

## Production potential and development possibilities of organic products in the East Mediterranean region of Turkey

Paksoy M.

in

Nikolaidis A. (ed.), Baourakis G. (ed.), Isikli E. (ed.), Yercan M. (ed.).  
The market for organic products in the Mediterranean region

Chania : CIHEAM

Cahiers Options Méditerranéennes; n. 61

2003

pages 45-52

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=800150>

To cite this article / Pour citer cet article

Paksoy M. **Production potential and development possibilities of organic products in the East Mediterranean region of Turkey.** In : Nikolaidis A. (ed.), Baourakis G. (ed.), Isikli E. (ed.), Yercan M. (ed.). *The market for organic products in the Mediterranean region*. Chania : CIHEAM, 2003. p. 45-52 (Cahiers Options Méditerranéennes; n. 61)



<http://www.ciheam.org/>  
<http://om.ciheam.org/>

# Production Potential and Development Possibilities of Organic Products in the East Mediterranean Region of Turkey

Mücahit Paksoy

Department of Agricultural Economics, Faculty of Agriculture, Ankara University, Turkey

---

**Abstract:** Covering 6,8 % of Turkey's total areas and 9,2% of the national population, the East Mediterranean Region with its natural sources is one of the richest regions in Turkey. Besides this, agriculture is very developed and is the main activity in the region. Cereals, industrial crops, oilseeds, fruits (especially citrus) and vegetables are the main crops grown in the area.

In Turkey, organic farming is a newly developing issue in the region. The region shows a great potential for the production of organic products. According to 2000 data, 12 % of the organic agricultural production in Turkey is realized in the East Mediterranean Region.

This paper firstly examines the agricultural structure focusing on land use, production and input use. It then discusses the production potential of organic products and the development possibilities in the region according to provinces.

**Keywords:** East Mediterranean Region of Turkey, Organic Farming

---

## 1. Introduction

The East Mediterranean Region, which is located in the southern part of Turkey is close to the Mediterranean Sea and covers Adana, Hatay, Icel, Kahramanmaraş and Osmaniye provinces. It is one of the leading regions in Turkey in terms of high agricultural value and quality and richness of agricultural land, biological diversity and culture (Figure 1). Also, the greatest plain of Turkey, named Cukurova, and two important rivers, the Seyhan and Ceyhan, are located in this region. The Mediterranean climate is dominant except in mountainous regions and passage areas.

Many crops are grown, especially cereals, cotton, citrus, groundnut, soybeans, sugar beet, red pepper, early season vegetables, grapes, watermelon, almond, olive etc. Beside this, vegetable and fruit production for land under protective cover and second crop cultivation is very developed and make up an important share in Turkey. Cattle breeding, poultry production, small ruminant production and apiculture are the main activities in terms of animal production (Paksoy, 2000).

In the region, the economy depends on agriculture and the agricultural industry. Textile, vegetable oil, flavor, animal feed, dairy products and fruit processing are important sub sectors of agro industry. The total population of the region is 6,2 million and consists of 62% urban and 38% rural population according to the 2000 census.

The aim of this research is, firstly to give useful information about natural sources and agricultural structure of the region, then to analyze the production of organic products and determine development strategies.

## 2. Materials and Methods

All the data used in this research is derived from secondary data obtained from the State Institute of Statistics (SIS), the Ministry of Agriculture and Rural Affairs (MARA) of Turkey and other resources.

Figures are shown by province level and provide both quantities and percentage levels.



Figure 1. Location of East Mediterranean Region in TURKEY

## 3. Results

### 3.1. Natural Resources

#### 3.1.1. Water Resources

Four of the 26 river basins are located within the East Mediterranean Region. These are Seyhan, Ceyhan, Asi and Eastern Mediterranean basins. These basins take up 27,43 km<sup>3</sup> annual surface runoff and make up 14,7% of Turkey. The annual available ground water reserve of the region is 1,447 km<sup>3</sup> (11,8 % of Turkey's ground water reserve). The water surfaces area (natural lakes, dam reservoirs, small dam reservoirs, streams) is 48 676 hectares. Land suitable for irrigation takes up 1 573 964 hectares, irrigable land, 961 970 hectares (61,1%) and economically irrigable land, 846 688 hectares (53,8%).

