



# **ECONOMIC EFFICIENCY OF HIGHLY CONCENTRATED PHOSPHORUS AND COMPOUND FERTILIZERS FOR FINE-FIBER COTTON**

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## **ABSTRACT**

*The result of calculation economical efficiency different highly-concentrated phosphoric and complex fertilizers actualization experiment shows that the cost fertilization of seedbed 150 kg/g, P<sub>2</sub>O<sub>5</sub> dependently amount was 15,53 till 33,66 roubles. Clear income taken from fertilization consists of 75,27 up to 174,27 roubles. The largest clear income was taken on the variation where the polyphosphot ammonium, diamphos, ammophos and ammonized superphosphate were fertile ted. The spin off usage these fertilizers was accounted as 1 g amount from 67,73 up to 99,00 roubles. Cost effectiveness phosphoric complex fertilizers consist of 41,3 up to 54,7%. Here at the highest cost effectiveness was taken from fertilization, polyphosphot ammonium 54,7% and minimum 41,3 simple and 41,7% double superphosphate.*

**KEYWORDS.** *Highly concentrated, complex, polyphosphate, ammonium, simple, double.*

## **INTRODUCTION**

In the leading cotton-growing countries, there is a continuous search for effective ways, methods and methods of using cotton fertilizers, new integrated systems are being developed for the accumulation and preservation of early fruit elements in order to obtain an early and higher yield with good fiber quality that meets the requirements of world standards. For the scientific substantiation of the placement of plants in natural - climatic zones and regions, it is necessary to know the natural - climatic conditions and the degree of their favorableness for the cultivation of cotton crops. Climatic and weather conditions largely determine the yield of agricultural crops, the quality of products, the costs of its production, the peculiarities of agrotechnical and technical measures, and territorial specialization. By many natural and climatic factors,

the southern part of the Surkhandarya region of the Republic of Uzbekistan surpasses the US cotton belt and the cotton zone of North Africa, where fine-fiber cotton is cultivated.

The climate of the Surkhandarya region is sharply continental, which is expressed in large fluctuations in annual, seasonal and especially daily temperatures, as well as great dryness with a sharp contrast in the moisture of the seasons. The main part of the annual amount of precipitation is confined to the non-growing period during which about 52% of the annual amount falls, in March April 37%, summer and autumn are characterized by their complete absence, very low air humidity and high evaporation.

The sum of effective temperatures is + 2704-3056°C, positive for the growing season of fine-fiber cotton -5700-5920°C (Babushkin, 1968) [1] The



duration of the frost-free period is 266-272 days. Precipitation will be 127-160 mm, the air is extremely dry. Average annual relative air humidity is 8-12%. Despite the sharp continentality, the weather conditions of the Surkhandarya region can be considered favorable for the cultivation of fine-fiber cotton.

It should be noted that the fine-fiber varieties of cotton are drought and heat-resistant than the medium-fiber varieties.

Fine-staple cotton has a large fineness, longer strength than medium-staple varieties. Therefore, the yarn made from it turns out to be 1.5-2.0 times more durable, since due to the large fineness and strength of the fibers in the cross section of the thread (yarn), they fit more than in medium-fiber varieties of cotton with the same cross section. Thanks to these properties, more meters of more valuable fabrics are produced from the fiber of fine-staple cotton. So from the fiber of medium-fiber varieties with the fiber type, about 860 m<sup>2</sup> of calico is produced, while the fiber of fine-fiber varieties with type 1 fiber can be obtained over 1500 m<sup>2</sup> of cambric - cremon, which cannot be made from the fiber of medium-fiber varieties of cotton. [2] Thus, almost 2 times more fabrics are made from the fiber of fine-fiber varieties of cotton, and each meter of these fabrics is considered much more expensive than calico.

Due to these reasons, cotton - medium-staple varieties of cotton, depending on the type of drag, is paid by the state above the raw of medium-staple varieties by 1.2 - 2.0 and even 3 times [3]

In this regard, the President of the Republic of Uzbekistan and the government pay special attention to increasing the production of fine-staple cotton, which has especially valuable technological and economic properties.

This is evidenced by the presidential decree No. PF -5742 of July 17, 2019 and the decree of the Cabinet of Ministers of the Republic of Uzbekistan. [4] It should be noted that on soils where fine-staple cotton is cultivated for natural soil fertility, the yield of cotton 12 - 15 and grain 15 - 16 c / ha.

The use of nitrogen, phosphorus and potash fertilizers increases the fertility of irrigated soil makes it possible to obtain 35 - 40 and more centners / ha of raw cotton and 55 - 60 centners / hectare of grain. An increase in the productivity of cotton crops depends not only on the creation of an optimal nutritional regime on irrigated lands, but also on the temperature and humidity of the air, as well as the norm and ratio of NPK — nutrition, the density of plants and their varietal characteristics.

All of these factors are interrelated, therefore, when creating conditions for obtaining high cotton yields, it is necessary to maintain their optimal ratio. It should be noted that the growth of the economic efficiency of the production of cotton and other agricultural crops largely depends primarily on the rational and expedient use of mineral fertilizers.

At present, the possibilities of irrigated lands are far from being fully utilized. The level of farming is lagging behind modern requirements. The average yield of cotton and grain crops does not correspond to the possibilities of irrigated agriculture. And yet, in the south of the Surkhandarya region, there are large reserves for increasing the productivity of irrigated lands. Scientific data and production experience show that with the correct use of irrigated land and natural conditions, it is possible to get 35 - 40 centner / ha of raw cotton annually 60-70 c / ha of grain, 70-80 c / ha of grain crops.

