ANALYSIS OF ENTREPRENEURIAL BEHAVIORS OF GREENHOUSE VEGETABLE FARMERS: A CASE STUDY IN TÜRKİYE

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Abstract

The purpose of this study is to determine the factors affecting the entrepreneurial behaviours of the farmers producing vegetables in the greenhouse in the Menderes district of Izmir province-Türkiye. The data were collected from 94 farmers using proportional sampling and face-to-face survey method. Five-point Likert scale was used in the analysis of the entrepreneurial behaviours of the farmers. Fuzzy Paired Comparison Method was used in the analysis of the criteria that the farmers give importance to when deciding on greenhouse vegetable growing. According to the results of the study, the average age of the farmers is 46.94 years, and the average education period is 9.30 years. The average greenhouse land size of the farmers is 5.78 decares. Farmers consider the profitability level and sustainability of the activity, financing opportunity and total cost as important factors in agricultural entrepreneurship. Farmers also consider water supply, marketing opportunities and seed-seedling supply as the most important factors in greenhouse vegetable entrepreneurship. The most important criterion in greenhouse vegetable growing is production costs, followed by marketing opportunities and price. The most important future goals of the farmers, who produce two vegetables: cucumbers and lettuce in the greenhouse per year are minimizing the hazards during production and marketing and sustaining greenhouse vegetable production.

Key words: *greenhouse production, farmers decisions, entrepreneurial behaviour, agricultural investment*

INTRODUCTION

Considering the climate changes caused by global warming, which is felt more today, the importance of greenhouse production, which is realized by controlling the growing conditions partially or completely, in eliminating these problems is better understood [39]. Greenhouse production consists of different methods such as surface covers, covers laid on plants, low or high tunnels and greenhouses. One of the mentioned methods, greenhouse production is a type of production that creates high economic benefit from the unit area compared to other methods; greenhouses can be defined as facilities that provide the production of plants outside of their natural growing periods, where climatic conditions are partially or completely suitable for plant production, and are covered with light-transmitting materials such as glass or plastic [45, 50].

In Türkiye, after 1970, with the use of transparent plastic (polyethylene) as a covering material, greenhouse production has shown great development. Production in greenhouses has become widespread today along the Mediterranean, Aegean, and Marmara coasts. According to 2022 data, the total land under protective cover in Türkiye is 81,088 hectares. Production was carried out in plastic greenhouses on an area of 47,128 ha, in a low tunnel on an area of 16,954 ha, in a high tunnel on an 11,043 ha area, and in a glass greenhouse on a 5,963 ha area. The provinces where the greenhouse agricultural area is dense in Türkiye are respectively;

Antalya, Mersin, Adana, Mugla and Izmir. In 2022, a total of 8.18 million tons of vegetables, 1.15 million tons of fruits and 1.6 billion ornamental plants were produced in land under protective cover in Türkiye. The most produced products in greenhouses are vegetables. Among the vegetables produced in the greenhouse, tomatoes take the first place, followed by cucumber, pepper and eggplant, respectively. According to the 2022 data of TURKSTAT, 4.14 million tons of tomatoes, 1.18 million tons of cucumber, 464,574 tons of green pepper and 346,667 tons of eggplant were produced on land under protective cover in Türkiye [48].

The most important goal for the farmers in greenhouse vegetable growing is to make the production profitable and to increase the income. To achieve this and economic sustainability, it is necessary to reduce the production cost and to perform the marketing with a high price. Yield and price increases will be important to make production profitable. To reduce the cost in vegetable production, it is necessary to go for input support in production or to increase product yield. To increase the efficiency obtained from the unit area; it is necessary to choose suitable and high-quality seeds, to apply alternation, to ensure efficiency in the use of fertilizers and pesticides, and to apply appropriate cultivation techniques on time. Therefore, it is necessary to analyze the farmer practices and entrepreneurial decisions in different regions and to guide the farmers in this direction [6].