#### 3.1.2. Land Resources

The total area of the region is 5 283 487 hectares. The East Mediterranean Region holds a 6,8% share of Turkey's total area. The land is used as follows: 33,3% arable land, 12,6 % pasture and meadow, 46,6% forests, 6,6% other lands, 0,9% area of surface water.

## 3.2. Agricultural Structure

### 3.2.1. Agricultural Land Use

The East Mediterranean agricultural lands make up 7 % of Turkey's total agricultural land. In the region, 1 874 234 hectare of agricultural lands are allocated as follows: 77,1% area sown, 6,1% fallow land, 6,1% vegetable gardens, 10,7% area of fruit trees.

**Table 1.** Land Use by provinces in the East Mediterranean Region (\*)

	Adana	Hatay	Icel	Kahramanmaras	Osmaniye	East Mediterranean
Arable Land	563 125	270 766	379 124	428 467	115 277	1 756 759
Pasture & Meadow	83 856	53 375	218 830	302 429	5 491	663 981
Forests	636 996	195 913	886 084	557 035	185 854	2 461 882
Other lands	92 048	18 553	98 907	130 105	12 576	352 189
Area of surface water	26 996	1 654	2 314	14664	3 048	48 676
TOTAL	1 403 021	540 261	1 585 259	1 432 700	322 246	5 283 487

(\*) According to the General Directorate of Rural Affairs investigation, Source: SHW (State Hydraulic Works), 2001

**Table 2.** Agricultural Land Use by provinces in the East Mediterranean Region (ha)-1999

Provinces	Total land	Cultivated Field Area		Vegetable	Area of Fruit
		Area Sown	Fallow Land	Gardens	Trees
Adana	589 574	513 915	11 781	25 538	38 250
Hatay	273 445	185 207	2 550	36 838	48 850
Icel	401 500	255 171	43 428	34 842	67 659
K.Maras	465 488	359 991	56 618	7 837	41 042
Osmaniye	144 227	131 128	50	8 399	4 650
East Mediterranean	1 874 234	1 445 812	114 427	113 454	200 451
Share in Turkey (%)	6,99	7,83	2,27	14,36	7,94

Source: State Institute of Statistics, 2001.

### 3.2.2. Crop Production

#### 3.2.2.1. Field Crop Production

The East Mediterranean field crops production comprises 8,8 % of Turkey's total production. Field crop production in the region consists of: 67,5% cereals, 14,6% industrial crops, 6,9% oil seeds, 7,6 % tuber crops 1,9% pulses. Cereal production is important and comes first in field crop production. Among the cereals, wheat comes first with 2 543 155 tons production, followed by maize 998 148 tons. Cotton is important for the region and 18,6 % of Turkey's cotton (raw) production is realized in the region with 377 356 tons. Besides, nearly all of the production of oil seeds in Turkey like groundnuts (85,2%) and soybeans (90,2%) are also realized in the region. Dry onions and garlic are important tuber crops produced in the region.

**Table 3.** Field Crop Production by provinces in the East Mediterranean Region (tons)-1999

Provinces	Cereals	Pulses	Industrial crops	Oil seeds	Tuber crops	Total
Adana	1 595 598	11 325	64 271	146 318	155 783	1 973 265
Hatay	407 592	2 698	83 016	112 821	91 033	697 160
Icel	610703	15 542	4 600	18 772	15 810	665 427
K.Maras	578 848	70 562	624 149	42 527	124 728	1 440 814
Osmaniye	402427	467	2 116	42 876	10 190	458 076
East Mediterranean	3 595 138	100 594	778 152	363 314	397 544	5 324 742
Share in Turkey (%)	12,5	7,4	4,3	15,7	4,6	8,8

Source: State Institute of Statistics, 2001.

