

# Field Vegetable Production in Hungary

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**Summary:** Hungary is a country with excellent ecological potentials and with rich traditions in vegetable production. The total vegetable production area comprises about 100 000 ha and annual production amounts to 1.4–1.8 million tons, 75–80% comes from fields and the rest from forcing. Approximately 40 species are produced, but only 20 of them play a dominant role. The most important ones are: sweet corn, peas, peppers, watermelon, onions, tomatoes, gherkin, carrots, beans, white cabbage.

40–45% of the total production is processed, 20–30% sold on the fresh market and 30% exported.

Vegetable production is based on rural farms of 1–5 ha average acreage. It provides living for about 70–100 000 families. The low number of producers' organisations is a major setback.

Profitability of vegetable production is rather low. Production costs are high, wholesale prices are depressed.

Vegetables are produced for the industry by contract. Fresh vegetables are sold through local markets (15–20%), the wholesale market (decreasing importance) and direct marketing (35–40%).

Against the self-sufficiency of the country there is a seasonal import of vegetables mainly in winter and early springtime.

Hungarian legal regulations are harmonized with the EU directives, EU standards are accepted and applied, traditionally good market connections and cooperation with several EU countries enable the country to be a partner of EU vegetable growers.

**Key words:** field production of vegetables, development of production

## Introduction

The vegetable sector plays a very important role in Hungarian agriculture. During the last decade, in terms of value, vegetable production gave 10–12% of agricultural plant production and it was steadily increasing.

The total vegetable production area comprises about 2% only of the total arable land, about 100 000 hectares, production amounts to approximately 2.5–3.8% of the EU vegetable production. Out of the total 1.4–1.8 million tons, field production has a share of 75–80%, and vegetable forcing comes to 400–450 000 tons a year. The export ratio is about 30% of the total vegetable production, out of which fresh exports constitute 7–9%, mainly coming from forcing, from protected production.

What is the Hungarian vegetable production based on?

The country has excellent ecological conditions. The climate is suitable for field production of almost 100 different vegetable species (Table 1). However, it must be taken into consideration that the country is located at the northernmost border of the field production of heat demanding vegetable species (such as tomatoes, peppers, sweet corn, melons etc), whereas others, such as cabbages, leaf and root vegetables, peas, struggle with the warm continental summer climate. It means that intensive and in some cases special technology has to be applied.

The geological fundamentals of Hungary are also suitable for vegetable production, there are large plains and good fertile soils.

**Table 1** Climatic characteristics of the vegetation period in Hungary (from April till October)

average air temperature (°C)	12–22
sunshine (hours/month)	130–280
precipitation of the growing season (mm)	300–350
annual precipitation (mm/year)	500–600

The geographic position of the country, the proximity of large markets enables it to export vegetable products with little transport.

Good knowledge of vegetable production is available thanks to the traditions, the advanced education and a long and good relationship with the Netherlands and other countries, pioneers of vegetable production.

Production is well supplied with all the necessary materials, i.e. seeds, fertilizers, chemicals, machines, equipments etc.

Due to the special ecological conditions and the long traditions special growing areas have been established for peppers, onions, cabbages, gherkin, watermelon, horseradish, just to mention the main vegetables.

Owing to the climate, Hungarian vegetables are of high quality and have excellent flavour, which is nowadays often missing from the products of most large scale farms.

In 1999, within the framework of the National Agro-environment Protection Programme ecological and integrated vegetable production was favoured and sponsored by the government.

## Quantitative Information about Field Vegetable Production in Hungary

The main vegetable species can be grouped as follows:

crops for processing: sweet corn, tomatoes, peas, beans, gherkin, peppers (spice pepper)

crops suitable for storing: onions, root vegetables (carrots, parsley, celeriac, red beet), cabbages (white cabbage, cauliflower, Savoy cabbage)

seasonal crops for fresh market: table tomato, sweet pepper, cucumber, water melon, melons, leaf vegetables, radish, Chinese cabbage, kohlrabi, mushroom

As it can be seen from *Table 2*, the harvested area was quite stable in the past five years; there was a considerable increase in sweet corn and a decrease in tomato area, due to processing reasons. Total harvested production (*Table 3*) varied according to the area and the average yield (*Table 4*). Average yields of the country seem to be low compared to those of the leading vegetable producing countries but there are large differences between farms with extensive (non irrigated) and intensive technology.

