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ANALYSIS OF FARMERS' HEMP GROWING TENDENCIES AND EXPECTATIONS: THE CASE OF TÜRKİYE

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Abstract

The purpose of this study is to analyze the factors affecting the tendency of farmers to grow hemp in Rize province of Türkiye. The data was collected by face-to-face survey method from 90 farmers with proportional sampling. A five-point Likert scale was used to evaluate farmers' knowledge levels, opinions and attitudes regarding hemp growing, and their tendencies and expectations towards hemp growing. Best-Worst analysis was performed to determine the most important support practices that farmers expect from the government to grow hemp. The Fuzzy Paired Comparison method was used to determine which criteria farmers will attach importance to when growing hemp. According to the study results, 46.7% of the farmers have grown hemp before. However, it has been determined that farmers need more information about hemp growing. 48.9% of farmers are willing to grow hemp individually and 35.6% under contract. Farmers do not find the current supports sufficient and think that they should be diversified. For example, land use, seed supply and grant support are among their expectations. 36.6% of farmers think that hemp growing is profitable. 56.6% of farmers argue that hemp growing will not be more profitable than other products such as tea and hazelnuts. 56.7% of farmers stated that they would turn to hemp growing if government support was increased. The most important criteria that farmers will consider for growing hemp are climate conditions, soil structure and yield, respectively. For hemp growing to develop in this region, farmers' expectations regarding supports and market alternatives must be met.

Key words**:** *hemp growing, hemp economics, agricultural product pattern, farmer preferences*

INTRODUCTION

Hemp is a multi-dimensional agricultural product that can be evaluated within the scope of oil plants, both medicinal-aromatic plants and fiber plants, as it is a plant from which fiber is obtained with its stem and oil is obtained from its seeds. Studies on hemp indicate that it has 2,500 uses, and some sources say it has up to 5,000 uses. The economic value of both fiber and seed of hemp has paved the way for the plant to be used in various products [21]. The use of hemp has spread to many areas such as textile and paper industries, plastic industry, furniture industry, feed production, essential oil production, pharmacy and cosmetics. Additionally, biodiesel can be produced from hemp[43, 5, 34].

According to FAO's 2022 data, 354,560 tons of hemp fiber (raw and semi-processed) were produced in 253,484 hectares of land in the world, and 42,267 tons of hemp seeds were produced in 43,622 hectares of land [15]. The countries that produce the most hemp seeds are France, China, Russia and Chile, the countries that produce the most hemp fiber are North Korea, Netherlands, China, Italy and Chile. 32 countries in the world allow farmers to grow industrial hemp. However, in recent years, this number has increased to over 40 [7].

Many studies have been conducted on the economic aspects of hemp production in different countries of the world [41, 40, 25, 28, 12, 10, 20, 30, 29, 45, 6, 49, 22, 23]. In these studies, the cost and profitability levels of industrial production were mostly examined.

While hemp growing was carried out freely in Türkiye until 1933, for the first time in 1933, within the scope of the Law No. 2313 on the Control of Narcotic Drugs, it was stipulated that hemp growing could only be carried out in a controlled manner for fiber, seed, stem and similar purposes. Amendments were made to the relevant law first in 1979 and then

in 1990. In accordance with the regulation numbered 20672 prepared in 1990, it was determined that hemp growing could be carried out in a controlled manner in 20 provinces. Finally, with the Regulation on Hemp Growing and Control in 2016, controlled hemp growing was brought back to the agenda in 19 provinces. These provinces are Amasya, Antalya, Bartin, Burdur, Corum, Izmir, Karabük, Kastamonu, Kayseri, Kütahya, Malatya, Ordu, Rize, Samsun, Sinop, Tokat, Usak, Yozgat and Zonguldak [43, 1].

According to TURKSTAT data, while 31 tons of fiber hemp were produced in an area of 36.5 hectares in Türkiye in 2022, 359 tons of fiber hemp were produced in an area of 211.7 hectares in 2023. While 159 tons of hemp seeds were produced in an area of 196.3 hectares in 2022, 327 tons of hemp seeds were produced in an area of 392.3 hectares in 2023 [46].Tasköprü district of Kastamonu province has been the most important center in Türkiye for hemp growing, especially for its fiber, until recent years. For seeds, Ödemis and Tire districts of Izmir province and Burdur province are the leading ones. In Gümüshaciköy district of Amasya province, the best quality hemp seeds in the world were produced. However, today hemp production is mostly carried out in the Vezirköprü district of Samsun province [5].

