

ECONOMIC EFFICIENCY OF THE NUTS COMPLEX BUSINESS IN THE AGRICULTURE OF UKRAINE

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Abstract

The purpose of the article is to justify the conditions for saturation of the walnut domestic market and export development, analysis of the domestic market conditions, outline problems and prospects for industrial nuts production, development of a number of measures for the competitive development of the industry in Ukraine. The current state and tendencies of supply and demand formation are considered, the level of production and consumption of walnuts is estimated, the norms of labour and money costs for the creation and use of marketable plantations are determined, the investment needs for the development of the domestic branch of nuts production and the expected socio-economic effect are determined. The validation of the proposed valuation methodology has confirmed that agricultural enterprises can make adequate management decisions for the efficient management of nut businesses by farmers. It is proved that laying of industrial walnut gardens in Ukraine will increase the level of their production and will promote its export growth. In this regard, determining the priority of economic efficiency of nuts production, becomes of particular importance, which determines the relevance of the chosen topic and the importance of the results obtained.

Key words: agriculture, nuts complex, walnut, consumer market, prospects, production program, cost, efficiency

INTRODUCTION

The current stage of development of the agrarian sector of the economy is characterized by intensification of the processes of its dualization, as a result of which the problems of the sector of small agricultural enterprises and individual agrarian entrepreneurs are aggravated, as it becomes increasingly difficult for them to confront large enterprises, especially agro holdings. The way out is the reorientation of the small business sector to produce products related to the cultivation of so-called niche crops, which today include walnuts.

In Ukraine walnut came from Wallachia (region of Romania), which is why it has this name. Nowadays, this culture is popular in our country for laying gardens, because demand

for nuts is constantly growing, they are a valuable raw material for the food industry, are well preserved for a long period, relatively simple to pack. Their plantations are characterized by high productivity – the annual harvest of walnuts in Ukraine is up to 100 thousand tons, of which more than half are exported abroad. The quality of walnuts grown in Ukraine is one of the highest in the world [6].

That is why this type of economic activity is best suited for agricultural development. Recognizing the high relevance and importance of the development of nuts production for the Ukrainian economy and its potential prospects, many scholars are paying sufficient attention to this problem. Among them should be mentioned such scientists and practitioners as N. Dronyk [3], S. Klischenko

[4], V. Lanovenko [5], A. Porembskyi [7], G. Satina [9]. In particular, V. Lanovenko [6] emphasizes that apart from profitability, nuts production has a socio-economic basis, since for the family it is a stable income, for society - additional jobs, and for the country - replenishment of the budget, creation of enterprises for processing and storage of products. Today Ukraine holds the leading position on walnut production in Europe and the fifth in the world. According to official statistics, we have 16 thousand hectares under nuts. In the 2016 season, 40 thousand tons of nuts were exported, totalling 79.28 million USD. However, this is not enough - Ukraine retains virtually the last place in the value of nuts, and that is our biggest problem - almost all nuts are not varietal, but grown in households, on private plots [10].

Therefore, there is a need to systematize and complement disparate and partial research, comprehensive assessment of our country's capabilities in industrial walnut cultivation and the saturation of the consumer market.

MATERIALS AND METHODS

The theoretical and methodological basis of the study is the basic provisions of modern economic theory, the work of leading domestic and foreign scientists on nuts production and the development of food markets. Methods of analysis and synthesis, grouping, balance sheet are used to assess the state of the nut market; at establishment of perspective volumes of production - calculated, normative, for substantiation of bases of effective development of branch - modelling, comparative analysis. To determine the relationship of the cost of production with the resources of the enterprise and its impact on the performance indicators of the enterprise used: linear multivariate regression analysis - to establish the relationship of the aggregate components of cost and profit and nine-factor economic and mathematical model for the impact of elements cost of production for profitability of products. In general, all the materials in the article have been elaborated using a set of scientific research methods. The efficiency of running a nut business with

farms, private peasant farms is based on the concentration and intensification of agricultural production.

RESULTS AND DISCUSSIONS

Increasing the competitiveness of agri-food enterprises is inextricably linked to increasing the competitive advantages of products created using various types of innovations [1].

