Restrictions of the Agricultural Sector on Safety and Quality Food Production in Turkey and Some Precautions

Nevin DEMIRBAS*, Duygu TOSUN*

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Abstract

Quality and safety of raw and processed food production is becoming increasingly important in terms of human health and competition. High expectations, especially harmony with food quality and safety standards in exports, appear as restrictions causing difficulty in accessing markets in the European Union (EU) countries. As a result, in Turkey, where the food sector gets its raw material from agriculture, the number of firms with quality and food safety system certificates such as ISO 9000 (Quality Management System Standards), HACCP (Hazard Analysis and Critical Control Points), GMP (Good Manufacturing Practices) and GHP (Good Hygienic Practice) has recently increased. However, a successful food chain is necessary for success in food quality; therefore, in Turkey's food sector, some restrictions have to be eliminated from the agricultural sector to meet both the demands of Turkish people relating to quality and safety food and those of the export market. This paper evaluates the restrictions of the agricultural sector on the quality and safety of food products in Turkey and the advocated precautions.

Résumé

La qualité et la sécurité de la production alimentaire deviennent de plus en plus importante du point de vue de la santé humaine et de la concurrence. L'harmonisation avec les standards de qualité et de sécurité alimentaire apparaissent comme des restrictions qui causent des difficultés dans l'accès sur les marches de l'Union Européenne. En Turquie, où l'industrie alimentaire est approvisionné par l'agriculture, les exploitations ayant un certificat de qualité et de sécurité alimentatire tel que ISO 9000, HACCP et GHP se sont accrues. Le success de la filière alimentaire est nécessaire pour promouvoir la qualité des aliments. Voilà pourquoi il est nécessaire d'éliminer les restrcitions qui pèsent sur le secteur agricole afin de satisfaire la demande des turcs en terme d'aliments sains et de qualité et les attentes des marchés étrangers. Cet article offre une évaluation des restrictions du secteur agricole sur la qualité et sécurité alimentaire et quelques précautions.

1. Introduction

Substances which are consumed for nutrition are gathered under the title of 'food' regardless of their level of process. Along with its being available and containing the required nutrition elements, the primary expectation from a food product is safety. Safe food can be defined as a food item which is suitable for consumption that hasn't lost its nutritive value in terms of its physical, chemical and microbiological qualities when produced as planned (SPO, 2003). Food products which are produced by the agricultural sector are marketed directly or after being processed according to the expectations of customers. Providing food safety depends on a shared responsibility between the agriculture sector, food sector and other related sectors.

In recent years, as a result of the high expectations of the consumers in developed countries and in accordance with international trade, expectations concerning the adaptation of food products to safety and quality standards have increased. These high expectations might appear as hindrances, which make it difficult to enter the EU and other markets with high purchasing power. For this reason, in the Turkish food sector, which has an organic connection with the agricultural sector, the number of firms that have quality assurance and food safety system certificates such as ISO 9000 (Quality Management System Standards), HACCP (Hazard Analysis and Critical Control Points), GMP (Good Manufacturing Practices) and GHP (Good Hygienic Practice) is gradually increasing. However, the role and importance of primary production is quite clear for the success of quality and safety rules that are applied mostly in the processing dimension of the food chain. Furthermore, the fact that the agricultural sector produces food products, which are directly consumed, and supplies raw material to the food sector, increases the expectations from agriculture in terms of safe food production. In Turkey, safe production in food sector is an obligation for both export and for the safe food consumption of Turkish people. At present, legal regulations and applications relating to good agricultural practices (GAP), Integrated Pest Management (IPM), and the spread of ecological agriculture in the food production sector in Turkey have been positive steps for encouraging food safety. Nevertheless, there are some restrictions as well. In this study, we evaluated the restrictions of the agriculture on quality and safety in the food production sector and offered some solutions.

2. Importance and Scope of Food Sector in Turkey

Turkey has an important level of production capacity in agricultural products due to its suitable geographical and ecological conditions. Agriculture, which covered 33.9% of the civil employment by the year 2003, contributes 12.5% of the gross national product. 5.2% of the general export is

* Ege University, Faculty of Agriculture, Department of Agricultural Economics, Bornova Izmir,Turkey

formed of the export of agricultural products (Republic of Turkey, Ministry of Finance, 2004).

Agriculture is an indispensable source of raw material for the food sector. In countries where rational agriculture is applied, about 60% of agricultural products are utilised in the food sector versus 25-30% in Turkey (Günes et al., 2002). Nevertheless, when unprocessed agricultural products are taken into account, the importance of agriculture in food production increases further.

