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EFFECT OF PREVIOUS CROPS ON SOIL FERTILITY AND YIELD OF WINTER WHEAT IN SHORT ROTATION ROTATION

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Abstract

In this article, information aimed at ensuring food security, which is relevant today on a global scale, providing employment of the population at the expense of jobs created in agro-sectors, as well as information aimed at increasing the income of the real sector and population. In the irrigated lands of the Republic of Uzbekistan, tasks such as selecting wheat varieties suitable for ecological conditions, optimization of cultivation technologies have been studied on a large scale and positive results have been achieved. According to the results of the study, under the influence of previous crops, the yield increased to 53.1-65.1 t/h, and an additional 3.4-15.4 t/h was obtained. Based on this, the widespread use and implementation of leguminous grain crops and intermediate crops in winter wheat short-row planting is one of the urgent tasks today.

Keywords: Food security, agro-sector, income, irrigated land, soil fertility, humus, sideration, crop rotation, rotation, cotton, wheat, mash, productivity, profitability.

I. INTRODUCTION

Agriculture is the largest employer sector on earth. About 40 percent of the world's population is employed on this front. For this reason, at a time when food safety is becoming an urgent issue, the development of this network is of great importance. If you have noticed, the main goal of the agrarian policy in Uzbekistan is aimed at fulfilling this task. This policy is primarily aimed at increasing production by increasing soil fertility, attracting innovative technologies to the field, and developing a cluster and cooperative system of farming. Work has already been started in this regard. For example, the land area used in Surkhandarya region is 60% of the territory. Later, as a stage of reforms, the low-yielding cotton fields were replaced by vegetables, sugarcane, and leguminous crops. In addition, an intensive garden, vineyards and greenhouses were created.

This year, it is planned to plant food crops on 90,000 hectares of land that will be cleared of grain. Based on the 2021-2030 strategy for the development of agriculture in the Republic of Uzbekistan, the expansion of the export volume and geography, the creation of a management system based on market mechanisms - clusters in agriculture is paying off in practice.

That is, this system provides a guaranteed income for rural residents. By the way, in this decision, the financing of the costs of growing cotton and wheat, financial support for the cultivation of vegetable products.

Therefore, in order to ensure the implementation of the President's decree of October 20, 2019 "On the approval of the strategy of the development of agriculture of the Republic of Uzbekistan for 2020-2030" in order to take advantage of such opportunities in our region, the areas planted with cotton were reduced to 33.6 thousand hectares, and the areas planted with grain were reduced to 40 thousand hectares. 320,000 hectares of land were put into use, and food and fodder areas were expanded to 193,600 hectares due to redevelopment.

So how did such changes work?

By the end of 2021, the volume of gross product production in agriculture was 105.3 percent. In it, the share of farms was 20.7 percent, the share of peasant farms was 76 percent, and the share of agricultural enterprises was 3.3 percent. To generalize again, this amount corresponds to 53.8% in agriculture and 46.2% in animal husbandry.

In the province, in 2021, drip irrigation and sprinkler irrigation was applied to 1454.1 hectares of land, as a result of which productivity increased despite the drought of the year. In particular, the share of agriculture in the gross regional product (GDP) in the region is currently 50.4 percent.

If we consider the yield of cotton, 234,500 tons of cotton were grown in 2019, 244,800 tons in 2020, and 253,566 tons in 2021 from an area of 72,370 hectares due to the use of the above modern technologies. The average yield was 35 centners.

Currently, there are nine cotton textile clusters and four cotton textile cooperatives working in the region. They pay special attention to the improvement of land reclamation for agriculture, maintenance and increase of soil fertility, water-saving technologies and optimal crop rotation system. In this regard, we use international experience.

At this point, it should be mentioned that the end of the boycott of Uzbek cotton by the international coalition of the Cotton Company opened a great way for the development of the textile industry in our country.

A new stage is also being passed in grain farming. There are eight clusters in this field in the region, with which 2483 farmers have signed futures contracts.

The judicious placement of repeated crops in fields free from grain is bringing great income to our farmers. In particular, in 2021, 6,646 hectares of irrigated and 100 hectares of dry land were planted with peas, mash, beans, beans, and peanuts. Importantly, 28,655 tons of leguminous crops were harvested, the population's needs were met, and a part was sent for export.

This, in addition to ensuring food security, employment of the population due to the jobs created in the agro-sectors, has been serving to increase the income of the real sector and the population.

II. DISCUSSION AND RESULTS

Currently, 2.1 billion tons of grain are grown worldwide, of which wheat grain is 759.6 million tons of the total harvest. tons. The wheat cultivation area is 243.5 million ha, including countries such as the USA, Germany, China, India, Brazil, Australia, Canada, Russia, and Ukraine. . and 1.5 t in dry land conditions. is By 2050, grain production in the world is expected to reach 3 billion tons. Under conditions of intensive farming, irrigated lands of Asian countries have the opportunity to harvest twice a year [11].

