

Economic Efficiency of Production of Low-Density Porey Onion Variety Samples

Mirzayev Sherali Fayzullayevich¹, Khurramov Ulugbek Kholmamatovich^{2*}

1. Tashkent State Agrarian University, Independent researcher (PhD) of the department of "Genetics, selection and seed production of agricultural crops".
2. Tashkent State Agrarian University, Professor of the department of "Organization of vegetable growing and greenhouse farming", Doctor of Agricultural Sciences.

*Correspondence: sabkonf-22@mail.ru

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Abstract: This article studies the economic efficiency of growing leek varieties, one of the rare vegetable crops. The study analyzed the yield, product quality, and costs incurred in the cultivation process of leek varieties. The economic efficiency of the varieties was also assessed based on the value of the crop, gross income, net income, and profitability. The results of the study show that it is important to select and introduce high-yielding and economically efficient varieties in the cultivation of leek in local conditions.

Keywords: leek, rare vegetable crops, varieties, yield, cultivation technology, economic efficiency, gross income, net income, profitability.

Introduction

Leek (*Allium porrum* L.) occupies an important place among onion crops. It differs from other vegetable crops in terms of its nutritional value, high nutritional value, and richness in biologically active substances. Worldwide, 2,239.8 thousand tons of leek are produced. The leading countries in terms of leek production are Indonesia - 638.7 thousand tons, Turkey - 225.5 thousand tons, France - 168.4 thousand tons, Southern Belgium - 147.1 thousand tons, Korea - 148.1 thousand tons and China - 119.0 thousand tons. These figures indicate that leek is one of the crops of certain economic and nutritional importance in world vegetable production.[1]

Leek is grown mainly for food purposes. It contains vitamins C, B₁, B₂ and E, essential oils, as well as various minerals necessary for the human body. Therefore, leek is one of the vegetable crops with high nutritional value. Its easy digestibility, dietary properties and the presence of biologically active substances in its composition are of great importance for human health. These properties create the basis for the widespread use of leek in the diet and the increasing demand for it.

Currently, the classification proposed by A.A. Kazakov et al. is widely used in vegetable science [2]. According to this classification, leek varieties and forms are divided into European or typical subspecies (subsp. *Porrum*) and Asia Minor subspecies (subsp. *Anatolicum*) based on the characteristics of their ecological and geographical distribution. This classification allows you to group different varieties and forms of leek based on their origin, distribution area, morphological characteristics and ecological characteristics. This is of significant scientific and practical importance

in studying the varietal characteristics of the crop, selecting varietal samples suitable for specific soil and climatic conditions and their effective use.

The nutritional value of leek is determined, first of all, by the relatively high content of energy, vitamins, minerals and biologically active compounds in its composition [3]. These substances are important in ensuring the normal physiological activity of the human body. In this regard, leek is considered valuable not only as a nutritious vegetable crop, but also as an important source of vitamins and minerals for human nutrition.

Another important biological and nutritional property of leek is its ability to accumulate ascorbic acid during storage. Among leafy vegetable crops, leek stands out for its increased ascorbic acid content during storage. According to data, during its storage, the ascorbic acid content can increase by up to 1.5 times [4]. This property allows not only to preserve the nutritional value of leek during storage, but in some cases even to increase it. This property is also important in terms of long-term storage of leek and the supply of high-quality vegetable products to the population at different times of the year.[5][6]

In general, the high nutritional value of leeks, their richness in vitamins and minerals, their ability to retain biologically active compounds, and the increase in the content of ascorbic acid during storage determine the scientific and practical importance of cultivating this crop and studying its varieties. In particular, the identification of varieties with high yields and high quality indicators, suitable for various environmental conditions, is an important factor in the effective use of leeks, increasing the profitability of cultivation, and ensuring the economic efficiency of the vegetable growing industry.[7]

Materials and Methods

When conducting field experiments, the following manuals were used: "Methodical guidelines for the ecological testing of vegetable crops in the open ground" Moscow, 1981., "Methodology of experimental work in vegetable and melon growing" Moscow, 1992., "Methodology of conducting experiments on vegetable, melon and potato crops" Tashkent, 2023., "Methodology of state variety testing of agricultural crops" Moscow, 2015., etc. Statistical analysis of the data was carried out using the Microsoft Excel program based on the B.A. Dospechov dispersion method.[8][9]