Many studies have been conducted on the growing characteristics and usage areas of hemp in Türkiye [1, 26, 16, 5, 52, 27, 39, 11, 13, 18, 32]. It is seen that some studies have been done on the economics of hemp growing in recent years [4, 54, 7, 47, 50, 9, 48, 44, 51]. However, hemp production needs to be expanded to meet the demand for use in different sectors and to create export opportunities. For this purpose, farmer tendencies and expectations need to be revealed through research. The data obtained in this way can be the basis for preparing appropriate policies.

One of the provinces in Türkiye where farmers are allowed to produce hemp is Rize province. Economic activities are limited in this region. Farmers mostly produce tea. In addition, hazelnuts and kiwi are also produced. However, especially the tea plantations in the region are quite old and will need to be dismantled soon. Farmers are turning to alternatives where they can earn higher income. Therefore, investigating the possibilities and conditions of popularizing hemp growing in this region can provide important contributions in terms of scientific and policy implementation.

The purpose of this study is to analyze the factors affecting the tendency of farmers to grow hemp in Rize province of Türkiye. Based on this, the aim is to evaluate the conditions and opportunities for hemp growing in the region.

MATERIALS AND METHODS

The data that constitutes the main material of the study was obtained by face-to-face survey method from the farmers in Findikli district of Rize province, Türkiye. In addition, data published by different institutions and the results of previous studies on the subject were also used.

It was decided to conduct the study in Rize province because it has a significant potential in terms of hemp production. According to the information received from the Rize Provincial Directorate of the Ministry of Agriculture and Forestry, it was determined that the district with the highest willingness to grow hemp in recent years was Findikli and the farmers in this district were included in the scope of the study (Figure 1).

Fig. 1. Rize province and its districts
Source: [3].

There are a total of 23 villages and 8 neighbourhoods in Findikli district. According to the information received from Findikli

District Directorate of the Ministry of Agriculture and Forestry and because they are more suitable for hemp growing, Arslandere, Sümer, Hara and Avcilar villages and Yenimahalle and Ilica neighbourhoods were included in the scope of the research. The total number of farmers registered with Farmer Registration System in these six settlements was determined as 590 and these farmers constitute the main population of the study. It was decided to include a portion of the total number of farmers within the scope of the research through proportional sampling, and the following formula was used for this purpose [31]. It is seen that this formula is used in many studies [17, 14, 19].

$$n = \frac{Np(1-p)}{(N-1)\sigma^2_{px} + p(1-p)} \quad \text{.....(1)}$$

In the formula:
n = Sample size
N = Total number of farmers
p = Proportion of farmers willing to produce hemp (0.5 was taken for maximum sample size)
σ^2px = Variance.
In the study, calculations were made based on a 90% confidence interval and an 8% margin of error, and the sample size was determined as 90. In determining the number of farmers to be interviewed in each settlement, the shares of the settlements in the total number of farmers were taken as basis. The farmers to be interviewed in the settlements were determined using the random numbers table. Study surveys were conducted in March 2021.The study was found ethically appropriate with the decision of Ege University Scientific Research and Publication Ethics Committee numbered E.2204/2021.
In the analysis of data, farmers are divided into 3 groups according to land size. Farmers with less than 1.5 hectares of land (33 farmers) formed the first group, farmers with 1.5-3.0 hectares of land (27 farmers) formed the second group, and farmers with more than 3.0 hectares of land (30 farmers) formed the third group.

The socio-economic characteristics of the farmers were determined. For this purpose, the ages, education periods, household size, land and parcel size, family labour potential, capital level and organizational status of the farmers were examined. Then, the farmers' knowledge levels, opinions and attitudes about hemp growing, tendencies and expectations for hemp growing were evaluated. At this stage, a five-point Likert scale was used [8].
In the study, Best-Worst analysis was performed to determine the most important support practices that farmers expect from the government to grow hemp. Farmers were asked to comment on 11support applications. Best-Worst Analysis is based on the logic of comparing each criterion according to the best (most important) and worst (least important) criteria, rather than comparing each criterion with others one by one. The application stages of the method are as follows [36, 37]:
Step 1: The decision matrix is created.
Step 2: The most important and least important (least important) criteria are determined.
Step 3: An evaluation between 1 and 9 is made by comparing each criterion with the most important criterion.
Step 4: Similar to the previous step, the least important criterion is determined and compared with other criteria.
Step 5: Optimal weights are calculated.
In the study, the Fuzzy Paired Comparison method was used to determine which criteria farmers will attach importance to when growing hemp. Farmers were presented with six criteria to determine their decision preferences. The steps of the method can be summarized as follows [38, 42, 35].
First, pairwise comparisons are presented to indicate individual preferences. For example, the degree of preference of objectives K and H, G_{KH}, is measured according to the distance between them. The change in the value was between 0 and 1 for each element. The total distance is equal to the following.