At the global level, special attention is being paid to maintaining and increasing soil fertility and effective use of other available opportunities to obtain high and quality wheat yields. In the conditions of irrigated land, it is possible to harvest 2-3 times a year, and the selection of suitable predecessor and repeated and intermediate crops is directly related to maintaining and increasing soil fertility in agriculture. Tasks such as selection of wheat varieties suitable for ecological conditions, optimization of cultivation technologies are being studied on a large scale and positive results are being achieved. Based on this, the widespread use and implementation of leguminous grain crops and intermediate crops in short-rotation sowing of winter wheat is considered one of the urgent tasks today.

B. Khalikov studied the influence of grain-legume crops and short-row cotton-grain rotation systems as a repeat crop after winter wheat in different soil-climatic conditions and the effect on crop productivity. [8], B. Izbasarov [3], F. Namozov [6], A. Mansurov [5] and others have also conducted a number of scientific researches. The research conducted by foreign scientists S. Kuo, U. M. Sainju and E. Jellum [10] is also related to this topic, and it was noted that the effect of intermediate and repeated crops studied in different soil and climate conditions is positive.

As an object of research, the typical gray soils of the foothills of the Yakkabog district of Kashkadarya region, cotton "Bukhara-102", corn "Uzbekistan 300 MV" hybrid, chickpea nigretum "K-95" type, mash "Radost", rapeseed "Spring" were used as the predecessor crops. "Regina" varieties, "Tanya" variety of winter wheat was taken as the main crop.

For the first time, the conditions of the mountainous northeast of the Kashkadarya region were selected in the Yakkabogdarya massif by the selection of repeated crops of plants belonging to different families - cotton, corn, chickpea (Nigretum K-95 variety), mush, spring rapeseed (Regina variety) as a predecessor for winter wheat. received;

root and shoot residues of selected previous crops, their chemical composition were analyzed and their influence on soil fertility was determined;

In the conditions of Kashkadarya region, the rapeseed plant was compared to different predecessors and its positive effect was determined;

It was determined that the root system of winter wheat was formed under the influence of previous crops - cotton, corn, peas, mash, and rapeseed, and the main part of the roots was located in the tillage layer of the soil.

Experiments were conducted in the conditions of typical gray soils of irrigated Yakkabog district of Kashkadarya region, the seepage water level is at a depth of 8-10 meters, the mechanical composition is medium sand, not saline.

In this region, the humus content of the soil is 0.9-1.3%, and the parent rocks begin after a depth of one meter. The volume mass of the soil in the driving layer is up to 1.34 g/cm3, and the porosity is up to 52-55%. As a result of irrigation farming for many years, humus and carbonate salts have spread to the lower layers of the soil, and the amount of humus in the soil layers has decreased somewhat.

Yakkabog district is typical of the mountainous area of the region, the average annual rainfall is 293.3 mm, the average annual temperature is 16.90C, the sum of useful temperatures is 2450-28000C. The average relative humidity of the air is 31-46%, the average daily temperature during the growth period of the plant is equal to 22.2-24.5 0C, the maximum temperature rises to 42-450C.

Research works Field experiments were conducted in 2014-2017 in the conditions of the typical gray soils of the farm "Razzaq ota Meyliev" in the Yakkabog district of the Kashkadarya region. aimed at studying the quality. Field experiments were conducted in 6 variants with 4 replications. In the experiment, each plot was 60 m long and 7.2 m wide. Experience options are systematically arranged in one tier.

Agrochemical, agrophysical and microbiological analyzes in the experiment "Methods of agrochemical, agrophysical and microbiological research in irrigated cotton areas" (1963), "Workshop on agrochemistry" (1985), "Workshop on agronomic chemistry" (1968), "Agrochemical studies of soils" (1965), "Methods of agrochemical research" (1980) conducted on the basis of methodological manuals.

The following agrophysical analyzes were carried out in the experiment. Water resistant aggregates of the soil (%) in 0-30 and 30-50 cm layer in 4 repetitions of each option, at the beginning and end of winter wheat vegetation by the method of N.A. Kachinsky; volume mass of the soil (g/cm3) in 4 repetitions by the cylinder method according to N.A. Kachinsky; specific mass (g/cm3) by pycnometric method in 4 repetitions; soil porosity (%) in the method of calculation according to soil volume mass and specific mass; water permeability of the soil (m3/ha) was performed in 4 replicates of each option in a holistic manner.