It is seen that there are many studies that analyze the economic aspects of vegetable growing in greenhouses in Türkiye [35, 15, 16, 17, 49, 21, 36, 33, 22, 55, 26, 37, 27, 34]. However, entrepreneurial decisions of farmers were not examined in these studies.

Greenhouse vegetable farmers need to improve their production with entrepreneurial behaviours to meet the increasing vegetable needs of the society. Entrepreneurship makes an important contribution to the correct application of growing methods, the realization of the objectives in the growing plan, the provision of economic efficiency and

the follow-up of technological developments [18].

In addition to having advantages over other agricultural activities in terms of product yield and agricultural income, farmers must be able to compete in the world agricultural market to ensure sustainable development in greenhouse production, which also requires higher facility and operating costs, higher technical knowledge and skills compared to other production methods. A detailed analysis of technological and innovation initiatives on issues such as technical inadequacies encountered during production in greenhouse production in Türkiye, problems encountered during product marketing and logistics will make significant contributions. For this reason, it is necessary to analyze the entrepreneurial trends for the framers to switch from the traditional aquaculture-oriented approach to the market-oriented approach. Entrepreneurship is also effective in increasing the accessibility of farms in the market and increasing their share in the market. In this respect, it is important and necessary to evaluate the effects of the innovative perspectives and personal characteristics of the farmers on their attitudes and behaviours within the framework of entrepreneurship [54].

It is seen that farmers in different sub-sectors of agriculture in different countries of the world [31, 40, 52, 44, 24, 53, 42, 5, 28, 29, 30] and in Türkiye are handled in terms of entrepreneurship behaviors [9, 25, 51, 1, 7, 3, 8, 54, 4, 12, 2]. However, it would be beneficial to carry out these studies for greenhouse vegetable farmers as well.

One of the important greenhouse vegetable production centers of Türkiye is Izmir province. When examined by districts in Izmir, Menderes district is the district where the most greenhouse vegetables are produced. The most important greenhouse vegetables grown in this district are cucumber, tomato, and lettuce. With the research to be conducted in this district, the information and other needs of the farmers can be determined, as well as the data that can be used in the formation of effective policies to ensure sustainability. In addition, an ecosystem

suitable for entrepreneurship strategies will be developed and a framework will be formed. The purpose of this study is to determine the factors affecting the entrepreneurial behaviours of the farmers producing vegetables in the greenhouse in the Menderes district of Izmir province-Türkiye.

MATERIALS AND METHODS

The data constituting the main material of the research were obtained by face-to-face survey method from the farmers producing vegetables in the greenhouse in the Menderes district of Izmir province. In addition to the survey data, the results of previous studies and statistical data published by different institutions were also used. According to the data of Izmir Provincial Directorate of the Ministry of Agriculture and Forestry, 80% of the greenhouse areas (11,328 decares) where vegetables and fruits are produced in the province are in Menderes district. For this reason, it is planned to include the Menderes district. Cucumber and lettuce are produced mainly in greenhouses in Menderes district.

According to the information received from the Menderes District Directorate of the Ministry of Agriculture and Forestry, 90% of the greenhouse areas in the district are located in Altintepe, Atakoy, Camonu, Cileme, Degirmendere and Develi neighborhoods, and approximately 90% of vegetable production is carried out in these neighborhoods. Therefore, these neighbourhoods were included in the scope of the study. The total number of farmers registered in the Farmers Registration System in these neighbourhoods was determined as 831. It was decided that it would be appropriate to include some of the farmers by sampling in the study. For this purpose, the following Proportional Sample Size Formula was used (Newbold, 1995) [32]. It is seen that this formula is used in the sampling phase of many studies [14, 47, 19, 20, 4].

