



## INFLUENCE OF PAST CROPS ON WINTER WHEAT YIELD

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| <b>Received:</b> 6 <sup>th</sup> March 2022<br><b>Accepted:</b> 6 <sup>th</sup> April 2022<br><b>Published:</b> 20 <sup>th</sup> May 2022 | In the saline soils of the Republic of Karakalpakstan, field experiments were conducted to determine the effect of past crops (mung bean, sesame, soybean), which were included in the system of short-term crop rotation (1: 2, cotton: grain: grain) and sown before winter wheat, on winter wheat yields.<br>In the experiment, it was found that the yield was 9-12 q / ha higher than all other methods when mung bean was sown for grain before winter wheat as a past crop, then as an interval crop (mung bean) and fertilized with an additional 20 t / ha and then winter wheat was sown. |
| <b>Keywords:</b> Saline Soils, Past And Interval Crops, Winter Wheat, Yield, Crop Rotation, Winter Wheat Monoculture.                     |   |

**INTRODUCTION.** At present, the effective use of irrigated lands in Uzbekistan, the improvement of land reclamation, the creation of salt-tolerant crops are of particular importance. This, in turn, is an urgent issue to conduct scientific research on increasing soil fertility, producing high yields of agricultural crops.

In the Republic of Karakalpakstan, high yields of agricultural crops are achieved mainly through the use of mineral fertilizers. As a result of the drying up of the Aral Sea, the salinization of the region's soils and the increase in the mineralization of groundwater have a negative impact on crop yields and soil fertility.

Today's demand is the development of new agro-technologies for high yields of agricultural crops, modernization, increasing production, the development of methods for the use of legumes in short-term crop rotation systems that increase soil fertility.

Resolution of the President of the Republic of Uzbekistan No. PP-106 of January 28, 2022 "On additional measures for further development of agricultural seed production" provides for measures to increase soil fertility in cotton fields and fertilize cotton with mineral fertilizers, and it is stated to apply 15-20 tons of organic fertilizers or 20-30 tons of compost and legumes, siderate crops on each hectare of the field.

**METHODOLOGY OF THE EXPERIMENT.** The following options were studied in the experiment: option 1, winter wheat (control), option 2, 1:2, cotton: mung bean for grain + winter wheat: winter wheat, option 3, 1:2, cotton: sesame for grain + winter wheat : winter wheat, option 4, 1:2, cotton: soybean for grain + winter wheat: winter wheat, option 5, 1:2, cotton: mung bean for grain + 10 t / ha manure + winter wheat: winter wheat, option 6, 1:2, cotton: sesame for grain + 10 t / ha manure + winter wheat: winter wheat, option 7, 1:2, cotton: soybean for grain + 10 t / ha manure + winter wheat: winter wheat , option 8, 1:2, cotton: mung bean for grain + 20 t / ha manure + winter wheat: winter wheat, option 9, 1: 2, cotton: mung bean for grain + interval crop mung bean + 20 t / ha manure + winter wheat: winter wheat.

After past crops, in 2020, winter wheat was sown on all options. In the third year of the control option, when winter wheat was sown, the yield was 41.0 q / ha, and the yield decreased by another 1.5 q / ha. When the same crop is replanted in the same field for several years, a decrease in yield is natural.

When past crops mung bean, sesame, and soybean were sown for grain, and then when winter wheat was sown, the winter wheat grain yield was 43.5–44.5 q / ha, which provided an additional 2.5–3.5 q / ha compared to the control option.

When past crops were sown before winter wheat for grain (opt. 5-7) and an additional 10 t / ha of manure was applied to it, the yield was 46.7-47.2 q / ha, which is 5.7-6.2 q / ha more than the control variant. Due to the additional 10 t / ha of manure added to the past crops, an additional yield of 3.2-2.7 q was achieved.

When as a past crop, mung bean was sown for grain, fertilized with an additional 20 t / ha manure, and then winter wheat was sown (opt. 8) yielded 51.5 q / ha, which is 10.5 q / ha more than the control variant. Either after applying 10 t / ha of manure with past crops, winter wheat yielded 4.8-4.3 q / ha more than 5-7 options, or an additional 7.5 t / ha was obtained due to 20 t / ha of manure applied together with past crops.

Yield was 54.0 q / ha when winter wheat was planted after sowing of mung bean as a past crop + mung bean for siderate + 20 t / ha of manure (var. 9), which provided an additional yield of 13.0 q / ha compared to the control option. As can be seen from the table data, it can be noted that this method is more effective than all the options.

The positive effects of crop rotation, the use of past crops and the use of organic fertilizers on winter wheat yields were maintained in the second year (2021). In all crop rotation options, yields were higher than in the control option.

When winter wheat was sown for two years after the past crops, the average yield per variant was 42.2-52.5 q / ha. In the control variant of continuous sowing of winter wheat, the average yield was 39.7 q / ha.

In variants 2-4 where past crops sown for grain it was 42.2-43.2 q / ha, past crops sown for grain and fertilized with an additional 10 t / ha manure in variants 5-7 - 45.3-45.7 q / ha, when mung bean was sown for grain as past crop and additional 20 t / ha of manure and then winter wheat - (opt. 8) 49.5 q / ha and when mung bean for grain as a past crop + mung bean for siderate + 20 t / ha of manure in option 9 it was 52,5 q / ha.

**CONCLUSIONS.** In the meadow-alluvial saline soils of the Republic of Karakalpakstan, crop rotation is applied to increase soil fertility and winter wheat yield, with a 1:2 system, cotton: grain: grain, cotton is sown in the first year, winter wheat in the next two years. In the second year, in the spring, before winter wheat, mung bean is sown as a past crop for grain, with an additional 20 t / ha of manure, or mung bean for grain + interval crop (mung bean) + 20 t / ha of manure. When planted in this way, the positive effects of past crops and organic fertilizers are maintained for two years.

**Winter wheat yield, q.ha**

| Options | in 2020 | in 2021 | Average | Difference,<br>± |
|---------|---------|---------|---------|------------------|
| 1       | 41,0    | 38,5    | 39,7    | 00               |
| 2       | 43,5    | 41,0    | 42,2    | 2,5              |
| 3       | 44,5    | 42,0    | 43,2    | 3,5              |
| 4       | 44,1    | 41,6    | 42,8    | 3,1              |
| 5       | 46,7    | 44,0    | 45,3    | 5,6              |
| 6       | 47,1    | 44,4    | 45,7    | 6,0              |
| 7       | 47,2    | 43,8    | 45,5    | 5,8              |
| 8       | 51,5    | 47,5    | 49,5    | 9,8              |
| 9       | 54,0    | 51,0    | 52,5    | 12,8             |

HCP 05 2,42 q/ha; 2,23 q/ha

HCP05% 2,1%; 2,3%

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