In Turkey, out of the total agricultural production value in the years 2000-2002, the share of crop production is 62.7%, and the share of animal production is 37.3% (Table 1).

Table 1. *Value of Crops and Animal Production in Turkey (%)*

	2000	2001	2002	Average
Crop Production	55.8	58.2	69.9	62.7
Animal Production	44.2	41.8	30.1	37.3
Total Agricultural Production	100.0	100.0	100.0	100.0

Source: SIS (State Institute of Statistics), Several Years. Agricultural Structure (Production, Price, Value), Ankara.

As for crops production, the share of the value of fruit and vegetables, which supplies the food sector with a great deal of raw material, is 54.9% and the share of wheat production is 14.7%. Of the animal products that are an important source of raw material for the food industry, the production value of milk is 20.9% and that of meat is 12.7% (SIS, Several Years).

Again, according to 2000-2002 years' average, 39.9% of food industry production value is formed of grain and starch products, 14.4% is of slaughterhouse products and 14% is milk and dairy products (Table 2).

Table 2. *The Production Value of Sub-Sectors in Food Sector (%)*

	2000	2001	2002	Average
Slaughterhouse Products	15.0	14.3	13.8	14.4
Milk and Dairy Products	13.3	14.3	14.4	14.0
Seafood Products	1.0	1.4	1.5	1.3
Grain and Starch Products	38.1	41.1	40.7	39.9
Fruit and Vegetable Processing	6.3	7.2	7.2	6.9
Vegetable Oil and Products	8.4	6.9	6.1	7.2
Sugar and Confectionery Products and Others	13.1	11.1	12.4	12.2
Feed Sector	4.6	3.7	4.1	4.1
TOTAL	100.0	100.0	100.0	100.0

Source: UCTEA Chamber of Food Engineers., 2003. Food industry report (in Turkish) http://www.gidamo.org.tr/GIDA%20SANAYI_rapor.pdf.

3. Quality Assurance Systems and Food Safety in the Turkish Food Sector

Quality and safety food production for raw and processed food products is vitally important in terms of world food market for both human health and competition. Especially in the export of food products, quality and food safety standards may hinder the entrance into markets with high purchasing power such as the EU countries. Therefore, applications for providing food safety within the framework of quality management system standards such as HACCP, GMP, GHP, GAP and ISO 9000 have become widespread in Turkey, as well.

In Turkey, the HACCP system is being applied to all the sectors which process, pack, transport and distribute food including the fresh fruit and vegetable sector (Gündüz, 2002). As a matter of fact, the number of firms that have the HACCP certificate is gradually increasing; there were 12 firms in 2003, the number went up to 71 in the year 2004. Of these firms, 36.62% are in ready meal industry, 15.49% are in fruit-vegetable processing industry, 9.86% are in milk and dairy products industry and 9.86% are in alcoholic and non-alcoholic beverages industry (Albayrak and Günes, 2004).

In order to ensure Total Quality Management, the first goal is to establish a functioning quality system, and the second goal is to improve this system continuously. ISO 9000 standards guide the firms in order to develop a concrete basis upon which Total Quality Management can rise (Gündüz, 2003). In 2004 in Turkey, there were 338 food firms with ISO 9001:2000 quality management system certificates. Of the firms which had the quality management system certificate from the Turkish Standards Institute, 16.86% are of milk and dairy products, 15.86% are of ready meal sector, 13.61% are of processing fruit and vegetable products, 11.24% are of sugar and confectionery products and 10.95% are of pastry and milling products (Albayrak and Günes, 2004).

4. The Success of Quality Management Systems in Food Sector and Expectations from Agriculture Sector for Food Safety in Turkey

For a high-quality and safety production of foods, some important conditions should be performed in agriculture. Some of these might be about production and growth, others might be about transport and storage and some about traceability and control. This section intends to analyse expectations from agriculture in terms of GAP and ecological agriculture.

4.1. Good Agricultural Practices (GAP)

GAP is a process which was supported by technical studies in agricultural production and has economic and ecological outcomes. In most of the developed countries in the world, as a result of the shift in demand towards safety foods, GAP gained a different dimension when 14 European food retailers gathered in November 1999 and formed EUREPGAP protocol, which is based on GAP. EUREPGAP protocol, the main aim of which is to decrease the usage of agricultural chemicals, clarifies the topics about keeping records, species and rootstocks, the history and management of the farmland, soil and growing method, use

of fertilisers, irrigation, plant protection, harvest, post-harvest applications, waste and pollution management, re-processing and re-using, workers' health, safety and rights and the environment, explains the minimum standards. GAP was included in the certification process together with EUREPGAP protocol (Gündüz, 2003). Turkey ranks 21st in the league of 52 countries that produce in compliance with EUREPGAP with 102 certified producers and 20th in terms of the cultivated farmland. There are 5 certification institutions that issue the EUREPGAP certificate in Turkey (Turhan et al., 2004).

