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Seed Sector in Turkey and Analysis of Sunflower Seed Purchasing Behaviour of Farmers: Example of Thrace Region

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Abstract: Selection of suitable seed in agriculture has great importance in terms of scarce resources and efficient use of facilities. Efficient use of inputs has been one of the key objectives of agricultural policies in all over the world. Therefore, studies continue about production of new seeds with high yield and resist to diseases. The 66.7% of the total seed production in Turkey are met by the private sector (hybrid sunflower, corn, potato, soybean, cotton and vegetable seed). And 53.4% of the total sunflowers in Turkey are grown in Thrace region. It is therefore appropriate to be selected as the research area. In this regard, the aim of this study was to examine the dynamics in seed sector and particularly investigate the sunflower seed purchasing behavior of farmers with special attention to Thrace region. As a methodology, 198 questionnaires which pursued sunflower farm activities in the region were utilized. As a result of the descriptive statistics, it could be concluded that almost 20% of seed supply in Turkey is imported and that 70%-80% of it is directly used as an "input" for growing vegetative products and the remaining is used as "intermediate goods" for growing "certified seeds" for domestic or international markets.

Key words: Sunflower, seed selection, farmers' preferences.

1. Introduction

Inputs used for production are divided into four categories and they are called production factors. They are soil, capital, labor, and entrepreneurship. Capital can be described as tools which are also produced and boost the efficiency of production. To a farmer, capital means all assets which are owned and used in an agricultural enterprise. Seed, feed, fertilizer, pesticide, fuel, and other raw materials are included in the category of floating capital. The primary goals of the agricultural policy are listed as boosting agricultural production, increased use of inputs, self-sufficiency, being environmental-friendly, agricultural development, and increasing farmer income since the years when planned development began in Turkey [1].

Effective use of inputs has been one of the primary goals of agricultural policies in the world. Efforts to grow seeds with a high yield and resistant to diseases continue at full speed because agricultural output needs to be increased 70% in order to feed the world's population by 2050 and this ratio is expected to go up to 100% in developing countries [2]. It is of crucial importance to use varieties with a high yield and resistant to diseases in order to achieve those goals. Considering its importance to the nutrition of human beings, field and industrial crops come to the fore.

Seed is the starting point for agricultural production. Seed is the first link of the food chain and the foundation of biological and cultural diversity. Certified seed means a material whose physical, biological, and genetic values have been determined and documented by public authorities. Being a vegetative production

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Saraçoğlu, K. C. "Evaluation of Seed Sector in Turkey in Terms of Firms and Producers: Trakya Example", quoted from the doctoral thesis, NKÜ, Institute of Science and Technology, Tekirdağ.

material, seed is of strategic importance to the agricultural industries of countries. In today's world, seed is not only an agricultural input, but also a product which is obtained by using technology and has an economic value bringing a high revenue [3].

Thrace is one of the regions where the yield of major field crops such as wheat, sunflower and paddy per unit area is above the national average in Turkey. According to TUIK data, 6.5% of wheat, 53.4% of sunflower, 46.6% of paddy is grown in Thrace (Tekirdağ, Edirne, and Kırklareli) in Turkey. Improved hybrid seeds are densely used in this region which has been selected as the research area [4].

The industry has witnessed a big change in the past century. The farmers are purchasing seeds from a market with better traits rather than purchasing seeds from previous harvest. Developments in seed technology also played a big role in the industry's growth [5]. Globally, North America occupies the biggest market share, and together with Europe, owns more than 50% of the global seed market. In order to increase their share in the market, big companies try to develop new strategies and some mergers and acquisitions take place as well.

The seed industry in Turkey has considerably grown in the past 25 years. According to data released by the Ministry of Food Agriculture and Livestock, the market share of local varieties obtained as a result of improvement works undertaken by the public and private sectors in Turkey varied between 35% and 40% in average in different years. This ratio is expected to reach 50% in the next five years. The private sector accounted for 45% of total seed production in 2005 as compared to 66.7% in 2011. According to 2011 data, almost all hybrid sunflower, hybrid maize, potato, soya, cotton and vegetable seeds are grown by the private sector. These developments in sector are the reason of this research. These developments show that the share of the state in the sector is gradually decreasing and the free market conditions are becoming widespread as the dominance of private sector increases [6-8].

