The Fate of Horticulture in the East Central European (ECE) Transition Countries: A Case Study of Hungary

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Abstract

Prior to the time of the 1990s transition in Hungary from a socialist to a capitalist economy, the ECE (East-Central-European) countries produced a great proportion of the fruit, vegetables and wine grapes on large-scale farms. These products were delivered to the wholesale trade, to the processing industry or designated for export. Household farms produced for their own consumption or for local markets. Hungarian large farms also organized the production of small farms, and purchased and traded their products. Earlier, Hungary had been a major exporter of horticultural products. The country’s ecological conditions are good for both open-air and under-cover production. Hungary also has plenty of thermal-energy. Nowadays, horticultural exports from Hungary are still significant but their quantity is diminishing. After the transition, the vertical chain of production was broken. The wholesale trade did not buy up horticultural products from the numerous small farms. Many processing plants were destroyed. The Soviet market, which had been the major importer of horticultural products from the ECE countries, collapsed. As a consequence horticultural production decreased. The recent trend has been for farms to turn to more extensive cereal production encouraged by the EU’s agricultural support system. The domestic horticultural trade has also been damaged by the free import regime. The retail trade for food has become increasingly dominated by big retail trade chains. These require a steady flow of goods in large quantities and of a standard quality. The processing industries, which have been reorganized and are mainly in foreign hands, have the same demands. However, these stipulations cannot be met by individual farms. Farms have to cooperate in order to comply with these requirements. Such cooperation also receives subsidies from the EU. However, the current organization of cooperatives is proceeding slowly, at least in Hungary, where it needs more support and promotion from the national government.

INTRODUCTION

Hungary’s ecological conditions are favorable for both open-air and under-cover horticultural production. The country does not rank among the largest horticultural producers of Europe (especially when compared to Mediterranean producers), but its production is significant in the temperate zone. Hungarian vegetable production is about 2% of the EU-27 production and its fruit area is about 3.5% of the total EU-27 area. The two largest areas of apple trees are found in two new member states: in Poland (34%) and Romania (12.4%). Hungary has the fourth largest area under apricots, with a share of over 7% of the EU-27 area. 10% of the EU-27 wine area is located in Romania, Bulgaria and Hungary with shares of 5, 3, and 2%, respectively (Data of Agricultural Statistics: Main results – 2007-08. 2009 edition of Eurostat).

The research project examined the Hungarian supply chain for horticultural products. This paper deals with the state of production, labor use, markets, domestic and foreign trade, processing and cooperation in the field of horticulture.

METHOD

The research was based on inquiries, statistical data and literature dealing with the topic.

PRODUCTION
After the transition in the ECE countries from socialist to capitalist economies, agricultural land was privatized where, earlier, large collective and state farms had dominated. As a consequence of the land distribution, the average sizes of farm units became too small for viable production (Swinnen and Mathijs, 1997). There has been some land concentration since then, but even so, the average farm sizes have not grown very much (Burger, 2006). In 2007, the average farm size of individual farms was 3.86 ha in Hungary. At the same time, the average farm size of the production companies and cooperatives (together with corporate farms, which farm about 60% of the total 5,800,000 ha utilized agricultural area) was 524 ha. On average, corporate farms produce vegetables on 82 ha, while the equivalent figure for fruits is 29 ha. The average vegetable area farmed by individuals is 1.1 ha, while for fruit the figure is 0.6 ha. Those individuals who are members of fruit and vegetable producer organizations (POs) produce on plots having an average area of 1.75 ha. Altogether 46% of horticultural production and 87% of fruit production of Hungarian farms is under 2 ESU (ESU = European Size Unit, which is a standard gross margin of EUR 1,200 and is used to express the economic size of an agricultural holding or farm). Productivity on these farms is low.

The share of horticultural products is 25-26% of gross crop production and 14-15% of total agricultural gross production in value terms.

The 170,000 men and women who were employed in full-time job in agriculture in 2008 accounted for not more than 4.4% of the total national employment (according to calculations using the ILO methodology). However, there were 619,000 individual farms in the country in 2007 – although not all the workers on the farms were full-time employees - with 23,896 of these producing vegetables as a major profile. The number of all types of farms has decreased during recent years, with the exception of corporate farms growing vegetables and fruits (see Table 1). In general, individual farms have only a few, scattered fruit trees; corporate farms have generally larger orchards.

