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EFFECT OF CROP ROTATION ON BIOLOGICAL CHARACTERISTICS AND ECONOMIC INDICATORS OF WINTER WHEAT IN DIFFERENT AGROECOLOGICAL CONDITIONS

©Tamrazov T., *Ph.D., Research Institute of Crop Husbandry, Ministry of Agriculture of the Republic of Azerbaijan, Baku, Azerbaijan, ttamraz.tamrazov@gmail.com*
©Abdullaeva Z., *Ph.D., Research Institute of Crop Husbandry, Ministry of Agriculture of the Republic of Azerbaijan, Baku, Azerbaijan*
©Mammadova P., *Ph.D., Research Institute of Crop Husbandry, Ministry of Agriculture of the Republic of Azerbaijan, Baku, Azerbaijan*
©Bakhshaliyeva S., *Research Institute of Crop Husbandry, Ministry of Agriculture of the Republic of Azerbaijan, Baku, Azerbaijan*

ВЛИЯНИЕ СЕВООБОРОТА НА БИОЛОГИЧЕСКИЕ ХАРАКТЕРИСТИКИ И ЭКОНОМИЧЕСКИЕ ПОКАЗАТЕЛИ ОЗИМОЙ ПШЕНИЦЫ В РАЗНЫХ АГРОЭКОЛОГИЧЕСКИХ УСЛОВИЯХ

©Тамразов Т. Г., *канд. биол. наук, Научно-исследовательский институт земледелия МСХ Азербайджана, г. Баку, Азербайджан, ttamraz.tamrazov@gmail.com*
©Абдуллаева З. М., *канд. с.-х. наук, Научно-исследовательский институт земледелия МСХ Азербайджана, г. Баку, Азербайджан*
©Маммадова П. М., *канд. с.-х. наук, Научно-исследовательский институт земледелия МСХ Азербайджана, г. Баку, Азербайджан*
©Бахшалиева С. С., *Научно-исследовательский институт земледелия МСХ Азербайджана, г. Баку, Азербайджан*

Abstract. The article deals with observations on plants and agrotechnical measures in accordance with the recommendations on the cultivation of plants in short rotation alternating and continuous crops consisting of cereal and inter-row cultivated plants under irrigation conditions. It is known that realizing the potential productivity of wheat in favorable soil and climate conditions is possible by applying high-level agrotechnics in various agro-ecological conditions. The highest indicators of spike elements of the Gobustan variety of wheat, which is the main source of research, were obtained in the crop rotation variant. In Absheron YTT, the spike length is 9.1 cm, the number of spikes is 17.4, the number of seeds is 43, and the mass of the seed is 1.62 g. The mass of 1000 grains are 41.8 g. 9.9 cm according to the mentioned indicators in Tarter BTS; 19.9 units; 50 units; It was determined to be 1.83 g: 40.9 g, which is 0.6-0.9 cm in regions, respectively, compared to continuous cultivation; 2.3-2.8 pieces; 4-3 units; An increase of 0.11-0.16 g and 3.1-3.4 g was obtained. The number of beans per plant in Absheron AEF is 45.6, the number of seeds is 106.3, the mass of seeds is 12.5 g, and the mass of 1000 seeds is 118.4 g. In Tarter RES, one plant has 52.5 beans, 128 grains, the mass of a grain is 13.9 g, and the mass of 1000 g of grain is 110.3 g. These indicators 4.0-4.3 units according to regions compared to continuous cultivation; 9.0-12.3 units; 1.2-1.3 g and 7.4-3.2 g indicate an increase. Thus, the crop rotation in 2 different agroecological conditions after the soybean predecessor had a significant effect on the spike and economic indicators of the winter wheat crop. The highest indicators of spike elements of the winter

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wheat Gobustan variety were obtained in the crop rotation variant. According to the results of the research, the highest grain yield in the regions was obtained in the mentioned option. Thus, in this variant, the grain yield of winter wheat per hectare was 40.4 cwt in Absheron AEF and 48.4 cwt in Tartar RES.