2. Materials and Methodology

2.1 Materials

Research materials consist of primary and secondary resources which have been collected at three phases. Various researches previously conducted about the matter were reviewed in the first phase and data needed for research sampling were obtained from agricultural offices in cities and counties at the second phase. İnan and Güngör, in their research about sunflower seed market, they have conducted a survey with 760 producers in Marmara region. In this research, market share of seed companies in the market has been measured and some future determinations have been done using Markow analyses. Marketing activities and strategies of these companies as well as the producer behaviors have been analysed in detail. This study has been the starting point of the research. Changes in market share took the attention of researchers and need to analyze into detail has been emerged [9].

Also some researches show that the analyses of the various factors affecting buying behavior of farmers and dealer's analysis will be needed to help the organization to formulate the strategies improving existing position of the organization as well as formulate future strategies [10, 11].

A survey targeting seed companies and farmers was conducted at the third phase. Three provinces in Thrace region, namely Edirne, Tekirdağ and Kırklareli were included in the scope of the study regarding a part of research materials related to farmers. Data derived from questionnaires filled out with formers represent the primary data of the research.

Secondary data were derived from documents made available by the Ministry of Food Agriculture and Livestock (GTHB), Directorate General for Vegetative Production (BÜGEM), State Institute of Statistics, Sub-Union of Seed Industrialists and Farmers (TSÜAB), Seed Industry Association of Turkey

(TÜRKTED), and Seed Registration and Certification Center (TTSMM).

2.2 Methodology

As a result of preliminary meetings, it was determined that big farmers were the target groups of seed companies and that small farmers made decisions on production after constantly observing the production decisions of big farmers. Farms with a size smaller than 50 decares were not included in the scope of sampling done according to land size. Considering the size of the research area, it was understood that stratified sampling was the most appropriate method determined for this study and calculations were done under four groups [12].

Table 1 shows the parameters used for determining the number of samples and the number of questionnaires calculated by land groups. As a result of calculations, it was considered sufficient to interview 680 out of a total of 64,631 farmers who were conducting agricultural activities on lands over 50 decares in Thrace region. The number of questionnaires was distributed by the cultivation of different crops in the region and the number of questionnaires corresponding to sunflower production was found to be 198 as shown in Table 2. Separate sampling was not done for settlements that needed to be visited and interviews were randomly conducted by taking account of cultivation areas in villages.

3. Seed Industry in Turkey

The seed industry in Turkey can be divided into three categories namely vegetable, cool climate cereals and forage plants and industrial plants. Hybrid vegetable seeds, which rapidly increased over years, account for the largest part of the market in terms of monetary value. Industrial plants made up of hybrid seeds, including maize, sunflower, cotton and sugar beet are the second segment of the seed market. The cool climate cereals and forage plants, which particularly covers certified wheat and barley seeds, are atop the list in terms of quantity of seeds if not monetary value. Calculations made by various organizations indicate that seeds worth US 1.5-2 billion

Table 1 Parameters used for determining number of samples.

Groups	Group 1 (50-99 da)	Group 2 (100-199 da)	Group 3 (200-499 da)	Group 4 (500 da and larger)
Nh	24,151	14,740	5,181	756
St. Deviation (Sh)	37.955	60.745	87.998	137.002
Sh^2	1,440.582	3,689.955	7,743.648	18,769.550
D	3.25	11.89	31.82	123.31
Arithmetic average	70.701925	135.17116	221.10714	435.30375
Number of samples	435	188	52	5
N (total number of farmers)	44,828			
n (total number of samples)	680			

Table 2 Distribution of grower questionnaires by provinces and crops.

