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An economic overview of the nut sector in Turkey

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SUMMARY – Turkey is known to be one of the oldest nut producing countries. It holds first place of the world hazelnut production, third place in walnut, chestnut and pistachio and seventh place almond. Hazelnuts have more than 60 percent share of the total Turkish nut production followed by walnuts, chestnuts, almonds and pistachios. Productivity of hazelnuts, chestnuts, almonds and pistachios has increased while walnuts productivity has decreased in the last 15 years. Hazelnut, chestnut and pistachio production are concentrated in Black Sea, West Anatolia and East Anatolia Regions, respectively, while walnut and almond production are spread out all over the country. Turkey is the largest hazelnut world producer and exporter, it has recently increased its production and export capacity substantially while government involvement in this market has declined gradually in the last 15 years. Turkey exports hazelnuts mainly to Germany and other European countries. Turkish hazelnuts have been also exported substantial amount to major hazelnut-producing countries. The restriction of hazelnut planted areas, the increasing market share in the domestic and foreign markets and the export fund level of hazelnut to solve the excess supply problem in recent years are considered. Important current issues related to the hazelnut market. Walnuts, chestnuts and almonds are produced for mainly domestic consumption with a very small amount or exports. Pistachio production increased while the amount of exports decreased but additional increases are expected in pistachio production and hence exports, as a result of GAP project providing irrigated land where pistachio is produced.

Key words: Turkey, hazelnut, walnut, chestnut, almond, pistachio, economics.

RESUME – *"Analyse économique du secteur des fruits secs en Turquie". La Turquie est connue comme un des pays producteurs de fruits secs de plus longue tradition. Il occupe la première place dans la production mondiale de noisettes, la troisième pour les noix, châtaignes et pistaches et la septième pour les amandes. Les noisettes représentent plus de 60% de la production totale turque de fruits secs, suivies par les noix, châtaignes, amandes et pistaches. La productivité des noisettes, châtaignes, amandes et pistaches a augmenté, bien que la productivité des noix ait baissé pendant les 15 dernières années. La production de noisettes, châtaignes, et pistaches est concentrée dans la Mer Noire et les régions de l'Anatolie de l'Ouest et de l'Est, respectivement, bien que la production de noix et d'amandes se soit étendu à tout le pays. La Turquie est le premier producteur et exportateur mondial de noisettes, ce pays ayant augmenté récemment sa production et sa capacité d'exportation bien que l'implication du gouvernement dans ce marché ait baissée graduellement lors des 15 dernières années. La Turquie exporte des noisettes principalement en Allemagne et dans d'autres pays européens. Les noisettes turques sont aussi exportées en quantités non négligeables aux principaux pays producteurs. Dans cet article on considère la restriction des surfaces plantées en noisettes, la part croissante sur le marché intérieur et international ainsi que le niveau de subventions à l'exportation des noisettes pour résoudre les problèmes d'excès d'offre qui se pasent ces dernières années. D'autres questions importantes concernant le marché des noisettes sont étudiées. Les noix, châtaignes et amandes sont produites principalement pour la consommation intérieure et la quantité destinée à l'exportation est très faible. La production de pistaches a augmenté bien que la quantité exportée ait baissé, mais on espère des augmentations additionnelles de la production de pistaches et donc des exportations, comme résultat du projet GAP qui apporte des terrains irrigués où les pistache sont produites.*

***Mots-clés** : Turquie, noisette, noix, châtaigne, amande, pistache, économie.*

Introduction

For centuries, Turkey has been known as one of the motherland countries of nuts in the world. It produces around 73% of hazelnut, 13% of walnut, 18% of chestnut, 4% of almond and 14% of pistachio production of the world (Koksal *et al.*, 1995).

Production share trends of nuts in Turkey for the 1980-94 period are shown in Table 1. Hazelnuts have the largest share of nut production with 61.5% and they have increased their share from 56.8% to 61.5% in the last 15 years. Walnuts have occupied the second place, with 15.9% of total nut production and they have diminished their share from 23.4% to 15.4% between 1980-94. Chestnuts and almonds occupy the third and fourth places with 10.8% and 6.3%, respectively, and they have remained almost stable for the last 15 years. Pistachios have the smallest share with 5.3% but they have increased their share from 2.9% to 5.3%.