Аннотация. В статье приведены наблюдения за растениями и агротехнические мероприятия в соответствии с рекомендациями по возделыванию растений в коротких севооборотах, чередующихся и сплошных посевах, состоящих из зерновых и междурядных культурных растений, в условиях орошения. Известно, что реализация потенциальной продуктивности пшеницы в благоприятных почвенно-климатических условиях возможна путем применения агротехники высокого уровня в различных агроэкологических условиях. Наиболее высокие показатели элементов колоса сорта пшеницы Гобустан, являющегося основным источником исследований, получены в варианте севооборота. У Апшерона АЕФ длина колоса 9,1 см, количество колосков 17,4, количество семян 43, масса семени 1,62 г. Масса 1000 зерен 41,8 г. 9,9 см по указанным показателям в Тартерском РЕС; 19,9 единиц; 50 единиц; Она определена как 1,83 г: 40,9 г, что в регионах соответственно составляет 0,6-0,9 см по сравнению с сплошным культивированием; 2,3–2,8 шт.; 4-3 единицы; Получена прибавка 0,11–0,16 г и 3,1–3,4 г. Таким образом, севооборот в 2-х различных агроэкологических условиях после предшественника сои оказал существенное влияние на всхожесть и экономические показатели урожая озимой пшеницы. Наиболее высокие показатели элементов колоса озимой пшеницы сорта Гобустан получены в варианте севооборота. По результатам исследований самая высокая урожайность зерна в регионах получена в указанном варианте. Так, в этом варианте урожайность зерна озимой пшеницы с гектара составила 40,4 ц в Апшеронском ВЕС и 48,4 ц в Татарском РОС.

Ключевые слова: растение, почва, плодородие, предшественник, севооборот, элементы колоса.

Keywords: plant, soil, fertility, soil, crop rotation, spike elements.

In recent years, in Azerbaijan, environmental, soil protection, cost-saving, as well as biological diversity problems have been identified as important priorities, and serious efforts are being made in the development of this field. A lot of work has been done in the direction of solving these problems, and mainly the protection of agricultural plant species, improvement of land, efficient use and protection of biological diversity are being implemented [7, 8]. Because biological diversity is one of the most important issues in ensuring sustainable development and food security [4]. The rapid development of the agricultural sector is related to the development of promising scientific fields, which requires the development of modern technologies for the production of agricultural products in scientific research institutions and their wide application in the agricultural field [5]. The basis of these technologies should be highquality product production, environmental safety and competitiveness. For this, the application of the correct crop rotation, as well as the selection of salaf plants, has a positive effect on the more efficient use of cultivated areas, the improvement of soil fertility and the productivity and quality of plants. In modern times, since farms consist of small areas, the application of crop rotations with fewer fields is more is efficient.

Currently, research scientists in the republic are developing a system of measures that positively affect soil fertility, its biological activity and the productivity of cultivated plants. Alternating agricultural crops according to their biological characteristics and soil fertility elements

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is to cultivate the soil in accordance with the agroecosystem. When alternating plants with different coke structure, the structural indicators of the crop and the corresponding yield also increase [3, 5].

In order to restore the soil fertility and the nitrogen reserve in it, alternate planting of siderates and leguminous plants that replace organic and mineral nitrogen placement in the fields lays the foundation of the crop elements, which are the main indicators of the productivity of grain crops.

The main goal of the presented research was to increase the productivity of cereals and legumes, which play an important role in providing nutrients to irrigated lands suitable for cultivation and increasing the production of food products, on scientific grounds, and to prepare recommendations for farmers operating in the republic.

Material and methods

By us in accordance with the purpose of the study in two different regions under irrigation conditions in 2018-2020 Absheron Auxiliary Experimental Farm (AEF) and Tartar Regional Experiment (RES)in soybean-winter wheat-maize crop rotation and continuous crops in the area research work has been carried out. The soils of the Absheron AEF area have low fertility and are poorly supplied with basic nutrients and atmospheric sediments. The soils of the teritory of Tartar RES are light chestnut with 2.0-25% humus, and have a medium granular structure due to their mesic content. Observations on plants and agrotechnical measures in short rotation alternating and continuous crops consisting of cereal and inter-row cultivated plants under irrigation conditions were carried out in accordance with the recommendations on the cultivation of plants [4]. 90 kg of nitrogen fertilizer was applied to wheat and barley plants in the budding phase, 150 kg to corn plants in the 3-5 leaf phase, 45 kg to soybean plants before branching, and 45 kg in the formation of beans.

Results and their discussion

It is known that realizing the potential productivity of wheat in favorable soil and climate conditions is possible by applying high-level agrotechnics in various agro-ecological conditions. Quantitative traits in cereals have been studied by many researchers.According to those authors, the quantitative indicators are related to the variety of cultivation conditions according to different agro-ecological conditions.This variety is observed in the height of the plant, the length of the spike, and the number of grains in the spike.The number of grains is Considered one of the main yield elements and varies greatly depending on the external environment and the applied cultivation [1, 2].

