

Economic Efficiency of the Norms of Rice, Domestic and Ore Fertilizers Used in the Production of Autumn Wheat

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Abstract: This article describes the results of research on the economic effectiveness of rice straw, local and mineral fertilizer standards used in winter wheat care. According to it, it was determined that 73.4% yield can be achieved by feeding winter wheat with rice straw at the rate of 20 t/ha of manure and mineral fertilizers at the rate of $N_{100}P_{75}K_{50}$ kg/ha.

Key words: winter wheat, rice straw, local fertilizer, mineral fertilizers, grain, productivity, gross income, profitability.

Introduction.

Every year, a number of decrees and decisions are signed in order to ensure the stability of the price of wheat in the domestic market, to collect the grain crop without destroying it. According to the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 255 dated June 24, 2023, a decision was made to accept 1 million 283 thousand tons of commercial wheat as a state resource. Pursuant to this decision, wheat growers may, at their discretion, transfer commodity wheat grown in excess of the designated dislocation. In this regard, it is important to increase the yield of winter wheat grains, reduce production costs, and get a higher income per hectare.

The efficiency of agricultural production depends first of all on the efficiency of the use of land and then production resources. The economic efficiency of land use is characterized by the results of comparing the gross income obtained from it or the volume of production to the area, as well as the means of production. The economic efficiency of land use in agriculture is described in value and product indicators. The main value indicators are gross income, net profit, profitability [1].

Therefore, it is necessary to use resource-saving agrotechnical measures and at the same time achieve high economic efficiency in growing a higher yield of agricultural crops, especially winter wheat. Based on this, it is one of the important tasks to determine the highly profitable directions of agrotechnical measures used along with the development of agromeasures for obtaining a high yield of winter wheat in rice fields cultivated as the main crop.

Research Methods.

The research was conducted in the conditions of meadow saz soils planted with winter wheat in the season of 2020-2023, and the effects of rice straw, local and mineral fertilizers on wheat germination, number of stalks, grain yield and quality indicators "Methods of conducting field experiments" [2] methodological manual was used to determine the effect of the norms.

In the researches, the rates of mineral fertilizers $N_{100}P_{75}K_{50}$ kg/ha and $N_{150}P_{105}K_{75}$ kg/ha were used in the backgrounds where rice straw at the rate of 6 t/ha was separately and additionally manure at the rate of 10 and 20 t/ha. The impact on the economic efficiency of winter wheat care was studied. As a control, the recommended norms of $N_{200}P_{140}K_{100}$ kg/ha were taken in winter wheat without fertilizer and under production conditions, and the studied variants were compared to the control

Research Results.

2022 data were used to determine the economic efficiency of 6 tons of rice straw, local and mineral fertilizer rates used in the cultivation of winter wheat after rice planted as the main crop under the conditions of grassland saz soils [3, 4]. Because, every year in the production of seeds, mineral fertilizers, fuel and

lubricants, the costs of technical service, payment of labor and the purchase prices of cultivated grain changed, this was the reason, and the received economic analysis data are presented in Table 1.

The costs of the options were calculated based on the average amounts of grain yield obtained in the 2020-2023 season. In the experiment, option 1 was the control and no fertilizer was applied. In this option, the average grain yield is 25.3 s/ha, the income from the sale of cultivated grain is 6832467.8 soums/ha, production costs are 6905426.1 soums/ha, and the profitability level is -1.1%, under the influence of the norm of mineral fertilizers $N_{200}R_{140}K_{100}$ kg/ha, which is widely used in production conditions, a grain yield of 59.3 s/ha was obtained. In this option 2, the indicators are respectively, sales revenue is 16005691.6 soums/ha, production costs are 10801037.3 soums/ha, net income is 5204654.3 soums/ha and profitability is 48.2% was found to be equal to

Options 3 and 4 of the experiment based on the purpose of the research, taking into account the chaff that remains in the main cultivated rice fields, the rate of 6 tons is set, and the expenses for it are not included in the calculation. In these options, only the applied mineral fertilizers and agrotechnical costs, like all options, were calculated. According to him, in the 3rd option, when 6 tons of rice straw were used as siderate, and mineral fertilizers were reduced by 50%, $N_{100}P_{75}K_{50}$ kg/ha, the average grain yield was 45.4 s/ha. Sales revenue was 12267351.4 soums/ha, production costs were 9151331.2 soums/ha, net income was 3116020.2 soums/ha and profitability was 34.0%. In the 4th option, the grain yield is 3.1 s/h higher, the income from sales is 827,947.2 soums higher, however, the use of mineral fertilizers $N_{150}P_{105}K_{75}$ kg/ha, mineral fertilizer Production costs also increased by 836,582.7 soums due to high purchase prices of dogs. It was found that the level of profitability decreased by 2.9% compared to the 3rd option.

In variants 5 and 6 of the experiment, additional 10 t/ha of manure was applied to rice straw, and in this background, higher indicators were recorded compared to the application of only rice straw. The importance of the use of manure, as noted above, has been confirmed once again. According to him, in the 5th option, in which the rate of mineral fertilizers $N_{100}P_{75}K_{50}$ kg/ha was applied, the average grain yield was 56.9 s/ha, compared to the 6th option, it was 3 It was observed that grain yield was less by 3 s/ha. Also, it was found that the income from sales was 895,807.7 soums per hectare, the production costs were 836,582.7 soums, and the net income was 59,225.0 soums less. It was found that the level of profitability was higher by 4.1%. In this case, the income from sales, the net profit is explained by the high grain yield, and the level of profitability is taken into account by the difference in the rate of fertilizers.