4.2. Ecological Production

In about 130 countries in the world, ecological production is being made in a commercial dimension and ecological agriculture fields are rapidly increasing. In this group, the number of developing countries including Turkey is 90, and the number of less developed countries 15 (Çelik and Bilgiç, 2003). The total land devoted to ecological agriculture in the world is 24 million hectare. Turkey is 30th with a surface area of 57 thousand hectare (SOEL, 2004).

In Turkey, ecological agriculture started in 1986 with only 8 products such as raisins, dried figs and apricots; the number of products reached 184 in 2003. When the production of ecological products between the years 1996-2003 in Turkey was analysed, a great increase could be observed in terms of the number of farmers, production land and the amount of production (Table 3).

Table 3. *Development of Ecological Agriculture in Turkey*

	Number of Product	Number of Producers	Ecological Farm Fields (ha)
1996	26	1947	6789
1997	53	7414	15906
1998	67	8199	24042
1999	92	12275	46523
2000	95	18385	59985
2001	98	15795	111324
2002	151*	12442*	89827
2003	184*	13082*	103190

*Number of product also includes animal products.

Sources: 1 -Kayalar, A.D., 2004. Organic farm in Turkey and in the world, a study about production and export (in Turkish), Istanbul Exporters Unions.
2- Ministry of Agriculture., 2005. www.tarim.gov.tr.

The production and export of ecological products regard the sectors of edible and dried fruits, frozen fruit and vegetables, fresh fruit and vegetables and spices and pulses; while other exported ecological products are rose water, rose oil and olive oil (Table 4). The number of countries towards which the export is headed is 37 and the EU countries are the most important export markets (IGEME, 2005).

While ecological crop production and export increase in Turkey, there is also an increasing interest towards ecological animal husbandry. For instance, Kelkit Ecological Dairy and Beef Cattle Project, which was established in 2001, is now one of the largest rural development projects. Over the years, 2000 farmers' families will join this project. The feeds needed for the 3300 cows within the project are being ecologically produced in nearby farms in a land of 4000 hectares. When the project is completed, it will be the biggest ecological dairy cattle husbandry farm of Europe (Dogan Holding, 2005). The enterprise, the first processed milk of which was launched on the market in July 2005, aims to produce 8 thousand tonnes of milk until 2008 and 20 thousand tonnes of milk until 2010 by spreading contractual production in Kelkit region (Anonymous, 2005 a; Anonymous, 2005 b).

Table 4. *Exports of Major Ecologi c Agricultural Products of Turkey (Q: Quanti ty: Tons , V: Value: US $ 000)*

	2000		2001		2002		2003	
Products	V	Q	V	Q	V	Q	V	Q
Raisins	4252	4836	5412	4887	6115	5718	5677	7056
Dried fig	2103	4074	2227	4764	2228	5537	2027	5166
Nut	1252	4226	1590	5457	1560	4755	1403	5107
Dried Apricot	1268	2741	1934	2805	1835	4044	1688	4734
Apple Juice	315	424	142	138	468	456	2528	3055
Frozen Fruits	185	252	1163	1368	892	1106	1212	1983
Cotton Fibres	175	299	92	184	411	623	865	1376
Pine kernels	52	787	54	726	96	1534	701	1212
Lentil	979	806	1097	841	962	655	1447	1025
Chickpea	707	636	1035	827	1413	1113	1167	830

Source: *IGEME (Export Promotion Center)., 2005. www.igeme.org.tr.*

The growing ecological agriculture in Turkey brought about the legal studies and the Regulation concerning the production, processing and marketing of ecological plant and animal products was issued on December 18, 1994. The so-called regulation was re-arranged with the "Regulation Concerning the Fundamentals and Application of Ecological Agriculture" on July 11, 2002; according to this, the Ministry of Agriculture and Village Affairs was authorised to deal with the subject. Then some points mentioned in the 2002 regulation were re-arranged and on June 10, 2005, the Regulation Concerning the Fundamentals and Application of Ecological Agriculture was enacted (Anonymous, 2002; Anonymous, 2005c).