One of the most important indicators determining productivity is the mass of 1000 grains. Although this indicator has genetic determination, it mainly depends on soil and climate conditions. During the research, according to the methodology, the structural analysis of plants was carried out on plant samples taken from one square meter and the results are given in Table 1.

Table 1

SOME BIOLOGICAL CHARACTERISTICS AND ECONOMIC CHARACTERISTICS OF COMMON WHEAT DPENDING ON CROPPING SCHEMES AND REGIONS

İndicators	*Absheron AEF*		*Tartar RES*	
	Crop rotation	*Non-stop crop*	*Crop rotation*	*Non-stop crop*
Plant height, cm	98.1	90.3	106.2	99.4
Productive bushing, no	1.26	1.20	1.47	1.41
Spike length, cm	9.1	8.5	9.9	9.0
The number of spikes, number	17.4	15.1	19.9	17.1
The number of grains in the spike	43	39	50	47
Mass of grains in spike, g	1.62	1.51	1.83	1.67

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İndicators	*Absheron AEF*		*Tartar RES*	
	Crop rotation	*Non-stop crop*	*Crop rotation*	*Non-stop crop*
Mass of 1000 deniers, g	41.8	38.7	40.9	37.5
Productivity per hectare, s	40.4	35.7	48.1	43.7

Based on the data in the table, it can be noted that the highest indicators of spike elements of the plant we studied were obtained in the crop rotation option. In Absheron AEF, the length of the spike is 9.1 cm, the number of spikes is 17.4, the number of grains in the spike is 43, the mass of a grain is 1.62 g and the mass of 1000 grains is 41.8 g. 19.9 units; 50 units; 1.83 g; It was determined to be 40.9 g, which is 0.6-0.9 cm in regions, respectively, compared to continuous planting; 2.3-2.8 pieces; 4-3 units; 0.11-0.16 g; It means an increase of 3.1-3.4 g.

In accordance with the above mentioned, the highest grain yield in the regions was obtained in the crop rotation option. Thus, in this variant, the grain yield per hectare was 40.4 s in Absheron AEF and 48.1 s in Tartar RES. With winter wheat in crop rotation and continuous crops during the study besides, the yield indicators of soybean, which is a cereal-legume plant, differed in both regions. In Absheron AEF, the number of beans in this plant is 45.6 pieces, the number of grains is 106.3 pieces, the weight of beans is 12.5 g, the weight of 1000 grains is 118.4 g. 13.9 g and the weight of 1000 grains was found to be 110.3 g. This shows that 4.0-4.3 units, according to the zones, in the crop rotation variant compared to continuous cropping. 90-123 units. 1.2-1.3 g and 7.4-3.2 g were obtained (Table 2).

Table 2

YIELD INDICATORS OF SOYBEAN AND BUCKWHEAT
UNDER DIFFERENT AGROECOLOGICAL CONDITIONS

İndicators	*Absheron AEF*		*Tartar RES*	
	Crop rotation	*Non-stop crop*	*Crop rotation*	*Non-stop crop*
Soybean "Bryson" variety				
Number of pods per plant, number	45.6	41.6	52.5	48.2
The number of seeds in plant,number	106.3	97.3	128	115.7
The mass of the grain in the plant, g	12.5	11.3	13.9	12.6
The mass of 1000 grains is g	118.4	111.0	11.3	107.1
Corn "Zagatala 420" variety				
The number of branches in the plant, no	1.4	1.2	1.5	1.3
The length of the fence, cm	20.4	19.3	21.9	19.4
The diameter of the fence, cm	5.1	4.7	5.9	5.2
The grain that comes out of the mil, g	155.4	150.0	155.9	150.2
Mass of 1000 grains, g	250.4	256.5	293.8	287.3

Also, the structural elements of corn differed depending on the crops in both regions. In the samples taken from the valid field, the number of spikelets per plant, the length of the spikelet, the diameter, the fresh spikelet and the weight of the grain from one spikelet were higher in the crop rotation variant than in the continuous flow.

Result

Thus, crop rotation in 2 different agro-ecological conditions after the soybean predecessor had a significant effect on the spike and economic indicators of the winter wheat crop. The highest

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indicators of spike elements of the “Gobustan” variety of winter wheat were obtained in the crop rotation variant. According to the results of the research, the highest grain yield in the regions was obtained in the mentioned option. So, in this version, the grain yield of winter wheat is 40.4 s per hectare in Absheron AEF. In Tartar RES, it was 48.4s.

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