If G_{KH}=0.5 then K≈H; If G_{KH}>0.5 then K>H; If G_{KH}<0.5 then K<H

The number of pairwise comparisons of the objectives (C) is determined as C= [(Z.(Z-1))/2].
In the formula, Z represents the number of preferred objectives.
In the study, 15 comparisons were presented to each farmer according to six different criteria. Effective factors are listed from largest to smallest according to their weight [17]. Gcr preference was obtained in each pairwise comparison. The measurement of the degree of preference of r over c can be expressed as gcr=1-grc. Then, a fuzzy preference matrix was created. The following expression was used for this.

$$\text{Gcr} = \begin{cases} 0 & if c = r \ \forall c, r = 1, \ldots . n \\ g_{cr} & if c \neq r \ \forall c, r = 1, \ldots . . n \end{cases} \quad (2)$$

In the study, a 6x6 fuzzy preference matrix was created as follows (G):

$$\text{G} = \begin{bmatrix} g_{11}g_{12}g_{13}g_{14}g_{15}g_{16} \\ g_{21}g_{22}g_{23}g_{24}g_{25}g_{26} \\ g_{31}g_{32}g_{33}g_{34}g_{35}g_{36} \\ g_{41}g_{42}g_{43}g_{44}g_{45}g_{46} \\ g_{51}g_{52}g_{53}g_{54}g_{55}g_{56} \\ g_{61}g_{62}g_{63}g_{64}g_{65}g_{66} \end{bmatrix} \text{.....(3)}$$

The preferred intensity (μj) of each objective separately was obtained using the following equation. The μj value varies between 0 and 1.

$$\mu j \ = 1 - (\sum_{c=1}^{n} G_{cr}^{2} /(n-1))^{1/2} \text{ .....(4)}$$

Whether the purpose of comparison is equally important was determined by the Friedman Test. Additionally, Kendall's coefficient of fit was used for the lines.

RESULTS AND DISCUSSIONS

In the socio-economic characteristics of the farmers are presented in Table 1.
7.8% of farmers are women and 92.2% are men. The ages of the farmers range from 35 to 73, with the average being 53.65.
Education periods vary between 5-15 years, with an average of 10.13 years.

Table 1. Socio-economic characteristics of farmers

Characteristics	**Farm groups**			
	Group 1 (<1.5 ha)	Group 2 (1.5-3.0 ha)	Group 3 (>3.1 ha)	General
Age of farmer	49.13	56.74	55.24	53.65
Education period of farmer (year)	9.87	10.15	10.36	10.13
Household size	3.73	3.46	4.31	3.83
Family labour potential (MLU)	2.54	2.02	2.67	2.41
Land size (ha)	0.72	2.19	4.21	2.44
Average parcel size (ha)	0.19	0.30	0.34	0.32
Equity rate (%)	94.1	95.5	97.5	95.8
Cooperative partnership rate (%)	48.5	40.7	53.3	47.8

Source: Results of this study.

The total population in the farms examined is 345 people and the average household size is calculated as 3.83 people. Women constitute 43.3% of the total population in farms. The rate of the population aged 15-49 in the total population is 37.6%.
While calculating the family labour potential, the population was first converted into male labour unit (MLU) and then into male labour day (MLD) with the approach that they can work 300 days a year [24]. The average family labour potential in farms was determined as 2.41 MLU.
The land size in farms varies between 0.5-6.0hectares. The average land size and average number of parcels were determined as2.44hectares and 7.70, respectively. The average parcel size was calculated as 0.32 decares. Farmers generally cultivate their own land.
Land assets constitute 98.0% of the total active capital in farms. It is seen that building assets have a significant share (54.9%), followed by soil assets (38.7%) and plant assets (4.0%). However, it was determined that 95.8% of the liabilities consisted of equity capital.47.8% of the farmers are partners in any agricultural cooperative.
It was determined that farmers produce tea on 79.7% of the average farm land. Other grown products are hazelnuts and kiwi. It has been determined that cow milk, eggs and honey are also produced in the farms, albeit to a limited

extent. 80.5% of the average total gross production value in the farms was provided by tea (Table 2).

