ISSN 2181-9408

Scientific and technical journal

Sustainable Agriculture

№1(21).2024

Designer: Dilmurod Akbarov.

Note: Only the authors of the article are responsible for the content and materials of the article. The editorial board does not respond to the content of the article!

Founder: Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

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The journal "Sustainable Agriculture" is registered in the Press Agency of Uzbekistan on the 12th of February in 2018 (license № 0957).

In 2019, the journal is included in the list of recommended scientific publications by the Higher Attestation Commission of the Republic of Uzbekistan.

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RESULTS OF REFORMS IN THE FIELD OF WALNUT FARMING IN UZBEKISTAN

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Abstract

The article discusses ways to increase economic efficiency in the walnut industry in innovative ways and the results of reforms implemented in this area. As a result of the analysis, a comparison was made on the basis that the intensive method is more efficient in terms of income per hectare of land, even when the lowest level of productivity and product prices are calculated at prices 25-30 percent lower than retail prices.

Keywords: *walnut production, intensive method, economic efficiency, cost, profit, profitability.*

Introduction. The best practices of foreign countries, the implementation of modern intensive and innovative technologies in the field of walnut growing, which is currently considered one of the most important areas of horticulture, are of great importance in the continual increase of the productivity of walnuts. Another important point is that the establishment of walnut fields based on intensive technologies is being considered as one of the important strategic directions of modern horticulture to improve the food supply of the population.

In the last five years, the demand of farmers and subsisstance farms and the population of our country for intensive horticulture products and intensive tree seedlings is increasing day by day. Therefore, a lot of attention is being paid to the development of semi-intensive and intensive plantations, including the establishment of walnut groves in the foothills. Today, a number of positive indicators are being achieved in the field as a result of comprehensive arrangements implemented in Uzbekistan to increase the production of walnuts, unabi, pistachios and other fruits, which are considered to be of high demand in the world market. In particular, a seedling delivery system is being developed on the basis of walnut and unabi seeds imported from foreign countries.

President Shavkat Mirziyoyev's decree of June 1, 2017 “On the Establishing and organizing the Association of walnut producers and exporters” [1] through the effective use of dry land in agriculture and the establishment of intensive walnut orchards aimed at increasing the production of walnuts in the domestic and foreign markets, and as an important document made a great contribution to the development of the walnut industry. According to the decision, "Walnut Producers and Exporters Association" was established and its tasks were clearly defined.

The mountain regions of Uzbekistan are favorable places for the growth and high yield of tree seedlings such as walnuts, almonds, and pistachios. In particular, today it is possible to get a good harvest from walnut trees in Andijan, Jizzakh, Namangan, Samarkand, Navoi, Kashkadarya, Surkhandarya, Fergana, Tashkent regions [14].

With the Decree of the President No. PF-4947 of the Republic of Uzbekistan dated February 7, 2017 "On the Strategy of Actions for the Further Development of the Republic of Uzbekistan" [2], five priority areas of development of the Republic of Uzbekistan in 2017-2021 In connection with the implementation of the Strategy of Actions, the State Program defined also important areas such as increasing the volume of walnut production, encouraging walnut production in farms.

In the current conditions, special attention is paid to the implementation of projects aimed at the production of agricultural products, including fruit and vegetable products, their processing and export. The Decree on additional measures for the rapid development of horticulture and vegetable growing serves as an important factor in this direction [17].

Lterature review and methodology. Foreign agro-economists such as H.Adem & Peter H.Jerie , Larry Harper , Dr. William Kurtz, Russian economists such as Nazranov X.M, Chemazokova Z.Z., Salvaridze L.X., Nakonechnaya O.A., Khashir A.A., Bakhshinejad M. conducted research on the development of walnut production, increasing their yields and the development of horticulture in the foothills..

Scientific-theoretical solutions aimed at improving the economic basis of fruit and vegetable growing, cooperation relations, intensive horticulture in the agriculture of Uzbekistan were reflected in the research works of a number of agro-economists such as O’.Umurzakov, N.Khushmatov, O.Jumaev, Kh.Khushvaktova, Ch.Murodov, S.Eshmatov, O.Sattorov, N.Ashurmetova, O.Norbekov, F.Polvonov, etc...