Table 1. Average production shares of nuts in Turkey (%) (1980-94) (Source: SIS, Statistical Yearbooks of Turkey)

	Hazelnuts	Walnuts	Chestnuts	Almonds	Pistachios	Total
1980-82	55.8	23.4	11.1	6.5	2.9	100
1983-85	56.9	22.3	11.0	7.2	2.5	100
1986-88	57.6	18.9	14.3	6.6	2.3	100
1989-91	60.8	16.3	10.9	6.4	5.5	100
1992-94	61.5	15.9	10.8	6.3	5.3	100

Productivity levels per tree in the nut sector are given in Table 2. Hazelnut productivity has increased from 1.1 kg/tree to 1.4 kg/tree in the last 15 years. There was a decrease in productivity from 1.6 kg/tree in the 1989-91 period to 1.4 kg/tree in the 1992-1994 period. Although walnut productivity has decreased in the last 15 years from 37.9 kg/tree to 34.5 kg/tree, there has been an increase in walnut productivity from 33.7 kg/tree in the 1986-88 period to 35.4 in the 1989-91 period. Chestnut productivity has increased from 36.7 kg/tree to 45.3 kg/tree in first three periods and it has decreased from 45.3 kg/tree in the 1986-88 period to 40.1 kg/tree in the 1992-94 period. Almond productivity has increased continuously from 8.8 kg/tree to 12.1 kg/tree in the last 15 years. Pistachio productivity also has increased from 0.8 kg/tree in the first period to 2.1 kg/tree in the last period. Finally, almonds and pistachios productivity has increased continuously but hazelnut and chestnuts productivity have increased with fluctuations while walnut productivity has decreased.

Table 2. Average nut productivity levels (kg/tree) (1980-94) (Source: SIS, Agricultural Structure and Production, 1980-94)

	Hazelnuts	Walnuts	Chestnuts	Almonds	Pistachios
1980-82	1.1	37.9	36.7	8.8	0.8
1983-85	1.1	35.8	37.5	9.5	1.5
1986-88	1.2	33.7	45.3	9.4	1.3
1989-91	1.6	35.4	40.8	11.4	1.9
1992-94	1.4	34.5	40.1	12.1	2.1

The price is expected to transmit orders and directions in a competitive agricultural market. High and rising prices mean high income and incentives to farmers to produce more prices are a kind of communication signals which serve in various ways to co-ordinate production and marketing decisions. The prices of nuts received by farmers, at constant rates, for the last 15 years are given in Table 3. There is a continuous increase in all nut prices with some exceptions. Price of hazelnuts, walnuts, chestnuts, almonds and pistachios increased from \$83.85, \$94.55, \$5518, \$76.28 and \$225.29 per 100 kg to \$97.26, \$116.44, \$87.36, \$99.71 and 240.22 per 100 kg respectively. The trends in the prices indicate that substantial production increase in the nut sector might be expected in the near future.

Table 3. Average nut prices received by farmers in nut sector (1994 $/100 kg) (1980-94) (Source: SIS, Statistical Yearbooks of Turkey)

	Hazelnuts	Walnuts	Chestnuts	Almonds	Pistachios
1980-82	83.65	94.55	55.18	76.28	225.29
1983-85	75.74	89.85	56.48	75.25	262.45
1986-88	99.31	94.69	54.98	81.94	229.07
1989-91	82.71	107.76	68.58	89.02	276.51
1992-94	97.26	116.44	87.36	99.71	240.22

Hazelnuts

Hazelnuts, which are generally produced on steepy lands in the Eastern Black Sea Region of Turkey, are one of the most important traditional export products and they have an important role in the Turkish Economy. Hazelnuts have a significant contribution to total exports and it is a source of income for a large number of family farms in the Black Sea Region. Turkey produces 65-70% of world hazelnut production and it has the world's best quality (Ayfer, 1984). Hazelnut cultivation, which has the best ecological conditions in the Black Sea Region and protects the lands from erosion, is the most important economic activity in the region.

The importance of the Turkish hazelnut market

Statistics of the hazelnut market for major hazelnut producing countries are shown in Table 4. Turkey is a leading country in production, export and domestic consumption with 72.3%, 84.3% and 38.7%, respectively, among the major hazelnut producing countries. Italy holds the second place for hazelnut production, export and domestic consumption with 18.9%, 11.6% and 36.6%, respectively, followed by USA, Spain and Greece with 4.0%, 3.5% and 1.0% for production, 2.2%, 1.7% and 0% for exports and 10.5%, 9.4% and 4.6% for domestic consumption, respectively.

Table 4. Average hazelnut statistics of main hazelnut producing countries (1990-95) (Source: Black Sea Hazelnut Exporters Union Records)

	Production†		Exports		Consumption	
	1000 tons	%	1000 tons	%	1000 tons	%
Turkey	425.00	72.38	183.33	84.34	24.56	38.72
Italy	111.00	18.90	25.33	11.65	23.26	36.67
USA	24.01	4.09	4.95	2.28	6.68	10.53
Spain	21.10	3.59	3.75	1.73	5.96	9.40
Greece	6.07	1.04	0.00	0.00	2.97	4.68
Total	587.18	100.00	217.36	100.00	63.43	100.00

†Unshelled basis

Trends related to hazelnut market statistics are shown in Table 5. Hazelnut production has increased from 286.66 to 481.66 thousand tons, by 68.0% in the last 15 years. Domestic consumption of hazelnuts has increased by 28.3% but with fluctuations from 18.1 to 23.3 thousand tons during the 1980-94 period. Hazelnut exports of Turkey have increased steadily from 104.2 to 184.3 thousand tons by 76.9% for the last 15 years.