Table 2. Gross production values obtained by farmers according to products (US$)

Products	Farm groups				
	Group 1 (<1.5 ha)	Group 2 (1.5-3.0 ha)	Group 3 (>3.1 ha)	General	%
Tea	155,840.46	270,940.17	491,025.64	328,915.81	80.5
Hazelnut	21,730.77	1,887.46	31,686.61	18,691.45	4.6
Kiwi	3,988.60	2,136.75	14,957.26	7,676.64	1.9
Animal products	32,805.41	47,272.65	71,457.57	53,272.36	13.0
Total	214,365.24	322,237.03	609,127.08	408,556.26	100.0

Source: Results of this study.

In order to determine the farmers' level of knowledge about hemp growing, they were asked to what level they agreed with some statements (Table 3). According to the results, farmers know the hemp and know where it is used. Although 74.5% of farmers know the problems, they will encounter in hemp growing, they also think that they do not have knowledge of pesticide and fertilizer applications, tools and equipment used and marketing.46.7% of the farmers have growing hemp before.44.5% of farmers know the planting and harvest periods for hemp growing.

Table 3. Knowledge levels of farmers regarding hemp growing*

Knowledges	**Farm groups**			
	Group 1 (<1.5 ha)	Group 2 (1.5-3.0 ha)	Group 3 (>3.1 ha)	General
I've heard of the hemp before	5.00	4.96	5.00	4.99
I know the purposes for which the hemp is used.	4.88	4.74	4.83	4.82
I have grown hemp before	3.25	2.22	2.70	2.75
I know the planting and harvest periods of the hemp	3.24	3,00	3.23	3.17
I know where to market the hemp	2.03	1.93	2.23	2.07
I know the tools and equipment used in hemp growing	2.76	2.41	2.90	2.70
I know the pesticides and fertilizers used in hemp growing	2.42	2.26	2.73	2.48
I know the problems that can be encountered in hemp growing	4.55	3.59	4.40	4.21

*1: Strongly disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly agree
Source: Results of this study.

The most important information sources of farmers about hemp growing are their own experiences (66.7%), recommendations of other farmers (13.3%), internet (10.0%), pesticide and fertilizer dealers (3.3%), technical staff of the Ministry of Agriculture and Forestry (2.2%) and other sources of information (4.5%).

To determine their opinions and attitudes about hemp growing, farmers were asked to what level they agreed with some statements (Table 4).

While 48.9% of farmers want to grow hemp individually, 35.6% of farmers prefer contract production.

53.3% of farmers do not approve of growing due to intense inspections.

36.6% of farmers think that hemp growing is profitable.

56.6% of farmers argue that hemp growing will not be more profitable than other products such as tea and hazelnuts.

56.7% of farmers stated that they would turn to hemp growing if government support was increased.

Table 4. Opinions and attitudes of farmers towards hemp growing*

Opinions and attitudes	**Farm groups**			
	Group 1 (<1.5 ha)	Group 2 (1.5-3.0 ha)	Group 3 (>3.1 ha)	General
I prefer to grow hemp for fiber purposes	3.36	3.52	3.13	3.33
I prefer to grow hemp for seed purposes	3.30	3.22	2.67	3.07
I think growing hemp for fiber purposes is more profitable	3.03	2.96	2.73	2.91
I think growing hemp for seed purposes is more profitable	3.06	2.59	2.73	2.81
I prefer to grow hemp individually	3.75	2.81	3.33	3.33
I prefer to grow hemp on a contract basis	3.48	2.96	3.73	3.41
I do not favor hemp growing due to intense controls.	2.12	1.96	1.86	1.99
I am hesitant to focus on the production of a new product	4.55	3.59	4.40	4.21
I have prejudices towards growing hemp	1.82	2.19	1.73	1.90
I think hemp growing is profitable	3.53	3.22	2.87	3.21
I think the production of other products is more profitable (tea, hazelnuts, etc.)	2.42	2.52	1.97	2.30
If government support is increased, I may decide to grow hemp.	3.42	3.92	2.73	3.34

*1: Strongly disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly agree
Source: Results of this study.

