



Article

The Possibilities of Increasing the Efficiency of Growing and Using Medicinal Plants

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Abstract: This paper explores the increasing global interest in medicinal plants, particularly in Uzbekistan, where agro-economic reforms have influenced the sector. Despite the economic potential of medicinal plants, organizational and economic mechanisms for their cultivation in Uzbekistan remain underexplored. This study aims to address this gap by analyzing statistical data on cultivation areas and production volumes across various regions of Uzbekistan. The findings reveal a marked increase in cultivation efficiency, especially in Karakalpakstan and Kashkadarya. These results highlight the potential of targeted reforms and investments to enhance biodiversity and economic output. The study emphasizes the need for further modernization and international collaboration to fully optimize the medicinal plant sector in Uzbekistan.

Keywords: Medicinal plants, Pandemics, Forest lands, Investment projects, Research, Land area, Growth rates, Biodiversity.

1. Introduction

As a result of the socio-demographic, geopolitical, and pandemic circumstances taking place in the world, interest in medicinal plants has recently revived all over the world. According to the secretariat of the Convention on Biodiversity, in 2000 the world trade in medicinal plants was estimated at 60 billion US dollars, in 2008 at 83 billion US dollars, and it is expected that the annual growth will be 7%, and by 2050 it will reach 5 trillion US dollars [1]. This indicates an increase in economic efficiency, investment attractiveness of this area, the formation of new organizational and financial relations in the industry, and the desire for research aimed at technical and technological solutions.

Research aimed at mitigating the negative effects of global climate change, at finding new ways and means of adapting to it, equally penetrates into the cultivation and processing of medicinal plants, as well as into all sectors of the economy. This stimulates the withdrawal from artificial drugs, chemicals, and an increase in demand for natural, biologically active substances in today's conditions, when the demand for organic products is growing. Especially in the EU countries, which, despite the widespread distribution of medicinal plants in the wild, in recent years have prepared the ground for an increase in the area of plantations of medicinal plants by 5 times, and the number of subjects of cultivation by 7.5 times [2]. Therefore, he expands the scope of research related to the development of scientific foundations for the cultivation of medicinal plants in developed countries, standardization and the creation of modern certification criteria.

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The agro-economic reforms carried out in Uzbekistan today, the widespread introduction of new forms of management and management also have a positive impact on the cultivation of medicinal plants. This creates prerequisites for the development of new investment projects, an increase in the number of enterprising entrepreneurs, and creates the need for technical and technological modernization of the industry. To achieve these goals, the development strategy for 2022-2026 "... considering that on the basis of processing extracts of medicinal plants (pomegranate pods, licorice root, namatak fruits, grape seeds and pods), tasks such as "bringing the area of medicinal plant plantations on forest lands to 4984 hectares" without preserving natural distribution were set. Among the topical issues is the development of recommendations for the creation of new plantations, economic stimulation of the introduction of innovative technologies in the industry.

2. Materials and Methods

The role and importance of the cultivation of medicinal plants and its development are in the focus of attention of scientists from all over the world and Uzbekistan. In particular, scientific, theoretical and methodological, as well as practical aspects of this problem were developed by scientists from abroad. M.Karaman, V.E.Karachevskaya, A.V.Papanov, N.I.Tarassenko, A.A.Tereksin, V.E.Cherkashina, Yu.E.Alekseev, Z.T.Artyushenko, N.N. Brezgin, E.V.Wulf, A.F.Hammerman, I.A.Gubarov, V.A.Gushchina, S.N.Glushakov, Sh.B.Bayrambekov, S.M.Moksamed and were investigated by others [3]. Currently, in Uzbekistan, the study of medicinal plants, their reservation, harvesting, cultivation and breeding of varieties imported from foreign countries are carried out on a fairly large scale. Yunusov, K.3.Zakirov, H.A.Abdulazimov, R.H.Ergashev, M.S.Yusupov, N.D.Saidova, I.B.Rustamova, N.K.Abubakirov, A.Ya.Butkov, I.I.Granitov, I.P.Sukervanik, N.S.Kelkinboev, M.B.Salmakly are the merits of such outstanding scientists like Sultans [4].