Table 5. Average hazelnut market statistics (1980-94) (Source: Black Sea Hazelnut Exporters Union Records)

	Production†		Consumption		Export	
	1000 tons	Index	1000 tons	Index	1000 tons	Index
1980-82	286.66	100.0	18.16	100.0	104.20	100.0
1983-85	325.00	113.3	27.30	150.3	131.16	125.9
1986-88	345.00	120.3	22.50	123.8	135.93	130.4
1989-91	470.00	163.9	28.30	155.8	164.86	158.2
1992-94	481.66	168.0	23.30	128.3	184.30	176.9

†Unshelled basis

Hazelnut production in Turkey is concentrated in certain regions. Average regional hazelnut production shares are shown in Table 6. The Black Sea region holds around 70% of hazelnut production followed by West Anatolia (Aegean and Marmara Agricultural regions) with around 16% and Central Anatolia (Central North, Central East and Central South Agricultural regions) with around 13%. Hazelnut production share of the Black Sea region decreased from 70.8% to 68.9% in the last 15 years but with fluctuations. While hazelnut production share of the West Anatolia region increased from 14.6% in 1980-82 period to 17.3% 1992-94 and also with fluctuations. The other regions almost remained with the same hazelnut production shares.

Table 6. Average regional hazelnut production shares (%) (1980-94) (Source: SIS, Agricultural Structure an Production, 1980-94)

	West Anatolia	Central Anatolia	Mediterranean region	Black Sea region	East Anatolia	Turkey
1980-82	14.6	13.5	0.01	70.8	0.9	100
1983-85	15.7	12.4	0.01	71.0	0.6	100
1986-88	18.2	12.9	0.01	67.6	1.1	100
1989-91	15.4	13.6	0.01	70.0	0.9	100
1992-94	17.3	12.5	0.02	68.9	1.1	100

Foreign trade of hazelnuts

Hazelnut exports take an important role in Turkish economy. Hazelnut exports distribution is shown in Fig. 1. Turkey exports hazelnuts mainly to countries classified under four groups which are Germany, other European countries (Italy, France, Netherlands, Belgium, England, Switzerland and Austria), Russia and others. Germany, the largest Turkish hazelnut importing country, increased its imports from 54.5 thousand tons to 106.6 thousand tons with fluctuations in the period 1983-95. The European countries also increased Turkish hazelnut imports from 44.7 thousand tons to 98.3 thousand tons with some fluctuations. Russia decreased its Turkish hazelnut imports from around 16.2 thousand tons to 1.7 thousand tons. This decrease occurred mainly in 1991 because of the breakdown in Russia. Other countries of the world increased its amount of Turkish hazelnut imports from 5.5 thousand tons to 34.5 thousand tons in the last 13 years.

Distribution of Turkish hazelnut exports is shown in Table 7. Shares of Turkish hazelnut exports to Germany and Russia decreased continuously from 46.9 and 10.9% in the 1984-86 period to 44.3% and 1% in the 1993-95 period, respectively, while exports to European countries and other world countries increased their share continuously from 36.2% and 5.8% in the 1984-86 period to 41.9% and 12.7% in the 1993-95 period, respectively. Eventually, Turkey is expanding hazelnut exports to European countries and other countries in the world.

Turkey is also exporting hazelnuts to other hazelnut producing countries. Average distribution of Turkish hazelnut exports to other hazelnut producing countries is shown in Fig. 2. Italy is the largest Turkish hazelnut importing country among hazelnut producing countries followed by USA and Spain. Italy increased its Turkish hazelnut imports from 7.5 thousand tons in 1983 to 28.5 thousand tons in 1995. USA, Spain and Greece also increased their Turkish hazelnut imports from 1.4, 0 and 9 thousand tons to 6.7, 5.7 and 3 thousand tons, respectively. In summary, hazelnut-producing countries increased substantially their hazelnut imports from Turkey.