The nut business in the investment plan is very attractive in Ukraine. Climatic conditions and soils throughout Ukraine are practically suitable for growing this valuable product in every respect. The Ukrainian market for nuts is far from perfect. The development of the nut market can be guided by the maximum convergence of consumer demand (1.4 kg) to food standards (3.6 kg per year) and meeting the needs of the external market. Of all walnuts collected in Ukraine, 60% is exported, 20% remains in the domestic market, and another 20% is lost [2].

Ukraine has formed three areas of foreign trade in nuts. These are exports of high quality fresh fruits for consumption in Western Europe and northwest Asia, and trade in medium quality nuts for domestic consumption; import of nuts for further commodity processing and resale to the commodity markets of the countries of Western and Eastern Europe. In recent years, there has been an increasing tendency for exports of purified nuts, as well as processed products (oil, meal, dietary supplements), resulting from economic feasibility. The positive is that the nut will be guaranteed to bear fruit for 100-150 years, because the nut tree can survive up to 300 years. Thus, nuts production turns into a long-term profitable business, when 12 hectares of industrial nut garden produce an income of 45,000 euros per year. Payback of all costs is 5-7 years.

Ukraine ranks second in the world as a walnut exporter and the fifth largest gross crop in the world. Almost all walnuts are harvested in households. There are no large fruitful orchards in our country yet. Those that have been laid for the last 5-10 years are now only reaching the level of full fruition. Importers of Ukrainian nuts - Turkey, Romania, Iraq, Vietnam, France, Bulgaria and others.

Switzerland and Germany are leaders in the import of organic products, they are interested in organic nuts. The price for purified walnut, for example, in Germany is 25 euro (retail), 11 euro (wholesale price). An eco-friendly nut costs 30-35 euro (retail), 11 euro (wholesale). As of 2019, the price of walnuts in Ukraine ranges from 4-6 USD (wholesale) per 1 kg of peeled nuts, round wood (unpeeled) is sold for 30 UAH/kg. The largest walnut producers in the world are China, the USA, Iran and Turkey. Ukraine exports most nuts to the markets of Italy, Azerbaijan, Belarus, Turkey, France, Greece. The largest quantities of nuts are produced by the markets of China (48%), the USA (28%), Ukraine (6%), Turkey (6%), Chile (2%), France (2%), India (2%) and Romania (2%). In Ukraine, all the collected walnuts are exported more than 50%. This practice shows that walnut production has a large export potential. In Europe alone, consumption of walnuts is over 100,000 tons per year, including 30% of walnuts. Italy, Germany are already ready to buy large consignments of nuts in Ukraine.

Taken together, these findings confirm the weak position of the `leader producers` among the gardeners. Overall, more than 60 percent of gardeners cited the effectiveness of leader producers as average [8].

The modern enterprise engaged in cultivation of a walnut, should have not less than 100 hectares of a garden with carefully selected varietal composition adapted to local conditions, the latest technical equipment for care and harvesting, and also modern technology of production processing. From one tree, starting from 8 years for industrial production, the productivity of the whole nut is about 12 kg, with a gross harvest of 22.2 kg/ha (planting scheme 9x6 m – 185 trees per 1 ha). With an average yield of 50% pure kernel of the nut can be obtained from a hectare of at least 11.1 c of purified nut (halves + small kernel residues). The amount of investment for the creation of 1 ha of industrial walnut garden is about 100 thousand UAH.

The most important step in the development of an effective strategy in competition is strategic analysis, which makes it possible to evaluate their own resources and capabilities of the state and needs of the environment [10]. SWOT – analysis is an effective method for exploring opportunities and threats in your activities. The study of the prospects of the company is aimed at discovering the resource strengths and weaknesses of the activity. The SWOT–based assessment is shown in Table 1.

Table 1. SWOT Analysis. Assessment of own strengths and weaknesses of competitors in the nut complex of Ukraine

SWOT – analysis and potential risks	
<i>Strengths</i>	<i>Weaknesses</i>
<ul style="list-style-type: none"> - Convenient geographical and economic location; - Use of intensive cultivation technologies; - High quality products; - Protection against pressure from competitors. 	<ul style="list-style-type: none"> - Limitation of marketing personnel; - High transportation costs; - Insufficient number of developed markets.
<i>Opportunities</i>	<i>Threats</i>
<ul style="list-style-type: none"> - Attracting new customers; - Expansion of sales areas; - Increase of landing area; - Strengthening market position; - Introduction of new technologies. 	<ul style="list-style-type: none"> - The likelihood of new competitors; - Technical problems in the organization of production; - Slow growth in demand.