Field crops	Cultivated areas (da)	Distribution (%)	Number of questionnaires in Tekirdağ	Number of questionnaires in Edirne	Number of questionnaires in Kırklareli	Total number of questionnaires
Wheat	4,238,593	53.9	143	129	94	367
Sunflower	2,294,048	29.2	77	70	51	198
Barley	277,191	3.5	23	20	14	56
Maize	319,732	4.1	22	21	16	59
Other	729,270	9.3	0	0	0	0
Total	7,858,834	100	265	240	175	680

This research was developed from a section of the doctoral thesis mentioned in the footnote on the first page. Developed in line with the changed in seed sector described above and presented as an article.

are sown in Turkey every year, which showed the size of the market. First plant improvement works and production of seeds of high quality seeds in Turkey began when seed improvement stations were established in 1926 and fundamental policies related to the seed industry were significantly revised early in the 1980s and the public-based seed supply system was replaced with a seed industry model based on private entrepreneurship. Deregulation of the economy and the discontinuation of restrictions on seeds in foreign trade prepared the ground for private sector investments and many local or foreign seed companies entered the market directly or through partnerships. Thus, the number, capacity, and operations of private seed companies rapidly grew in a short period and the national seed industry was largely dominated by the private sector. Today, around 130 seed companies have the states of research organizations.

The Turkish seed industry constantly developed and grew and the number of private seed companies reached 581. Recently, very important legal arrangements were made in the seed industry. In that context, the private sector was organized in accordance with laws and Sub-Union of Seed Industrialists (TSÜAB) was founded. TSÜAB is a professional organization with the status of a public entity with legal entity. It was founded in accordance with article 16 of the seed law and became operational in 2008. TSÜAB's primary goal is to represent the Turkish seed industry based on powers vested by laws, to safeguard the rights and interests of its members, and to develop the Turkish seed industry. It is a legal requirement to become a TSÜAB member for all seed industrialists and farmers operating in Turkey. A total of 581 companies are members of TSÜAB as at May 2013, according to records.

A total of 650 thousand tons of certified seed was produced in Turkey in 2012 and they included more than 70 plant varieties. Private sector companies primarily grow hybrid maize, hybrid sunflower, hybrid sugar beet, cotton, and hybrid and standard vegetable seeds, potato, some forage plants, paddy, barley, and more recently, wheat seeds. Public organizations traditionally focus on wheat, barley, some forage plants and pulses.

Data related to seed production and trade in Turkey are shown in detail by years in Table 3. The table indicates that seed production and exports constantly increased in Turkey whereas import fluctuated over years.

Hybrid sunflower seed was not grown in Turkey in 1980's and the total amount of its seed production was 14,000 tons in 2013. Potato seed production rose 24 times, hybrid maize seed production rose nine times, vegetable seed production rose five times during the same period. In 2012, approximately 320 thousand tons of wheat, 43 thousand tons of barley, 33 thousand

Table 3 Seed production and trade in Turkey.

Year	Production (ton)	Import		Export	
		Quantity (ton)	Value ($ thousand)	Quantity (ton)	Value ($ thousand)
2002	145,227	19,227	55,292	8,112	17,320
2003	184,247	16,161	71,249	16,095	21,451
2004	349,332	19,838	79,238	15,658	35,147
2005	332,190	23,801	89,597	13,814	26,981
2006	370,748	32,654	105,608	23,941	47,093
2007	325,013	34,374	130,581	21,335	49,886
2008	290,148	43,578	170,798	26,245	71,101
2009	385,061	30,267	158,363	21,816	70,766
2010	497,964	40,610	176,792	29,586	94,789
2011	637,330	36,754	178,121	30,554	108,948
2012	646,905	33,160	197,649	37,439	120,796

tons of hybrid maize, nine thousand tons of paddy, 15 thousand tons of hybrid sunflower, 1,200 thousand tons of sugar beet, 185 thousand tons of potato, 23 thousand tons of cotton and 2,500 thousand tons of vegetable seed were produced in Turkey [13].

Table 4 shows main seed varieties imported and exported in 2011 and their monetary values.

Turkey imports tomato, potato, cucumber, maize, and zucchini seeds and exports maize, cotton, zucchini, and tomato seeds. Turkey's share of seeds involved in international trade has been calculated as 5.7% in terms of value.