In microbiological analyzes of the effect of previous crops on soil microorganisms, bacteria were grown on meat peptone agar (GPA), fungi were grown on Chapek's medium (Sreda Chapeka), and actinomycetes were identified on starch-ammonia agar (KAA).

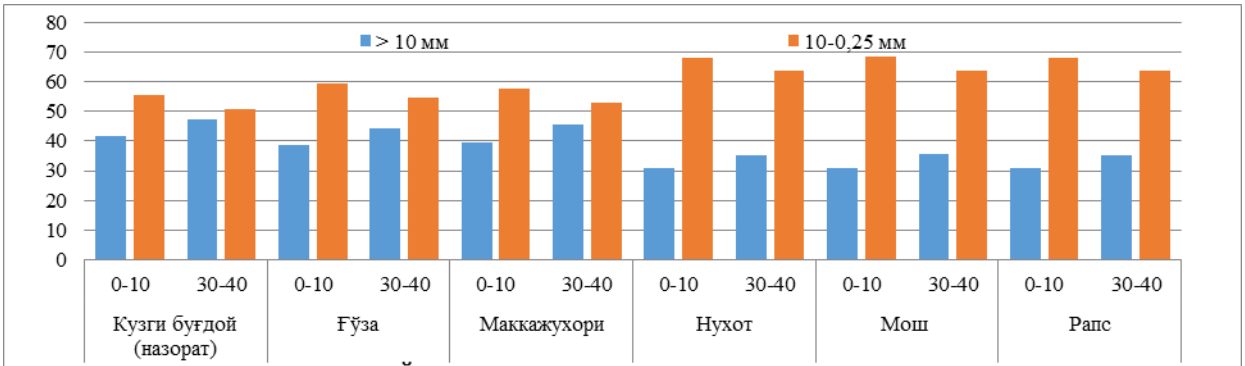
Agrochemical analyzes of the soil of the experimental field were carried out in the following ways. The amount of humus in the soil according to the method of I.V. Tyurin (GOST-26213), GOST-13496-10; gross nitrogen, phosphorus and potassium according to I.M. Maltsev, L.P. Gritsenko, the amount of nitrogen in the form of nitrate according to Grandval-Lyaju, the amount of nitrogen in the form of ammonium according to Nessler's reagent, mobile phosphorus according to B.P. Machigin and exchangeable potassium according to P.V. Protasov determined by the method.

Putting laboratory, field and production test experiments, taking soil samples, biometric measurement, phenological observation and various analyzes PSUEAITI, Methods of Plant Science ITI, "Methods of conducting field experiments", "Metody agrokhimicheskix, agrofizicheskix i mikrobiolicheskix issledovaniy v polivnyx khlopkovyx rayonakh" based on manuals. Mathematical statistical analysis of data obtained from field experiments was carried out by B.A. Dospekhov using Microsoft Excel.

At the end of the growing season, the height of the main stem was 88.1 cm, the number of branches was 12.4, the number of cobs was 9.2, the number of pods was 10.6, and the number of opened pods was 3.8. , average yield was 31.5 tons/ha. When corn was planted for silage, it was determined that the height of the plant before harvesting was 215.3 cm, the number of leaves was 14.5, and the yield was 337.0 t/ha. When peas were planted for grain, the average plant height was 68.7 cm, the number of pods per plant was 43.7, the number of grains per plant was 59.3, the mass of 1000 grains was 312.3 g, and the yield was 17.5 t/ha.

It was observed that the average height of mush when planted was 64.3 cm, the number of pods was 12.8, the number of grains in a pod was 12.0, the weight of 1000 grains was 42.3 g, and the yield was 15.3 tons/ha. It was determined that the average height of the previous crop of rapeseed was 70.5 cm, the number of branches was 10.2 pieces, and the yield was 270 tons/ha. In the conditions of irrigated typical gray soils of Kashkadarya region, it was determined that the amount of granular structural aggregates of the soil changed in a positive direction due to the placement of predecessor crops on the fields freed from winter wheat.

At the beginning of the vegetation period of previous crops, when samples were taken from the 0-10, 10-20, 20-30, 30-40, 40-50 cm layers of the soil, solid structural aggregates 61.3-60.1-56.8-58.4-56, was 2%, in the control option it was 55.4-53.8-49.6-50.6-49.1% in the sampled layers, 5.9-7.1% compared to the beginning of the growing season, cotton, corn it decreased from 2.1-3.5% to 3.7-5.6% at the end of the growing season when it was the predecessor, the optimal predecessor crops are peas 67.9-67.2-64.3-63.8-63.0% , mosh is 68.3-67.5-64.7-63.5-62.5%, and after rape is 68.1-67.3-64.6-63,762.9%, at the end of the growing season 5 ,3-7,9%, increased, compared to the control variant, it was observed that it increased by 1,2-15,1% at the end of the growing season under the influence of suitable previous crops.