5. Restrictions Caused by the Agriculture Sector for Quality and Safety Food Production and some Solutions

In Turkey, due to the importance of agriculture and food sectors in terms of export and the need for food within the country, the Ministry of Agriculture and Village Affairs has included quality and safety food production into its topics and Turkey has taken important steps about the law con-

cerning food safety in conformity with the EU. As a matter of fact, the decree law number 560, which was enacted in 1995, the Turkish Food Codex of 1997, the Notifications which were based on this and related to different sectors, and the Food Law number 5179 that was issued on June 5, 2004 brought about positive applications such as traceability and addition of primary production to food control for the aim of conforming to the EU food law. Nevertheless, some problems are also being evaluated concerning the education and number of the staff who will work during the inspections of law conformity.

In Turkey, the legal arrangements about GAP have reached certain maturity. However, Turkey's agricultural production structure has some restrictions in shifting to the GAP system. The major restriction is the small size of farms. In Turkey, the average farmland is 61 da and greenhouse areas are about 2 da on average. When the world is analysed, the average farm size is between 250-300 da in countries which apply GAP successfully (Duman et al., 2004). Together with the small size of farms, the farmland is scattered, divided into many parcels, the farm's capital is quite insufficient and there is a serious imbalance between the regions in terms of using the input. The use of chemicals by producers cannot be traced continuously; producers' organisations only market input to the producers; studies on guiding and informing the producers, tracing the production techniques and establishing a registration method improve very slowly. On the other hand, when the social characteristics of producers are concerned, a lot of experts and additional investments are needed in order to apply a series of principles, standards and rules that GAP brings along. Europe's EUREPGAP document, which puts forward GAP, is quite extensive and so difficult to apply by individual farmers. However, large-sized farms that have enough capital and work with a staff of specialists, can apply EUREPGAP individually. By considering this point, although two alternatives were presented as individual producers and producers' group in terms of the application of EUREPGAP certificate, it will be likely to meet countless problems during the application of producer groups due to the excessive number of producers and each scale being small and scattered.

Some of the precautions to be taken in order to apply GAP in Turkey:

- Producers becoming organised or strengthening the present organisations,
- Keeping the residue limits of chemicals in food items at the EU standards and examining continuously,
- Harmonising the legal arrangements concerning the topic with the legal arrangements about GAP,
- Establishing traceability processes in agriculture rapidly,
- Giving significance to producers' education and disseminating information,
- Encouraging the studies on enlarging the farm size and preventing the farms from dividing into parts that are smaller than the minimum farm scale described according to the Turkish Civil Code, by using economic and social precautions,
- Realising coordinated studies among the related institutions (Duman and et al, 2004).

In addition to these precautions, the public sector has to act very quickly on topics like preparing the necessary infrastructure and law as well as informing the public. In Turkey, a study is being made under the coordination of the Ministry of Agriculture TUGEM. This study has to be concluded as soon as possible and the number of accredited certified institutes has to be increased rapidly; education programmes should be applied to the food firms concerning the topic (Altinalev, 2004).

The restrictions on ecological agriculture in Turkey also result from the structural problems. Ecological productions may be affected by the chemicals used in other conventional nearby farms (Tamer et al., 2003). Furthermore, although ecological production contributes to decreasing many dangers in the food chain, it should be taken into consideration that it does not remove the danger totally and this production technique has some dangers peculiar to itself. Therefore, research studies on food quality and safety concerning these products should be given significance (Ölmez, 2003). Food firms and retailers may guarantee food safety and quality only by applying and developing the concept of supplementary chain quality assurance in supply chains and by establishing traceability systems (Karabayır, 2002). At this point, the necessity for the establishment and continuous tracebility of the integration between agriculture and food sectors clearly occurs.

The restrictions which are peculiar to the agriculture sector in general and affect all the production systems as a whole, are not independent from the problems which affect GAP and ecological agriculture. Therefore, precautions such as increasing the yield in agriculture, preventing the farms from getting smaller, establishing large-sized farms and providing educated expert staff, directly concern safety and quality production in food sector as well.

6. Conclusion

Due to its ecological advantages, Turkey has a great potential of production and export in raw and processed food products. Quality and safety food productions were primarily export oriented, whereas today, they have become important for the domestic consumption as well. As a result of these developments, processes for safety production systems in agriculture are gradually becoming widespread in Turkey. However, some structural problems of agriculture might hinder the applications of GAP, IPM and ecological production systems, which intend to supply quality and safe raw material to food industry. In order to overcome these restrictions, the problems which occur during the application of the law should be solved. Other precautions are related to the identification of trained and educated experts and to the education and information of the producers. Some of the other precautions are the promotion of produc-

ers' organisations, preventing the farms from dividing and establishing large-sized farms.

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