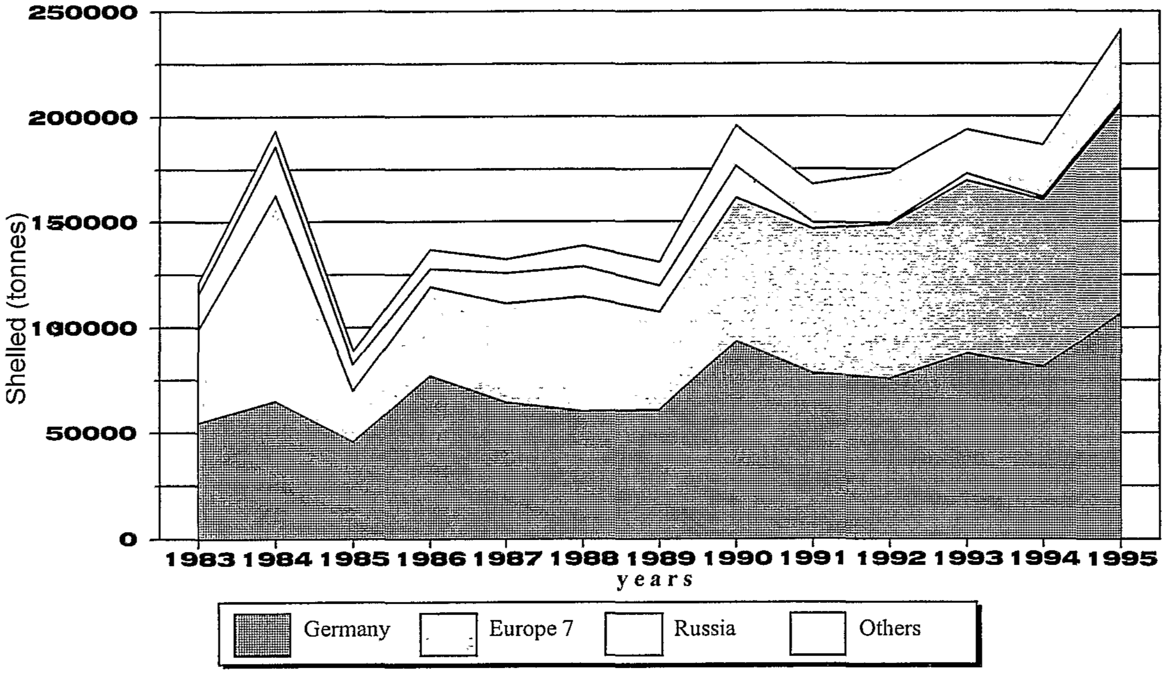

Fig. 1. Distribution of Turkish hazelnut exports.

Table 7. Average distribution of Turkish hazelnut exports (%) (1980-94) (Source: Black Sea Hazelnut Exporters Union Records)

	Germany	Europe 7	Russia	Others	Total
1984-86	46.9	36.2	10.9	5.8	100
1987-89	46.0	36.8	10.2	6.9	100
1990-92	45.9	39.2	3.3	11.5	100
1993-95	44.3	41.9	1.0	712.7	100

Government involvement in the hazelnut market

Hazelnut producers usually sell their products unshelled in sacks in the market in September, after harvesting and cleaning them for 15-20 days in August. They sell their products fixing the price level and payment conditions with local merchants or with the Union of Hazelnut Sales Cooperative (FISKOBIRLIK) to which they are members. This cooperative, a state institution since 1962, only by itself in years 1963, 1988, 1989 and 1990. It purchases hazelnuts at support price levels which are determined for 1 kg of unshelled hazelnuts with 50% yield. Hazelnut prices are not usually below market prices because of the purchases made by this cooperative and thus hazelnut producers do get a sufficient income (Sayili and Cicek, 1996).

Support price level was $100.7 per 100 kg in the early 1980s, varied as $92.3, $112.5 and $99.3 in the 1980s and increased to $124 in the early 1990s depending upon hazelnut market situations and political decisions, and it is shown in Table 8. On the other hand, export fund declined continuously from $99.3 per 100 kg to $8 per 100 kg. In conclusion, government has supported hazelnut producers, by increasing support price especially in the periods 1986-88 and 1992-94 and hazelnut exporters by decreasing export fund which is a type of export tax on hazelnut export.

