



## Influence of Weed Control Measures on Soil Fertility and Microflora in Cereal Fields

Djuraeva S. F. <sup>1</sup>, Rizaev Sh. Kh. <sup>2</sup>

<sup>1</sup> Independent researcher

<sup>2</sup> Samarkand Branch of Tashkent State Agrarian University, Uzbekistan

**Abstract:** In the scientific article the creation of the possibility to grow high-quality and environmentally friendly products from winter wheat (5,94-6,26 t/ha) in conditions of typical virgin soil in which winter wheat is grown, on the basis of choosing right depth (30-35 cm) of soil tillage, depleting both annual and perennial weeds 35-40% in the cotton field, decreasing soil density per 0,08 g/cm<sup>3</sup> ha, increasing porosity per 1,5-2,0 % ha and the water permeability per 87,3-101,3 m<sup>3</sup>/ha, stimulating the activity of microorganism and increasing soil fertility will create favorable conditions for the growth and development of winter wheat grown in such conditions were identified as the results of the research.

**Keywords:** winter wheat, weeds, depth of plowing, soil density, specific gravity, porosity, micro flora, grain crops.

**Introduction.** Weeds are one of the elements that have a detrimental impact on the ecological environment and soil fertility in agriculture. Currently, weeds are growing freely and quickly in all sorts of primary crops, including fields of winter wheat. These weeds are nearly universally nitrophilic (extremely nitrogen-demanding) and thrive and develop quickly in soils rich in nitrogen. Contrarily, nitrogenous fertilizers are used three times as often as potassium fertilizers and twice as often as phosphorus fertilizers while growing winter wheat, which is used to make bread and other bakery goods. As a result, weeds are given the right circumstances to grow quickly, and their negative impacts on the ecosystem are growing. [4; 308-311-p.; 7; 78-84-p.].

The introduction of all agro-technological activities related to the cultivation of winter wheat, i.e., the introduction of accelerated technologies, the effective use of fertilizers and irrigation water, the increase of soil fertility and the preservation of the purity of the ecological environment, the prevention of grain crops from disease, is currently one of the most crucial factors for increasing grain production and increasing its productivity in our republic. [5; 50-53-p.; 6; 135-137-p.].

Winter wheat types cultivated in the Zarafshan oasis' complex of cotton, grains, and other crops typically yield between 40 and 45 tons per hectare. One of the primary causes of this is the lack of scientifically established agrotechnical and chemical control methods to eliminate weeds in grain fields and increase soil fertility.

**Methodology.** Experiments were carried out in the fields of the farm "Muhammadmurad Muhammaddiyor," Tailoq district, Samarkand area, in order to find a solution to the difficulties mentioned. As an experimental subject, common gray soils, the "Nota" type of winter wheat, and the major tillage depths (20-25; 25-30; 30-35; 35-40 cm) were chosen.

Four variations and four replications of field experiments were carried out, and model plants (1 m<sup>2</sup>) selected for each variant and replication underwent phenological observations and biometric measurements [2; p. 131]. Dispersion analysis was used to examine the experiment's results [1; p. 240].

**Result and Discussion.** High-quality preparation of the land for planting is important in the cultivation of high and early crops from agricultural crops. The plowing depth is determined according to the type of soil, the thickness of the plowing layer, the density of the soil and the amount of weeds. For example, light-colored gray soils of Andijan region, strong fertile soils of Surkhandarya region 35-40 cm, grasslands of Tashkent, Samarkand, Syrdarya, Kashkadarya, Bukhara regions and Karkalpakstan 30 cm, grasslands of Khorezm region give good results when plowed at a depth of 32-35 cm [4] is defined. The authors considered the fact that using two-layer plows PY-3-35 and PD-3-35 fully turns the top soil layer, places it underneath the plow layer, and then layers the bottom soil layer on top of it, finally lowering weeds by 2-3 times [3; pp. 149–152].

Plowing depth in the primary tillage method is crucial for boosting soil fertility and winter wheat output. In this situation, it's important to appropriately use the technique, or the ideal depth of plowing appropriate for each field. By preparing the ground to a suitable depth, it is possible to remove weeds from grain fields and enhance the agrophysical and agrochemical characteristics of the soil. All this ultimately increases soil fertility and winter wheat yield.