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

....(1)

where:
n = Sample size
N = Total number of farmers
p = Proportion of farmers producing vegetables in greenhouse (0.5 was taken for the maximum sample size)
$\sigma^2 px$ = Variance

In the study, calculation was made based on 90% confidence interval and 8% margin of error and the sample size was determined as 94. In determining the number of farmers to be interviewed in each neighbourhood, the shares of the neighbourhood in the total number of farmers were taken as a basis. Farmers to be interviewed in the neighbourhoods were determined by using the random numbers table. In the research, the production period of 2021/2022 was taken as a basis, and the survey studies were carried out in July and August of 2022.

The study was found ethically appropriate with the decision of Ege University Scientific Research and Publication Ethics Committee dated 25/04/2022 and numbered 04/05. During the survey studies, the aims of the study and how they can benefit from the results were explained to each farmer. In this way, they were allowed to participate in the study voluntarily and the consent form was filled.

In the analysis of data, the farmers were divided into three groups according to the size of the greenhouse production area. At this stage, decare (1,000 m^2=0.1 hectare) was used. The first group is farmers with a greenhouse production area of ≤3 decare (30 farmers), the second group is farmers with a greenhouse production area of 3-6 decare (37 farmers), and the third group is farmers with a greenhouse production area of 6≤ decare (27 farmers). In the study, first, the socio-economic characteristics of the farmers were determined and at this stage. The age of the farmers, education level, family population, land size, family labour potential, capital and cooperatives levels were examined. Then, the annual activity results of the farmers were analyzed and the entrepreneurial characteristics and the factors affecting the entrepreneurial decisions were determined.

A five-point Likert scale was used to evaluate the entrepreneurial knowledge level and behaviour of the farmers, their sources of information, the factors they attach importance to, and their future tendencies and expectations [10].

Fuzzy Paired Comparison method was used in the analysis of the factors affecting the farmers' decision to produce vegetables in the greenhouse. This method is like the simple paired comparison method. In both, farmers compare the two purposes. On the other hand, in this method, the degree of preference of one goal over the other is revealed and it is also ensured that the farmers remain indifferent between the two goals. Six different criteria were presented to farmers to determine their decision preferences. These criteria are price, marketing opportunity, cost, soil characteristics, climatic conditions, and yield level. Method steps may be summarized as follows [43, 46, 38].

First, pairwise comparisons were presented to indicate individual preferences. The total distance in comparison is follow equal.

If $G_{KH}=0.5$ then $K\approx H$; if $G_{KH}>0.5$ then $K>H$ and if $G_{KH}<0.5$ then $K<H$.

The number of paired comparisons of the objectives (C) were determined as C= [(Z.(Z-1))/2]. Z refers to the preferred number of objectives in the formula.

In the study, each farmer was presented with 15 comparisons of six different criteria. Influencing factors are listed according to their weights, from largest to smallest. For each pairwise comparison, g_{cr} preference was obtained. Measurement of the preference degree of r according to c can be expressed as $g_{cr}=1-g_{rc}$. Then, fuzzy preference matrix was as follow generated as follow.

$$Gcr = \begin{cases} 0 & if\ c = r\ \forall c, r = 1, ... n \\ g_{cr} & if\ c \neq r\ \forall c, r = 1, ...n \end{cases}$$

....(2)

In this study, 6x6 fuzzy preference matrix was created for everyone as follow (G):

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

....(3)

Separately preferred density of each objective (μj) was obtained using the following equation.

$$\mu j = 1 - \left(\sum_{c=1}^{n} G_{cr}^2 / (n-1) \right)^{1/2}$$

....(4)

The value of μj ranges between 0 and 1. Whether the purpose of comparison was equally important was determined by the Friedman Test. In addition, Kendall's coefficient of agreement was used for the rows.

It was tested whether the results obtained differed between the groups. At this stage, One-Way Anova test was used for normally distributed variables and Kruskal Wallis test was used for non-normally distributed variables. Chi-square test was applied to the data obtained by counting.