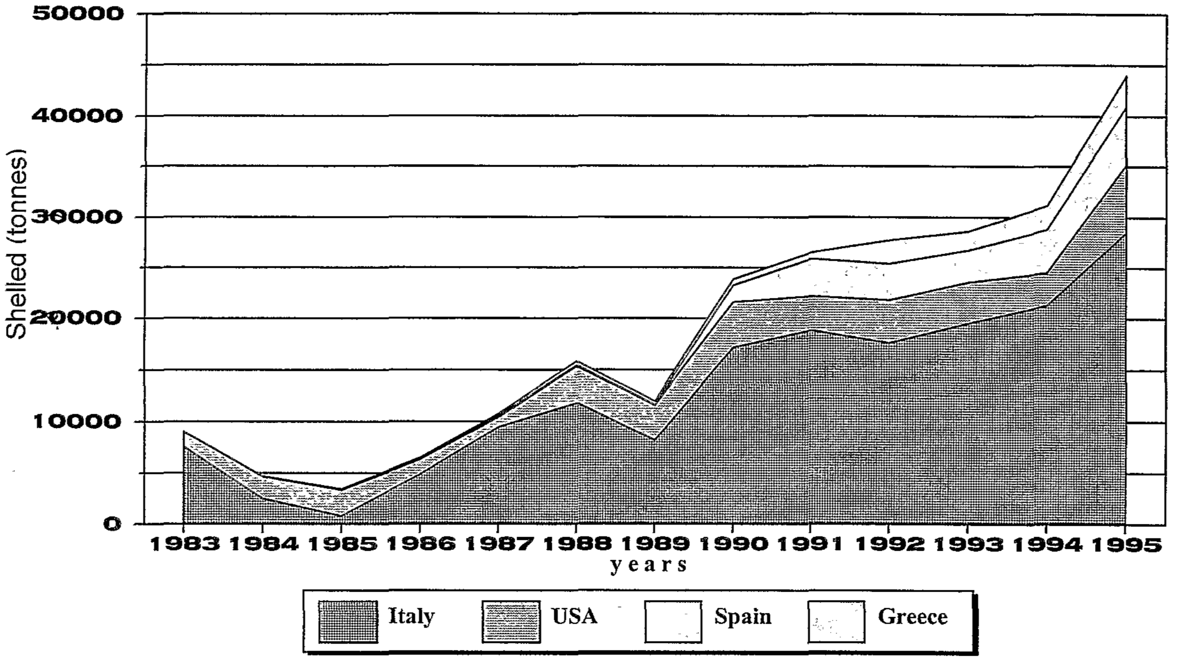

Fig. 2. Distribution of Turkish hazelnut exports to major hazelnut producing countries.

Table 8. Average hazelnut support prices and the export fund (1980-94) (Source: Black Sea Hazelnut Exporters Union Records)

	Support price ($/100 kg)	Index (%)	Export fund ($/100 kg)	Index (%)
1980-82	100.7	100.0	99.3	100
1983-85	92.3	91.6	98.6	99
1986-88	112.6	111.7	80.2	80
1989-91	99.0	98.3	36.0	36
1992-94	124.0	123.1	8.0	8

The amount of hazelnut purchased by the cooperative and the private sector during the last 15 years are shown in Table 9. The amount of hazelnut purchased by cooperative has declined from 152.8 to 83.7 thousand tons with some fluctuations. The share of hazelnuts exported by the cooperative in the market declined from 39.9% to 2.5% in the 1980-1994 period (Table 10). But the private sector has increased its exports share from 60.7% to 97.4% in the last 15 years. These figures show that the cooperative has lost its importance in the foreign market more than in the domestic market.

Table 9. Average hazelnut purchased by cooperative and private sector (1980-94) (Source: Hazelnut Sale Cooperatives Union Records)

Periods	Cooperative		Private sector		Total	
	1000 tons†	%	1000 tons†	%	1000 tons†	%
1980-82	152.8	52.9	135.9	47.0	288.8	100
1983-85	98.1	33.3	196.5	66.6	294.6	100
1986-88	74.1	22.2	259.4	77.7	333.6	100
1989-91	174.1	40.0	260.8	59.9	435.0	100
1992-94	83.7	18.7	362.9	81.2	446.6	100

†Unshelled basis

Table 10. Average hazelnut exported by cooperative and private sector (1980-94) (Source: Hazelnut Sale Cooperatives Union Records)

Periods	Cooperative		Private sector		Total	
	1000 tons	%	1000 tons	%	1000 tons	%
1980-82	40.7	39.9	62.9	60.7	103.6	100
1983-85	26.8	23.0	89.8	76.9	116.7	100
1986-88	13.2	9.7	122.6	90.2	135.9	100
1989-91	17.4	10.5	147.4	89.4	164.8	100
1992-94	4.6	2.5	179.6	97.4	184.3	100

Important issues related to the hazelnut sector in Turkey

Hazelnut production has increased in recent years facing marketing problems and the presence of high storage levels. Arguments, such as, the restriction of hazelnut planted areas, the increasing market share in domestic and foreign markets, and the decreasing export fund level of hazelnut have been put on the agenda. At this point, it is adequate to summarize some of the arguments given to get rid of the excess supply problem for hazelnuts.

The authorities and scientists have recently discussed these problems based on different grounds. Regarding the restriction of hazelnut planted areas, Cetiner (1988) claimed that hazelnut production should be re-structured and a law determining hazelnut planted areas should be enacted. Moreover, Aral (1990) pointed out that there should be restrictions on hazelnut production at the bottomland on which hazelnut planted can be used for other agricultural activities. On the other hand, Koksal (1990) stated that hazelnut production must be increased but bottomlands should be dedicated to other crops. Currently, the problem in Turkey is not the excess supply but inadequate marketing. The prospects of increasing market shares in domestic and international markets have not yet been fully exploited.

