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SUSTAINABLE DEVELOPMENT TRENDS IN GRAIN AND LEGUME CROPS PRODUCTION AND EXPORT IN UZBEKISTAN

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ABSTRACT----------
The article analyzes the trends in the production and export of cereals and legumes in Uzbekistan, highlighting their role in a sustainable and circular agrarian economy. The results show that the production of cereals and legumes has consistently increased, and although the volume of exports fluctuates, the value indicators have steadily increased. Peas and mung beans have emerged as the main export drivers, while lentils and processed products represent the direction of diversification. Cereals and legumes provide resource efficiency through nitrogen fixation and serve to maintain soil fertility. They are a strategic link between production growth, export diversification, and environmental sustainability.

KEYWORDS: *Cereals And Legumes; Sustainable Agriculture; Circular Agrarian Economy; Export Diversification; Agricultural Production Growth; Resource Efficiency; Uzbekistan.----------*

INTRODUCTION

In the context of increasing risks to the sustainable development of the world economy, ensuring global food security, increasing the efficiency of agricultural production, and rational use of natural resources are becoming priority tasks of agriculture in the 21st century. In particular, climate change, degradation of land and water resources, as well as the increase in prices for mineral fertilizers and energy resources, have a significant impact on the stability of the agricultural sector. In such conditions, the introduction of the principles of sustainable agriculture and the circular economy into the production system is of strategic importance. [1].

The concept of a circular agricultural economy is based on ensuring the circulation of resources, reducing waste, and restoring natural capital. [2]. Crops that support biological cycles in the agricultural sector are important in ensuring the practical implementation of this model. In particular, cereals and legumes, through their ability to biologically fix atmospheric nitrogen, reduce the need for mineral fertilizers and help increase soil fertility. [3]. According to research, biological nitrogen fixation by legumes can reach 100–300 kg/ha, which has a positive effect on increasing the yield of subsequent crops. [4].

The development of legumes is of particular importance as a practical expression of the principles of a circular agrarian economy. The cultivation of legumes in Uzbekistan's agriculture has been showing a steady growth trend in recent years. In particular, the sharp increase in gross production during 2012–2024 has created a solid foundation for expanding the export potential of the sector, providing the domestic market with protein products, and deepening the processes of agricultural diversification. At the same time, the structural changes observed in the structure of exports indicate that certain types of products are emerging as new export drivers.

However, existing scientific research has not analyzed the relationship between the dynamics of legume production, export transformation, and a sustainable agrarian economy in a sufficiently comprehensive manner. In most cases, research has focused either on agrotechnical efficiency or on individual export indicators, and their integrated economic mechanism has not been fully revealed.

In this regard, the purpose of this study is to systematically analyze the production and export trends of cereals and legumes in Uzbekistan and scientifically substantiate their role in a sustainable and circular agrarian economy.

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MATERIALS AND METHODS

The study aimed at a comprehensive assessment of grain and legume production and export trends and was conducted based on official statistical data. The analysis used economic-statistical, dynamic, and structural analysis methods.

The data were compiled based on the reports of the State Statistical Bodies of the Republic of Uzbekistan for 2012–2024 and foreign trade statistics for 2022–2024. Production indicators were analyzed by region (thousand tons), and export indicators were analyzed by volume (tons) and value (thousand US dollars). Scientific sources on sustainable agriculture and circular economy were used as a theoretical basis [1–4].

Production dynamics were assessed based on long-term growth rates and relative indicators. Export efficiency was determined through unit cost analysis, and the average export price per ton of product was calculated. Export composition was also analyzed based on product shares, and diversification trends were assessed comparatively.

The object of research is the production and export of grain and legume crops in Uzbekistan; the subject of research is the economic relationships between production growth, structural changes in exports, and a sustainable agrarian economy.

RESULTS AND DISCUSSION

During 2012–2024, the production of grain and leguminous crops in Uzbekistan showed a consistent growth trend. Analysis shows that during this period, the gross crop volume increased by almost 12 times. This is due to structural reforms implemented in the agricultural sector, improvement of cultivation technologies, and export-oriented production. related to politics. The growth in production demonstrates the growing strategic importance of grain and legume crops in the national agrarian economy.

