

## An Investigation on Turkish Hazelnut Export Concentration

Arzu Secer

Department of Agricultural Economics, Faculty of Agriculture,  
Cukurova University, 01330, Adana, Turkey.

**Abstract:** Turkey is the main hazelnut producer and exporter country that it provides 68.8 % of world hazelnut production and 69.0% of world hazelnut–shelled export in the world. Export has become more crucial issue due to high production quantity, low domestic consumption level and its socio-economic importance of Black Sea Region. The main aim of the study has been to determine country concentration in hazelnut export of Turkey by using Hirschmann - Herfindahl index and concentration ratios. The results show that country concentrations have decreased and numbers of countries have increased however main importer countries have not been differentiated in 1990-2007.

**Key words:** Hazelnut, Export, Hirschmann - Herfindahl Index, Concentration Ratio

### INTRODUCTION

Turkey is the most important country in the world from hazelnut production and export the point of view. The country meets 68,8 % of world hazelnut production due to climate advantages of the area. Other important producer countries can be ranked as Italy (14.8%), USA (4.3) and Spain (2.6%)<sup>[3]</sup>. The country provides 69.0% of world hazelnut–shelled export in 2005. Italy (7.8%), Azerbaijan (5.7%) and Georgia (5.0%) follow to Turkey as other exporter countries. Hazelnut has imported by European Union countries especially Germany (22.2%), Italy (21.0%) and Belgium (10.2%). Hazelnut in shell exports is not mentioned due to it is in small quantities<sup>[3]</sup>.

In Turkey, hazelnut production increased from 375.000 tones to 661.000 tones between 1990 and 2006. Hazelnut export also increased from 195.600 tones to 247.000 tones in the same period. Turkish domestic hazelnut consumption is in very small quantities (40.000 tones in 2006) although it is a big producer and exporter in world<sup>[3]</sup>.

The hazelnut sector has great economic and social importance in the Black Sea Region in Turkey. Agriculture, trade, industry and employment largely depend on hazelnut in this region that there are about 400,000 hazelnut producers, 350 merchants, and 220 cracking and/or processing plants in the area<sup>[4,14]</sup>. Export has become more crucial issue due to high production quantity, low domestic consumption level and its economic and social importance.

Hazelnut has been supported by different policy instruments such as price support, foreign trade

policies, and direct income support. The government started to support prices to encourage hazelnut production, raise producers' incomes and prevent the soil erosion by producing the product in 1964. FISKOBIRLIK (Hazelnut Agricultural Sale Cooperatives Union) has been responsible for hazelnut purchasing from this year. The organization has purchased hazelnut at support price level<sup>[8]</sup>. The Government made some changes in the price support system in 2000 and started to apply direct income support program financed by the World Bank. In this respect, the Government has tried to reorganize the Hazelnut Sales Cooperatives (HSCs) by giving it financial independence and administrative autonomy<sup>[6,18,20]</sup>. Whilst, it had purchased about 50% of the total production in 1980's, it has bought 10% of the production in 2000's<sup>[5]</sup>.

Nonetheless, restrictions on hazelnut-planted areas were implemented in 1989 by enacting a new regulation to control the accumulation of stocks. Despite this regulation, hazelnut production continued in forbidden areas. An additional regulation enacted in 1995 by providing a program to pay producers to convert hazelnut-planted areas having young trees to alternative crops. Lack of funds has prevented this regulation implementation of this regulation<sup>[18,19]</sup>.

In many previous studies it is mentioned that Turkish hazelnut production quantity became a crucial problem for governments since production has tendency to increase, share of export in production has decreased<sup>[10,16]</sup>. At this point, knowledge of the level of concentration in hazelnut markets is very important in assessing marketing activities such as product

**Corresponding Author:** Arzu Secer, Complete Postal Address: Department of Agricultural Economics, Faculty of Agriculture, Cukurova University, 01330, Adana, Turkey.  
Tel: 0090 533 602 87 36 Fax: 0090 322 338 64 41  
E-mail: asecer@cu.ed.tr, awsecer@hotmail.com

innovation, advertising and promotion programs and assimilation of new technologies. Aim of the study is to present the changes in concentration levels of main hazelnut importer countries from Turkey and their compositions between 1990 and 2007.

### MATERIALS AND METHODS

In the study, secondary data has been mainly collected from Food and Agricultural Organization (FAO), Black sea Exporters' Union (BEU), Hazelnut Agricultural Sale Cooperatives Union and previous studies. In the study, export concentration of hazelnut in Turkey was defined by calculating Hirschmann-Herfindahl index (HHI) and Concentration ratios (CR1, CR2, CR3 and CR4).

Concentration ratios are the shares of the largest *n* units in the total, e.g. CR3 is the share of the largest three industries/countries<sup>[11]</sup>. The level of trade concentration in specific products is measured using the Hirschmann-Herfindahl Index (HHI), which is equal to the sum of the squared shares of all individual countries exported. The value of index can be 0 and 100. If a single country imports all products, HHI equals 100; if export revenues are distributed over many countries, HHI approaches zero<sup>[17]</sup>.

$$HHI_c = \sum_i^n \left[ \frac{x_i}{\sum_i^n x_i} \right]^2 * 100$$

### RESULTS AND DISCUSSION

HHI and CRs of Turkey hazelnut export is given between 1990 and 2007 in Table 1. HHI of the product export has decreased from 25.51% to 13.84%. CRs have tendency to decrease in the same time period. CR1 has decreased from 47.73 to 25.4 and it means that the most important country has given up purchasing hazelnut from Turkey. Change in CR4 is from 71.60 to 63.07. Although, the numbers of importer countries has increased; the most important countries have not diversified during the time period. The table also shows that the most important importer countries are Germany and Italy, France, Belgium, Nederland and Switzerland.

