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THE IMPACT OF TILLAGE AND PLANTING ON THE SOIL RESOURCE-INTENSIVE TECHNOLOGY IN THE REGION OF THE LOWLAND-STEPPE TULIP ON THE FIELD YIELD, SEEDLING NUMBER AND YIELD OF AUTUMN WHEAT

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ABSTRACT

In multifactorial field experiments conducted in 2022-2023, the influence of different methods and depths of processing of typical rain fed serezems, mineral fertilizers on field seed germination, stem density and productivity of winter bread wheat variety "Istiklol- 6" was studied in the conditions of the flat-hill rainfed zone of Uzbekistan.

KEYWORDS

Rainfed, flat hill zone, crop rotation, technology, wheat, fertilizers, yield increase, economic efficiency.

INTRODUCTION

Currently, the total arable fields in the Republic are 752 thousand ha. Atmospheric precipitation in these areas is seasonal in nature, with the bulk (85-90 %) falling during the winter and early spring months (March-April).

Over the past few decades, global climate change in lalmi fields, intensive technology planting of one field into the grain crop spree instead of introducing a scientifically based farming system, intensive processing with ploughs, discs and borons over many years, and soil degradation under the influence of many other factors, has led to an increase in erosion processes. As a result, the yield of grain and other crops grown on loamy land remains dependent on weather conditions.

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According to the results of many years of experiments, the chemical, physical, microbiological properties of soil in all lalmi regions of the Republic change inextricably with respect to the method and depth of soil treatment [1, 2].

The main purpose of conducting experiments is to plow at a depth of 20-22 CM with ploughs on a clean plow in a short rotational scheme of crop rotation of grain in the flat-winter region of the Lalli lands, to study the effect of local (ribbon) planting of mineral fertilizers on the productivity of autumn wheat in a local (ribbon) way, without tillage in the following years Such experiments were carried out very little in the lalmi field of our republic.

Methodology and conditions for conducting experiments.2022-2023

in the years, multi-factor experiments were carried out in the conditions of typical loamy soils with medium sand under the ownership of a seed farm. The 0-40 cm layer of soil contains 0.632-0.710% humus, 0.017-0.022% gross nitrogen, 0.130-0.210% total phosphorus and 0.925-1.007% potassium, and is low in motile nitrogen (NO3) and phosphorus. The moisture order in these soils belongs to the impermasid i.e. non-washable type and is not involved in soil formation processes [3, 4].

In multi-factor experiments, the effectiveness of planting Technologies was studied with the SZS-2,1 cultivator seyalka (Kazakhstan), which compacts the soil in a local (tape) way, giving mineral fertilizers to the Seeder, processing and planting in the soil according to the traditional technology (plug, diska, borona), planting in the Brazilian "no TILL" soil according to "o" technology. Experiments were put according to the 3x6x3 scheme. The size of the experimental fragments is 400 m2 (4x100), the area to be taken into account is 200 m2 (2-100). Experimental fragments (delyankas) were placed in the form of branched blocks [5]. Options were repeated in three returns.

In the 2021-2022 agricultural year where experiments were carried out, the amount of precipitation was 33 mm more than the average perennial norm (362 mm), the average monthly temperature of the air was 2.5 0S lower than the average perennial norm (12.6 0s), the relative humidity of the air was around the perennial norm (70%). The amount of precipitation in the 2022-2023 agricultural year was 1.8 mm less than the perennial norm, the air temperature was 10.2 0S, the relative humidity was 67%.

The results obtained one of the main factors limiting the yield of autumn wheat in tulip fields is a sharp decrease in the germination of seeds in field conditions and the number of plant bushes on an area of 1 m2, as a result of moisture, temperature, lack of nutrients in the soil during the autumn months. In addition to these indicators, the yield of autumn wheat varies widely depending on the methods of cultivation and planting in the soil and the norm of nutrients in it [6].