Table 1

Dynamics of gross output of legumes in Uzbekistan, thousand tons

№	Territories	Years				Ratio from 2024 to 2012, times
		2012	2016	2020	2024	
1	Republic of Uzbekistan	46,7	98,4	401,6	555,1	12
2	Republic of Karakalpakstan	1,2	3,1	8,1	40,5	34
3	Andijan region	1,9	2,7	27,1	37,4	20
4	Bukhara region	0,8	1,6	8,7	29	36
5	Jizzakh region	1,6	2,5	46,6	59,1	37
6	Kashkadarya region	2,8	4,3	11,5	22	8
7	Navoi region	0,5	2,4	7,2	9,6	19
8	Namangan region	15,3	22,3	50,1	96,5	6
9	Samarkand region	4	16,7	112,6	100,5	25
10	Surkhandarya region	3,7	15,2	25,4	37,8	10
11	Syrdarya region	2,7	3,9	43,3	19,1	7
12	Tashkent region	10,3	14	16	18,5	2
13	Fergana region	1,6	6,4	41,2	79,8	50
14	Khorezm region	0,3	3,3	3,8	5,3	18

According to calculations, the average annual growth rate (CAGR) of grain and leguminous crop production during 2012–2024 was approximately 24 percent. This indicates a high and relatively stable growth dynamics in the sector. When analyzed by region, it was found that the growth rates were not the same. Relative growth rates were high in Fergana, Jizzakh, Bukhara and the Republic of Karakalpakstan. In these regions, the processes of development of new cultivation areas and rapid adaptation to market demand were active. On the contrary, in Tashkent, Syrdarya and Namangan regions, the growth rate was relatively low, which is explained by the pre-formation of the production system and limited resource capabilities. In general, territorial differentiation indicates that internal reserves and institutional factors play an important role in the development of the sector.

Analysis of export indicators shows that the volume of grain and leguminous products in 2022-2024 was somewhat volatile. However, the export value had a consistent upward trend. In 2024, the total export value

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reached 389.9 million US dollars, which is a significant increase compared to 2022. Thus, export efficiency is ensured not only by increasing volume, but also by increasing the level of added value.

Table 2
Dynamics of export volumes of legumes in the republic

Product type	2022 Year		2023 Year		2024 Year	
	Volume (tons)	Value (thousands of dollars)	Volume (tons)	Value (thousands of dollars)	Volume (tons)	Value (thousands of dollars)
Legume products	**228 419,2**	**230 731,1**	**254 349,8**	**326 043,1**	**241 645,5**	**389 901,7**
Beans	19 693,4	16 528,8	19 825,4	20 720,3	26 651,3	32 593,4
Beans (red)	76 946,8	112 335,9	2 316,8	1 380,9	3 949,1	4 148,9
Mash	127 447,8	99 018,6	158 762,5	123 956,5	149 513,8	130 650,6
Frozen beans	0,0	0,0	0,0	0,0	2,0	0,6
Frozen peas	12,6	17,6	8,8	12,2	6,7	9,5
Peas	4 318,5	2 830,0	73 435,6	179 972,3	61 333,2	222 405,4
Lentils (lentils)	0	0	0,7	0,9	189,5	93,2

The average export price of 1 ton of product in 2024 was approximately 1613 US dollars. In particular, the growth in unit value in the chickpea segment exceeded the growth in volume, indicating an increase in the level of added value creation. Mung beans and beans have emerged as a stable source of export income, while the red bean segment has seen volatility in external market demand..

Export structure analysis shows the process of product diversification. The emergence of lentil exports and the entry of frozen legume products into foreign markets indicate that the processing chain is developing. This indicates an expansion of the export portfolio and an increase in the level of added value creation. The formation of new segments indicates that the agricultural export model is moving to a qualitatively new stage.