1-расм Ўтмишдош экинлар таъсирида тупроқнинг структурали агрегатлари ҳолатини ўзгариши, %

According to the results of our research, the structural aggregates of the soil in the 0-10 cm layer are >10 mm and 10-0.25 mm aggregates in the control version are 41.8-55.9%, and in the 30-40 cm layer 47.2-50.6% reached, under the influence of acceptable previous crops (peas, mash, rapeseed), aggregates >10 mm in the 0-10 cm layer decrease to 11.1%, and increase to 15.1% in the 10-0.25 mm layer, 30-40 and in the cm layer it was determined to decrease by 11.7% and increase by 13.2% (Fig. 1).

Depending on the types of previous crops, the volume mass of the soil changed. When samples were taken from the 0-30 and 30-50 cm layers of the soil, the volume mass of the plowed layer of the soil was 1.33-1.34 g/cm3 before planting the predecessor crops, while after planting winter wheat, the volume mass changed depending on the type of predecessor crops, wheat, corn and it increased by 0.03-0.05 g/cm3 in the variants with cotton, while it was observed that the volume decreased by 0.01-0.04 g/cm3 compared to the initial amount of mass in the fields free from peas, mash and rapeseed (Fig. 2).

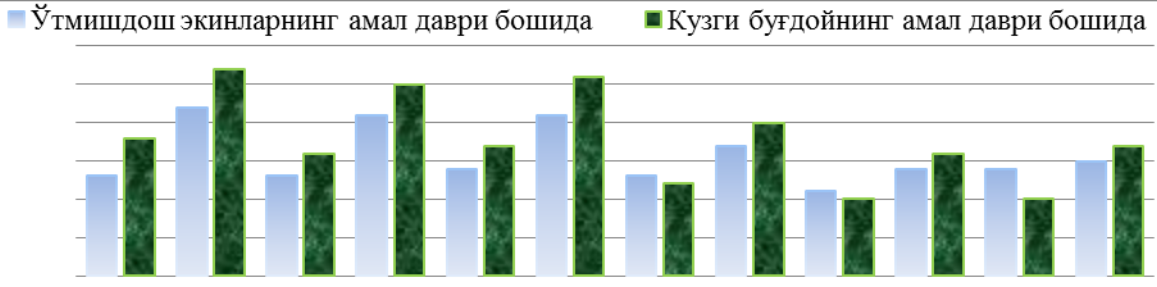


Figure 2. Effect of previous crops on soil volume mass, g/cm3

When studying the porosity of the soil in the 0-30 cm and 30-50 cm layers under the influence of previous crops, it was 50.2% in the 0-30 cm layer in the control option before planting the previous crops, and 48.7% after planting wheat, and the soil porosity was 1 It was observed that it decreased by 5% (Fig. 3).