In a study conducted in Vezirköprü district of Samsun province, Türkiye the net profit that could be obtained from fiber hemp production was determined as 3,812 US$/ha, and the net profit that could be obtained by producing seeds and fiber together was 4,333 US$/ha [4].In another study conducted in the same region, the net profit that could be obtained from seed hemp production was determined as 2,032 USUS$/ha, the net profit that could be obtained from fiber hemp production was 5,721 US$/ha, and the net profit that could be obtained by producing seeds and fiber together was determined as 8,233 US$/ha [47]. In another study, it was determined that the production of seeds and fiber together gave more profitable results [9]. These results show the economic feasibility of hemp production.

Farmers in the research region produce more tea. In recent years, due to problems in tea production and the fact that most tea plantations are close to reaching the end of their economic life, farmers are turning to alternatives. As a matter of fact, in a study conducted in Rize province, it was determined that farmers gained losses from tea [53]. In another study conducted in Rize province, 56% of the farmers stated that they encountered problems in marketing fresh tea [33]. Considering the soil structure and climate conditions in Rize province, conditions and opportunities for hemp are important.

The Ministry of Agriculture and Forestry provides field-based input (fertilizer and diesel), premium (difference payment), organic and good agricultural practices support to farmers engaged in crop production in Türkiye. In addition, low-interest loan supports are also available. Farmers who will grow hemp can also benefit from area-based input supports. However, there is no premium or direct income support for hemp. Studies on the appropriate support model for hemp are continuing in the Ministry of Agriculture and Forestry. At this stage, the opinions and expectations of the farmers are also important. The farmers within the scope of the study do not find the current support for hemp sufficient. They also think that the types of supports should be increased. Farmers believe

that input prices have increased recently, and that work should be done in this direction (Table 5). As a matter of fact, in a study conducted in Vezirköprü district of Samsun province, farmers stated that the most important problem in hemp growing is the increases in input prices [52].

Table 5. Opinions of farmers regarding government supports in hemp growing*

Opinions	Farm groups			
	Group 1 (<1.5 ha)	Group 2 (1.5-3.0 ha)	Group 3 (>3.1 ha)	General
Hemp growing supports in Türkiye is enough	1.45	1.63	1.67	1.58
Input prices should be reduced instead of cash payments	4.15	3.74	3.87	3.93
The types of supports applied are sufficient	1.55	1.74	1.70	1.66
Farmers use the supports they receive for their intended purpose	1.15	1.70	1.63	1.48
Supports do not affect my production decisions	2.03	1.77	2.60	2.15

*1: Strongly disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly agree
Source: Results of this study.

In the study, Best-Worst analysis was performed to determine the government support practices that farmers consider important and unimportant. According to the results of the best-worst analysis, the most important support practices that farmers expect from the government for hemp growing are providing suitable land, supplying seeds and meeting needs through grants. Farmers do not consider tool-equipment support and credit provision of government important for hemp growing (Table 6). In the study, Fuzzy Paired Comparison analysis was performed to determine the criteria that farmers will give importance to when growing hemp.

Table 6. Results of Best-Worst analysis

Support applications	Best frequency (B)	Worst frequency (W)	Mean (B-W)
Premium	0	3	-0.0333
Grant	16	5	0.1222
Credit	0	17	-0.1889
Diesel fuel	1	1	0.0000
Fertilizer	4	1	0.0333
Seed	20	2	0.2000
Land	34	11	0.2555
Organization	6	8	-0.0222
Direct income	8	2	0.0667
Tools-equipment	0	40	-0.4444
Control	1	0	0.0111

Source: Results of this study.

Table 7. Results of Fuzzy Paired Comparison analysis

Criteria	Minimum	Maximum	Mean	Standard deviation	Order of importance
Climate conditions	0.100	0.900	0.587	0.173	1
Soil structure	0.119	0.900	0.579	0.183	2
Yield	0.100	0.874	0.549	0.158	3
Production cost	0.100	0.900	0.324	0.162	4
Government supports	0.100	0.900	0.304	0.180	5
Price	0.100	0.900	0.262	0.163	6
Friedman test is significant at $p<0.01$. Kendall's W: 0.362					

Source: Results of this study.

Farmers were presented with six criteria to determine their decision preferences. These criteria: climate conditions, soil structure, yield, production cost, government supports and price. In the study, 15 comparisons of six different criteria were presented to each

farmer. Results were evaluated using the Friedman Test and Kendall's coefficient of concordance. According to the analysis results, the most important criterion that farmers consider for growing hemp was determined to be climate conditions. This is followed by soil structure, yield, production costs, government supports and price, respectively. The Friedman test shows that there is a statistical difference between preferences. In this study, Kendall's W value was determined as 0.362. Accordingly, when determining the weights of important criteria, the harmony between farmers is at a poor level (Table 7).