Source: own research.

Particular attention has been paid in recent years to the development of nut farming by private entrepreneurs, as it is a very profitable business. Pumpkin cultivation is proposed as a green manure in the garden row. Pumpkin can be grown all over Ukraine, it is better than

watermelon and melon tolerates a lack of light, but among all melons plants is the most demanding of moisture in the air and soil. Potential yield of pumpkin fruits reaches 50-80 t/ha, seeds – 500-800 kg/ha. The calculation of the yield of a nut garden is shown in Table 2.

Table 2. Calculation of garden yield indicators for a nut complex in Ukraine

	Culture	Years									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1.	Ferzhan, tons	-	-	-	-	-	12	15	14	18	20
2.	Fernor, tons	-	-	-	-	-	4	4.5	4.5	6.4	6
3.	Kyshebnivskyi, tons	-	-	-	-	-	2.2	2.2	2	2.2	2
4.	Bukovynskyi 1, tons	-	-	-	-	-	2.8	2.5	2.7	2.4	2.8
5.	Klishivskyi, tons	-	-	-	-	-	2	1.8	2	1.7	2.2
6.	Total nuts	-	-	-	-	-	25	26	25.2	30.7	33
7.	Pumpkin seeds, kg	4,800	6,000	5,400	6,600	7,200	-	-	-	-	-

Source: Own calculations.

In the first decade, the average nut yield is 28 tons, or 2.3 tons per hectare. In the next decade, average yield of pumpkin seeds is 6,000 kg or 4.94 tons per hectare, or 59.28 tons in total. The average yield of pumpkin seeds is 6,000 kg or 500 kg per ha. Calculation of the cost of nuts presented Table 3.

Table 3. The cost of nuts (peeled) in Ukraine

	Cost article	Unit of measurement	Number	Price, UAH	Sum, thousands UAH
1.	Watering and irrigation	cycle	2.4	7,500	18,000
2.	Phytosanitary care	item	2,366	66.65	157,694
3.	Annual Wage Fund with deductions	WF	1	132.03	132,03
4.	Harvesting	person/day	3,200	35	112,000
5.	Cleaning, packing	person/day	3,200	45	144,000
6.	Rent	ha	12	1,000.00	12,000
7.	Insurance	item	2,366	13.50	31,941
8.	Depreciation of fixed assets	%	10	577,580	57,758
Total					665,426

Source: Own calculations.

The total cost of the peel nut is 665.42/11,200 = 59.41 UAH/kg. The total cost of a whole nut is 521.42/28,000 = 18.62 UAH/kg, excluding cleaning and packing. The cost of pumpkin presented in Table 4.

Table 4. Cost of pumpkin in Ukraine

	Cost article	Unit of measurement	Number	Price, UAH	Sum, thousands UAH
1.	Seeds	kg	10	60	0.6
2.	Sowing	complex	1	10,000	10
3.	Manual double weeding with rolling	person/day	400	100	40
4.	Nutrition, fertilizers, pest and disease control	complex	1	12,000	12
5.	Harvesting	person/day	400	100	40
6.	Pre-sale preparation, processing	complex	1	12,000	12
Total					114.6

Source: Own calculations.

The cost of pumpkin seeds is calculated as follows: 114.6/6,000 = 19.1 UAH/kg. The purchase price calculation is shown in Table 5. We calculated the average husking category = (87.5 + 160 + 62.5)/3 = 103.33 UAH/kg. The average yield ratio of peeled walnut is 0.4. The calculation of revenues for 2020-2029 according to the production program indicators and average prices in Ukraine is made in Table 6.

Table 5. Purchase prices as of 2019 in Ukraine

	Products	Purchasing price range in Ukraine, UAH/kg	The average price in Ukraine, UAH/kg	The average price of Europe, euro/kg
1.	Whole nut	22-35	28.5	-
2.	Peel nut, category C	50-75	62.5	-
3.	Peel nut, category B	75-100	87.5	5.6
4.	Peel nut, category A	100-220	160.0	8.3
5.	Walnut shell	0.6-1	0.8	-
6.	Pumpkin seeds	30-60	45.0	-

Source: Own calculations.