Those that together are in first place with respect to supplying the market with horticultural products are corporate farms and large individual farms (Kovács, 2010).

According to the statistics, 52% of individual farms are subsistence, 32% are semi-subistence and only 15% produce exclusively for the market. As was also the case before the transition, small farms produce nowadays mainly for the household or for local markets; large farms produce for the national market. However, there are far fewer large farms at present than there were earlier. Many of the existing ones have turned to arable production instead of horticulture and livestock breeding. Even the earlier expertise has disappeared. These facts are also reasons for the decrease in the area used for horticulture (see Table 2).

### Open-air Production

Table 1 shows that the diminishing open air area of vegetables was offset by an increase in yields. This decrease in the area used for vegetables was, in no small measure, caused by the EU’s agricultural support system, which primarily subsidized cereal production. Yields are generally much lower than in developed Western countries. Not more than 20 percent of the vegetable area is irrigated (and only 5% of the fruit orchards). There are not sufficient high-yielding varieties and there is not enough investment for further development.

The structure of production has significantly changed during the time. The production of sweet corn, green peas, green beans, asparagus, cantaloupe melons, carrot, and horseradish has grown, in line with the respective demands of domestic and foreign traders, and the processing industry. However, the production of such traditional open-air vegetables as paprika, red pepper, tomatoes, cucumber, cabbage and onion has decreased. Among vegetables, sweet corn is the crop, which is produced in the largest quantities. According to the farm structure survey of 2007, 95% of cabbage and 89% of paprika were produced by

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Vegetable Area Production (ha)</th>
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<tbody>
<tr>
<td>Individual Farms</td>
<td>3.86</td>
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<tr>
<td>Corporate Farms</td>
<td>524</td>
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<tr>
<td>Total</td>
<td>567.86</td>
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<th>Table 2</th>
<th>Area Used for Horticulture (ha)</th>
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<tbody>
<tr>
<td>Individual Farms</td>
<td>23.896</td>
</tr>
<tr>
<td>Corporate Farms</td>
<td>524</td>
</tr>
<tr>
<td>Total</td>
<td>547.896</td>
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</tbody>
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individuals; however, 70-80% of tomatoes, green peas and sweet corn were produced by corporate farms.

**Under-cover Production**

Under-cover production accounts for 25-30% of the quantity of the total Hungarian vegetable production and 40% of the total value production. A major part of these vegetables is produced in plastic tunnels and a smaller part in greenhouses. The major under-cover vegetables are: tomatoes, paprika and cucumber. Owing to the strong import-competition, both their area and production have decreased. Foreign-owned retail trade chains import under-cover vegetables and out-of-season fresh vegetables and fruits in large quantities; the latter originate from the Mediterranean countries and the Southern hemisphere. Production in Hungary has also shrunk due to the high investment and production costs. Most under-cover facilities are obsolete and need to be restored. Under normal conditions, in the spring and autumn the Hungarian climate allows production without heating. But in winter period and early spring heating is needed and the concomitant costs are high. Although the country has plentiful supplies of thermal energy (water), the high investment costs needed for geothermal wells, the water re-injection obligation and the high costs of water-use discourage investors. Many small producers – mainly in the southern and northern parts of the Great Hungarian Plain – have abandoned the traditional under-cover production. However, there are large companies - transformed from the old cooperatives - which are still functioning well and selling to domestic and foreign traders in large quantities. Big retail chains buy domestic under-cover products almost exclusively from these producers.

**Fruit**

Among fruits, apples are produced in the largest quantity and their production has increased slightly. Unfortunately, in the majority of orchards it is the old variety of “Jonathan” apple that is still grown. Its yields are lower than those of better varieties, it perishes fast, and the demand for it is less than for other varieties. A considerable part of its production is used for industrial purposes, while apples for fresh consumption are imported in large quantities. The production of almost all other Hungarian fruits has decreased, except that of apricots, blackberries and walnuts.

After the transition, many big orchards were divided among small producers, and many which were not distributed have since been almost completely neglected. Many small producers do not cultivate fruit trees, especially given the fact that the costs of selling fruits in small quantities exceed the income. Furthermore, there is still a lack of those wholesale traders who collect fruits at the farm gate or household gate.

**LABOR**

Interestingly, horticultural production is also harmed by a labor shortage. Although unemployment rates are highest in the important fruit and vegetable areas, there is still a lack of seasonal labor. The causes might be: low wages (which do not exceed unemployment benefits), high labor costs added to wages, and the complicated administrative obligations faced by employers. Furthermore, there are few skilled workers, owing to the decline in agricultural vocational training in recent years. It has to be mentioned, however, that many workers are employed from the black market.