A breakdown of TSÜAB members by their regions, business segments, and capital structure is shown in Table 5. It indicates that a significant part of companies in Turkey (96.6%) have been founded with local capital. According to the table, 33.39% of seed companies in Turkey are operating in the Central Anatolia region, 26.85% in Marmara region, 14.62% in Mediterranean region and 9.12% in Southeastern Anatolia region.

The research indicates that cereal seeds atop the list in terms of production (44.21%). It was determined that there were 581 licensed seed producers and that production tended to grow in favor of the private sector. A look at recent years indicates that the private sector accounts for all production of hybrid maize, sunflower, potato, cotton and vegetable production.

An assessment of the Turkish seed industry was done by using SWOT analysis method in Table 6. While the analysis pointed at weaknesses and threats, the agricultural sector is growing and developing thanks to the fact that Turkey has rich agricultural land, strategic regional position, labor, sea and inland water resources. Additionally, Turkey has different ecologies for seed production, a young and dynamic population, rising prosperity, and neighboring countries

Table 4 Main seed varieties in foreign trade.

Main seed varieties imported			Main seed varieties exported		
Varieties	Monetary value (1,000 $)		Varieties	Monetary value (1,000 $)	
	2011	2012		2011	2012
(1) Tomato	52,096	59,657	(1) Sunflower	50,944	59,569
(2) Potato	18,794	14,822	(2) Maize	25,745	29,184
(3) Cucumber	13,695	15,991	(3) Cotton	9,006	8,024
(4) Maize	15,285	18,165	(4) Zucchini	336	148
(5) Zucchini	4,818	6,548	(5) Tomato	4,348	2,412

Source: GTHB, BÜGEM, 2013.

Table 5 A breakdown of companies by their regions, business segments and capital structure.

Geographical region where the company is located			Company's business segment			Company's capital structure		
Geographical region	Item	(%)	Product	Item	(%)	Capital	Number	(%)
Central Anatolian region	194	33.4	Cereals	371	63.9	Local	561	96.6
Marmara region	156	26.9	Potato	94	16.2	Foreign	17	2.9
Mediterranean region	85	14.6	Forage plants	116	20.0	Partnership	3	0.5
Southeast Anatolia region	53	9.1	Maize	45	7.7	Number of firms	581	100.0
Aegean region	48	8.3	Vegetable	128	22.0			
Eastern Anatolian region	24	4.1	Lentil-chickpea	26	4.5			
Black Sea region	21	3.6	Sunflower	36	6.2			
Number of firms	581	100.0	Cotton	9	1.5			
			Sugar beet	14	2.4			
			Number of firms	581	144.4			

Source: TSÜAB, 2013.

Table 6 An assessment of the seed industry by using SWOT analysis method.

Strengths: Large farms which belong to the public sector and have no isolation problem can be leased out to private companies for growing seeds; Greater use of organic farming and good farming practices; Subsidies provided for vegetative production; Availability of qualified technical staff; Turkey has rich agricultural land, strategic regional position, labor, sea and inland water resources, and very different ecologies conducive to seed production; Decline in conventional agricultural production; A young and dynamic population, rising prosperity, and neighboring countries with a high consumption potential; Small companies can rapidly adapt themselves to changing conditions and can act much more dynamically as compared to companies in the developed countries.	Weaknesses: Existence of small farms with divided lands; Constant rise in input costs; Lack of national planning for agricultural production; Grower organizations are not efficient and strong; Insufficient funds allocated to R & D and the private sector does not conduct and complete joint R & D projects with both the public sector and the academia; Dependence on other countries for inputs used; Insufficient plant improvement; Uneven distribution of technology utilization across regions; Utilization of certified seeds and saplings has not reached the desired level despite all efforts; Improper use of production techniques and insufficient technical training provided for farmers; There is insufficient accumulation of capital in the industry and companies are small.
Opportunities: Main opportunity: labor, an industrious and intelligent young generation keeping abreast of developments; Continuing incentives, grants, loans, and other forms of support because of awareness on their importance; Growing importance of vegetative production because of constantly rising demand for food; Agricultural R & D efforts are opened up to the private sector; Basin-oriented production planning; Increased opportunities for cooperation with national and international organizations; Changing supply structure as a result of increased consumer demands and awareness; Higher education levels among farmers as compared to the past; Rising awareness on input utilization.	Threats: Negative effects on environmental factors; Fluctuations in crop prices and international speculation; Rise in production costs; Non-agricultural use of agricultural land; Insufficient workforce and growing difficulties in finding workers; Global economic and political crises and challenges related to international markets; Confusion about powers related to issues that interest the agricultural industry; High logistical costs; Changing demographic structure in rural areas and diminishing interest in agriculture among young population; Misinformation resulting from the media and difficulties in overcoming it.