### 3.2.2.2. Vegetable Production

East Mediterranean vegetable production holds a 15,6% share of Turkey's total vegetable production. Vegetable production in the region consists of: fruit bearing vegetables (84,8%), leafy or stem edible vegetables (7,5%), root, bulb and tuberous vegetables (5,1%), leguminous vegetables (2,1%) and other vegetables (0,3%). As seen from Table 4 the region holds an important place in terms of all vegetable groups. The fields for early season vegetables have advanced a lot due to the developments in transportation. Nearly 40 % of early season vegetable production in Turkey is realized in the East Mediterranean Region with 1 362 880 tons of which 240 260 hectares of land are under protective cover like green houses and tunnels comprising a 56,8% share of Turkey's total areas for land under protective cover. The East Mediterranean Region supplies important amounts of vegetable to the Turkish national market.

**Table 4.** Vegetable Production by provinces in the East Mediterranean Region (tons)-1999

Provinces	Leafy or stem edible vegetables	Leguminous vegetables	Fruit bearing vegetables	Root, bulb and tuberous vegetables	Other vegetables	Total
Adana	47 848	5 301	811 543	6 357	350	871 399
Hatay	100 071	29 443	657 176	53 908	5 698	846 296
Icel	89 834	33 608	1 188 043	10 186	5 658	1 327 329
K.Maras	12 005	2 681	150 146	9 526	-	174 358
Osmaniye	10 724	1 413	125 975	97 528	-	235 640
East Mediterranean	260 482	72 446	2 932 883	177 505	11 706	3 455 022
Share in Turkey (%)	15,9	11,6	15,3	28,2	15,3	15,6

Source: State Institute of Statistics, 2001.

### 3.2.2.3. Fruit Production

East Mediterranean fruit production comprises a 20,2 % share of Turkey's total production. Fruit production in the region consists of: citrus (65,5%), grape-like fruits (18%), stone fruits (11%), pome fruits (4,7%), and nuts (0,7%). Citrus fruits are the primary fruit crops grown in the region. Nearly four fifths of the production of citrus fruits in Turkey is realized in the East Mediterranean Region. Among citrus, oranges come first with 772 896 tons production, fol-

lowed by lemons with 464 871 tons production. Strawberries, bananas, olive and other important fruits holds a 48,8%, 24,8% and 19,9% share of Turkey's total production, respectively.

**Table 5.** Fruit Production by provinces in East the Mediterranean Region (tons)-1999

Provinces	Pome fruits	Stone fruits	Citrus	Nuts	Grape-like fruits	Total
Adana	10 829	29 180	685 394	732	33 164	759 299
Hatay	6 091	66 786	346 016	1 962	58 107	478 962
Icel	76 604	171 393	677 181	8 197	273 345	1 206 720
K.Maras	28573	17 819	-	7 124	100 326	153 842
Osmaniye	1 469	6 434	22 886	261	12 732	43 782
East Mediterranean	123 566	291 612	1 731 477	18 276	477 464	2 642 605
Share in Turkey (%)	4,2	14,8	76,5	2,3	12,0	20,2

Source: State Institute of Statistics, 2001.

### 3.2.3. Animal Production

Cattle production is not very developed in the East Mediterranean Region. The number of cattle in the region is 568 140 per head. Small ruminant production, especially goat production, has an important role in animal production. The number of goats is, 1 124 370 per head comprising 15,4% share of Turkish livestock. Poultry production and beekeeping also have important shares.

The East Mediterranean Region is one of the less developed regions from the animal production point of view. According to 1999 data, 8% of milk, 5,6% of meat, 4,1% of wool, 11,1% of hair, 2,2% of hen eggs, 1,6% of poultry meat and 13% of honey produced in Turkey is realized in the East Mediterranean Region.

**Table 6.** Number of livestock in the East Mediterranean Region (head)-1999

Provinces	Sheep	Ordinary goats	Cattle	Buffaloes	Hens	Beehives
Adana	230 550	242 210	179 420	150	2 386 000	202 429
Hatay	108 110	81 050	102 230	360	480 400	33 133
Icel	301 200	526 540	102 350	-	20 866 500	137 530
K.Maras	571 380	223 010	124 010	160	3 568 100	63 780
Osmaniye	57 610	51 860	63 130	40	290 500	23 947
East Mediterranean	1 268 750	1 124 370	568 140	710	27 591 500	460 819
Share in Turkey (%)	4,2	15,4	5,1	0,4	11,5	10,7

Source: State Institute of Statistics, 2001.