Sagra and Ozalp (1988) suggested that increasing the domestic consumption level is a very important issue for the future and this matter needs to be worked out. Yucel (1990) also stated that increasing domestic demand for hazelnut production is important because there is a higher potential than today's consumption levels in the domestic market. To explore this potential, alternative consumption attitudes need to be created by emphasizing on different price and income policies by taking producer and consumer's point of view into consideration.

Yucel (1990) stated that different kind of policies, such as, the Hazelnut Support and Export Fund need to be implemented carefully by taking the conditions of producers and consumers into consideration. He gave the example of the USA, which subsidizes almond producers by about 40% per kg to increase world almond consumption. But, on the other hand, the policies applied in Turkey create disadvantages by putting a certain tax level per kg on hazelnut exports. Ozesen (1988) suggested that the fund applied to hazelnut exports should be decreased or adjusted, in necessary periods, not to cause unfair competition. Pirinccioglu and Arikbay (1987) discussed the fund level applied to hazelnut exports by determining hazelnut demand and supply functions, and they even concluded that increasing the fund level slightly more than 100% per kg would be more beneficial for the country.

Related to increasing foreign demand, Yucel (1990) said that although Turkey exports 70-75% of world hazelnuts trade, it does not have sufficient market power in the world hazelnut industry. Sagra and Ozalp (1988) stated that in foreign markets, there should be an effort not only to sell hazelnuts but also to standardize Turkish hazelnuts to give confidence to the customers by emphasizing on marketing activities. Cetiner (1990) suggested that Turkey must try to expand hazelnut consumption in the world by creating new and different processed products containing hazelnuts in their ingredients for new markets to increase hazelnut exports. Yazicioglu (1990) suggested that Turkey must also turn to new markets such as Japan and Russia maintaining classic European markets.

Walnuts

Turkey is one of the oldest walnut-producing countries and considered as the walnut motherland (Sen, 1986). The USA is the leading country for walnut production, followed by China and Turkey (Siebert, 1993). Trends for Turkey walnut production and exports statistics for the last 15 years are shown in Table 11. Walnut production has declined slightly, with fluctuations from 1980 to 1994 by 2.4%. Walnut exports are small and they have declined substantially in recent years. The figures in Table 11 indicate that walnuts are mainly produced for domestic consumption.

Regional walnut production shares are shown in Table 12. Walnut production is spread out all over the country. Central Anatolia Region holds the first place with around 32% followed by West Anatolia with around 24%. Share of walnut production in the Middle Anatolia and Black Sea regions declined from 32.8% and 20%, in the 1980-82 period, to 30.6% and 15%, in the 1992-94 period, respectively, with some fluctuations. On the other hand, walnut production shares in West Anatolia, Mediterranean and East Anatolia (North East and South East Agricultural regions) regions declined from 21.7, 6.6 and 18.6%, in the 1980-82 period, to 24.3%, 9% and 20.9%, in the 1992-94 period, respectively, with some fluctuations.

Table 11. Average walnut market statistics (1980-94) (Source: Siebert 1993, SIS Annual Yearbook of Turkey and Agricultural Structure yearbooks)

	Production†		Export	
	1000 tons	Index	1000 tons	Index
1980-82	121.3	100.0	2.92	100
1983-85	115.6	95.3	2.50	85
1986-88	110.0	90.6	1.83	62
1989-91	116.6	96.1	1.25	42
1992-94	118.3	97.5	0.41	14

†Unshelled basis

Table 12. Average regional walnut production shares (%) (1980-94) (Source: SIS, Agricultural Structure and Production, 1980-94)

Periods	West Anatolia	Central Anatolia	Mediterranean Region	Black Sea Region	East Anatolia	Turkey
1980-82	21.78	32.81	6.69	20.08	18.65	100.00
1983-85	24.64	33.55	7.02	19.29	15.49	100.00
1986-88	25.07	31.48	7.26	16.67	19.53	100.00
1989-91	24.83	31.20	7.56	16.95	19.45	100.00
1992-94	24.38	30.66	9.00	15.01	20.95	100.00

Chestnuts

Turkey produces 18% of the total world chestnut production (Koksal *et al.*, 1995). Chestnut production and export trends are shown in Table 13. Production and chestnut exports have continuously and substantially increased by 39.7 and 64.7%, respectively, with some fluctuations in the last 15 years.