Table 6. Calculation of revenues for 2020-2029 according to the indicators of the production program and average prices in Ukraine, thousand UAH

	Income item	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1	Revenues of nuts production	-	-	-	-	-	1,033.3	1,157.3	1,041.6	1,268.9	1,363.9
2	Income from pumpkin production	216	243	270	297	324	-	-	-	-	-
	Total	216	243	270	297	324	1,033.3	1,157.3	1,041.6	1,268.9	1,363.9

Source: Own calculations.

We calculate the economic efficiency of the garden complex on area of 12 hectares (period of 10 years). The results of the calculations are shown in Table 7.

Table 7. Calculation of the economic efficiency of a garden (nut) complex in Ukraine on an area of 12 hectares (for a period of 10 years)

	Years	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Average value
1.	Number of employees employed, total	46	46	46	46	46	56	56	56	56	56	51
1.1	Including seasonal workers	40	40	40	40	40	50	50	50	50	50	45
1.2	Permanent employees	6	6	6	6	6	6	6	6	6	6	6
2.	Total annual wage fund, thousand UAH, total	734.08	301.82	295.6	315.2	330.05	287.79	291.79	273.79	295.32	302.45	342.789
3.	The cost of fixed assets, total, thousand UAH	1,062.5	1,168.75	1,285.6	1,414.1	1,555.6	1,711.1	1,882.2	2,070.5	2,277.5	2,505.32	1,693.35
4.	Other expenses, thousand UAH	957.28	195.33	170.5	154.98	114.6	201.86	204.86	201.86	206.17	208.86	261.63
5.	Total production cost, thousand UAH	2,653.86	497.15	466.10	470.18	444.65	489.65	496.65	475.65	501.49	511.31	700.669
7.	Revenue from sales, thousand UAH	216.00	270.00	243.00	297.00	324.00	1,033.3	1,157.2	1,041.5	1,268.8	1,363.96	721.502
8.	Profit, (loss), thousand UAH	-2,537.86	-227.15	-223.1	-173.1	-120.6	543.68	660.64	565.9	767.4	852.65	10.833
9.	Profitability level	-0.956	-0.4569	-0.478	-0.368	-0.271	1.1103	1.3301	1.1897	1.5302	1.6675	0.42966

Source: Own calculations.

From Table 7 it follows that the income from the cultivation of nuts will be in increasing order from 6 years, and by this time the profit will be formed from the proceeds from the sale of pumpkin. This is the complex cost-effectiveness of the combined garden of nut stands. It is well-known that nut cultivation is a very effective type of economic activity and provides a stable income for many years. All you need to do is to plant the tree saplings properly and take care of them, which will ensure a good harvest for the 7-8 years and,

accordingly, the income from its sale. It will not be difficult to organize this business, since it does not have significant administrative and legal obstacles. Every citizen, using a land suitable for agricultural activity, certain knowledge and experience, as well as desires and financial means, is able to organize his own nut business. Of course, the success of this business will be primarily determined by the yield of successfully selected varieties that are most suitable for use in certain natural and climatic conditions.

In general, growing nuts is a modern and promising idea for profit.

CONCLUSIONS

In Ukraine, the nuts industry has significant untapped prospects for development in all categories of farms, including small and medium-sized agro-industries.

Among the risks that may arise in the process of calculating the economic efficiency of the nut business in agriculture are the following: price risk associated with the price of sales of manufactured products; production risk associated with the production of products; risks of basic production; risks associated with natural conditions.

Minimization of risks aimed at stabilization in the sale of manufactured products should provide for the influence of factors of micro- and macro-environment, and combine in a comprehensive way the mechanisms and means of production in a highly specialized field. A significant factor in regulating pricing policy on manufactured products is also the socio-political situation in the country, which directly, through leverage regulates the formation of economic aspects in the markets for product sales. Innovative industrial technologies for the cultivation and processing of nuts are needed to achieve a significant increase in production volumes. With minimal investment in the industry, nuts production is a world leader in manufacturing and exporting.

In Ukraine, the nuts market is one of the most stable, substantially growing and solvent. The supply on the nuts market in modern conditions is formed at the expense of internal production of separate kinds, in particular walnut.

In the future, the development of nut industry in Ukraine can become an effective tool for overcoming the poverty of the population, reducing unemployment and increasing its employment, as well as increasing the country's export potential.

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