From territorial aspect, vegetable production is well concentrated. Almost 70% of the production comes from the great plain (from central and eastern Hungary).

The major part, approximately 70% of total production is realized in Hungary, 45–50% for processing, 20–30% for fresh market and 30% for export (7–9% as fresh and the rest as processed vegetable).

The farm structure is rather special in Hungary. More than 80% of the production comes from private farms. The average farm size in the vegetable sector is small, the majority are under 1 ha, and about one third of the farms are between 1–5 ha. Small farms play a dominant role, they give 72% of the total vegetable production. Producers' Organisations are established to coordinate production and for marketing the products.

Vegetable production provides living for about 70–100 000 families, mainly in those parts of the countryside, where other jobs can hardly be found.

Due to the fact that the farms on which vegetables are grown are of many different types, it is difficult to give

*Table 2* Harvested area of major vegetable crops in Hungary (ha)

		1997	1998	1999	2000	2001
Total		63 000	77 000	83 100	84 000	92 500
Open field		57 000	71 000	78 000	79 000	87 000
Main crops	Sweet corn	16 000	21 500	20 500	23 500	28 900
	Peas	13 000	16 500	14 500	17 400	18 900
	Watermelon	6 000	8 000	11 000	9 000	8 200
	Spice pepper	4 800	6 770	4 630	5 390	6 890
	Onions	–	6 900	6 700	4 300	5 400
	Sweet pepper	3 800	4 200	3 500	3 800	3 900
	Tomatoes	7 800	9 000	5 500	3 200	3 740
	Gherkin	3 400	4 000	3 200	3 000	3 200
	Carrots	1 700	2 200	1 900	2 500	2 800
	Beans	2 300	2 500	1 800	2 000	2 300
	Cabbages (white)	1 300	1 200	1 500	1 800	1 500
	Cauliflower	800	850	700	1 100	1 100

*Table 3* Total harvested production of major vegetable crops in Hungary (1000 tons)

		1997	1998	1999	2000	2001
Total		1 186	1 570	1 516	1 480	1 777
Open field		715	1 100	1 071	1 030	1 328
Main crops	Sweet corn	200	280	260	254	423
	Peas	52	82	65	51	110
	Watermelon	108	160	180	160	148
	Spice pepper	–	65	33	40	–
	Onions	–	149	144	95	147
	Sweet pepper	59	76	55	60	53
	Tomatoes	110	260	130	130	118
	Gherkin	40	31	29	26	35
	Carrots	45	62	45	70	98
	Beans	15	17	13	15	18
	Cabbage (white)	50	52	50	62	60
	Cauliflower	16	21	19	21	22



**Table 4** Average yield of major vegetable crops in Hungary (tons/ha)

		1998	1999	2000
Main crops	Sweet corn	11.8	12.6	12.2
	Peas	4.4	3.9	3.2
	Watermelon	15.5	16.0	16.0
	Spice pepper	8.9	6.3	6.8
	Onions	19.4	17.8	18.7
	Sweet pepper	12.1	14.2	12.3
	Tomatoes	22.3	22.0	23.0
	Gherkin	15.5	14.5	17.0
	Carrots	17.9	18.6	20.3
	Beans	5.6	5.6	5.5
	Cabbage (white)	21.3	20.7	20.0

general estimates about production costs and profits. According to a calculation model, gross income is very variable depending on crop and season. In the case of the major field vegetables it is about 250–400 000 Ft/ha (1000–1500 EUR/ha), but with intensive field production it may even reach several millions as well. Production costs are steadily increasing, over the past years the prices of chemicals, energy, seed etc. have increased faster than market prices of vegetable products, which are, in turn, rather depressed.

Observing market prices, a seasonal fluctuation can be seen, which is smaller for the crops which are suitable for storing, but larger for seasonal crops. Regarding this latter group of vegetable crops, prices can drop or rise sharply from one day to the other.