Economic efficiency reflects the result of economic activity of the farm in a complex way and the interaction of its elements. Economic efficiency evaluation criteria is a system of absolute, relative and dynamic efficiency indicators that allows to evaluate the effectiveness of the methods and means of ensuring economic efficiency used in the farm.

If we consider the term "efficiency" in a broad sense, we can emphasize that it is a general concept, since this term can be used in any field of human activity. D.Ricardo, one of the founders of the concept in economics, in his work "Political Economy and the Beginning of Taxation (1817)" expressed economic efficiency as the ratio of the result to certain types of costs [15].

O.Sattorov's researches show that "the fruit trees are low, the crop can be harvested easily by hand, and the mechanical damage of the harvested crop is avoided due to the weight of high-quality products offered to the market." This ensures a 20-25 percent increase in the economic efficiency of intensive orchards. Also, scientific and practical approaches such as carrying out feeding activities during the growing season, creating conveniences in the use of drip irrigation system and mechanization tools" [16] have been reflected.

Results. It is known that today in Uzbekistan, one of the most important tasks is to fully satisfy the growing needs of the population for natural products and the industry's requirements for raw materials. Because today, the living standard of the population and further development

of the economy of Uzbekistan remains one of the most urgent tasks in the conditions of intensive development of agriculture.

Walnuts are grown in almost all regions of Uzbekistan. Today, there are 337,300 hectares of groves, of which 18,700 hectares are walnut plantations. It is reported that in Uzbekistan walnuts varieties such as "Bostonliq", "Thing shell", "Jubilee", "Ideal", "Shakl N-86", "Chandler", "Peschansky", "Cogalniceanh", "Codrene" are being cultivated [17].

Discussion. Improving global food supply is an integral part of every country's economic goals and national security. The food market reflects the real situation of producers and consumer demand.

One of the key aspects of food safety is related to walnuts and nut products. Walnut farmers stress the importance of nut production for food security and emphasize the need for sustainable development and increased efficiency in producing nuts.

Also, the increase in the consumption of walnuts and its inclusion in the diet is of great importance today. This is expressed by the fact that walnuts contain a large amount of protein and other useful elements.

Data from the analysis show that even in the case when the minimum level of yield and the price of products are calculated at 25-30 percent lower than retail prices, the income from each hectare of land in the production of products in the traditional way was 42-51 mln UZS, and in the intensive method-86,8-103,5 mln UZS (Table 1).

Product profitability levels will be 150.4 and 329.5 percent, respectively. The trends among the data presented in the table are mainly due to walnut cultivation methods, walnut varieties, land terrain, planting scheme, i.e. seedling consumption per hectare. It should be emphasized that these calculations serve as a basis for making relevant conclusions in the assessment of various economic and financial risks of product growers and investors in the establishment of walnut groves.

Table 1.

Analysis of economic efficiency indicators of walnut cultivation in different ways on average per hectare of land (in 2021 estimates) [18]

Indicators		Unit of measure	In the traditional way, according to varieties		In an intensive way, by varieties	
			Ideal	Chandler	Ideal	Chandler
Costs of establishing a walnut grove on 1 hectare of land		thousand UZS	13164	14926	133657	136755
Annual maintenance costs of 1 hectare of walnut grove, *(when in full harvest)*	Total	thousand UZS	14577	15491	19446	22263
	Salary		5559	5915	7414	7919
	Material and others		9018	9576	12032	14344
Periods of entry into the main harvest of walnut groves	5 years	c/ha	5.3	8.4	10.5	16.4
	7 years	c/ha	10.1	15.3	22.2	32.1
	10-15 years	c/ha	25	31.2	54.4	65.5
On average, 1 hectare of walnut grove *(when in full harvest)*	Income	th. UZS	36500	45552	79424	95630
	Income	th. UZS	42059	51467	86838	103549
	Net profit	th. UZS	21923	30061	59978	73367
Rate of return		**%**	**150.4**	**194.1**	**308.4**	**329.5**