RESULTS AND DISCUSSIONS

The average age of the farmers is 46.94 years, and the average education period is 9.30 years. While the farmers in the first group are younger, the farmers in the third group have longer training periods. The average greenhouse experience of the producers is 16.20 years. The average household size is 3.88 people. The household size of the second group farmers is higher. The family labour potential of the farmers was calculated as 2.77 Male Labor Units (MLU). The average land size of the farmers is 40.50 decares and 5.78 decares are greenhouse lands. Equity constitutes 94.40% of the farmers' capital. 41.49% of the farmers are partners in any agricultural cooperative (Table 1).

Table 1. Socio-economic characteristics of farmers

Characteristics	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6da)	Group 3 (6da≤)	General
Age of farmers	45.48	48.57	46.34	46.94
Education level of farmers (years) (*)	7.10	9.51	11.48	9.30
Greenhouse experience of farmers (years)	18.00	17.00	15.00	16.20
Household size (*)	3.88	4.38	3.27	3.88
Family labour potential (MLU)	2.56	2.93	2.44	2.67
Land size (da)	32.40	39.70	50.60	40.50
Greenhouse land size (da)	2.60	5.20	10.10	5.78
Equity ratio (%)	93.56	94.45	94.65	94.40
Cooperative partnership rate (%) (*)	20.00	32.43	81.48	41.49

(*) The difference between groups is statistically significant at the 0.05 level.
Source: Results of this research.

When the farmers were asked about their educational status on agricultural entrepreneurship, 34.04% of the farmers stated that they received training, while 65.96% stated that they did not receive any training on this subject. The farmers in the second group have a higher education rate (45.95%) than the other groups (Table 2). In a study conducted in Konya province-Türkiye, it was determined that 79.69% of the farmers received such training [1], while in a study conducted in Odemis district of Izmir province-Türkiye, this rate was determined as 16.67% [12].

Table 2. The status of farmers receiving agricultural entrepreneurship training

Answers (*)	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6da)	Group 3 (6da≤)	General
Yes	10	17	5	32
No	20	20	22	62
Total	30	37	27	94

(*) The difference between groups is statistically significant at the 0.05 level.
Source: Results of this research.

The information sources they use when deciding on an agricultural entrepreneurship were asked to the farmers and their importance level was examined. The most frequently used information sources by the farmers are respectively; Ministry of Agriculture and Forestry (MAF) Provincial and District Agriculture Directorates, internet, and written resources. Responses are similar in all groups (Table 3).

Table 3. Information sources of farmers for agricultural entrepreneurship*

Sources	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6da)	Group 3 (6da≤)	General
MAF Provincial and District Directorates	4.50	4.43	4.44	4.46
Universities	2.57	2.59	2.33	2.51
Farmer associations	2.47	2.32	2.37	2.38
Cooperatives	3.47	3.22	3.19	3.29
Internet	4.10	4.27	4.41	4.26
Written sources	3.60	3.84	3.93	3.79
Banks	2.37	2.46	2.56	2.46
Traders	3.17	3.22	3.00	3.14
Small and Medium Enterprises Development Organization	2.80	2.89	2.78	2.83
Pesticide-fertilizer dealers	2.87	2.76	3.04	2.87

*1.Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

Similar results were obtained in studies conducted in Konya and Izmir provinces-Türkiye. The most important source of information has been determined as Provincial and District Agriculture-Forest Directorates [1, 12].

The factors affecting the agricultural entrepreneurial personality were asked to the farmers and they were asked to score according to the level of importance. According to farmers, the most important factors are technical knowledge, wish for success and willingness. It is seen that the farmers in the second group consider personal experiences also important (Table 4).

Table 4. Factors affecting agricultural entrepreneurial personality according to farmers*

Factors	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6da)	Group 3 (6da≤)	General
Family	3.80	4.00	4.00	3.94
Wish for success	4.20	3.92	4.63	4.21
Environment	3.27	3.51	3.15	3.33
Education level	3.87	3.97	3.89	3.91
Personal experiences	3.97	4.41	3.78	4.09
Willingness	4.40	4.03	3.93	4.12
Age and gender	4.17	3.84	4.19	4.04
Technical information	4.27	4.59	4.52	4.47

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

When the farmers were asked about the factors that they attach importance to in agricultural entrepreneurship, it was determined that the profitability level and sustainability of the activity, financing opportunity and total cost were the most important factors. It is seen that the farmers in the second group consider input supply and personal tendencies and preferences as important (Table 5).