Vegetable products have different marketing channels:

- local markets share 15-20% of the total commerce. Their importance is still remarkable due to the traditions
- wholesale markets are of decreasing importance
- direct marketing to the supermarkets (such as Spar, Tesco, Metro etc.). This marketing channel shares 35–40% of the total commerce and increases steadily.

Hungary is self sufficient in vegetables, production exceeds 1.6 times domestic consumption. (This rate is 3 in the Netherlands, 2.44 in Spain, 1.78 and 1.84 in Italy and in Portugal.)

Against the excess in production Hungary has seasonal imports of fresh vegetables (tomatoes, cucumber, peppers in winter time, cauliflower, broccoli, carrots in summer time), and also of some processed products.

Exports make up a significant portion, approximately 30% of the total production is exported. The main crops for fresh export are sweet pepper, onions, garlic, mushroom, cabbages, watermelon, horseradish, gherkin, carrots and tomatoes.

Export is also seasonal, and owing to our climate Hungarian vegetable products can be exported in the period when field production, due to the hot summer, is over in Southern Europe. Considering the external trade, exports surpass imports about 6–7 times in value.

Phytopsanitary regulations, quality standards in conformity with European quality standards are valid in Hungary too with the relevant documentation, there is no administrative restriction (except for duties) to transporting vegetables to the EU market. The main directions of Hungarian vegetable export are the EU member states, first of all Germany, Austria and non EU members, Russia, Poland, the Czech Republic, as the main importers.

Vegetable research is very local in general, results of other countries are hardly adapted to the Hungarian practice. Research is mainly based on university departments. There are 6-8 centres covering the main vegetable producing areas. The former Vegetable Research Institute in Kecskemét has been reorganised and now as a share company deals with breeding and seed production. Well concentrated research is going on with spice pepper in Kalocsa, where breeding, technological and processing research is carried out. There are regional trials promoted by seed companies or variety trials by the National Institute for Agricultural Quality Control with the subsidies of the Ministry of Agriculture and Regional Development. The most intensely studied species are spice pepper, sweet pepper, onions, watermelon, and the main fields of research are nutrition, irrigation and intensive field production for increasing yield, earliness, improving the quality and timing of the production.

## SWOT Analysis

### Strengths

- Favourable potentials of the country (climate, soils, central position)
- Traditions and experience in vegetable production
- Knowledge of the advanced technologies, good supply of materials and tools
- Manpower is available
- Full professional training
- High capacity of the processing industry
- EU conform legal regulations

### Weaknesses

- Initial stage in marketing (spontaneous juncture of production and market demand)
- Great ratio of small growers
- Low number of producers organisations
- Small ratio of the irrigated area, unsteady yields
- Lack of information
- Low level of post harvest activities (packaging and storage)
- Processing industry owned by multinational companies
- Lack of financial resources in general
- Lack of applied research and well-organised advisory service

## Opportunities

Rural development  
 Increasing the level of processing, production of high quality  
 Introduction of new vegetable species  
 Increasing domestic consumption per capita and exports  
 Increased turnover of supermarkets  
 Lack of production restrictions in the EU  
 Utilisation of rich thermal energy sources

## Threats

Unfavourable climate changes  
 Globalisation of the market (fast changing of the demand, loss of the domestic market, increasing imports)  
 Expansive policy of other vegetable-producing countries  
 Pressure of supermarkets and the processing industry  
 Appearance of protective measures on traditional export markets  
 Deterioration of financial resources (decrease in consumption)

## Conclusions

Although Hungary gives only a moderate amount of the EU vegetable production (2.5–3.8%), due to the special quality (especially flavour) and favourable marketing period, the climate, the domestic market, the long growing traditions, the great number of educated experts and for many other reasons, Hungarian vegetable production should keep or extend its position in an expanding European Union.

## Recommendations

- To build up correct partnership with other member states in information exchange and research.
- To provide more subsidies for Hungarian vegetable growers.
- To promote the establishment of Producers' Organizations.
- To cooperate with other EU member states in marketing to third countries.

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