

AGAINST WEEDS IN GRAIN FIELDS

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Abstract. *In the scientific article, tillage in the fight against winter wheat weeds - plowing at 30-35 cm, when applied in combination with herbicides Peak 15 g/ha + Axial 50, KE 0.75 l/ha in the norm is monocotyledonous and dicotyledonous annual and perennial weeds, legumes and cereals weeds is stated that it destroys of 84.7-97.4% and ensures the production of high quality grain.*

Keywords: *winter wheat, typical sierozem soil, weeds, annual, perennial, herbicides, soil tillage, disking, cheeslanding, plowing.*

INTRODUCTION

Currently, in the world more than 234 million hectares of wheat are grown and 729.0 million tons of grain are grown. In the world of agriculture, in a number of European countries (Russia, Belarus, the Baltics) and in the United Kingdom, France, Scandinavia, China, India, Pakistan and many other countries, including Uzbekistan, weed control is now a major issue of plant protection, without a successful solution to this problem, there will be no benefit to the effectiveness of measures to increase soil fertility and crop yields in agriculture [2; 28-p., 6; 40-p., 7; 4-6-p.].

The data shows that the species and number of weeds are increasing at this time. For example, in the CIS countries after the 90 - ies of the last century, more than 2000 species of weeds were found, while in Uzbekistan 841 species of weeds belonging to 72 families were identified, with 519 species of them being annual and 322 species - perennial weeds. However, in terms of damage to the agroculture, annual weeds predominate. Perennial bulbous rootstocks (Rod weeds) -21%, Rhizomatous roots weeds 7 and weed in all the remaining biological groups is about -2% [1; 585-586-p., 2; 28-p., 6; 40-p.].

MATERIALS AND METHODS

Field experiments have been conducted since 2018 on typical seirozem soils of Samarkand region. The research program includes different tillage methods (plowing 20-25; 30-35 cm, disking 12-16 cm, cheeslanding 18-22 cm) and monocotyledonous weeds control Biostar 75% DF herbicide as well as single and perennial dicotyledonous weeds field experiments on the study of different rates of Peak, 75% (15 g/ha), herbicides Axial 50, KE (0.75 l/ha) against grain weeds are carried out in 11 variants and 3 repetitions, the variants are systematically placed in one tier.

The typical sierozem soil was non-saline and humus content in the top 0-25 cm soil layer was 11.1 g kg⁻¹, total nitrogen - 1.3 g kg⁻¹, total phosphorus - 1.3 g kg⁻¹, total potassium - 23.4 g kg⁻¹, NO₃-N - 14 mg kg⁻¹, available phosphorus - 17 mg kg⁻¹ and exchangeable potassium - 224 mg kg⁻¹. The soil pH was 7.1[5; 356-p.].

Phenological observations, biometric measurements and yield determinations were conducted according to field experimentation methods [3; 1-131-p., 4; 223-256-p.] on delineated model plants in the area of 1 m² in each treatment and replication of the experiment. Standard procedures [5; 356-p.] were applied for determination of soil water physical and agrophysical properties (dry and wet sieving, water infiltration, bulk density and porosity).

RESULTS AND DISCUSSION

In our study of typical seirozem soils of Samarkand region (2018-2020), various methods and depth of tillage and the effect of herbicide standards on weeds in wheat fields were studied. In field experiments, before the main tillage of the soil, the total weeds by variants were detected at 44–53 pcs/m², of which annual weeds at 38–47 pcs/m² and perennial weeds at 4–9 pcs/m² (Table 1), it was found that in the second year of the experiment, these indicators decreased only in the plowed areas (total, 36-44 pcs/m², of which annuals 33-38 pcs/m², perennials 3-6 pcs/m². In this case, it was taken into account that the number of weeds increased from year to year in the variants where no herbicide was applied, tillage with a cheeslanding at a depth of 18-22 cm or disking with a depth of 12-16 cm.

According to the results of the main tillage methods and depths applied to the soil against winter wheat weeds in the experimental field, as well as the results of the effect of herbicides on an average of two years (2019-2020) (Table 1), soil tillage methods and herbicides have been shown to have different effects on weed numbers. For example, in the control variant-1 of the experiment, before tillage, the total number of weeds was 46 pcs/m², of which annual weeds – 40 pcs/m² and perennial weeds – 6 pcs/m², after plowing at a depth of 20-25 cm, before applying the herbicide in early spring, the total number of weeds averaged 39 pcs/m², and plowing was observed to decrease by 23.9% (for annual weeds 24.4%, for perennials 20.3%) at the expense of 20-25 cm. By the end of the winter wheat sowing period, control-1 variant is showed that in variant, the annual weeds increased by 4 (34) pcs/m² and the perennial weeds by 2 (7) pcs/m². However, it was noted that these figures decreased by an average of 10.8% compared to the corresponding initial number in this variant. It should be noted that with increasing depth of plowing in the experimental field, their effect on weeds, especially perennials, was more effective. For example, in variante-9, where herbicide-free plowing was carried out at 30-35 cm, weeds increased by 41.5% during the germination period of winter wheat compared to control (herbicide-free, plow 20-25 cm), of which annuals were 41.3% (27 pcs / m²). and perennials decreased by 42.8% (4). In more significant cases, the total amount of weeds decreased by 92.3%, annuals by 97.4%, and perennials by 84.7%.