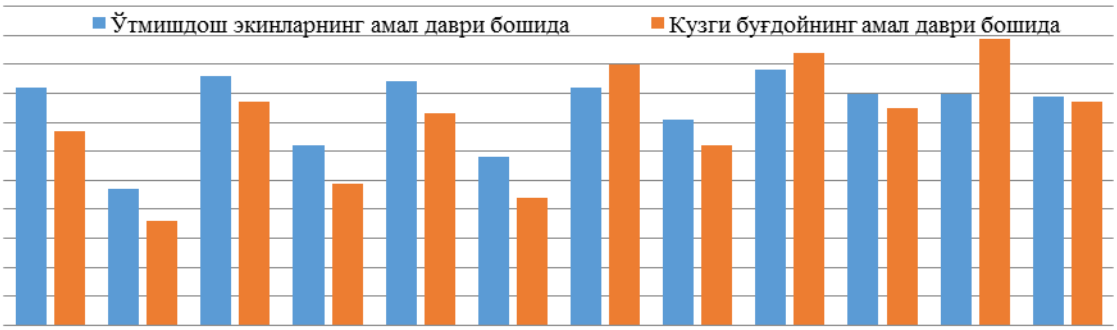


Figure 3. Changes in soil porosity under the influence of previous crops, %

In the experiment, it was found that in the 30-50 cm layer, in the control variant, it was 46.7% before planting predecessors, and after planting winter wheat it was 45.6%, that is, it decreased by 1.1%. 2-3 variants of the experiment, when cotton and corn were the predecessors, it was observed that before the predecessors, it decreased from 0.9-1.1% to 1.3-1.4% in the 0-30 and 30-50 cm layers. This situation increased by 0.8-0.6% in the 0-30 cm layer after the previous crop of peas and mash, and by 1.9% after rapeseed, and in the 30-50 cm layer by 0.9-0.5-0, It was found that it decreased by 2%. Under the influence of previous crops, depending on the amount of nutrients left by their roots and roots, the porosity of the soil has changed in a positive direction in options with leguminous grain and rape as predecessors. The water permeability of the soil directly depends on its mechanical structure, porosity and, most importantly, volume mass, terrain relief. In the researches, the initial indicators of predecessor crops at the beginning of vegetation were 533 m3/ha, and in the winter wheat (control) option, this indicator was 430 m3/ha during 6 hours at the end of vegetation, and it was found that 103 m3/ha less water was transferred. water permeability was slightly higher and was 624 m3/ha for 6 hours, compared to the control option by 91 m3/ha, while it was 533 m3/ha at the beginning of the growing season. When winter wheat was planted after cotton, 77 m3/ha less water was used towards the end of the growing season (Figure 4).

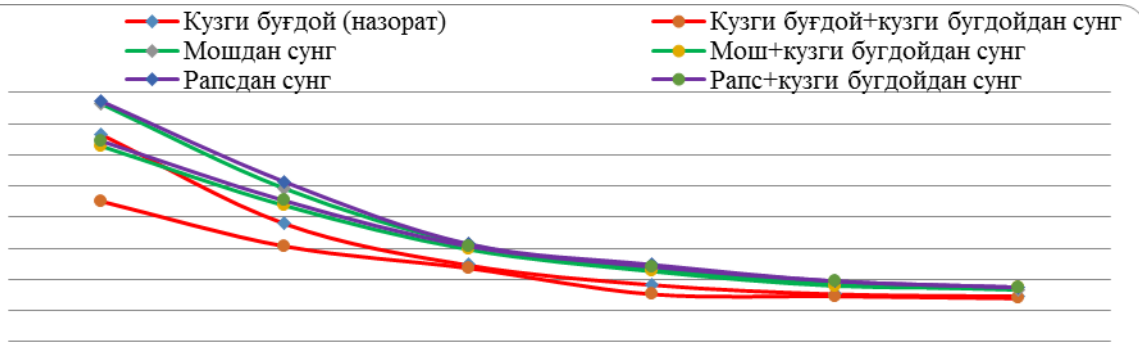


Figure 4. Effect of previous crops on soil water permeability, m3/ha

It was determined that the water permeability of the corn-planted variant was 617 m3/ha for 6 hours, compared to the control by 84 m3/ha.

Also, it was observed that this indicator changes in the positive direction in the variants of the experiment where peas and mash were planted, and it was found that 626-648 m3/ha of water was transferred for 6 hours, that is, 93-115 m3/ha more water was transferred compared to the control. Even in the variant where the previous crop of rapeseed was planted, the change in water permeability was significant, and it was determined that it transferred 664 m3/ha for 6 hours, that is, 131 m3/ha more water at the end of the growing season compared to the beginning of the growing season.

In the researches, it was observed that in the control variant planted with winter wheat, root and stem residues were 3.56 t/ha, 3.73 t/ha when the previous crop was cotton, 4.27 t/ha when corn was planted as the previous crop, and 2.55 t/ha when peas and mash were planted. 2.14 t/ha, and it was observed that the total amount in rapeseed was 5.14 t/ha on average (Fig.5).