with a high consumption potential as well as constantly growing exportation of agricultural production. There are other factors such as a dynamic, well-organized, and experienced private sector as well as the constantly growing domestic seed market which will most probably grow further in the future [14, 15].

4. Findings of the Study

Table 7 shows a breakdown of farm owners interviewed by age brackets. It is seen that the number of farmers aged 50 or older is higher than others which indicates that the average age of the farmer population is in the middle-age group. The agricultural sector increasingly operates as a buyers' market rather than a sellers' market [16].

Table 8 shows a breakdown of farm owners by their education levels. The majority of the farmers (60.15%) are primary school graduates while 20.29% of them are graduated from junior high schools and the percentage of college graduates was interestingly high (7.5%). It is understood that they can go to college because their families own relatively larger lands and have a high level of income and education. Acting as "leader farmers", those farmers also set a good example to other farms in their region.

It seems that Tekirdağ is considerably ahead of the other two provinces in terms of education level. In addition to the existence of a connection between income and education levels, their proximity to Istanbul can be cited as another factor.

Table 9 shows the distribution of farmers by varieties that they cultivate. Sunflower + wheat ranks first with 44.12% in the region. Sunflower + wheat + barley covers a significant part of cultivated areas with 16.47% while the share of farms growing very different varieties accounted for 16.47%. The percentage of farms which grow all of them was considerably high (28.12%).

Table 7 Breakdown of farm owners interviewed by age brackets.

Age	Tekirdağ		Edirne		Kırklareli		Trakya	
	Item	(%)	Item	(%)	Item	(%)	Item	(%)
25 and younger	2	2.6	2	2.9	1	0.9	5	2.4
26-35	8	10.4	6	8.1	6	11.1	20	10.2
36-45	17	22.1	8	11	11	21.3	36	19
46-55	22	28.6	25	36.4	13	26.4	60	30.2
56 and older	28	36.4	29	41.6	20	40.3	77	38.4
Total	77.0	100.0	70.0	100.0	51.0	100.0	198.0	100.2

Table 8 Breakdown of farm owners by their education levels.

Education level	Tekirdağ		Edirne		Kırklareli		Trakya	
	Item	(%)	Item	(%)	Item	(%)	Item	(%)
Primary school	41	53.2	47	67.1	32	62.7	120	60.6
Junior high school	17	22.1	14	20.0	9	17.6	40	20.2
High school	7	9.1	4	5.7	7	13.7	18	9.1
University	2	2.6	2	2.9	1	2.0	5	2.5
Post-graduate	10	13.0	3	4.3	2	3.9	15	7.6
Total	77	100.0	70	100.0	51	100.0	198	100.0

Table 9 Varieties cultivated by farmers.

Varieties cultivated	Trakya	
	Item	(%)
Sunflower + wheat	87	44.1
Sunflower + wheat + barley	33	16.5
Sunflower + wheat + barley + maize + paddy + vetch	20	10.3
All	58	29.1
Total	198	100.0

Table 10 shows sales point that farms prefer for buying sunflower seed. Thrace Union is a leading supplier preferred by 28.53%. It is followed by Agricultural Credit Cooperatives (22.65%). The data indicate that a large part of the farmers prefer a large number of options, including sugar beet cooperatives, chambers of agriculture, dealers and leader farmers. According to a breakdown by provinces, Thrace Union leads in Kırklareli; Thrace Union + Agricultural Credit Cooperative lead in Tekirdağ (29.9%), and Thrace Union also leads in Edirne (32.7%).