Table 13. Average chestnut market statistics (1980-94) (Source: SIS Foreign Trade Statistics, Agricultural Structure and Production yearbooks)

	Production		Export	
	1000 tons	Index	1000 tons	Index
1980-82	57.5	100	3.09†	100
1983-85	57.0	99	6.05††	195
1986-88	83.3	153	5.34	172
1989-91	78.0	135	4.35	140
1992-94	80.3	139	5.09	164

†This figure only refers to 1980
††This figure only refers to 1984 and 85 average

Average regional chestnut production shares are shown in Table 14. Chestnut is mainly produced in the West Anatolia and Black Sea regions with around 60 and 30%, respectively, and the rest 10% is produced in other regions. Share of chestnut production in West Anatolia Region increased from 44.6%, in the 1980-82 period, to 67.5%, in the 1992-94 period, while shares in Central Anatolia and Black Sea Regions decreased from 14.4 and 40.4%, in the 1980-82 period to 4.3 and 27.7%, in the 1992-94 period respectively, with some fluctuations.

Almonds

Turkey produces 3.7% of the world almond production. Trends related to almond production and exports are shown in Table 15. Production of almonds in the last 15 years increased by 39.2%. Almond exports were very small and they have declined substantially in recent years. From these figures, it can be stated that almond is produced mainly for domestic consumption.

Table 14. Average regional chestnut production shares (%) (1980-94) (Source: SIS, Agricultural Structure an Production, 1980-94)

	West Anatolia	Central Anatolia	Mediterranean Region	Black Sea Region	East Anatolia	Turkey
1980-82	44.6	14.4	0.08	40.4	0.4	100
1983-85	43.0	16.8	0.10	39.7	0.3	100
1986-88	62.3	11.3	0.08	26.1	0.1	100
1989-91	66.5	6.6	0.08	26.5	0.1	100
1992-94	67.5	4.3	0.07	27.7	0.2	100

Table 15. Average almond market statistics (1980-94) (Source: SIS Foreign Trade Statistics, Agricultural Structure and Production yearbooks)

	Production†		Export	
	1000 tons	Index	1000 tons	Index
1980-82	34.0	100	0.5††	100
1983-85	37.3	109	0.5†††	104
1986-88	38.3	112	0.5	114
1989-91	46.0	135	0.3††††	62
1992-94	47.3	139	0.3	60

†Unshelled basis
††This figure only refers to 1980
†††This figure only refers to 1984 and 85 average
††††This figure only refers to 1990 and 91 average

Almonds are produced mainly in the West Anatolia and Central Anatolia regions. Regional almond production shares are given in Table 16.

Table 16. Average regional almond production shares (%) (1980-94) (Source: SIS, Agricultural Structure and Production, 1980-94)

	West Anatolia	Central Anatolia	Mediterranean Region	Black Sea Region	East Anatolia	Turkey
1980-82	39.4	27.3	11.4	1.1	20.6	100
1983-85	37.6	31.6	10.2	0.8	19.6	100
1986-88	35.1	33.0	19.3	0.8	11.7	100
1989-91	37.1	30.4	19.5	0.4	12.3	100
1992-94	32.5	34.1	20.8	0.5	11.9	100

Share of almond production in the West Anatolia and East Anatolia regions decreased from 39.4 and 20.6%, in the 1980-82 period, to 32.5 and 11.9%, in the 1992-94 period, respectively, with some fluctuations. While almond production shares in the Central Anatolia and Mediterranean regions increased with some fluctuations from 27.3 and 11.4%, in the 1980-82 period, to 34.1 and 20.8%, in the 1992-94 period, respectively.

Pistachios

Although production of pistachios in Turkey goes back to very old times, today's production has not increased to the expected levels because pistachios are produced on dry and unproductive lands and thus the yield per tree is very low. However, the USA and Iran, leading pistachio-producing countries, produce pistachio on irrigated lands. The USA started pistachio production in 1960 and now is already the second biggest producer in the world because of good production conditions.

The economic problems, this market is facing, are the support price instability and the domestic and foreign marketing problems. The balance between production and exports has not been established yet. When there is production surplus and lack of exports, prices are low in the market. On the other hand, when there is lack of production and excess foreign demand prices become very high. There is a need to have a stable support price level and foreign demand to improve pistachio production in terms of quantity and quality. Since pistachio exports are undertaken in a traditional way, its process also needs to be modernized and well organized.

Pistachio production in Turkey is expected to enter into a new stage because of the Southeast Anatolia Project (GAP) which provides irrigated conditions for pistachio cultivation. Because of this project, increases of pistachio production are expected in the near future.

Trends related to the pistachio production, consumption and exports in Turkey are shown in Table 17. Pistachio production remained the same in the 1980s but it increased substantially, after the 1989-91 period, by 259.95%. Pistachio exports increased, in the 1983-85 period, and they decreased after this period.

