall (466-488 mm 501-542 mm) in late autumn (November), winter and spring, especially in May, 36.3-104.9 mm of precipitation led to soil moisture up to 0-160 cm. Naturally, such soil moisture is a favorable condition for the growth and development of winter grain crops and the accumulation of a rich harvest. In these years, soil moisture was 10.2-13.8% in autumn and 15.8-12.8% in spring, and wheat yield in unfertilized areas was 11.8-19.4 c/ha, and when N40P40 was applied, it was 14.9-29.4 c/ha.

Resolution No. PP-144 of March 1, 2022 "On measures to further improve the introduction of water-saving technologies in agriculture" In recent years, special attention has been paid to increasing the efficiency of agricultural land in our country, including through the use of water-saving technologies.

It is aimed at eliminating existing shortcomings and problems in the introduction of water-saving technologies, mitigating the negative impact of water shortages observed in the region, as well as more efficient use of water resources in the cultivation of agricultural crops.

If we take the direction of water conservation alone, the fact that the Development Strategy of New Uzbekistan for 2022–2026 sets a goal of saving 7 billion cubic meters of water confirms our opinion.

When studying the effect of various agrotechnical measures on the effective use of rain and small flood waters on wheat yield, the yield of the soft wheat variety "Kizil don" in 2025, depending on the agrotechnical measures used, was 3.3-5.2 centners per hectare, while in the control variant of winter wheat without fertilizer it was 3.3 centners/ha, and in the winter wheat P40

variants it was 3.9 centners/ha, in the winter wheat P40+N40 variant it was 4.3 centners/ha, in the winter wheat P40 + N40 + suspension variant it was 4.6 centners/ha, and in the winter wheat without fertilizer + May sprinkler irrigation variant it was 4.0 centners/ha.

The effect of various agrotechnical measures on the productivity of the "Red grain" variety (Gallaorol, 2025.)

№	Options Winter wheat without fertilizer	Productivity, ha/ts.				Additive derivative	
		On returns			Average /ha	± t/ha	%
		1	2	3			
1.	Winter wheat P40	3,1	3,3	3,4	3,3	-	100
2.	Winter wheat P40 + N40	3,7	3,8	3,5	3,6	0,3	109
3.	Winter wheat P40 + N40 + suspension	4,0	4,5	4,3	4,2	0,9	127
4.	Winter wheat without fertilizer + May sprinkler irrigation	4,6	4,8	4,2	4,5	1,2	136
5.	Winter wheat P40 + May sprinkler irrigation	3,8	4,5	3,5	3,9	0,6	118
6.	Winter wheat P40 +N40 + May sprinkler irrigation	4,5	4,7	4,2	4,4	1,1	133
7.	Winter wheat P40 + N40 + suspension + May sprinkler irrigation	5,1	4,5	5,0	4,8	1,5	145
8	Options	5,3	5,1	5,2	5,2	1,9	157

The highest yield was obtained in both the conventional and once-in-May irrigation with mineral fertilizers and the suspension for foliar feeding of winter wheat P40 + N40 + suspension + May irrigation option, 5.2 c/ha. The additional grain yield obtained in this option was 0.3-1.5 centners or 109-157% compared to the control, i.e. winter wheat without conventional fertilizer and Winter wheat without fertilizer + May irrigation options. In the winter wheat P40 + N40 + suspension option, the yield of the wheat variety "Kizil don" was 1.2 centners less than in the winter wheat P40 + N40 + suspension + May irrigation option.

Conclusions

1. One of the factors that limit the productivity of grain and other crops in dry areas of the republic is the decrease in soil fertility due to water erosion of the soil;

2. In order to effectively use atmospheric precipitation, it is effective to irrigate grain crops with rain once in May by accumulating rainwater and small flood waters in dry areas.

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