Based on the calculations, it can be seen that the difference between the costs associated with the establishment of one hectare of walnut grove is 8-9 times higher in the intensive method. However, it can be noted that intensive walnut cultivation is effective through the following aspects:

- 3-4 times the number of seedlings placed on one hectare of land in an intensive way;
- high potential for efficient use of water and mineral fertilizers through intensive drip irrigation;
- high level of labour mechanization in production;
- ease of product quality control and management;
- high efficiency and ease of combating diseases and pests;
- the high possibility of quick fruiting of intensively established orchards and the implementation of appropriate agrotechnical measures;
- the convenience of harvesting the product and carrying out other agrotechnical activities;
- despite the 8-9 times higher costs associated with the establishment of a orchard in an intensive way, these costs will be reduced within 3-4 years after the field is fully harvested due to the introduction of high resource-saving technologies full coverage, etc.

Also, resource efficiency in walnut production was calculated on a scientific basis. It compares the land area required to produce 10 tons of walnuts, irrigation water required for the number of walnut seedlings, labor costs, orchard establishment costs, and annual maintenance costs in different production methods (Table 2).

Table 2.

Assessment of resource efficiency in walnut growing technologies [19]

No	Indicators	Unit	For 10 tons of walnuts In local conditions		Compared to the traditional method, in the intensive method, %
			In the traditional way	In an intensive way	
1.	Cultivated area	hectares	1.7-2.4	1.14	67.1-47.5
2.	The number of seedlings	bush	360-508	3 19	88.6-62.7
3.	Irrigation water	m^3	3600-6192	5341	148.4-86.3
4.	Mineral fertilizers (all)	Kg	283-447	316	111.7-70.7
5.	Fuels	liter	374 - 528	328	87.7-62.1
6.	Labor cost	person/hour	2150-3024	1539	71.6-50.9
7.	The cost of planting a garden	thousand UZS	17280-24384	143550	8.3-5.9 times
8.	Annual maintenance costs	thousand UZS	21382-30187	17609	82.3-58.3

Note: 2021 when average orchards are in full harvest.

This table requires placement according to microclimate, soil and hydrogeological conditions in each area.

The available natural resources of the Republic of Uzbekistan, especially the reserve of lands not in use in agriculture, show the high potential for ecological, social and economic development.

This, in turn, offers great opportunities in the nut industry itself, which has a long historical experience.

The internal possibilities of establishing walnut orchards in Andijan region, which has special demographic indicators in our republic , were analyzed. In 2020, the total area of walnut groves in the urban area of the district was 1223 hectares. In some districts, it can be seen that the available walnut area is 10 to 100 times less than the domestic capacity. That is, the weight of the land area occupied by existing walnut groves is 7.1 percent compared to the internal potential (Table 3).

Monographic studies were conducted in Andijan, Oltinkol and Pakhtaabad districts of Andijan region. 10 walnut farms were selected from each district and questionnaires were conducted.

According to the results of the survey, it was found out that most of the farms engaged in walnut growing, i.e. 82%, are subsistence farms, and 18% are multi-branch farms.

The reason for these changes may be the increasing demand for nuts and nut products by the growing population, environmental changes, the need for calorie-dense products, and other reasons.

Table 3.

Internal opportunities for the expansion and establishment of pine plantations in the Andijan region (in hectares) [20]

№	Districts	Walnut groves available in 2021	Total agricultural land where walnut groves can be established	Including	
				Forest land fund	Reserve lands
1	Andijan	134	2366	2330	36
2	Andijan town	38	373	1	372
3	Asaka	43	984	760	224
4	Baliqchi	58	206	206	
5	Buloqboshi	15	2703	425	2278
6	Bo‘ston	11	350	338	12
7	Jalaquduq	56	1080	325	755
8	Izboskan	57	214	214	
9	Qo‘rg‘ontepa	56	5327	5268	59
10	Marxamat	64	2413	915	1498
11	Oltinko‘l	222	107	106	1
12	Pakhtaabad	82	35	0	35
13	Ulug‘nor	115	554	95	459
14	Xonobod.sh	9	50	44	6
15	Xo‘jaobod	27	417		417
16	Shahrixon	236	2039	2039	
	TOTAL	**1223**	**19218**	**13066**	**6152**

Also , if we analyze the gross yield, yield and per capita indicators of walnuts in the republic, in 2021, 79,300 tons of walnuts were harvested in our country. This indicator has increased by 119.2% compared to 2017. In 2021, yield was 147.6 c/ha, an increase of 125.4% compared to 2017 (Table 4).