At the same time, existing systemic problems from the point of view of the principles of a circular agrarian economy remain. Monographic and sectoral studies show that in some cases the share of chemical fertilizers and protective equipment in production costs remains high. This means that the potential for using biological resources is not fully exploited..

Insufficient implementation of crop rotation systems is also one of the factors limiting resource efficiency. In some regions, monoculture-based cultivation practices persist, which leads to a decrease in soil fertility and a high dependence on mineral fertilizers. Although there are opportunities to integrate legumes into scientifically based crop rotation schemes, they are not fully implemented in practice. The insufficient development of storage infrastructure and processing enterprises hinders the full formation of the added value chain. This situation indicates the existence of institutional and technological limitations in the practical implementation of the circular economy model.

According to our calculations, mung beans will take the leading position in the export volume in 2024, accounting for 61.87% of total exports. Chickpeas will form the second largest segment with 25.38%. The share of beans will be 11.03%, beans (red) will be 1.63%. The share of lentils will be 0.08%, and frozen products will have almost no share.

The effective functioning of the mechanisms of the circular agrarian economy largely depends on the level of development of logistics and processing infrastructure. In particular, the expansion of agro-logistics centers, modern storage facilities and processing enterprises will serve to extend the value-added chain. This will allow for a gradual transition from the export of raw materials to the export of finished or semi-finished products with high added value.

The results, when evaluated from the perspective of sustainable agrarian economics, show that increasing the production of cereals and legumes is not only economically but also ecologically important. Through nitrogen fixation, the need for mineral fertilizers is reduced, which allows for the optimization of production costs and the maintenance of soil fertility (Peoples et al., 2009; Assefa et al., 2021). In this regard, cereals and legumes are emerging as a strategic crop type that provides the biological basis for a circular agrarian economy.

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Overall, there is a trend of interrelated development between production growth, export diversification, and natural capital conservation. This trend creates an important economic basis for strengthening agricultural market stability, expanding the value chain, and increasing export competitiveness.

CONCLUSION

The results of the study confirm that grain and legume crops are becoming a strategic direction for economic growth and sustainable development in the agricultural sector of Uzbekistan. This sector creates an opportunity to deepen the processes of agricultural diversification through production dynamics and export transformation.

At the same time, in order to fully implement the circular agrarian economy model, it is necessary to increase resource efficiency, reduce dependence on chemical inputs, and widely introduce scientifically based crop rotation systems. The development of processing and logistics infrastructure is crucial for extending the value chain and bringing the export model to a qualitatively new level.

In conclusion, the development of grain and legume crops should be considered not only as a sectoral growth, but also as an integrated agricultural strategy combining economic efficiency, environmental sustainability, and institutional modernization.

REFERENCES

1. *Pretty J. Agricultural sustainability: Concepts, principles and evidence. Philosophical Transactions of the Royal Society B: Biological Sciences. 2008;363(1491):447–465. https://doi.org/10.1098/rstb.2007.2163*
2. *Corona B, Shen L, Reike D, Carreón JR. Towards sustainable development through the circular economy: A review and critical assessment of current circularity metrics. Resources, Conservation & Recycling. 2019;151:104498. https://doi.org/10.1016/j.resconrec.2019.104498*
3. *Peoples MB, et al. The contributions of nitrogen-fixing crop legumes to the productivity of agricultural systems. Plant and Soil. 2009;321(1–2):1–17. https://doi.org/10.1007/s11104-009-9990-8*
4. *Assefa B, et al. Biological nitrogen fixation and its contribution to sustainable agricultural systems. Frontiers in Sustainable Food Systems. 2021;5:767998. https://doi.org/10.3389/fsufs.2021.767998*
5. *President of the Republic of Uzbekistan. On additional measures to increase the export potential of agricultural products and develop the processing chain (Resolution No. PQ-136). Tashkent; 2025. Available: https://lex.uz/docs/7469633*
6. *State Statistics Committee of the Republic of Uzbekistan. Official statistics on agricultural production, 2012–2024. Tashkent; 2024. Available: https://stat.uz*