The high labor costs and labor shortage could be one of the reasons that corporate farms have turned to the cultivation of well-mechanized fruit and vegetable species.

**DOMESTIC TRADE**

The major actors in domestic horticultural trade are local markets, small retail shops,
retail trade chains, wholesale markets, producer organizations and producers (FruitVeb, 2009).

**Small Retail Trade**

On local markets, generally small producers are the sellers. Supplies are characterized by big variations of products in small quantities. The buyers are mainly local consumers.

Small shops are supplied by wholesalers or sometimes by producers. The role of small shops is decreasing as big retail trade chains gradually gain an ever-greater share of the market. On a measure of 100, the share of small shops is 47 and that of trade chains 53. Small shops generally keep more varieties of fruits and vegetables in small quantities than retail chains, they sell locally grown products, and these products are sometimes fresher and tastier than those of the trade chains.

**Retail Trade Chains**

In Hungary, at the end of 2008, there were 1116 hypermarkets, supermarkets and discount markets dealing with food marketing; this was for a country of 10 million inhabitants. Their number is growing rapidly - for instance, in 2007 the equivalent of the figure above was 100 less. In contrast, the number of small shops decreased by 1 100 over the same period. Multinational companies own most retail chains. Only 28% of them are in Hungarian ownership.

The policies of the individual chains are different with respect to the purchase of vegetables and fruits. There are some, which have regional centers for purchasing (e.g. Lidl). Others have Hungarian centers for this purpose. The purchasing activities of some chains are carried out by common-purchasing companies (e.g. Match, Cora, Profi). There are some Hungarian chains in which the individual shops do their own purchasing. Furthermore, they often buy from individual producers, as well (Seres and Szabó, 2010).

The chains strive to provide steady and standard varieties of fruits and vegetables for consumers during the whole year. Therefore, their choice is often narrower than that of the small shops. For example, they sell smaller amounts of new seasonal and high quality products; on the other hand, they sell more under-cover produces. At the same time, their requirement is that the delivered goods should be quality controlled (by some international system of quality control); comply with food safety requirements; be transported in cooled facilities; treated with post-harvest processes (washed, sorted, labeled, etc.); and be supplied regularly in standard quantities and qualities. Obviously, small producers can not fulfill these requirements (Vorley and Fox, 2004 and Vorley and Fearne, 2007). They can only be fulfilled by those traders who dispose of large quantities of products. These could be importers, wholesalers, or some large farms and cooperatives. Imported goods account for about 30% of the total supply of fruits and vegetables.

Retail chains try to get rid of wholesalers because they make their purchasing more expensive; instead they try to buy direct from producers. However, there are not many producers who can comply with their requirements – and those that can do this are inclined to export their goods, or at least a certain proportion of them. There are a few cooperatives, which are capable of producing in large quantities, but in general, the majority of cooperatives are weak.

**Wholesalers and Wholesale Markets**

Wholesalers buy mostly in wholesale markets from small producers, but also directly from some large farms and POs. Some have joint ventures with large farms and POs, while some work with foreign capital. Furthermore, some of them also export and import. There are others who deal exclusively with fruits and vegetables, and yet others who are concerned with different agricultural and food products (or even products outside the sphere of agriculture).
There are 1681 wholesalers in the country who deal with fruits and vegetables. They sell to small shops in the wholesale markets, but they also supply retail chains. The largest wholesalers have big logistic - i.e. transporting, storing, cooling, packing - bases. They supply the chains regularly with sorted, equalized, cleaned, labeled goods.

In wholesale markets it is mainly small producers and some POs who sell, and small shoppers and traders of local markets who buy - sometimes directly, but often through the mediation of wholesalers.

There are two wholesale markets in the country: one in Budapest and one in the South East, in Kiskundorozsma, near to the city of Szeged. The Budapest wholesale market handles about 30 percent of the domestic trade of fresh fruits and vegetables. Deliveries to the market are not steady, and they vary from time to time, according to the harvests in different regions, localities and farms. Products are not equalized - that is, quantities and qualities vary on a wide scale. Trade is often carried out without invoices in order to avoid paying taxes. Although there are no auctions in Hungary, wholesale markets are still good for getting information about quantities, qualities and prices.