In our research, it was observed that the number of weeds in discs treated with disking 12-16 cm, cheeslanding 18-22 cm (without the use of herbicides) in the cultivation of winter wheat with minimal tillage increased from year to year (Table 1). According to the average biennial data obtained in the experimental field, the total amount of weeds in the variants treated at a depth of 12-16 cm with a disking and 18-22 cm with a cheeslanding, without control variant herbicides, compared to the variants at a depth of 20-25 cm, respectively 27-33 pcs/m², 20–33 per year for perennials and 4–6 pcs/m² for perennials.

In field experiments, the results of the effect of herbicides, along with the methods and depth of tillage against winter wheat weeds, show that, the effect of Biostar herbicide on the recommended 20 g/ha norm variants is lower (according to the recommended 20 g/ha norm variants, along with different tillage methods (disking 12-16 cm, cheeslanding 18-22 cm, plowing 20-25; 30-35 cm) 84.3; 86.4;

90.2%) and perennial weeds were not significantly affected (26.2; 27.3; 28.7%).

Also, when different tillage methods are applied in combination with Peak 15 g/ha + Axial 50, KE herbicide 0.75 l/ha, the highest biological efficiency tillage is 30-35 cm, Peak 15 g/ha + Axial 50, KE 0,75 l/ha. Observed when applied at a rate of the average efficiency was 92.3%, reducing annual perennial weeds by an average of 97.4% in two years and perennials by 84.7%. Soil tillage disking 12-16 cm and cheeslanding 18-22 cm, herbicides Peak 15 g/ha + Axial 50, KE 0.75 l/ha, weed reduction in 5-8 variants applied in the norm of 84.3-89.0% plowing was found to be 30-35 cm + Peak 15 g/ha + Axial 50, KE 0.75 l/ha 3.3-8.0% lower than variant-11 used in the norm (Table 1).

CONCLUSIONS

Thus, in the conditions of typical seirozem soils of Samarkand region, plowing against winter wheat weeds is carried out at 30-35 cm. and destroying dicotyledonous and cereal weeds by 84.7-97.4%, creating favorable conditions for the growth and development of winter wheat and ensuring the production of high quality grain.

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Table 1. Weeds spread in the experimental field, (in pieces per 1 m²) 2018-2020 yy.

Experiment options	Before tillage			Before applying the herbicide			30 days after applying the herbicide		
	low annual	perennial weeds	total	low annual	perennial weeds	total	low annual	perennial weeds	total
1. Plowing soil 20-25 cm. Control - no herbicides.	40	6	6	30 (24,4)	5 (20,3)	3 5 (23,9)	34	7	4 1
2. Plowing soil 20-25 cm. Biostar-75% DF-20 g / ha (St)	44	8	2	33 (25,5)	6 (19,4)	3 9 (25,0)	5 (84,3)	4 (26,2)	9 (76,9)
3. Minimum tillage. Disking 12-16 cm.	42	4	6	51	8	5 8	61	13	7 4
4. Minimum tillage. Disking 12-16 cm. Biostar-75% DF-20 g / ha (St)	45	5	50	56	8	64	9 (83,8)	6 (24,7)	15 (76,5)
5. Minimum tillage. Disking 12-16 cm. Peak 15 g/ha+Axial 50, KE 0.75 l/ha	45	7	52	52	12	64	6 (88,4)	4 (68,3)	10 (84,3)
6. Minimum tillage. Cheeslanding 18-22 cm.	38	6	44	44	9	53	54	11	68
7. Minimum tillage. Cheeslanding 18-22 cm. Biostar- 75% DF-20 g / ha (St)	41	7	48	50	10	60	6 (86,4)	7 (27,3)	13 (78,3)
8. Minimum tillage. Cheeslanding 18-22 cm. Peak 15 g/ha + Axial 50, KE 0.75 l/ha	47	6	53	54	10	64	4 (91,8)	3 (72,2)	7 (89,0)
9. Plowing soil 30-35 cm.	46	7	53	25 (45,6)	4 (40,3)	29 (45,2)	29	4	33
10. Plowing soil 30-35 cm. Biostar-75% DF-20 g / ha (St)	43	5	48	22 (49,8)	3 (44,1)	25 (47,9)	2 (90,2)	2 (28,7)	4 (84,0)
11. Plowing soil 30-35 cm. Peak 15 g/ha + Axial 50, KE 0.75 l/ha	38	9	47	21 (46,2)	5 (42,7)	26 (44,6)	1 (97,4)	1 (84,7)	2 (92,3)

Note. The numbers in brackets represent the percentage reduction in weeds