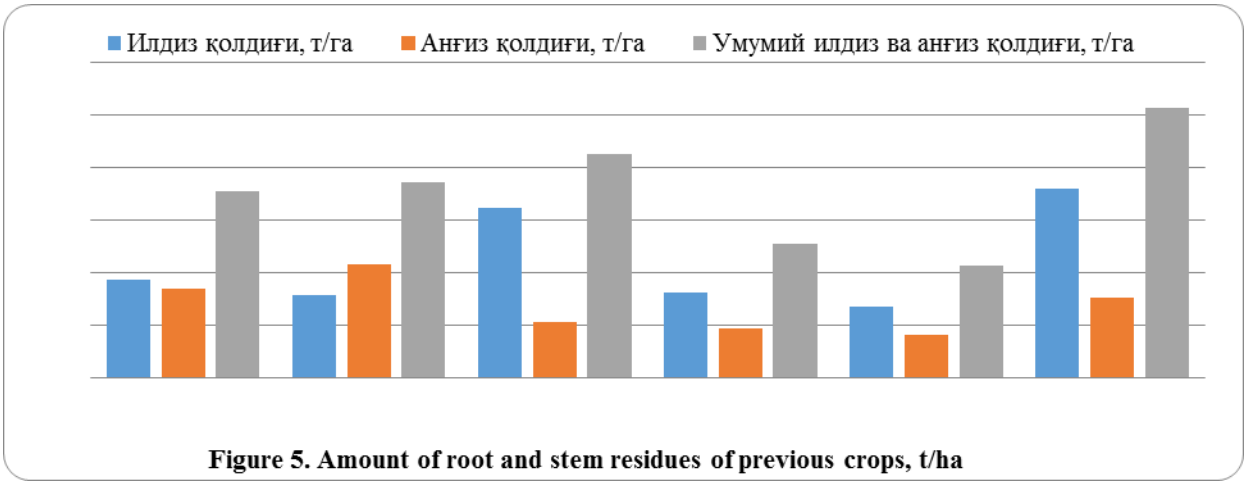


Figure 5. Amount of root and stem residues of previous crops, t/ha

In the researches, in the winter wheat (control) variant, root and stem residues were on average 3.56 t/ha, N-20.47 kg/ha, P-11.30 kg/ha, and K-30.05 kg/ha were observed. 3.73-4.27 t/ha of total roots and tubers on average when cotton and corn are planted from previous crops accumulated residues and nutrients N-36.89-23.11 kg/ha, P-15.62-12.40 kg/ha, K-47.37-15.61 kg/ha were returned to the soil. Preceding crop leguminous-cereal crops are peas, mung bean, N-24.03-29.48 kg/ha, P-11.71-15.18 kg/ha, K-16.27-28.47 kg/ha. it was observed that the elements were returned to the soil.

In the version of the experiment where rapeseed was planted, the root and stem residues left in the soil amounted to 5.14 t/ha, and returned nutrients N-30.72 kg/ha, P-17.26 kg/ha, and K-49.27 kg/ha detected (Fig. 6).

The data show that, regardless of crop type differences, the positive effect of previous crops on soil fertility was evident.

In the experiment, the number of bacteria belonging to the taxonomic groups of soil microorganisms, nitrogen fixers, nitrifiers and fungi belonging to the physiological groups, actinomycetes in the 0-30 and 30-50 cm layers of the soil was studied in the fields freed from winter wheat before the predecessors, the number of bacteria was 35.5-23.2 million/g, nitrogen fixers 23.5-17.3 million/g, nitrifiers 48.3-37.0 thousand/g, fungi 36.4-22.2 thousand/g, actinomycetes 29.3-17.6 million/g.

In the control option, the number of bacteria in the 0-30 and 30-50 cm layers is 41.4-26.2 million/g, nitrogen fixers 35.1-24.3 million/g, nitrifiers 46.6-34.1 thousand/g, fungi 38 ,9-25.1 thousand/g, while actinomycetes were 24.5-18.2 million/g. After the previous crops, cotton and corn, bacteria 53.3-50.3 million/g, nitrogen fixers 48.0-50.2 million/g, nitrifiers 65.6-64.8 thousand/g, fungi 50.8-50.0 thousand/g, actinomycetes were found to be 31.4-32.8 million/g.

In the 0-30 and 30-50 cm layers of the soil after the previous crop of legume-cereal crops, peas and mung beans, bacteria increased from 76.8-70.0 million/g to 54.7-48.4 million/g, nitrogen fixers 78.1-77, 8 million/g to 44.7-43.3 million/g, nitrifiers from 86.5-82.2 thousand/g, 62.8-60.7 thousand/g, fungi 68.1-66.3 thousand/g g from 54.6-52.1 thousand/g, actinomycetes from 58.7-54.4 million/g to 38.6-36.2 million/g, the number of microorganisms of both groups increased 2-3 times compared to the control observed. After previous crop rape, bacteria 72.5-5.2.2 million/g, nitrogen fixers 71.4-41.6 million/g, nitrifiers 78.6-56.4 thousand/g, fungi 66.0-44.2 thousand/g, actinomycetes were 52.9-33.6 million/g, compared to the control, the number of bacteria in the 0-30 and 30-50 cm layers was 31.1-26 million/g, nitrogen fixers 36.3-17.3 million/g, nitrifiers increased by 32-22.3 thousand/g, fungi by 27.1-19.1 thousand/g, actinomycetes by 28.4-15.4 million/g.

The effect of factors on the growth, development, ripening, yield and grain quality indicators of wheat sown in the fall according to the options were studied in detail. These works were carried out on the basis of phenological observations, biometric measurements, and analytical analyses. Based on the obtained results, it is possible to draw appropriate conclusions.

In our studies, when the formation of the root system under the influence of previous crops was studied, it was 185.64 g in the control variant, and 199.09-197.41 g after the previous crop cotton and corn, and 13.45-11.7 g higher root system was formed compared to the control. , leguminous-cereal and rape seeded options amounted to 210.53-216.88-216.30 g, compared to the control option, it was found that 24.89-31.24 -30.66 g more root system was formed.