Determining the economic efficiency of the results of research conducted in 2017–2019 on the selection of rare leek varieties is a practical solution to one of the urgent issues in this area. During the study, economic efficiency indicators were calculated based on the yield of marketable white false stems of leek varieties studied.[10]

The "Model technological cards for the care and production of agricultural crops" (for vegetables, potatoes, melons and grapes, part III) of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan for 2022–2026 were used as the basis for determining economic efficiency.[11]

Result

Calculations on the economic efficiency of the results of the research on the topic "Morphobiological study and selection of primary sources for the selection of rare leek (*Allium porrum* L.)" are presented in detail in Table 9.

The seed consumption for growing leek seedlings per hectare was 5 kg, and the cost of seed material was 2,500.0 thousand soums. During the cultivation of leek varieties, 170.5 liters of fuel and lubricants (FLU) were consumed per hectare. The cost of these costs amounted to 2,401.3 thousand soums.

To form a marketable white false stem crop of leeks, ammonium sulfate (21% nitrogen) - 960 kg, superphosphate (40% phosphorus) - 430 kg and potassium chloride (60% potassium) - 50 kg were

used for mineral nutrition of plants. Their fixed prices were 3,000, 5,300 and 5,500 soums/kg, respectively. As a result, the total cost of mineral fertilizers amounted to 5,434.0 thousand soums.[12]

Also, during the cultivation of leek varieties, 1,500.0 thousand soums were spent on combating various diseases and pests. The total cost of seeds, fertilizers, mineral fertilizers and chemical protection products amounted to 11,835.3 thousand soums.

Table 1. Economic efficiency of growing rare leek varieties, thousand soums (2019)

Indicators	Sample name				
	Karantansky, St.	Gulliver	Kazimir	K-14	Fil MS
Costs of seeds, fertilizers, chemicals	11835,3	11835,3	11835,3	11835,3	11835,3
Costs of growing seedlings	1255,8	1255,8	1255,8	1255,8	1255,8
Costs of preparing the land	1703,9	1703,9	1703,9	1703,9	1703,9
Costs of planting seedlings and caring for plants	6339,0	6339,0	6339,0	6339,0	6339,0
Costs of harvesting	1769,6	1691,6	1644,8	1795,6	1608,4
Costs of transporting the crop	1420,6	1380,3	1350,7	1440,1	1330,7
Total costs	24 324,2	24205,9	24129,5	24069,7	24073,1
Overhead costs, 25%	6081,1	6051,4	6032,3	6017,4	6018,2
Direct costs,					
All costs	30405,3	30257,3	30161,8	30087,1	30091,3
Yield (false stem), t/ha	14,8	13,3	12,4	15,3	11,7
Cost of crop (5000 soums/kg), soums	74000,0	66500,0	62000,0	76500,0	58500,0
Cost of 1 ton of product	2054,4	2274,9	2432,4	1966,4	2571,9
Net profit	43594,7	36242,7	31838,2	46412,9	28408,7
Profitability, %	143	119,7	105,5	154,2	94,4

The cost of growing leek seedlings per hectare was 1,255.8 thousand soums. 1,703.9 thousand soums were spent on land preparation, and 6,339.0 thousand soums were spent on planting seedlings and plant care.

