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Fruit and vegetable production trends in Turkey

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Résumé. *Tendances de la production des fruits et légumes en Turquie.* Le développement spectaculaire de la production de fruits et légumes en Turquie résulte de l'extension des zones irriguées (3,6 M ha aujourd'hui) qui atteindront 6 M ha en l'an 2000. Ce développement répond à une très forte croissance de la demande interne et à une progression des exportations. Il nécessite pourtant de nombreuses améliorations concernant les techniques, le conditionnement, la commercialisation.

Abstract. The remarkable progress of fruit and vegetable crops in Turkey is due to the expansion of the irrigated area; currently at 3.6 million ha, the area is expected to reach 6 million ha by 2000. This development responds to the rapid rise in domestic demand and growth of exports. Measures are still needed to improve technology, marketing, and packing.

Key words. Fruit – Vegetables – Irrigation – Turkey.

Introduction

Turkey has a population of approximately 55 million inhabitants and an area of 780 000 km². The topography is extremely varied, and the climate ranges from subtropical in the south and southeast to Alpine in the east. These variations in soil fertility, water resources, and topography allow cultivation of a wide range of crops as well as cattle and sheep production.

There has been substantial development in the agricultural sector since the foundation of the Republic of Turkey in 1923, with an expansion of arable area and an increase in agricultural productivity. Total arable area has increased 2.5 times from 11.7 million ha to 28.5 million ha. Population has grown 5.5 times from 10.5 million in the early 1920s to 55 million in 1990. However, productivity per hectare has risen 2–10 times depending on the type of agricultural produce. All these developments make Turkey one of the few countries in the world that are self-sufficient in food and fiber production.

I. – Land use in Turkey

The total area of Turkey is approximately 77.8 million ha, of which 35.6% is under cultivation. Forests and shrub cover 23.5 million ha. Pastures and meadows cover around 21.7 million ha (Table 1).

Table 1. Land potential and its use in Turkey

Land use	Area (ha)	%
Cultivated land	27 699 033	35.6
Pastures and meadows	21 745 690	28.0
Forests and shrub	23 468 463	30.2
Settlements	569 400	0.7
Other land	3 212 175	4.1
Water bodies (lakes, etc.)	1 102 396	1.4
Total	77 797 157	100.0

Source: DIE, various years

In the 1970s field crops occupied around 57% of the cultivated area. The average rose to 67.2% during 1986–1988 due to a reduction in fallowed land.

A recent government policy seeks to decrease fallowed land by encouraging legume production, especially lentils and chickpea. This policy resulted in an increase in actual cropped area and its share in cultivated area. In the vegetable sector the slight but steady expansion in area with a slight fall between the 1985 and 1986–1988 average values (*Tables 2a, 2b*) is probably due to an increase in the area of crops under plastic cover where two or more crops can be grown annually.

Table 2a. Trends in the use of cultivated land (in '000 ha) in Turkey, 1970–1988

Land use	1970	1975	1980	1985	1986–1988
Sown area	15 848	16 241	16 372	17 908	18 642
Fallow	8 824	8 177	8 188	6 025	5 508
Vegetables	445	490	596	662	620
Vineyards	838	790	820	625	593
Orchards	951	1 163	1 386	1 489	1 513
Olive groves	726	801	813	821	849
Total	27 632	27 662	28 175	27 530	27 725

Source: DIE, various years

Table 2b. Trends in the use of cultivated land (%) in Turkey, 1970–1988

Land use	1970	1975	1980	1985	1986–1988
Sown area	57.4	58.7	58.1	65.0	67.2
Fallow	31.9	29.6	29.0	21.9	19.9
Vegetables	1.6	1.8	2.1	2.4	2.2
Vineyards	3.1	2.8	3.0	2.3	2.1
Orchards	3.4	4.2	4.9	5.4	5.5
Olive groves	2.6	2.9	2.9	3.0	3.1
Total	100.0	100.0	100.0	100.0	100.0

Source: DIE, various years

Among the crops, cereals rank first and pulses second. These two major groups are followed by fruit, industrial crops, and oilseeds. Fruit and vegetables together constitute 9.6% of the cultivated area (*Table 3*).

Table 3. Area and percentage of major crop groups in Turkey

Crop groups	Area (ha)	%
Cereals	13 814 210	61.8
Pulses	1 989 051	8.9
Industrial crops	1 298 587	5.8
Oilseeds	954 855	4.3
Tuber crops	196 833	0.9
Fodder crops	527 626	2.3
Vegetables	620 000	2.8
Fruit	1 513 000	6.8
Vineyards	593 000	2.6
Olive groves	849 000	3.8
Total	22 356 162	100.0

Source: DIE, various years

Land use and cropping pattern are influenced by agroecological, social, technical, and economic factors. Another important factor is irrigation. The area irrigated by the public network was 2 649 000 ha in 1988 (DPT, 1989). It is estimated that around 1 million ha are irrigated through private sources by farmers. Total irrigated area in Turkey is approximately 3.6 million ha or 13% of the cultivated area in Turkey.