During the conducted field experiments (2014-2017), the grain yield of winter wheat after previous crops in the control option was 49.7 t/ha on average, while the highest yield indicators were 60.0 after the previous crops were leguminous peas, mash and rapeseed. It was observed that it was 65.1 t/ha, and it was found that 10.3-15.4 t/ha additional grain yield was obtained compared to the control (Table 1).

In the experiment, in the control variant, the spike length is 8.6 cm, the number of spikes in one spike is 14.2, the number of grains in one spike is 36.8, the mass of one grain is 1.31 g, and the mass of 1000 grains is 35.6 g. was determined to be

Due to the influence of predecessors, compared to the control variant, the spike length is 0.6-1.2 cm, the number of spikes in one spike is 0.9-1.5, the number of grains in one spike is 02-04, the mass of grain in one spike is 0.04-0.14 g , it was observed that the mass of 1000 grains increased to 0.5-36 g.

Table 1.

Effect of previous crops on grain yield of winter wheat, ts/ha

№	Options	years			Average
		2015	2016	2017	
1	Winter wheat (control)	48,6	49,3	51,2	49,7
2	Cotton	56,1	55,2	54,6	55,3
3	Corn	53,6	51,7	54,0	53,1
4	Peas	58,7	59,8	61,5	60,0
5	Mosh	60,5	62,1	64,3	62,3
6	Rapeseed	60,2	63,7	71,4	65,1
	EKF 05=	2,85	3,0	3,12	
	S (%)=	2,35	2,47	2,48	

In the variant planted with control winter wheat, the nature of grain was 762 g/l on average, vitreousness was 54.6%, protein was 12.1%, gluten was 26.3%, and the overall breadness score was 3.2 points, while under the influence of previous crops it was 772-795 g. /l, vitreous 58.8-63.1%, protein content 13.9-14.2%, gluten 27.1-27.5%, overall bread quality score was 3.6-3.8 points. The highest indicator was observed under the influence of previous crops, compared to the control, the nature of the grain increased by 10-33 g/l, vitreous by 4.2-8.5%, protein content by 0.6-2.1%, gluten by 0.2-1.2%. it was determined that he went.

As a result of the positive impact on soil fertility of corn, peas, mash, and rape planted as repeated crops, their root and leguminous residues are buried in the ground, and all costs incurred for planting and growing the main crop winter wheat, i.e., agrotechnological measures such as preparation of the land for planting, germination of crops, maintenance of lawns, etc. timely and quality transfer, all costs from crop cultivation to harvesting were calculated, based on the obtained results, in the control option, an average of 49.7 ts/ha of grain was harvested in 3 years, the net profit was 283500 soums, the cost of 1 ts of grain was 492957 soums, profitability level was 11.5%. This indicator shows that after planting leguminous crops as a predecessor crop, the net profit is 486,500-592,500 soums higher, the cost of 1 ts of grain is 71,791-86,648 soums less, and the level of profitability has increased by 18.9-22.8% compared to the control option planted with wheat (2- table).

Similar indicators were noted that in the case of rapeseed, an average grain yield of 65.1 tons/ha was obtained, the net profit was 1,050,000 soums, the cost of 1 ton of grain was 396,313 soums, the profitability level was 38.7%, 27.2% higher than the control.

Table 2.

Economic efficiency of winter wheat cultivation

№	Experience options	Harvest grain	total expenses for 1 ts/ sums	soums Gross product	The cost of 1 tsp of grain, soum	Net profit from 1 hectare, soum	Rent note level, %
1	Winter wheat (control)	49,7	2450000	2733500	492957	283500	11,5
2	Cotton	55,3	2500000	3041500	452079	541500	21,6
3	Corn	53,1	2470000	2920500	465160	450500	18,2
4	Peas	60,0	2530000	3300000	421166	770000	30,4
5	Mosh	62,3	2550000	3426500	409309	876500	34,3
6	Rapeseed	65,1	2580000	3580500	396313	1050000	38,7

III. CONCLUSION

1. In the northeastern region of Kashkadarya region, the soil and climate conditions are fully suitable for the cultivation of the main crop, winter wheat, by planting repeated crops on the fields freed from winter wheat, and fully growing food, fodder and other products from them until late autumn.

2. In the experiment, when peas, mash, rapeseed, as well as cotton and corn were planted as predecessor crops, it was observed that they accumulated a sufficient amount of root and stem residues in the soil, and it was proven that their influence ensured a higher yield of winter wheat compared to the control option. It should be noted that "K-95" (nigretum) pea and "Regina" varieties of rape planted as predecessors were studied for the first time in the climatic conditions studied above, and it was shown that high results were achieved.

3. When repeatedly planted crops are used as a predecessor crop, they have a positive effect on soil fertility, the mass of its roots and roots increases, the amount of water-resistant aggregates, the volume mass decreases by 0.01-0.04 g/cm3 in the driving layer, the total porosity is 0.6- It caused an increase of 1.9%, a decrease of the specific mass by 0.01-0.02 g/cm3.