The economic data analysis of the application of manure at the rate of 10 t/ha to rice straw in order to increase the efficiency of the use of mineral fertilizers in the experiments was given above. In the experiment, the difference between the control and the non-fertilizer option was clearly observed, and when compared to the option in which mineral fertilizers were applied at the rate of $N_{200}R_{140}K_{100}$ kg/ha in production conditions, $N_{100}R_{75}K_{50}$ + 6 t of rice straw + 10 t /ha, in option 5, the sales revenue is 648996.7 soums/ha, the production costs are 1111846.9 soums/ha less, but the net income is 462850.2 soums/ha and the level of profitability and it was found to be 10.3% higher. Against this background, the grain grown due to the application of mineral fertilizers at the rate of $N_{150}R_{105}K_{75}$ kg/ha in the 6th option is equal to 60.2 s/ha, the income from sales is 246811.0 soums/ha, net profit 522075.2 soums/ha and the level of profitability was found to be higher by 6.2%. So, by applying 6 t of rice straw and 10 t/ha of manure per hectare, it is possible to reduce mineral fertilizers to the norm of $N_{100}R_{75}K_{50}$ kg/ha and achieve a higher yield by 10.3%.

In the next background of the experiment, an additional 20 t/ha fertilizer rate was determined for rice straw, and in this background, mineral fertilizers $N_{100}R_{75}K_{50}$ kg/ha and $N_{150}R_{105}K_{75}$ kg/ha were used.

According to the received information, the same legality was observed in this background as in the previous options. In the 7th option, where the rate of mineral fertilizers $N_{100}R_{75}K_{50}$ kg/ha is used, the grain yield of winter wheat is 63.8 s/ha, the income from sales is 17222841.6 soums, production costs are 9929701, 5 soums, net income and profitability recorded the highest indicator. According to him, the net income was 7293140.1 soums, the profitability was 73.4%. The same 6 t of rice straw + 20 t/ha of manure mineral fertilizers rate of $N_{150}R_{105}K_{75}$ kg/ha was used in the 8th option, the grain yield of winter wheat was 65.2 s/ha , compared to option 7, it was found to be higher by 1.4 s/ha. Data are presented in Table 1.

Table 1

Economic effectiveness of rice straw, local and mineral fertilizer rates used in winter wheat cultivation

No	Experience options	Rate of mineral fertilizers, kg/ha	average grain yield in 3 years, s/ha	Revenue from sales, soum/ha	Production costs, thousand soums	Net income, soums	Rate of return, %
1	Control	without fertilizer	25,3	6832467,8	6905426,1	-72958,3	-
2		N ₂₀₀ P ₁₄₀ K ₁₀₀	59,3	16005691,6	10801037,3	5204654,3	48,2
3	6 t of rice straw	N ₁₀₀ P ₇₅ K ₅₀	45,4	12267351,4	9151331,2	3116020,2	34,0
4		N ₁₅₀ P ₁₀₅ K ₇₅	48,5	13095298,6	9987913,9	3107384,7	31,1
5	10 tons of manure + 6 tons of rice straw	N ₁₀₀ P ₇₅ K ₅₀	56,9	15356694,9	9689190,4	5667504,5	58,5
6		N ₁₅₀ P ₁₀₅ K ₇₅	60,2	16252502,6	10525773,1	5726729,5	54,4
7	20 tons of manure + 6 tons of rice straw	N ₁₀₀ P ₇₅ K ₅₀	63,8	17222841,6	9929701,5	7293140,1	73,4
8		N ₁₅₀ P ₁₀₅ K ₇₅	65,2	17604882,2	10756284,2	6848597,9	63,7

Also, in the 8th option, the income from the sale of grain was 17604882.2 soums, the production costs were 10756284.2 soums, the net income was 6848597.9 soums, and the profitability level was 63.7%. The results recorded in this option are 1643943.6 net income per hectare compared to option 2 where the widely used and recommended rate of mineral fertilizers N₂₀₀P₁₄₀K₁₀₀ kg/ha was applied without any manure or rice straw. per soum, profitability was found to be 15.5% higher. However, in the case where 6 t of rice straw + 20 t/ha of manure was used, compared to the option where the minimum norm of mineral fertilizers was N₁₀₀R₇₅K₅₀ kg/ha, the net income was 444542.2 soums, the profitability was 9 It was found to be less than .7%.

In general, it is recommended to apply an additional 20 t/ha of manure using rice straw as a siderate fertilizer after the main crop of rice planted in winter wheat under conditions of grassland saz soils N₂₀₀R₁₄₀K₁₀₀ kg/ compared to the norm of mineral fertilizers used, mineral fertilizers are used in the norms of N₁₀₀R₇₅K₅₀ and N₁₅₀R₁₀₅K₇₅ kg/ha, while increasing the efficiency of mineral fertilizers, the highest net income is 7293140, 1; 6848597.9 soums/ha and profitability 73.4; 63.7% was achieved.

Conclusion

In conclusion, it can be said that the use of 6 t/ha of rice straw together with 20 t/ha of manure and mineral fertilizers at the rate of N₁₅₀R₁₀₅K₇₅ kg application at the rate of ha provided the highest grain yield of 65.2 s/ha among the studied options, against this background, the application of mineral fertilizers at the rate of N₁₀₀R₇₅K₅₀ kg/ha was the highest A yield of 73.4% was achieved and was found to be cost-effective.

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