As it is mentioned above, Germany is paid attention as a prior hazelnut importer county. Main reason of the situation are re-export of the product by means of developed hazelnut processing industry in the country, active role of Hamburg Board in trade, high consumption level. Italy has increased hazelnut import

due to decreasing area causes of import even increasing yield. On the other hand, Belgium and France import the product because of the high consumption level<sup>[13,20]</sup>.

Recently, it has been also implied that the most important hazelnut importer countries (i.e Germany, Italy, France and Switzerland) look for other substitutes such as almonds and peanuts as a substitution of hazelnut. World almond import has increased more rapidly than hazelnut import, the reasons are shown as lower and more stable almond prices and activities of California Marketing Board<sup>[5,8]</sup>. The elasticity of demand can be determined by the existence of substitute goods, their prices and consumer preferences. In the long run, as new substitutes for hazelnut can be developed and preferences can change, world demand can become more elastic<sup>[12]</sup>.

Hazelnut export price has an increase since the beginning of the 2000's. Previously, export prices had decreased due to hazelnut surpluses and the policies applied by the Government. Turkey's high production and its large carry-over stocks resulted in low hazelnut prices on the international markets. Low Turkish prices and large stocks in Italy and Spain encouraged the European Union to limit Turkish hazelnut imports, to allow Italy and Spain to eliminate their stocks<sup>[14]</sup>.

Furthermore, one of the problems of Turkish hazelnut export is aflatoxin. Aflatoxins occur naturally in foods such as nuts and other dried fruits. They are produced by moduls that grow on plants before harvest or on the foods during storage. They are undesirable because they can cause cancer in animals and humans. Maximum levels of aflatoxins for all three nuts, to be set at an international level, are determined by Codex Alimentarius Commission. The Commission set that total aflatoxins level should be 8 ug/kg for unprocessed hazelnuts. Also it is defined that Hazelnuts are labelled clearly showing their use and bearing the indication "product shall be subjected to sorting or other physical treatment to reduce aflatoxin contamination before human consumption or use as an ingredient in foodstuffs"<sup>[7]</sup>.

The Turkish Technical and Scientific Research Organization (TUBITAK) carried out long-term research on this issue at the request of the hazelnut industry. harvest dates has been settled for all producers in order to avoid problems with aflatoxin. A different date for harvest was announced for each province depending upon the maturity of the crop. Any farmers which harvested earlier than the announced dates would have their crops confiscated and destroyed. This year's crop is not expected to have a serious aflatoxin problem<sup>[14]</sup>.

On the other hand, about seventy percent of Turkey's hazelnut exports are raw kernels and the rest are processed, including roasted, sliced, chopped, paste,

**Table 1:** Hazelnut Export Concentration in Turkey

Years	Herfindahl Index	CR1	CR2	CR3	CR4	The most important Countries	Total Country Numbers
1990	25.51	47.73	56.50	64.30	71.60	W. Germany, Italy, S.Russia, France	50
1991	24.51	46.39	57.61	65.61	70.43	Germany, Italy, France, England	49
1992	21.98	43.58	53.75	61.17	66.73	Germany, Italy, France, Nederland	61
1993	23.32	45.16	55.25	61.79	67.90	Germany, Italy, France, Nederland	66
1994	22.13	43.58	55.00	62.48	67.29	Germany, Italy, France, England	68
1995	22.62	44.20	56.01	63.55	68.73	Germany, Italy, France, Nederland	72
1996	20.35	41.76	51.70	59.67	65.54	Germany, Italy, France, Nederland	83
1997	21.01	42.59	52.99	61.04	66.37	Germany, Italy, France, Switzerland	81
1998	18.14	38.42	48.92	58.64	64.71	Germany, France, Italy, Belgium	84
1999	17.68	37.86	47.55	57.19	64.23	Germany, France, Italy, Belgium	81
2000	17.62	37.68	47.49	57.27	64.68	Germany, France, Italy, Belgium	85
2001	16.58	35.49	48.89	57.72	65.54	Germany, Italy, France, Belgium	90
2002	14.89	33.19	46.18	55.50	61.75	Germany, Italy, France, Nederland	89
2003	13.40	30.30	43.96	43.96	60.02	Germany, Italy, France, Belgium	89
2004	13.02	28.96	44.34	53.96	60.17	Germany, Italy, France, Belgium	89
2005	15.64	29.18	52.35	60.80	66.44	taly, Germany, France, Belgium	87
2006	15.80	28.79	53.09	61.27	66.34	Italy, Germany, France, Belgium	95
2007	13.84	25.14	48.34	58.87	63.07	Germany, Italy, France, Belgium	102

Source: Black sea Exports' Union

meal, and flour. The trend, however, is to move from raw kernel exports to processed products to get higher added value. In addition to a shift in the export product mix, Turkey is also hoping to expand its market presence in the Far East, Former Soviet Union, and the United States. Industry representatives in Turkey closely monitor other markets, including the U.S. hazelnut and almond industries<sup>[15]</sup>.

**Conclusion:** In Turkey, hazelnut export country concentration has shown a change between 1990 and 2007. HHI and CR indicators has shown that country concentrations has decreased, number of countries has increased but main importer countries have been remain the stable. It is the common perspective that support prices should be defined by taking into consideration world prices and alternative product prices as well as other determines. There should be an effort not only to increase hazelnut export quantity but also to standardize Turkish hazelnuts to give confidence to the customers by emphasizing on marketing activities. It can be also suggested that Turkey should expand hazelnut products processed consumption by creating new and different processed products for new markets to increase hazelnut exports.

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