4. As a result of the improvement of the physical properties of the soil, it was recognized that its water permeability increased by 128-174 m3/ in the options planted with peas, mash and rape compared to the control option. This is of great importance in determining the rate and duration of irrigation in irrigated agriculture.

5. The effect of previous crops on soil fertility was clearly demonstrated in the experiment. It was noted that the total and mobile forms of NPK in the soil in the tillage and sub-tillage layers increased compared to the control option during the entire vegetation period. The best results were observed in options planted with leguminous grain and rapeseed.

6. Root and root residues left in the soil by previous crops are mineralized in microbiological processes, i.e., under the influence of ammonification and nitrification, and become mobile, ensuring an increase in the germination rate of seedlings by 1.1-1.9%, and having a significant positive effect on the further growth and development of the plant. was recognized.

7. When the influence of previous crops on the formation of the root system of winter wheat was studied in the experiment, it was found that the positive effect of leguminous grain and rapeseed crops on the formation of the root system of winter wheat was significantly different compared to the control option. It was observed that the mass of roots in the studied layer increased by 24.89-30.66 g under the influence of previous crops compared to the control option, and this situation ensured that it also increased positively under the influence of other previous crops.

8. In the experiment, when observing the influence of predecessor crops on the development of winter wheat, including the effect on plant height, tufting, the surface of the leaf surface, the total and number of productive stems, the height of the predecessors increased by 2.8-7.2 cm, compared to the control variant, after wintering 1 It was clearly shown that the number of plants per m2 was 1.6-20.6, the total number of stems was 9.2-61.3, and the number of productive stems was 7-65.

9. In the control version of the experiment, the yield was 49.7 t/ha, but under the influence of previous crops, it increased to 53.1-65.1 t/ha, and the additional yield was equal to 3.4-15.4 t/ha. The length of the spike is 0.6-1.2 cm, the number of spikes in one spike is 0.9-1.1, the number of grains in one spike is 0.2-0.9, the mass of grains in one spike is 0.04-0.14 g. , the mass of 1000 pieces of grain is 0.5-3.6 g, and the technological parameters of the grain are 3-33 g/l, vitreousness 4.2-8.5%, protein 0.6-2.1%, gluten 0.2 Indicators such as -1.2% were ensured to be higher than the control option.

10. Higher efficiency was achieved in the options planted with previous crops compared to the control option. In the control variant, net profit was 283,500 soums per hectare, the cost of 1 ts of grain equaled 492,957 soums, the profitability level reached 11.5%, and the net profit increased to 486,500-766,500 soums, and the cost of 1 ts of grain was 71,791 - 96644 soums decreased, and the level of profitability increased by 18.9-27.2%. This is the result of the positive effect of previous crops on soil fertility.

11. In order to maintain and increase the productivity of the areas freed from winter wheat in the conditions of the typical gray soils of the northeastern region of Kashkadarya region, the varieties of pea (nigretum) "K-95", mash "Radost", and rapeseed "Regina" were planted and cultivated as predecessor crops. it is recommended to harvest the crop by the second day of October, and to plant the researched wheat variety "Tanya" as the main crop in the freed areas in compliance with agro-technological measures and to strictly observe the technology of its cultivation.

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ВЛИЯНИЕ ПРЕДЫДУЩИХ ПОСЕВОВ НА ПЛОДОРОДИЕ ПОЧВЫ И УРОЖАЙНОСТЬ ОЗИМОЙ ПШЕНИЦЫ ПРИ КОРОТКОМ СЕВООБОРОТЕ

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Аннотация

В данной статье представлена информация, направленная на обеспечение продовольственной безопасности, которая актуальна сегодня в глобальном масштабе, обеспечение занятости населения за счет рабочих мест, созданных в агросекторах, а также информация, направленная на повышение доходов реального сектора и населения. На орошаемых землях Республики Узбекистан такие задачи, как отбор сортов пшеницы, подходящих для экологических условий, оптимизация технологий возделывания, были изучены в больших масштабах и были достигнуты положительные результаты. Согласно результатам исследования, под влиянием предыдущих посевов урожайность увеличилась до 53,1-65,1 т/ч, и было получено дополнительно 3,4-15,4 т/ч. Исходя из этого, широкое использование и внедрение зернобобовых культур и промежуточных культур при короткорядном посеве озимой пшеницы является одной из актуальных задач на сегодняшний день.

Ключевые слова: продовольственная безопасность, агросектор, доход, орошаемые земли, плодородие почвы, гумус, сидерация, севооборот, хлопок, пшеница, сусло, продуктивность, рентабельность.

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