Our research indicated that the depth of the primary tillage utilized in the battle against winter wheat weeds has a significant impact on the soil, as well as the interrelationships between the soil's water, food, air, and heat regimes, as well as its granularity, density, porosity, and water permeability. For instance, the number of aggregates with a diameter of less than 0.25 mm, which is a measure of the structural state of the soil, was influenced by the depth of the primary tillage of the soil. In this instance, the amount of aggregates (> 0.25 mm) in the 0-25 cm layer of the plowed fields at a depth of 30-35 and 35-40 cm is on average 27.41-30.86%, and the amount in the 25-50 cm layer is 25.37-28%, whereas these indicators were 26.68-30.94 and 23.45-29.16%, respectively, during the harvesting of winter wheat grain. The control option (plow at a depth of 20–25 cm) had 24.11% more water-resistant aggregates in the arable layer throughout this time. When compared to the choices plowed at a depth of 30-35 and 35-40 cm, this indication is 25-30 cm; 3.92, respectively; 8.44 and 6.9% were less.

The density and porosity of the soil in the experimental field varied with the depth of tilling, with density being lower and porosity being greater. For example, the density of the arable layer (0-25 cm) of the plowed field at a depth of 20-25 cm is 1.30-1.33 g/cm<sup>3</sup>, the density of the solid phase is 2.68-2.71 g/cm<sup>3</sup> on average in 3 years before planting winter wheat seeds. cm<sup>3</sup>, while that of the arable sub-layer was 1.38-1.35 g/cm<sup>3</sup> and 2.67-2.66 g/cm<sup>3</sup>, these indicators were 1.32 -1.35 g/cm<sup>3</sup> and 2.66 g/cm<sup>3</sup>, and in the 25-50 cm layer it is 1.41 g/cm<sup>3</sup>-1.37 g/cm<sup>3</sup> and 2.65-2.62 g/cm<sup>3</sup> it happened. 1.29-1.28 in the 0-25 cm layer of deep plowed areas (30-35, 35-40 cm) before planting winter wheat seeds; It was 1.28-1.31 g/cm<sup>3</sup>, 2.70-2.68 g/cm<sup>3</sup> and 2.67-2.68 g/cm<sup>3</sup>, while these indicators were 1.30 during grain harvest; 1.31-1.34 g/cm<sup>3</sup> and 2.70-2.63; It was found to be equal to 2.68-2.70 g/cm<sup>3</sup>.

The major soil tillage depth that was utilized to suppress weeds in winter wheat also had a favorable impact on the soils' overall porosity. Before sowing winter wheat seeds in the plowed layer (0–25 cm), the total porosity in the control version of the experiment (ploughing at a depth of 20–25 cm) was 51.4–50.9%, but in the variants plowed at a depth of 30–35 cm, these indicators were correspondingly It increased between 0.8 and 1.5 percent. It was discovered that as soil porosity increased, so did the soil's water permeability and water-holding capacity.

In addition to the aforementioned, it was found that the soil microflora was significantly impacted by the depth of the primary soil tillage utilized to manage winter wheat weeds. For instance, prepare the soil by laying down 20–25 (control); 25–30; In plowed fields, there are 1.1–2.0 million–bacteria, 0.9–1.9 thousand–actinomycetes, 2.2–3.6 thousand–fungi, and a rise of 2.1–2.7 and 3.0–4.1%, respectively, in penicella and aspergillus as compared to the control option.

**Conclusion:** The density of the soil is reduced to 0.08 g/cm<sup>3</sup>, and the porosity is reduced to 1. In the conditions of typical gray soils for growing winter wheat, on the basis of the correct selection of the depth of the main soil tillage (30-35 cm), on the basis of the loss of 35-40% of biennial and perennial weeds in the grain fields, A favorable environment is created for the growth and development of

winter wheat grown in such conditions, and it is higher than winter wheat (57.3 -58.6 c/ha). Based on the results, it was determined that the opportunity to grow high-quality and environmentally friendly products was created by increasing the water permeability by 5-2.0% to 109.6-125.6 m<sup>3</sup>/ and increasing soil fertility by accelerating the activity of microorganisms.

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