**Table 7.** Animal Production in the East Mediterranean Region (tons)-1999

Provinces	Milk	Meat	Hide (number)	Wool	Hair	Hen eggs*	Poultry meat	Honey
Adana	260 363	11 462	542 847	295	82	5 642	6 607	5 642
Hatay	125 734	4 373	134 091	162	31	2 405	1 709	666
Icel	136 259	6 333	305 072	411	137	5 136	1 019	1 843
K.Maras	202 718	4 812	127 015	938	55	4 133	193	762
Osmaniye	86 311	1 884	82 263	74	16	1 762	-	429
East Mediterranean	811 835	28 864	1 191 288	1 880	321	19 078	9 528	8 742
Share in Turkey (%)	8,0	5,6	10,6	4,1	11,1	2,2	1,6	13,0

\*16000 eggs equals to 1 ton

Source: State Institute of Statistics, 2001.

### 3.3. Input Use

#### 3.3.1. Fertilizer Use

The East Mediterranean Region is one of the regions in Turkey where fertilizer is intensively used. According to 1999 data, 1 477 497 tons of fertilizer was used in the region, which covers 13,5 % of Turkey's fertilizer use (Table 8). Fertilizer consumption by provinces is 505 kg/ha in Turkey, while it was 840 kg/ha in the East Mediterranean Region. In terms of fertilizer use per hectare, Adana comes first with 1 276 kg/ha. Hatay (739,8 kg/ha), Osmaniye (662,8 kg/ha), Icel (592,4 kg/ha), K.Maras (568,1 kg/ha) follow in this order.

**Table 8.** Fertilizer Use by provinces in the East Mediterranean Region (tons)-1999

Provinces	21 % Nitrogen	16-18 Phosphorus	48-52 Potash	Total
Adana	557 425	167 517	12 170	737 112
Hatay	158 548	38 207	3 688	200 423
Icel	144 675	58 629	8 813	212 117
K.Maras	165 915	63 988	2 383	232 286
Osmaniye	71 459	23 526	574	95 559
East Mediterranean	1 098 022	351 867	27 608	1 477 497
Share in Turkey (%)	15,5	9,4	17,1	13,5

Source: State Institute of Statistics, 2001.

#### 3.3.2. Pesticide Use

The East Mediterranean Region is one of the regions in Turkey where pesticide intensively used. According to 1999 data, 11 036 622 kg of pesticide was used in the region, which covers 20,6% of Turkey's pesticide use (Table 9). Pesticide consumption comprises 2,45 kg/ha in Turkey, while it was 6,27 kg/ha in the East Mediterranean Region. In terms of pesticide use per hectare, Hatay comes first with 15,1 kg/ha. Icel, Adana, K.Maras and Osmaniye follow this with

11,2 kg/ha, 3,3 kg/ha, 1,9 kg/ha, 1,7kg/ha, respectively. Insecticide is the most used pesticide in the region. Fungicides, oils, herbicides and others follow this respectively.

**Table 9.** Pesticide Use by provinces in the East Mediterranean Region (kg)-1999

Provinces	Insecticide	Fungicide	Herbicide	Acaricide	Nematocide	Fumigant	Oils	Others	Total
Adana	1 349 568	155 440	251 804	118 580	-	-	-	48 163	1 923 555
Hatay	3 127 687	491 103	135 322	23 558	-	8	-	303 627	4 080 945
Icel	326 342	1 004 282	38 872	280 019	85 600	60 000	2 202 872		3997987
K.Maras	131 200	600 571	59885	2 917	-	-	96	111	794780
Osmaniye	93 361	89 740	49475	-	-	5 500	-	1279	239355
East Mediterranean	5 028 158	2 341 136	535 358	425 074	85 600	65 558	2 202 968	353 180	11 036 622
Share in Turkey (%)	27,2	11,0	6,8	39,4	18,8	12,5	58,8	12,6	20,6

Source: MARA (Ministry of Agriculture and Rural Affairs), 2002a.