Purpose of the study. The economic efficiency of fertilizers largely depends on the level of farming culture and the concentration of nutrients in the applied fertilizers. With the modern level of agricultural technology, the rational use of fertilizers and the timely, high-quality implementation of all agricultural practices contribute to an increase in efficiency.

The use of highly concentrated phosphorus and compound fertilizers eliminates the need for separate application of several types of fertilizers. In this regard, the economic efficiency of concentrated forms of phosphorus and complex fertilizers has an indisputable advantage over simple fertilizers, since it contains 2 - 4 times more nutrients. Thanks to this, labor costs for delivery, storage and their use are reduced, which is of great importance in conditions of labor-intensive agricultural processes. When preparing and applying complex fertilizers to the soil, 0.3 person per day is saved per 1 hectare of land area compared to the labor costs for applying an equivalent amount of single fertilizers. According to A.V. Peterburgsky and A.V. Postnikov, the use of various brands of nitrophosphate under the conditions of podzolic soils for potatoes and sugar beets, with the same increase in yield with an equivalent mixture of simple fertilizers, provided additional profit by 38.5 and 20.6 rubles, respectively. [6]

The calculations of the authors have established that in the state farm, where experiments were carried out with the use of nitrophoska on the entire area of potato planting (400 hectares), 15,816 rubles were saved.



## **MATERIAL AND RESEARCH METHODS**

The calculation of the economic efficiency of the use of various highly concentrated phosphorus and complex fertilizers for fine-fiber cotton was carried out by us according to the methodological instructions of the VIUA (N.N. Baranov and N.N. Mikhailov) and according to the standards of the Union of Scientific Research Institute of Agriculture, approved by the Ministry of Agriculture of the Uz SSR for 1970, the price list for chemical products of 1972 and recommendations to research institutes. [7]

To determine the cost of fertilizers, we calculated all the costs associated with their purchase and their use. These include the wholesale price of fertilizers, transportation costs, handling, storage, preparation prior to application to the soil. This also included the cost of the costs of harvesting, transportation, refinement and sale of additional harvest obtained from the use of fertilizers. In addition to direct costs, general and general production costs were also taken into account.

Research results and their discussion. The results of calculating the economic efficiency of various highly concentrated phosphorus and complex fertilizers in the experiment are presented in table 1, the data in table 1 shows that the cost of applying 150 kg of P<sub>2</sub>O<sub>5</sub> per hectare, depending on the forms of fertilizers applied, amounted to 15.53 to 33.66 rubles, net income was obtained from the use of fertilizers ranging from 75.27 to 174.27 rubles. The largest net income was obtained on the variants where ammonium polyphosphate, diamphos, ammophos and ammonized superphosphate were introduced. Additional profit from the use of these fertilizers per hectare ranged from 67.73 to 99.00 rubles, compared with the use of simple superphosphate.

The profitability of phosphate and compound fertilizers was 41.3 - 54.7 percent. At the same time, high profitability was obtained from the introduction of ammonium polyphosphate - 54.7% and the least from simple superphosphate - 41.3% and double superphosphate - 41.7%.



**Table 1**  
**Economic efficiency of using various highly concentrated phosphorus and complex fertilizers for fine-fiber cotton**

No	Experience options	Raw Cotton Yield 3-Year Average	Average yield increase from P2O5, c / ha	The cost of the increase in yield, rub / ha	The cost of phosphate fertilizers, including costs of transportation, storage, preparation and application to the soil	Expenses for harvesting and implementation of an increase in yield, rubles / ha	Total costs associated with the use of fertilizers, rubles / ha	Net income from applying P2O5, rub	Additional profit from the use of complex highly concentrated phosphorus fertilizers in comparison with simple superphosphate, rub / ha	Profitability%
1	Nitrogen potassium background	34,8	-	-	-	-	-	-	-	-
2	Background superphosphate simple	38,3	3,5	269,5	28,53	165,7	194,23	75,27	-	43,9
3	Background double superphosphate	38,9	4,1	315,7	28,69	194,1	222,79	92,91	17,64	41,7
4	Background ammoniated superphosphate	40,6	5,8	446,6	29	274,6	303,6	143	67,73	47,1
5	Background ammophos	41	6,2	477,4	33,66	293,6	327,26	150,14	74,87	48,8
6	Background ammonium polyphosphate	41,2	6,4	492,8	15,33	303	318,53	174,27	99	54,7
7	Background diamphos	41,6	6,8	523,6	30,81	322	352,81	170,79	95,52	48,4



## CONCLUSIONS

1. The economic efficiency of fertilizers largely depends on the level of farming culture and the concentration of nutrients in the fertilizers used.
2. The use of highly concentrated phosphorus and compound fertilizers eliminates the need for separate application of several types of fertilizers.
3. The economic efficiency of concentrated forms of phosphorus and complex fertilizers has an indisputable advantage over simple fertilizers, since they contain 2 - 4 times more nutrients.
4. When preparing and applying highly concentrated complex fertilizers to the soil, 0.3 person per day is saved per 1 hectare of area compared to the labor costs for applying an equivalent amount of single fertilizers.
5. Additional profits from the use of ammophos, diamphos and ammonium polyphosphate from 74.87 to 90.0 rubles in comparison with the use of simple superphosphate.
6. The profitability of phosphate and compound fertilizers was 41.3 - 54.7 percent. At the same time, high profitability was obtained from the introduction of ammonium polyphosphate - 54.7% and the least from simple superphosphate - 41.3% and double superphosphate - 41.7%.

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