Table 17. Average pistachio market statistics (1980-94) (Source: SIS Foreign Trade Statistics, Agricultural Structure and Production yearbooks)

	Production†		Export	
	1000 tons	Index	1000 tons	Index
1980-82	15.1	100	0.3††	100
1983-85	13.0	86	2.5†††	661
1986-88	13.8	91	2.4	635
1989-91	39.3	259	1.4††††	376
1992-94	39.6	262	0.7	184

†Unshelled basis
††This figure only refers to 1980
†††This figure only refers to 1984 and 85 average
††††This figure only refers to 1990 and 91 average

Pistachio production is mainly concentrated in the East Anatolia and Mediterranean regions. Average regional pistachio production shares are shown in Table 18. East Anatolia holds around 50% of the pistachio production followed by the Mediterranean and Central Anatolia regions, with around 30 and 13%, respectively. East Anatolia and Central Anatolia regions decreased their share from 53.1 and 15.7% to 47.7% and 11.2%, respectively, while the Mediterranean and West Anatolia regions increased their shares from 28 and 3% to 36.9% and 4%, respectively, with some fluctuations in the last 15 years.

Table 18. Average regional pistachio production shares (%) (1980-94) (Source: SIS, Agricultural Structure and Production, 1980-94)

Periods	West Anatolia	Central Anatolia	Mediterranean Region	Black Sea Region	East Anatolia	Turkey
1980-82	3.00	15.73	28.02	0.08	53.17	100.00
1983-85	2.99	10.60	36.16	0.04	50.21	100.00
1986-88	3.28	13.49	28.68	0.17	54.39	100.00
1989-91	3.74	15.72	31.36	0.12	49.07	100.00
1992-94	4.01	11.28	36.92	0.08	47.71	100.00

Government involvement in the pistachio market

Pistachio is purchased by the Southeast Agricultural Sale Cooperatives, at the support price level, on the name of the state but recently they started buying pistachio for themselves. In the high production years, these cooperatives enter into the market to purchase pistachio, at support price level, in order to have prices not below a certain level which guaranties pistachio supply. After harvest, producers wait for the support price to be determined so they can sell their products above this price level. This floor price stabilizes the market. Determining the support price level before the harvest might increase pistachio production and its quality.

Conclusions

(i) Turkey is one of the biggest nut producing countries in the world. According to average 1991-94 figures, hazelnuts hold the largest share, with 61.5%, followed by walnuts, with 15.9%, chestnuts, with 10.8%, almonds, with 6.3%, and pistachios, with 5.3%, of the Turkish nut production.

(ii) Productivity for hazelnuts, chestnuts, almonds and pistachios have increased from 1.1, 36.7, 8.8 and 0.8 kg/tree to 1.4, 40.1, 12.1 and 2.1 kg/tree respectively, while walnut productivity has decreased from 37.9 kg/tree to 34.5 kg/tree, in the last 15 years.

(iii) After the 1983-85 period, nut prices received by farmers have increased continuously and substantially with a few exceptions. This indicates that important production increases might be expected in the sector.

(iv) Hazelnut plays an important role in Turkish economy and international trade because it accounts for 72.3% of world production and 84.3% of world exports. Hazelnut production and exports have increased by 68% and 76.9%, respectively, in the last 15 years. Hazelnuts are mainly produced in the Black Sea region, with around 70% of the total production followed by the West Anatolia and Central Anatolia regions.

(v) Turkey exports hazelnuts mainly to Germany and other European countries. Turkish hazelnuts have been also exported to major hazelnut producing countries such as Italy, USA and Spain by a substantial amount.

(vi) Government involvement in the hazelnut market, through the cooperative system, has declined in the last 15 years by decreasing its handling of the domestic market share from 52.9 to 18.7% and the exports share from 39.9 to 2.5%.

(vii) In recent years, the Turkish hazelnut market faces production surplus which cannot be vanished by domestic consumption and foreign trade. Solutions given to this problem and discussed in the current literature are restricting hazelnut planted areas in bottom lands, decreasing support price levels, abolishing the export fund taken from hazelnut exporters and increasing the domestic and foreign demand by price and product differentiation as well as finding new markets abroad.

(viii) Turkey is the third producer of walnuts in the world with 13%. Walnut production in Turkey declined slightly with fluctuations but exports declined steadily in the last 15 years. Walnuts are produced in every region of the country.

(ix) Chestnut production of Turkey accounts for 18% of the world production and it occupies the third place in the ranking. Chestnut production and exports have increased continuously, in the 1980-94 period, with 39.7 and 64.7%, respectively. Chestnut production is concentrated in the West Anatolia and Black Sea regions, respectively.

(x) Turkey produces about 4% of world almond production. Its production has increased by 39.2% and its exports have declined from 500 tons to 300 tons in the last 15 years. Almond production is spread out all over the country except for the Black Sea region.

(xi) Turkey is one of the oldest pistachio producers in the world but it has lost its share substantially in the last two decades and now it holds the third place with 14% of world production. Pistachios are mainly produced in the East Anatolia region with around 50% followed by the Mediterranean and Central Anatolia regions, respectively.

(xii) Pistachio production might increase in the near future because of South-eastern Anatolia Irrigation Project (GAP) in the region where pistachios are largely produced.

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