**PROCESSING**

Prior to the transition, the food processing industry had a significant share in the total of the Hungarian processing industry. At present the existing 18 Hungarian processing firms account for less than 10% of the number of earlier functioning firms. More than 50% of these are in foreign ownership. The largest firms - namely Globus, Univer and Bonduelle – account for two-thirds of food processing. The industry exports 60-80% of its produce in terms of value.

In the deep-freezing industry there are 8 firms which each have more than 20 000 tones capacity; the few other existing firms have much lower capacities. They are all in Hungarian ownership. The industry exports 60-65% of its produce.

The processing and deep-freezing industries process one-third of the vegetable production of the country and half of the fruit production (among the latter, 60-80% of apples).

Earlier, the range of processed products was much more diversified than at present. At present the major processed fruit and vegetable products are sweet corn, green peas, pickles, sour cherry and apple concentrate. Hungary produces the second largest quantity of sweet corn in Europe after France. Now, a proportion of many traditional vegetables that were once produced in Hungary in large quantities are today imported by the industry. These are e.g. onions, root vegetables, red pepper, cucumber and apples. The small domestic quantities of these products are not competitive on the world market. However, some domestically grown, processed produce is exported in big packages for quality improvement in foreign industries.

The narrowing choice of industrial products affects horticultural production, as well. The cultivation of many traditional Hungarian plants has diminished and changed for items that are in greater demand, e.g. sweet corn.

Earlier, the processing industries organized production of the contracted farms: they supplied seeds and other materials for them, prescribed the technology, provided extension services and organized harvesting. Nowadays such connections are rare. Agreements are even fewer in number. All these cause difficulties in ensuring the steady flow of raw materials. Expertise in the processing industry has also diminished, owing to the decline of vocational teaching.

**FOREIGN TRADE**

Exports take up about 47% of the marketed Hungarian fruits and vegetables. The balance of trade is positive, in spite of increased imports after EU accession (see Table 3). Apart from Hungary, Poland is the only other country among the newly accessed countries which has a positive balance with respect to horticulture (Erdész et al., 2009)
Although the positive balance of vegetables has diminished over the years, they still play their part in keeping the total balance positive, in spite of the negative balance of fruits.
The import and export shares of product groups are shown in Table 4.
Table 4 shows that vegetables and processed products make up the largest share in the exports. Vegetables also dominate in the export of processed products. At the same time, fresh fruits take the major share in import groups, followed by processed products.
Processed sweet corn accounts for the greatest quantity with respect to exports. It is followed by green peas, preserved cherry and sour cherry, deep-frozen sweet corn, paprika, pickled cucumber, watermelon, mushroom, and deep-frozen green peas.

Hungary’s major export markets are Germany, followed by Russia, Poland, Austria and Romania. Their percentage shares are: 21, 11, 10, 8, 5 respectively. Prior to the transition, the Soviet Union was the major export partner, importing mainly processed vegetables. One of the reasons for the decline in the processing industry is the decreased demand of successor states, especially that of Russia.
Imports of fruits and vegetables have grown enormously since EU accession. The growth between 2003 and 2004 was 84%. At the same time exports increased by only 38%.
Major imported products are bananas, citrus fruits, fresh tomatoes, processed potatoes, paprika, apple, and table grapes.

Most imports come from Germany and Austria (a great part from here as re-exports), then from Italy, the Netherlands, Spain and Poland, in that order. Germany’s and Austria’s increased share is due to the presence of their retail chains, such as Spar, Aldi and Lidl.

**COOPERATION**

POs are promoted and supported by the EU. According to the EU regulation of 1996, which is observed by Hungary, POs organize production, store, grade, process and market products and are set up by producers of a certain product or (sub)region. POs are active mainly in the fruit and vegetable sector. In fact, at the beginning of the 2000s some were organized in Hungary for the very purpose of getting EU support. Those wholesalers who bought horticultural products regularly from particular producers also organized some POs. When the system of support became more controlled, many POs founded in such a manner were liquidated.

In 2008 there were 63 fruit and vegetable POs in Hungary, with 20 000 members and a total area of 35 000 ha. On average, one PO had 317 members and an area of 556 ha.