As can be seen from the data in the table. While" Istiqlol 6 "autumn wheat field yield was 40.7-50.3% by default option i.e. fertilizer norm in traditional technology," o " technology and variants planted directly with the SZS-2.1 cultivator seyalka recorded a 10.7-28.3 and 5.7-20.3% abundance of field yield in comparison with traditional technology respectively. This is due to the fact that in 2022, when the extremely arid October, November, was driven to a depth of 20-22 CM with plugs according to traditional technology, large incisors were displaced in the soil bet and the thinning of wheat grass was observed as a result of the seed being trapped in a large and cross-sectional ground bet. This situation is observed in most years in lalmi fields. Wheat germ sown directly from No till and SZS-2.1 cultivator sown without tillage ensured that

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field germination of the seed was higher compared to conventional technology as a result of planting to an optimal depth (3-5 cm).

Experiments have found that the wintering rate of sprouted grass, despite the low unbreakability of "Istiqlol 6" fall wheat seeds planted according to traditional technology, can be seen to be 20-21% higher than the options used by "o" technology, 15-17% higher than that planted with the SZs-2.1 cultivator seyalka. The number of tubers in 1 m2 of wheat preserved by the time of harvest amounted to 75.8-128.9 and 82.8-130.8 units, respectively, in traditional technology and in variants planted with Kazakhstan's SZS-2.1 cultivator seal, and the lowest in "o" technology planted variants-78.4 – 92.8 units/m2.

Table 1.

Soil processing and planting technologies and mineral fertilizers field germination of autumn wheat, degree of wintering, number of plant bushes and the impact on productivity, 2022-2023 y

№№	Variants	Field flourish, %	Wintering rate, %	Plant Bush number, PCs/m2, (full ripening)	Productivity, ts / ga		On average, ts / ga	Технологияга нисбатан қўшимча хосил		Additional yield compared to technology	
					2022 y	2023 y		+ - ts / ga	%	+ - ts / ga	%
1	2	3	4	5	6	7	8	9	10	11	12
A_1 – Traditional technology-template											
1	Without fertilizer-control	46,7	81,8	75,8	6,6	8,8	7,7	-	100	-	100
2	P40, K40-autumn scattering +N40	53,0	83,0	90,8	8,7	12,0	10,3	-	100	+2,6	134
3	R20k20-fall + N20 picking by shaving method	50,5	89,2	124,8	7,7	11,0	9,3	-	100	+1,6	121
4	N20 R40K40 - autumn scattering + N20 gathering	49,7	95,1	128,9	7,0	11,6	9,3	-	100	+1,6	121

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5	P40, K40-autumn spraying +N40 clumping + RG 2.5 L/ga +20 g/ga herbicide + 5% CAS (clumping)+2.5 L/ga RG + 0.15 L/ga Fun.+ insek. suspension (tubing)	46,7	89,5	127,9	10,2	12,0	11,1	-	100	+3,4	144
6	P40, K40-autumn spraying + N40 clumping + NK-100 ml/ga + herbicide + 0.15 l/ga (clumping) + NK-100 ml/ga + 5% CAS + 0.15 L/ga Fun.+ insek. suspension (tubing)	46,4	89,3	122,5	8,8	11,8	10,3	-	100	+2,6	134
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
A_2 – "O" technology (NO TILL, Brazil)											
1	Without fertilizer-control	64,3	60,8	78,4	6,7	6,1	6,2	-1,5	80	-	100
2	P40, K40-local method in autumn (along with planting) +N40 picking	72,2	61,5	85,6	9,0	9,0	9,0	-1,3	87	+2,8	145
3	R20k20-local method + N20 gathering in autumn	78,5	60,8	88,7	8,6	10,5	9,6	+0,3	103	+3,4	155
4	N20 R40K40 - local method + N20 gathering in autumn	76,3	64,8	91,3	7,5	8,5	8,0	-1,3	86	+1,8	129
5	P40, K40-local method in autumn +N40 clumping + RG 2.5 l/ga +20 g/ga herbicide + 5% CAS (clumping)+2.5 L/ga RG + 0.15 L/ga Fun.+ insek. suspension (tubing)	63,4	74,5	90,8	7,0	8,7	7,8	-3,5	70	+1,6	126
6	P40, K40-local method in autumn +N40 clumping + NK-100 ml/ga + herbicide + 0.15 l/ga (clumping) + NK-100 ml/ga + 5% CAS + 0.15 L/ga Fun.+ insek. suspension (tubing)	66,6	73,4	92,8	8,2	7,9	8,0	-2,3	78	+1,8	129
A_3 – C3C-2,1 cultivator seyalka (Kazakhstan)											