The costs associated with harvesting marketable white false leek stalks, cutting leaves, sorting the product, placing them in containers, transporting them out of the field, and loading them onto a vehicle differed among the varieties. In particular, these costs amounted to 1,795.6 thousand soums for the K-14 variety, 1,691.6 thousand soums for the Gulliver variety, 1,691.6 thousand soums for the Karantansky, St variety, 1,644.8 thousand soums for the Kazimir hybrid, and 1,608.4 thousand soums for the Fil MS variety.[13]

The transportation costs associated with the delivery of white false stalk crops to consumers also varied depending on the yield of the varietal samples. These costs amounted to 1,440.1 thousand soums for the K-14 variety, 1,420.6 thousand soums for the Karantansky, St variety, 1,380.3 thousand soums for the Gulliver variety, 1,350.7 thousand soums for the Kazimir hybrid, and 1,330.7 thousand soums for the Fil MS variety. In general, the economic calculations presented allow for a comprehensive assessment of the costs associated with the cultivation of leek varietal samples, including seeds, fertilizers, mineral fertilizers, plant protection products, seedling cultivation, land preparation, planting and care, as well as harvesting, sorting, storage and delivery of the crop to consumers. Based on these costs, the necessary calculations were made to determine the economic

efficiency of the varieties in terms of marketable white false stalk yield and product sales indicators. The total costs of growing leek varieties amounted to 24,069.7 thousand soums for the K-14 variety, 24,069.7 thousand soums for the Karantansky, St variety, 24,205.9 thousand soums for the Gulliver variety, 24,129.5 thousand soums for the Kazimir hybrid, and 24,073.1 thousand soums for the Fil MS variety. When direct costs are added to these costs and all costs are calculated, the K-14 variety amounted to 30,087.1 thousand soums, compared to 30,405.3 thousand soums for the Karantansky, St variety, which is 318.2 thousand soums; The Gulliver variety cost 30,257.3 thousand soums, which is 170.2 thousand soums; the Kazimir hybrid cost 30,161.8 thousand soums, which is 74.7 thousand soums less.

When 1 kg of white false stems of leek varieties were sold at the wholesale market for 5,000 soums, the value of the white false stem yield per unit area was 76.5 million soums for the K-14 variety. In comparison, the value of the product for the Karantansky, St varieties was 74.0 million soums, which is 2.5 million soums; for the Gulliver variety, it was 66.5 million soums, which is 10.0 million soums; It was noted that the Kazimir hybrid cost 62.0 million soums, which is 14.5 million soums less, and the Fil MS variety cost 58.5 million soums, which is 18.0 million soums less.[14]

Discussion

The cost of 1 ton of leek samples for the K-14 variety was 1,966.4 thousand soums. This indicator was found to be 2,054.4 thousand soums for the Karantansky, St varieties, which is 88 thousand soums higher than the K-14 variety. It was also noted that the Gulliver variety cost 2,274.9 thousand soums, which is 308.5 thousand soums; the Kazimir hybrid cost 2,432.4 thousand soums, which is 466 thousand soums; and the Fil MS variety cost 2,571.9 thousand soums, which is 605.5 thousand soums higher.

The net income from the cultivation of leek varieties was 46412.9 million soums per unit area for the K-14 variety. Compared to this variety, the net income for the Karantansky, St varieties was 43594.7 million soums, which is 2818.2 million soums less; for the Gulliver variety, it was 36242.7 million soums, which is 10170.2 million soums less; for the Kazimir hybrid, it was 31838.2 million soums, which is 14574.7 million soums less; and for the Fil MS variety, it was 28408.7 million soums, which is 18004.2 million soums less.

When analyzing the profitability level, which is one of the important indicators of economic efficiency, it was 154.2% for the K-14 variety. In relation to this variety, the profitability level of the Karantansky, St variety was 143%, the Gulliver variety was 119.7%, the Kazimir hybrid was 105.5%, and the Fil MS variety was 9440%. Thus, among the studied variety samples, the K-14 variety showed the highest indicators in terms of economic efficiency, net income and profitability.[15]

In general, the economic efficiency indicators clearly demonstrated the relationship between the yield, product value, cultivation costs and product cost of leek variety samples. According to the results of the study, the K-14 variety provided the highest product value, net income and profitability due to the high yield of marketable white false stems. This allows us to evaluate this variety as an economically efficient variety sample in leek cultivation.

Conclusions

The highest indicators of economic efficiency of leek varietal production were recorded in the K-14, Karantansky, St and Gulliver varieties. The net income per unit area was 46.4 million soums for the K-14 variety, 46.4 million soums for the Karantansky variety, and 46.4 million soums for the Gulliver variety.

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