The farmers were asked to evaluate the reasons that are effective in choosing agricultural entrepreneurship according to the level of importance. Farmers stated that earning money and the increase in demand for agricultural products are the most important reasons. The farmers in the second group consider land acquisition by inheritance as an important reason (Table 6).

Similar results were obtained in studies conducted in Konya and Izmir provinces-Türkiye. According to the farmers, the most important reason for agricultural entrepreneurship is to earn Money [1, 12].

When the farmers were asked about the factors they considered when establishing a farm, they indicated marketing opportunities and climatic features as the most important factors

Table 5. Factors that farmers consider important in agricultural entrepreneurship

Factors	**Farm groups**			
	Group 1 (≤3 da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Level of knowledge about the agricultural activity	3.70	4.11	4.00	3.95
Choosing the production area	2.97	3.73	3.37	3.38
Profitability level and sustainability of activity	4.33	4.41	4.52	4.41
Market conditions and price change	3.53	3.05	3.33	3.29
Personal tendencies and preferences	3.63	4.22	4.00	3.97
Total costs	4.27	4.14	4.26	4.21
Input supply	4.07	4.27	4.22	4.19
Financing opportunity	4.17	4.51	4.15	4.30

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

Table 6. Reasons for farmers to engage in agricultural entrepreneurship

Reasons	Farm groups			
	Group 1 (≤3 da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Insufficient employment opportunities	3.37	3.49	3.26	3.38
The emergence of opportunities	3.67	3.41	3.41	3.49
Increase in demand for agricultural products	4.50	4.57	4.37	4.49
To earn money	4.60	4.65	4.56	4.61
Land acquisition by inheritance	3.63	4.11	4.04	3.94
Increasing the grant and incentive opportunities	3.80	3.57	3.81	3.71
Providing suitable loans to entrepreneurs	2.90	3.35	3.70	3.31

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

Farmers in the first group consider surrounding water resources as an important factor (Table 7). In a study conducted in Konya province-Türkiye, the most important factor for the farmers when establishing a farm was the land size [1], while in a study conducted in Izmir province-Türkiye, the most important factor was determined as socio-economic conditions [12].

Table 7. Factors that farmers take into account when establishing a farm

Factors	Farm groups			
	Group 1 (≤3 da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Land and soil structure	3.57	3.68	3.30	3.53
Geolocation	3.63	3.62	3.56	3.61
Input supply	3.13	4.00	3.52	3.59
Climatic features	4.23	4.30	4.15	4.23
Labor opportunity	3.10	3.03	3.11	3.07
Surrounding water resources	4.20	4.05	3.41	3.91
Marketing opportunity	4.47	4.62	4.30	4.48

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

When asked about the expectations of the farmers from agricultural entrepreneurship, it was determined that the most important expectations were to increase income and to be respected in the society (Table 8). In a study conducted in Konya province-Türkiye, the most important future goal of the farmers was determined as producing at the lowest cost [1], while in a study conducted in Izmir province-Türkiye, the most important future goal of the farmers was determined as preserving the land and capital and transferring it to the next generations [12].

Table 8. Expectations of farmers from agricultural entrepreneurship

Expectations	Farm groups			
	Group 1 (≤3 da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Increasing income	4.63	4.70	4.74	4.69
Creating new employment opportunities	2.97	3.03	2.89	2.97
Implementing agricultural innovations	3.37	3.14	2.85	3.13
Providing consumers with natural products	3.03	2.92	2.89	2.95
Respect in society	4.20	4.11	4.04	4.12

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

Farmers were asked about the level of importance they attach to various factors in greenhouse vegetable entrepreneurship. Farmers stated water supply, marketing opportunities and seed-seedling supply as the most important factors. The farmers in the second group also consider energy supply as an important factor (Table 9).