### 3.4. Organic Agricultural Production

Organic agricultural production is undertaken generally as contracted farming with export companies. In 2000, 28263,3 tons of organic products was produced in 7401,7 hectares by 1323 farmers in the region. The East Mediterranean region holds a share of 12% in Turkish organic production with 14 products. Tomatoes and cotton are leading crops in organic production with respect to quantity (Table 10). The amount of organic farmland is 0,4% of the total agricultural land of the region.

**Table 10.** Organic Agricultural Production in the East Mediterranean Region, 2000

Product Name	Control Firm	Provinces	Number of farmers	Area (hectare)	Production (tons)
Pistachio	INAC	K.Maras	99	165,8	22,2
Almond	ECOCERT, INAC, SKAL	K.Maras	115	517,1	374,48
Pepper	SKAL	Hatay	107	13,0	330,0
Rosemary	SKAL	Icel	300	2000,0	100,0
Wheat	ECOCERT	K.Maras, Icel	54	751,5	1118,5
Bulgur	SKAL	Hatay	3	18	10,0
Walnut	ECOCERT, SKAL	K.Maras	43	213,7	201,5
Tomatoes (canned)	SKAL	K.Maras, Hatay	252	331,4	14000
Beans (fresh)	SKAL, ETKO	K.Maras	32	120	500,0
Cumin	ETKO	K.Maras	2	43,7	100,0
Lentil	ECOCERT	K.Maras	12	431,5	408,8
Citrus (cocktail)	INAC	Adana	1	6,0	7,5
Chick pea	ECOCERT, SKAL	Icel, K.Maras	152	1413,0	954,3
Cotton	ETKO, SKAL	Hatay	141	2097	10136
East Mediterranean			1323 (7,2%)	7401,7 (12,3%)	28263,28 (12%)
TURKEY			18835	59984,78	237209,60

Source: MARA (Ministry of Agriculture and Rural Affairs), 2002b.



Among provinces, Hatay comes first with 18 476 tons of organic agricultural production getting a 65,4% share from the region. Also K.Maras province has an important place in organic production with 8 148 tons holding a 28,3 % share. Different organic products (9 varieties) are grown in K.Maras province due to low input use. In other provinces like Icel and Adana, organic agricultural production isn't significant. Osmaniye province has no organic agricultural production data.

### **3.5. Development Possibilities of Organic Agricultural Production**

- Organic agriculture is one way to increase the income of small farmers in less developed areas of the region.
- Development of the retailing sector (supermarkets, hyper markets) will increase consumer demand in the region.
- Entrepreneurs will begin to produce organic agricultural products, especially vegetables for the local market.
- An increase in organic cotton production is expected since the textile industry is a very important sector in the region
- In the near future different organic products will be produced in the region.
- Collected plants from nature will be valued and processed organically like medicinal and aromatic plants.

## **4. Conclusion**

In the East Mediterranean Region, there is a tendency for a shift from conventional to organic production. On the other hand, to develop organic farming in the region further education is needed. Also, new product varieties may surface with increasing demand. Organic vegetable production has offers for potential both the local market in the region and Turkey as a whole.

## **5. References**

- [1] MARA, 2002a. Ministry of Agriculture and Rural Affairs General Directorate of Protection and Control Registrations, Ankara, Turkey.
- [2] MARA, 2002b. Ministry of Agriculture and Rural Affairs Research, Planning and Coordination Bureau Registrations, Ankara, Turkey.
- [3] Paksoy, M., 2000. Dogu Akdeniz Bolgesi Dogal Kaynak Potansiyeli ve Tarım-Cevre Iliskileri. IV. Ulusal Tarım Ekonomisi Kongresi 6-8Eylul 2000 Tekirdag/Turkey.
- [4] SIS, 2001. Agriculture Structure 1999. State Institute of Statistics Prime Ministry of Turkish Republic. Publication Number: 2457, Ankara, Turkey.
- [5] SHW, 2001. State Hydraulic Works Registrations. Ankara, Turkey. (<http://www.dsi.gov.tr>)