The scientific research of these economic scientists has expressed the organizational and economic mechanisms of growing medicinal plants, their specifics in Uzbekistan and regions, the problems of introducing innovations into the industry and increasing efficiency. In these studies, issues related to the cultivation of medicinal plants were considered as an urgent problem [5]. The problems arising in the process of interaction between the manufacturer of medicinal plants and the entities engaged in their harvesting, storage, transportation and processing, and the need to improve the economic foundations of the industry, served as the basis for choosing this thesis as the topic. Consequently, the scientific, theoretical and methodological foundations of ways to improve the economic base of growing medicinal plants and their effective use necessitate increasing the efficiency of field work, continuing research work in this direction [6].

3. Results and Discussion

While the fact that medicinal plants and spices have been contained in the statistical reports of Uzbekistan in general form for many years has somewhat limited the possibilities of economic assessment of their condition, in recent years a system for maintaining statistics on the sale of individual medicinal plant products has been created [7]. This has opened up new possibilities. Paying attention to these statistics, out of more than 4.3 thousand plant species belonging to the local flora, 750 species are considered medicinal, of which 112 species are registered for use in scientific medicine, of which 70 species are actively used in the pharmaceutical industry [8].

In Uzbekistan, medicinal and spicy plants on agricultural lands were planted on a total area of 17.9 thousand hectares, including 4.2 thousand hectares in the main districts and 13.1 thousand hectares in the districts, and 19.1 thousand tons of raw materials were

harvested. The area of medicinal and spicy plants in 2018 amounted to a total of 12,069.0 hectares, by 2022 it reached 17,843 hectares or increased by 148% over the years (Table 1).

Table 1. Change in the area of crops of medicinal and spicy plants in our republic, ha [5]

Regions	Area, ha					As of 2023-2019
	2018 y.	2019 y.	2020 y.	2021 y.	2022 y.	
Karakalpakstan Republic	1235,4	1292,2	1374,7	1447	1752,9	141,9
Andijon	11,92	13,55	14,38	15,80	15,899	133,4
Bukhara	115,88	131,68	139,78	153,60	170,26	146,9
Gizzakh	2292,72	2605,37	2765,49	3039,00	3414,1	148,9
Kashkadarya	6153,16	6992,23	7421,96	8156,00	9167,3	149,0
Navoi	31,31	35,58	37,77	41,50	42,959	137,2
Namangan	151,64	172,32	182,91	201,00	220,97	145,7
Samarkand	121,46	138,03	146,51	161,00	176,42	145,3
Surkhandarya	1044,89	1187,38	1260,35	1385,00	1550,1	148,4
Sirdarya	129,01	146,60	155,61	171,00	183,97	142,6
Tashkent	594,49	675,56	717,08	788,00	879,34	147,9
Ferghana	147,11	167,18	177,45	195,00	214,27	145,7
Khorezm	39,98	45,44	48,23	53,00	54,489	136,3
Total	12069,0	13603,07	14442,16	15806,9	17843	147,8

Analyzing by region, it can be noted that the largest area of medicinal and spicy plants falls on the Kashkadarya region (8.2 thousand hectares), while in the Jizzakh (3.1 thousand hectares) and Surkhandarya (1.4 thousand hectares) regions they are grown on significant areas [9]. In addition, the area where the least products are grown is khissa in the Andijan and Khorezm regions. For many years, the area of growth of medicinal and spicy plants with high growth dynamics has been the area with this Kashkadarya, while the lowest is observed in the Khorezm region [10].

The volume of products grown in accordance with the change in the area of cultivation of medicinal and spicy plants is also gaining growth dynamics [11]. In particular, if in 2018 a total of 13,069.8 tons of products were grown in our republic, then we see that in 2020 this figure reached 15,764.8 tons, and by 2022 - 19,477 tons, or increased by 149 percent (Table 2).

Table 2. Changes in the volume of medicines and spices grown in our republic, tons [5]