CONCLUSIONS

In this study conducted in the Findikli district of Rize province, the trends and expectations of farmers regarding hemp production were analyzed. According to the study results, 46.7% of the farmers have grown hemp before. However, it has been determined that farmers need more information about hemp growing. 48.9% of farmers are willing to grow hemp individually and 35.6% under contract. Farmers do not find the current supports sufficient and think that they should be diversified. For example, land use, seed supply and grant support are among their expectations. 36.6% of farmers think that hemp growing is profitable. 56.6% of farmers argue that hemp growing will not be more profitable than other products such as tea and hazelnuts. 56.7% of farmers stated that they would turn to hemp growing if government support was increased. The most important criteria that farmers will consider for growing hemp are climate conditions, soil structure and yield, respectively.

The Black Sea Region and Rize, one of the provinces in this region, is a region where hemp production can be achieved at low cost due to the soil type and rainfall amount. For hemp growing to develop in this region, the expectations of the farmers must be met. From this perspective, the development of local varieties, the solution of the marketing problem, the increase of extension efforts and the development of appropriate support tools are among the most important expectations.

In recent years, hemp breeding and variety development efforts in Türkiye have yielded important results. Samsun Ondokuz Mayis University started its activities and in cooperation with the Black Sea Agricultural Research Institute, Narlisaray hemp variety with low Tetrahydrocannabinol (THC) rate and high fiber and stem yield was developed. The Ministry of Agriculture and Forestry has assigned the General Directorate of Agricultural Enterprises (GDAE) to propagate the Narlisaray variety. To prevent the genetic structure of the Narlisaray variety from being damaged, GDAE carried out seed production in 4 hectares of land in the Gökhöyük farm in 2019, through contract production, and in 12.7 hectares of land in the Narlisaray village of Vezirköprü district. The Ministry of Agriculture and Forestry currently produces and distributes seeds for farmers. The Ministry is currently working on developing an appropriate support model for hemp. On the other hand, efforts are being made to encourage the private sector to demand and process products in this field. On January 11, 2019, the "Report and Action Plan on Industrial Hemp Growing in Türkiye" was prepared with the participation of the Ministry of Agriculture and Forestry, the Ministry of Industry and Technology, the Ministry of Health, Turkish Scientific and Technological Research Council and Samsun Ondokuz Mayis University [2].

Most of the hemp fiber needed in Türkiye is met by imports. It is predicted that hemp fiber imports will decrease in the coming years in parallel with the increase in hemp growing areas in Türkiye. Hemp yield in Türkiye is low compared to other countries. Reducing production and operating costs and increasing efficiency depends on the development of agricultural techniques and mechanization. To solve these problems in Türkiye, the project "Improving Agricultural Techniques and Mechanization in Plants from whose Stems Fiber is Obtained, Reducing Production and Operating Costs" was developed in partnership with the public and private

sectors, with the support of the General Directorate of Agricultural Research.

The hemp market in Türkiye is developing. Hemp seeds can enter the oil sector, functional and health food sector and nutraceutical sectors. There is a growing market for hemp oil in cosmetics and body care products. It has high potential for the pet and veterinary markets. For hemp fiber; textile, composites, construction materials, animal bedding, pulp and paper products sectors are important markets. In hemp growing, marketing the fiber by separating it by machine or traditional method makes it less profitable than marketing it without separating the fiber from the stem. However, mechanized agriculture is recommended especially when it is desired to obtain fiber [4].

Some measures need to be taken to increase hemp production in Türkiye. First, farmers should be informed about hemp production and be made aware of the importance of its production. Regions and farmers with knowledge about hemp production should be designated as pilot regions and production should be encouraged. Varieties with low THC content should be developed to facilitate controlled growing and control. Varieties suitable for country and regional adaptations should be developed and registered, local and national hemp varieties should be used. State-controlled seed production should be increased, and farmers should be prevented from purchasing seeds at high prices. Production costs should be reduced and productivity per hectare should be increased by improving mechanization in production. Cooperation between industrialists and farmers should be ensured and the contract farming model should be encouraged to meet the annual need for industrial hemp raw materials. The hemp processing industry should be developed and encouraged. In conclusion, if these measures are taken, Türkiye will be able to benefit significantly from hemp and at the same time, the competitiveness of Turkish hemp in the foreign market will be increased.

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