Cooperation is still weak in Hungary (Swinnen and Vanderplas) and many people do not trust in it. In addition, some POs are in a bad economic condition. Membership fees and contributions often do not cover the costs of administration, functioning an investment in spite of the EU support. POs are non-profit institutions and thus net incomes are distributed among members. This is why POs are unable to accumulate sufficient means for further development. They need credits for investment but in most cases they cannot pay these back without government support. Furthermore, POs have to pay taxes and have many administrative obligations. At the same time, individual farmers do not pay income taxes under a certain income limit. Most of the individual farmers do not declare their incomes to be over that limit and thus they can completely avoid income tax payment. If POs sell to the retail chains, they get the payment for their products only after some weeks. If individuals sell in the market, - and they often do this without invoices - they get their money at once. In addition, retail chains require fairly high contributions to their selling costs from the delivering producers. All these facts hold back cooperation.
64% of the individual producers of fruits and vegetables sell individually and so dispense with contracts. Sometimes, even members of POs sell in that way, if it is more advantages for them. 16% of the producers enter into contracts with traders and 4% make contracts for production. Altogether 16% sell through cooperatives or POs. This share is about 70% in the Netherlands and Belgium, and 50-55% in Spain and France; however, the equivalent figure is only 13% in Poland and these percentages are similarly low in the other new ECE EU countries. (Székely and Pálinkás, 2007).

The low share of contracts is an indication of the disorganized manner of marketing (Magda and Gergely, 2010). The hesitant attitude towards cooperation can very likely be explained by the causes mentioned above - namely, by the distrust of producers in cooperation and the low income levels of cooperatives. Government try to strengthen cooperation by supporting those POs which merge and create larger cooperatives. Some of these operate well. Larger POs could become financially more successful. They could buy the equipment which is needed for processing and homogenizing the products. They would then have more chance to become steady suppliers of the retail trade and the processing industry; furthermore, due to their strong bargaining power they could also be partners of the large commercial chains.

**CONCLUSION**

There is a significant demand for fruits and vegetables in the European Union. 11 countries within it are not self-suppliers of these products. However, there is great competition, both in the world market and in the EU. Tropical and sub-tropical countries of the world and southern countries of the EU supply large quantities of these items. There are also big producers among the newly accessed countries, e.g. Poland, Bulgaria and Romania. Many countries have more advantages than Hungary in production and trade. Hungary has a good climate, good soils and sufficient geothermal energy for production. However, productivity is relatively low, causing low incomes. Additionally, both the production and trading practices of producers are disorganized. The cooperation of producers has to be strengthened in order to synchronize and support production and trade. Inside cooperatives, the building of vertical chains – with respect to purchasing, processing, and selling - has to be promoted. Stronger and larger cooperatives would also have a better bargaining position when dealing with retail trade chains and processing industries. The government has to support cooperatives by creating better rules, reducing administrative obligations, lowering taxes and labor costs, and providing more extension services.

**ACKNOWLEDGEMENT**

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**Literature Cited**


Table 1: Change in number of farms. Source: Hungarian Statistical Office

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<th>Year</th>
<th>Individuals</th>
<th>Individual vegetable growers</th>
<th>Individual fruit growers</th>
<th>Corporate farms</th>
<th>Corporate vegetable growers</th>
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<td>2000</td>
<td>959 000</td>
<td>63 607</td>
<td>140 543</td>
<td>8400</td>
<td>411</td>
<td>585</td>
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<tr>
<td>2007</td>
<td>619 000</td>
<td>23 896</td>
<td>90 653</td>
<td>7400</td>
<td>474</td>
<td>860</td>
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Table 2: Production of vegetables and fruits in Hungary. Source: Data of FruitVeb, Hungarian fruit and vegetable Organization

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Table 3: Balance of trade of fruits and vegetables in 2008 in million EUR
Source: Hungarian Agricultural Economics Institute

<table>
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<th>Import</th>
<th>Export</th>
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<td>Vegetables (fresh, deep frozen, dried)</td>
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<td>Fruits (fresh, deep frozen, dried)</td>
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<tr>
<td>Processed fruits and vegetables</td>
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<td>Total balance</td>
<td>253.2</td>
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Table 4: Import and export shares of product groups in 2008 in value terms
Source: Hungarian Statistical Office

<table>
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<th>Product groups</th>
<th>Import %</th>
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<td>Vegetables (fresh, deep frozen, dried)</td>
<td>25</td>
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</tr>
<tr>
<td>Fruits (fresh, deep frozen, dried)</td>
<td>44</td>
<td>16</td>
</tr>
<tr>
<td>Processed fruits and vegetables</td>
<td>31</td>
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