In addition, comparing the indicators of the Andijan region and the Republic for the cultivation of nuts, we can see that in the Andijan region 7022 tons of nuts were grown in 2021, which is 12.1 times less than the Republican indicator, but in the Andijan region this indicator has reached an increase of 1.6 times than in 2017. As for the volume of nuts per capita, there is also a trend of growth on this from year to year.

If the annual average consumption of walnuts per capita is 8 kg according to medical norms, in 2021 it is observed that we are consuming 4.5 or 2.1 times less than the norm.

Table 4.

Key indicators of walnut production [21]

№	Indicators	Unit	2017 year	2018 year	2019 year	2020 year	2021 year
1	Gross production of walnuts by republic	tons	65463	59758	67733	79141	79300
2	The average yield of walnuts in the republic	c/ha	117.7	122	120.3	123.2	147.6
3	Gross yield of walnuts in Andijan region	tons	4397	4886	5933	6980	7022
4	Average yield of walnuts in Andijan region	c/ha	64.4	53.2	54.6	57.1	57.4
5	Annual average nut volume per capita	kg	3.1	3.5	3.8	4.4	4.5

In general, in recent years, a lot of attention has been paid to walnut growing, increasing the volume of walnut production in the foothills, creating opportunities for farmers to use dry land efficiently, focusing on the development of intensive planting, As a result of large-scale implementation of reforms, such as the establishment of intensive walnut orchards, opportunities for increasing the income of the population will be created.

Conclusion. The initial period of post-independence economic reforms related to the development of the sector covers the years 1990-2002, the second stage covers the years 2003-2016, and the 3rd stage covers the years after 2017. In this last third period, rapid changes and reforms are being implemented in the industry, and the volume of walnut production is increasing with the help of modern resource-efficient technologies and intensive methods.

In 2021, the volume of walnut production in the Republic of Karakalpakstan (2.4 times), Andijan (2.1 times), Bukhara (4.9 times), Jizzakh (1.94 times), Navoi (2.02 times), Tashkent (1.9 times) Namangan (1.8 times), and Fergana region (2.39 times) amounted to a high share in the Republic. There was also a decline in walnut production in the regions of Kashkadarya (30.8 %), Samarkand (82.3%) and Surkhandarya (46.2%).

Looking at the analysis in the cross section of all categories of farms, it can be seen that mainly the production of nuts corresponds to the contribution of peasant farms, that is, 60217 tons were grown in 2017, and by 2021 74648 tons or 124.0 percent more were grown. 94.1% of the total walnut crop grown in 2021 corresponds to peasant farm contributions. In 2021, the production of nuts on farms decreased by 92.1% compared to 2017.

As a result of the development of high-demand products in Uzbekistan such as nuts, funduk, almonds, pistachios, a number of consumers are buying nuts at low prices, nisba-tan, due to the savings in transportation costs. In general, the organization of nut production in our country in a cluster method expands the possibility of ensuring the processing industry's need for raw materials.

The presence of “informal intermediaries”in the markets in the regions where the study was conducted, mainly among manufacturers and buyers, forms the basis for the fact that the price of nuts increases by 25-30 percent at each stage in the middle.

Organization of sale of nuts and nut products based on the vending system; direct delivery of nuts and nut products to retail outlets; organization of "mobile trade" of nuts and nut products; organizing the sale of nuts and nut products based on the establishment of "producer - seller-consumer" cooperatives; organization of sales using the service of logistics centers; establishment of agricultural products portal and others.

According to the sociological research and monographic observations conducted in the districts of Andijan region , it is appropriate to organize special training courses for them to acquire legal knowledge in farms .

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