Table 9. Effective factors in greenhouse vegetable entrepreneurship

Factors	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Farm location selection	3.73	3.62	3.41	3.60
Capital and credit opportunities	3.33	3.30	3.44	3.35
Government supports and grants	4.07	3.68	3.85	3.85
Climatic and soil conditions	4.00	3.97	4.00	3.99
Marketing opportunities	4.40	4.35	4.56	4.43
Transportation and handling	3.63	3.86	3.59	3.71
Labor supply	3.07	3.32	2.89	3.12
Seed-seedling supply	4.33	4.05	4.41	4.24
Energy supply	4.17	4.28	4.15	4.21
Water supply	4.80	4.62	4.52	4.65

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

The Fuzzy Paired Comparison method was used in the analysis of the factors affecting the farmers' decision to produce vegetables in the greenhouse. Six different criteria are presented to farmers to determine their decision preferences. These criteria are vegetable prices, marketing opportunities, production costs, soil and water characteristics, climatic conditions, and yield. It has been determined that the most important criterion in the decision of the farmers to produce vegetables in the greenhouse is the production costs. Other important criteria are marketing opportunities, vegetable prices, climatic conditions, yield, and soil-water characteristics, respectively. According to the Friedman test results, the difference between the preferences is statistically significant (Table 10).

Table 10. Fuzzy Paired Comparison Method results

Factors	Min.	Max.	Mean	Std. error
Production costs	0.420	0.730	0.594	0.059
Marketing opportunities	0.400	0.720	0.561	0.065
Vegetable prices	0.410	0.670	0.560	0.055
Climatic conditions	0.360	0.670	0.528	0.064
Yield	0.300	0.620	0.456	0.063
Soil-water characteristics	0.280	0.590	0.418	0.074

Friedman test is significant for $p<0.01$. Kendall's W: 0.445
Source: Results of this research.

Farmers produce cucumbers in the greenhouse in the spring. It was determined that some farmers grow autumn cucumbers after spring cucumbers, while some farmers grow lettuce after spring cucumbers. However, it has also been determined that the automation systems required for the creation of artificial conditions such as heating, ventilation, irrigation, fertilization, and spraying are limited. Farmers usually market cucumbers and lettuce to brokers and traders on the farm. Average yields obtained in cucumber and lettuce production and average prices obtained by farmers are presented in Table 11.
89.36% of the farmers think that the government supports in greenhouse vegetable growing are insufficient. It was determined that 64.15% of the farmers had agricultural insurance. 97.87% of the farmers do not consider organic production, and 80.85% of the farmers do not consider production with good agricultural practices.

Table 11. Economic results of greenhouse vegetable production of farmers

Vegetable yield and price	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Spring cucumber yield (kg/m²)	24.05	26.88	27.58	26.18
Spring cucumber price (USD/kg) (*)	0.12	0.12	0.12	0.12
Autumn cucumber yield (kg/m²)	16.29	16.80	17.63	16.87
Autumn cucumber price (USD/kg) (*)	0.30	0.31	0.32	0.31
Lettuce yield (kg/m²)	5.00	5.08	5.40	5.15
Lettuce price (USD/pcs) (*)	0.28	0.29	0.29	0.29

(*) 1 USD was 16.57 Turkish Lira in 2022.
Source: Results of this research.

When the farmers were asked about their future goals in greenhouse vegetable entrepreneurship, they stated minimizing the hazards during production and marketing and sustaining greenhouse vegetable production as the most important goal (Table 12).