Regions	Gross harvest, tons					As of 2022-2019
	2018 r.	2019 r.	2020 r.	2021 r.	2022 r.	
Karakalpakstan Republic	8733,3	9924,2	10534,2	11576	12241	140,2
Andijon	8,15	9,26	9,83	10,8	8,27	101,5
Bukhara	82,3	93,5	99,3	109,1	118,83	144,4
Gizzakh	1444,1	1641,1	1741,9	1914,2	2148,6	148,8
Kashkadarya	913,8	1038,4	1102,2	1211,2	1358,1	148,6
Navoi	26,6	30,2	32,1	35,3	35,73	134,3
Namangan	130,1	147,9	157,0	172,5	190,13	146,1
Samarkand	123,0	139,8	148,4	163,1	179,53	146,0
Surkhandarya	124,9	141,9	150,6	165,5	182,23	145,9
Sirdarya	1017,4	1156,1	1227,1	1348,5	1512,5	148,7
Tashkent	274,7	312,1	331,3	364,1	405,53	147,6
Ferghana	182,7	207,6	220,4	242,2	268,53	147,0
Khorezm	8,9	10,1	10,7	11,8	9,43	106,0
Total	13069,8	14852,1	15764,8	17324,0	19477	149,0

On the scale of Uzbekistan, an increase in yield is usually associated with the yield of the licorice plant (licorice), which has relatively high rates, which is explained by the relatively high area of this type of medicinal crops, as well as its sensitivity. In the territories of Uzbekistan with a high level of salinity and close occurrence of gray waters, there is a high probability of growing licorice, which is grown mainly in Uzbekistan of Karakalpakstan and the Syrdarya region. A particularly high level of processing, as well as the availability of demand for it (mainly export-oriented), also stimulate the cultivation of this type of medicinal plants [12].

If in 2018 the volume of grown medicinal products and spices in Uzbekistan of Karakalpakstan amounted to 8733.3 tons, in the Jizzakh region - 1444.1 tons, in the Kashkadarya region - 913.8 tons, in the Syrdarya region - 1017.4 tons, then by 2020 this figure amounted to 10534.2 tons, 1741.9 tons, 1102.2 tons and 1516.4 tons, respectively. and also in 2022 - 12,245.1 tons, 2,152.5 tons, 1,362.0 tons and 1,516.4 tons, respectively [13]. By region, the first 3 places are occupied by Uzbekistan of Karakalpakstan, Jizzakh, Kashkadarya regions, while the bottom 3 places are occupied by Khorezm, Andijan, and Samarkand regions. the other hand, the yield of medicinal and spicy crops grown in our republic increased by an average of 5% in 2022 compared to 2018 and achieved significant results in Uzbekistan of Karakalpakstan and the Syrdarya region among the regions (Fig.1) [14].

As already noted, this increase is mainly due to the contribution of the sweetness plant. Medicinal plants account for about 1/3 of the area of medicinal and spicy plants grown in our republic, as well as 1/3 of the volume of production. Although medicinal plants are mostly naturally distributed, their plantations have also been expanding in recent years. This is especially evident in the expansion of the range of plants such as sedge, hemp, saffron. The fact that the seed production of these crops is slowly improving also suggests that in the future the plantation area will have a growth dynamic [15,16].

4. Conclusion

Medicinal plants account for about 1/3 of the area of medicinal and spicy plants grown in our republic, as well as 1/3 of the volume of production. Although medicinal plants are mostly naturally distributed, their plantations have also been expanding in recent years. This is especially evident in the expansion of the range of plants such as sedge, hemp, saffron. The area of plantations of medicinal and spicy plants grown in our republic in 2018 amounted to a total of 5,167 hectares, in 2020 -4,390 hectares, and by 2022-5,214 hectares, or partially increased over the past 3 years. Uzbekistan has sufficient potential for growing, storing and processing medicinal plants, as well as natural and environmental conditions, and the only way to use them effectively is the widespread introduction of market mechanisms in the industry, the expansion of reforms in the field of environmental sustainability and providing additional income to the population. And for this, it is desirable to implement the following tasks.

1. Conclude contracts with manufacturers of medicinal plants for the purchase of cultivated products, provide them with seeds, mineral fertilizers, machinery, fuel and other means;
2. Cultivation of medicinal plants in specialized areas, preparation of seeds and seedlings, step-by-step organization of modern plantations of medicinal plants; - application of advanced scientific achievements in the organization of cultivation and seed production of medicinal plants;
3. Active cooperation with international organizations for the cultivation and processing of medicinal plants and the phased introduction of innovative solutions (know-how) into the industry;
4. Attracting investments and advanced technologies from foreign companies in the cultivation and processing of medicinal plants;
5. Satisfaction of domestic market demand for medicinal plants and medicinal products from them, as well as their export;
6. Establishing cooperation with foreign research centers in this direction by organizing a constant exchange of experience and information.

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