Table 11 shows sunflower seeds preferred by farms. It indicates that a significant part of farms covered by the study (40.74%) say that Tunca is their first choice. This percentage is 60.12% in Edirne. The percentage of farmers cultivating Tunca variety was 41.12% in Tekirdağ and 34.19% in Kırklareli. LG 5580 + LG 5543 CL + Tunca mix can be cited among other choices with 9.56%. It is seen that farmers include a large part of varieties in production patterns and that they are still in search of options.

Table 12 lists the reasons for preferring and abandoning of sunflower seed varieties by farmers which the majority prefers for yield, oil content, resistance to diseases, inclined platform, price and resistance to orobanch together and abandons mostly due to low yield and quality.

Table 13 lists criteria about criteria used by farm owners for assessing seed quality. Company image was cited as an interesting finding by 27.94% of them.

Low yield and quality was the main problem (39.41%) and the percentage of farmers who stated that the quality of seed in the bag was unsatisfactory was quite high (35.00%).

Table 10 Suppliers of sunflower seeds sold to farms.

Seed supplier	Tekirdağ		Edirne		Kırklareli		Trakya	
	Item	(%)	Item	(%)	Item	(%)	Item	(%)
Thrace Union	16	20.8	22	31.4	18	35.3	56	28.3
Thrace Union + Agricultural Credit Coop.	22	28.6	12	17.1	9	17.6	43	21.7
Thrace Union + Agricultural Credit Coop. + Sugar Beet Coop. + Dealer	15	19.5	10	14.3	7	13.7	32	16.2
Thrace Union + Agricultural Credit Coop. + Sugar Beet Coop. + Dealer + Chambers of Agriculture	17	22.1	19	27.1	11	21.6	47	23.7
Thrace Union + Agricultural Credit Coop. + Sugar Beet Coop. + Chamber of Agriculture	3	3.9	6	8.6	5	9.8	14	7.1
Thrace Union + Agricultural Credit Coop. + Dealer + Leader Farmer	4	5.2	1	1.4	1	2.0	6	3.0
Total	77	100.0	70	100.0	51	100.0	198	100.0

Table 11 Seed varieties preferred by farms in two production periods.

Varieties preferred in preceding year			Varieties preferred in the current year		
Name of variety	Item	(%)	Name of variety	Item	(%)
LG 5580	17	8.6	LG 5580	13	6.6
LG 5580 + Tunca + Sanay	3	1.5	LG 5580 + LG 5543 CL	3	1.5
LG 5580 + LG 5543 CL + Tunca	19	9.6	LG 5580 + LG 5543 CL+ Tunca	19	9.6
LG 5580 + Tunca + P 64 G 46	4	2.0	LG 5580 + LG 5543 CL + P 64 G 46	0	0.0
Tunca	74	37.4	LG 5580 + Tunca + Sanay	3	1.5
Tunca + PR 64 G 46	9	4.5	LG 5580 + Tunca + P 64 G 46	3	1.5
Tunca + Sanay	18	9.1	Tunca	81	40.9
LG 5543 CL + Sanay	6	3.0	Tunca + P 64 G 46	18	9.1
LG 5543 CL	5	2.5	Tunca + Sanay	13	6.6
LG 5543 CL + Tunca	8	4.0	LG 5543 CL	6	3.0
LG 5543 CL + Tunca + Pioneer	5	2.5	LG 5543 CL + Tunca	7	3.5
PR 64 G 46	7	3.5	LG 5543 CL + Tunca + Sanay	6	3.0
Sanay	10	5.1	P 64 G 46	11	5.6
Sanbro	4	2.0	Sanay	11	5.6
Sanay + Sanbro	2	1.0	May	4	2.0
Sanay + Oliva	3	1.5			
Sanay + PR 64 G 46	4	2.0			
Total	198	100.0	Total	198	100.0

Table 12 Reasons prompting farmers to prefer or abandon sunflower seed variety.