Table 12. Future targets of farmers in the greenhouse vegetable entrepreneurship

Targets	Farm groups			
	Group 1 (≤3da)	Group 2 (3-6 da)	Group 3 (6 da≤)	General
Production by reducing costs	3.77	3.81	3.78	3.79
Setting up new farms	3.87	3.76	3.96	3.85
Preserving the farm and passing it on to future generations	3.37	3.08	2.78	3.09
Using greenhouse automation systems	3.57	3.30	3.63	3.48
Pay off debts	3.80	3.46	4.11	3.76
To sustain greenhouse vegetable production	4.00	3.86	3.93	3.93
Minimizing hazards during production and marketing	4.43	4.35	4.33	4.37
Using ecological farming methods	3.27	3.24	3.11	3.21

*1. Not important, 2. Slightly important, 3. Undecided, 4. Important, 5. Very important
Source: Results of this research.

CONCLUSIONS

Unlike other business lines, agriculture has a distinct position in society and therefore it is not correct to see farmers as one with other entrepreneurs. It is also seen that entrepreneurship includes features that are not compatible with traditional agricultural values and lifestyle. To understand the entrepreneurship of farmers, it is necessary to examine the relationship between their goals, objectives and attitudes and their strategic entrepreneurial behaviours. The definition of entrepreneurship in agriculture has changed over the years. Research to date shows that traditional or production-oriented identities dominate among farmers [13], but there is some evidence of the emergence of new identities such as entrepreneurial identity, especially among small farmers [11, 23].

In this study, entrepreneurship perspectives, expectations and factors affecting entrepreneurial behaviours of greenhouse farmers were analyzed. According to the results of the study, 66% of the farmers did not receive training on agricultural entrepreneurship. It has been determined that the most important information sources are the Ministry of Agriculture and Forestry (MAF) Provincial and District Agriculture Directorates, internet, and written resources. Knowledge transfer in greenhouse activities is possible by learning traditional greenhouse information from the father or from the father. Farmers see the profitability level and sustainability of the activity, financing opportunity and total cost as important factors in agricultural entrepreneurship. The two most important reasons for their agricultural entrepreneurship are earning money and the

increase in demand for agricultural products. Marketing opportunities and climatic features are considered when establishing a farm. The most important expectations from agricultural entrepreneurship are increase income and to be respected in the society.

Farmers see water supply, marketing opportunities and seed-seedling supply as the most important factors in greenhouse vegetable entrepreneurship. The most important criterion in greenhouse vegetable growing is production costs, followed by marketing opportunities and price. The most important future goals of the farmers, who produce two vegetables a year by producing cucumbers and lettuce in the greenhouse, are minimizing the hazards during production and marketing and sustaining greenhouse vegetable production.

In other studies, conducted in Türkiye and other countries, the effects of entrepreneurial behaviours and influential factors on greenhouse farmers were analysed. In a study on greenhouse farmers in Antalya, it was determined that the farmers believed that entrepreneurial behaviour could enable them to apply production techniques that are more suitable for human health. In addition, farmers think that they can use various new production techniques or pesticide types that can increase yields, that they can have new technologies by being entrepreneurial, and that they can take more risks in their investments [54]. In a study conducted in the Jiroft region of Iran, the effect of entrepreneurial orientation and marketing abilities on the performance of greenhouse farmers was investigated. As a result of the research, it was concluded that entrepreneurial orientation and marketing abilities have a significant and positive effect on the greenhouse enterprise performance. It has been determined that planning and development efforts increase performance and continuity in activities in a competitive environment [41].

Greenhouse vegetables are among the agricultural products that Türkiye exports the most. In recent years, greenhouse areas have been increasing rapidly. There is a need to increase the number of entrepreneurs in this sector so that Türkiye can produce at a level that meets its own needs and increase its exports. For this reason, training and extension support should be offered to entrepreneurs who will invest in this sector. Technical support should be offered to investor candidates in terms of consultancy and mentoring services. Access to agricultural information should be facilitated. Support for marketing and storage should be provided. Today, important supports related to greenhouse production should be provided to farmers and private sector entrepreneurs by the government in Türkiye. Support for modernizing greenhouses and improving them in terms of technology should be provided and increased. It would be beneficial for farmers to increase their risk insurance practices. On the other hand, the use of different production techniques in greenhouses may reduce costs as well as increase farmer incomes.

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