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1	Without fertilizer-control	52,4	66,8	82,8	7,2	6,2	6,7	-1,0	87	-	100
2	P40, K40-local method in autumn (along with planting) +N40 picking	68,5	67,9	120,4	10,8	9,2	10,0	-1,1	97	+3,0	148
3	R20k20-local method + N20 gathering in autumn	65,1	72,8	125,0	11,0	10,0	10,5	+1,2	113	+3,8	157
4	N20 R40K40 - local method + N20 gathering in autumn	61,2	75,1	130,4	11,3	12,3	11,8	+2,5	127	+5,1	176
5	P40, K40-local method in autumn +N40 clumping + RG 2.5 l/ga +20 g/ga herbicide + 5% CAS (clumping)+2.5 L/ga RG + 0.15 L/ga Fun.+ insek. suspension (tubing)	70,6	77,7	130,4	13,4	11,8	12,6	+1,5	113	+5,9	188
6	P40, K40-local method in autumn +N40 clumping + NK-100 ml/ga + herbicide + 0.15 l/ga (clumping) + NK-100 ml/ga + 5% CAS + 0.15 L/ga Fun.+ insek. suspension (tubing)	70,6	77,7	130,6	11,0	11,8	11,4	+1,1	111	+4,7	170
	P, %				3,2	4,2					
	EKF 05, ts / ga				0,55	0,42					

Note: rg – Rokogumin is a universal organic and ore fertilizer that preserves amino acids, fulvates, macro and micro fertilizers; NK - nanocrem is a stimulant drug containing SiO2.

According to the results of two years of experiments, the yield of winter wheat "Istiqlol 6" under the influence of soil processing and planting technologies and the norm of ore fertilizers and many other factors was 7.7 – 11.3 ts/ga, depending on the norm of ore fertilizers in the default options, the additional grain yield obtained at the expense of ore fertilizers was 1.6-2.6 ts/ga (121-134 %)

In multi-factor experiments conducted in 2022-2023, the relatively highest yield (6.7-12.6 ts/ha) yield was obtained in variants of autumn wheat seed planted directly with the SZS-2.1 cultivator seyalka. In these variants, the traditional technology was that the additional yield obtained compared to the variants planted with SZT-3.6 grain sludge, which were driven into the soil with ploughs at a depth of 20-22 CM, was 1.1-2.5 ts/ga (111-127%), depending on the fertilizer norm. The lowest yield, on the other hand, was obtained in the "o" technology planted options without soil processing – 6.2 – 9.6 ts/ha. These variants received 1.3-

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3.3 ts/less yield (70-87%) compared to the default variants (traditional technology).

In our experiments, the effectiveness of ore fertilizers was 3.0-5.9 ts/ga (148-188%) compared to the fertilizer-free control option in the variants where mineral fertilizers were given to the Seeder in a local (ribbon) method with planting with the SZs-2.1 cultivator sezalka. In variants where" O " technology was applied, these were 1.6-3.4 ts/ga (126-155%).

Based on the results of two years of experience, the following conclusions can be drawn

CONCLUSIONS

1. In the plain - winter lalmikor region, planting with the SZS-2.1 cultivator seyalka, which provides mineral fertilizers in a local (tape) way, compacting the soil and taking furrows, along with the energenic resource-saving planting that protects the soil from erosion, should be used in galla-plow exchange planting schemes;
2. In the variants planted with the SZS-2.1 cultivator seyalka, the field germination of autumn wheat, the degree of wintering and 1 m sq.the yield of autumn wheat increases by 1.1-2.5 ts/due to the fact that the number of bushes of the plant in DA is higher than in traditional technology.
3. "O" technology tillage ("no TILL" Brazil) into the soil in the plains-arid adyrological region of the lalmicore lands leads to over-compaction of the soil, intense grazing of the field and a decrease in productivity. According to the results of the two-year experiment, the yield of the wheat variety "Istiqlol 6", planted with "no TILL" without processing the soil according to the "o" technology,was 1.3-3.5 ts/ha lower than the traditional technology, on average 0, -3.0 ts/ha compared to the direct SZS-2.1 cultivator seyalka (Kazakhstan).

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