Reasons for preferring the variety	Item	(%)	Reasons for abandoning	Item	(%)
Yield + oil content	61	30.8	Low yield and quality	78	39.4
Yield + oil content + resistance to diseases	29	14.6	Quality of seed in bag is not satisfactory	70	35.4
Yield + oil content + resistance to diseases + inclined platform	16	8.1	Low rate of germination	19	9.6
Yield	14	7.1	Corner and weak appearance	24	12.1
Yield + oil content + resistance to diseases + inclined platform + price	9	4.5	Not resistant to Orobanja	7	3.5
Yield + oil content + resistance to diseases + inclined platform + price + resistance to Orobanch	69	34.8			
Total	198	100.0	Total	198	100.0

Table 13 Criteria used by farmers for assessing seed quality.

Quality criteria of farmers	Tekirdağ		Edirne		Kırklareli		Trakya	
	Item	(%)	Item	(%)	Item	(%)	Item	(%)
Packaging	11	14.3	10	14.3	8	15.7	29	14.6
Appearance of seed	8	10.4	12	17.1	4	7.8	24	12.1
Germination rate	9	11.7	9	12.9	4	7.8	22	11.1
Company name	26	33.8	15	21.4	14	27.5	55	27.8
Price	6	7.8	10	14.3	7	13.7	23	11.6
All	17	22.1	14	20.0	14	27.5	45	22.7
Total	77	100.0	70	100.0	51	100.0	198	100.0

Table 14 Places where farms market their products (sunflower).

Place where sunflower is marketed	Tekirdağ		Edirne		Kırklareli		Trakya	
	Item	(%)	Item	(%)	Item	(%)	Item	(%)
Thrace Union	21	27.3	25	35.7	23	45.1	69	34.8
Thrace Union + Agricultural Credit Coop.	8	10.4	4	5.7	4	7.8	16	8.1
Thrace Union + Agricultural Credit Coop. + Merchant	12	15.6	5	7.1	5	9.8	22	11.1
Thrace Union + Agricultural Credit Coop. + Merchant + Dealer	18	23.4	20	28.6	6	11.8	44	22.2
Thrace Union + Agricultural Credit Coop. + Merchant + Commodity Exchange + Leader Farmer	12	15.6	11	15.7	10	19.6	33	16.7
Thrace Union + Agricultural Credit Coop. + Commodity Exchange + Factory	6	7.8	5	7.1	3	5.9	14	7.1
Total	77	100.0	70	100.0	51	100.0	198	100.0

Table 14 shows a breakdown of places where farmers market their sunflower harvest. It is understood that a significant part of farmers deliver their produce directly to Thrace Union (35.15%).

5. Conclusions and Suggestions

Considering the average age of farmers was 50 years and older (40.9%) and youngest farmers were found to be in Edirne and Tekirdağ, it is clearly seen that young population is moving away from agriculture. Farm owners emphasize the importance of yield, resistance to orobanche, inclined platform structure, and high oil content in sunflower seeds and Thrace Union and Agricultural Credit Cooperatives stand out as the main suppliers of seeds. Thrace Union purchases sunflower seed grown by 41% of farmers. And Tunca is the mostly preferred variety by sunflower farmers with 43% and it was understood that yield and high oil content were the main factors for preferring Tunca. One of the key findings of the study was that farmers are in search of a new and better seed. This is an advantage for companies and provides an opportunity to grow and market new varieties. It can be assumed that firms will continue their operations in Turkey for a long period.

Main problems and suggestions can be as follows:

It should be easier to follow and access technological advances and programs aimed at supply of educated human resources needed by the industry should be implemented.

An efficient use of existing R & D resources in line with the demands and under supervision of the industry is of crucial importance to the efficient use of scarce resources in the future.

Some problems faced due to the organization of the industry conducting seed law numbered 5553. Regarding the law different interpretations should be eliminated and bottlenecks should be overcome through amendments to regulations and legislation. The participation of companies in fairs should be supported and training in presentation techniques for promotional events, seminars, and meetings and the

outcome of field studies should be used at meetings, fairs and events.

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