II. – Vegetable and fruit crops

1. Vegetable and fruit production

Fruit and vegetables can be grown in many parts of Turkey because of the favorable climate and soil conditions. The regions where vegetables and fruit are grown extensively are the Mediterranean, Aegean, and Marmara coasts. Among these regions the Aegean region ranks first in terms of production, followed by the Mediterranean and Marmara regions.

Average annual vegetable production between 1986 and 1988 was 16.5 million t. Fruit production for the same period was around 8.5 million t (FAO, 1989). It is estimated that the area of vegetable crops under plastic is 4% of total vegetable area, and that this accounts for 8% of total vegetable production (Sürmeli ve Erkal, 1988).

Turkey has a significant place in world fruit and vegetable production. Turkey's share of world vegetable production is around 4%, and its share of world fruit production is around 3% (Table 4). For some crops, Turkey's share of world production is quite high: for example, 18.4% for watermelon, 13.1% for eggplant, 8% for tomato, 6.1% for cucumber, and 5.1% for dry onion and grape (Table 4).

Table 4. Average annual production of certain fruit and vegetables (in '000 t) in Turkey and the world, 1986–1988

Crop	Turkey	World	%
Tomato	5 083	63 216	8.0
Cucumber	783	12 783	6.1
Eggplant	730	5 586	13.1
Dry onion	1 317	25 709	5.1
Watermelon	5 217	28 316	18.4
Grapes	3 217	63 090	5.1
Citrus	1 404	64 594	2.2
Total vegetable	16 558	422 472	3.9
Total fruit	8 485	326 892	2.6

Source: FAO, 1989

Horticultural scientists report that there is a high potential to increase fruit and vegetable production once certain seedling and crop production problems are overcome. The potential for increasing yields is also high, although those of certain fruit and vegetables (e.g., tomato and eggplant) are already above the world average (Table 5). Only grape yield is below the world average.

Grape (for fresh fruit, raisins, wine) ranks first with 39% of total fruit production in Turkey. It is followed by pome fruits with 24%. The shares of other fruit are: stone fruit, 16%; citrus, 15%; nuts, 6%.

Table 5. Average yields (kg/ha) of certain fruit and vegetables in Turkey and the world, 1986–1988

Crops	Turkey	World	Index (world=100)
Tomato	37 469	24 107	155.4
Cucumber	17 341	15 069	115.1
Eggplant	16 693	12 941	129.0
Dry onion	17 795	14 587	122.0
Watermelon	21 736	17 174	126.6
Grape	5 392	7 491	72.0

The most important vegetables are watermelon, melon, and tomato. The share of watermelon and melon is 34.3%, and of tomato 33.5%. The shares of eggplant, pepper, and cucumber change each year, but their individual share is around 5% of total vegetable production.

2. Development of vegetable and fruit production

Data on cultivated area for 1970–1988 were examined to monitor development of fruit and vegetable production. During this period cropped area expanded by 40% for fruit and by 47% for vegetables (*Table 2a*). At the same time fruit production rose by 30% and vegetable production by 80% (*Tables 6 and 7*).

Table 6. Increase in fruit and vegetable production (in '000 t) in Turkey, 1970–1988

Crop	1970	1975	1980	1985	1986-1988	Index (1970 = 100)
Fruit						
Pome fruit	972	1 188	1 819	2 352	2 306	237
Stone fruit	1 119	1 192	2 087	1 405	1 532	137
Citrus	655	958	1 158	982	1 394	213
Nuts	440	549	470	422	584	133
Grape	4 226	3 587	4 009	3 849	3 796	90
Total	7 413	7 475	9 545	9 011	9 614	130
Vegetables						
Root, bulb, tuber	136	187	277	380	379	278
Leaf or stem	1 070	1 067	1 094	1 288	1 258	118
Pod-bearing	381	395	443	542	536	141
Fruit-bearing	6 832	7 867	10 111	12 989	12 931	189
Others	28	45	64	58	63	227
Total	8 438	9 561	11 989	15 258	15 1688	180

Source: DIE, various years

Development was most significant in the pome fruit sector. Production increased almost 2.4 times in this group. Apple production contributed largely to this increase. Production of another important group, citrus fruit, increased 2.1 times. Increases in the production of mandarin and orange were especially high. On the other hand, grape production decreased by 100% due to the fall in vineyard area.

Vegetable production increased by 80%. Among the different vegetable groups, the most significant increase was achieved in root and bulb vegetables—2.8 times. Production in the "other" vegetable

group, which includes cauliflower and asparagus, increased 2.3 times. Production of leaf and stem vegetables increased by 18%, pod-bearing vegetables by 41%, and fruit-bearing vegetables by 89%.

Table 7. Increase in production (in '000 t) of certain fruit and vegetables in Turkey, 1970–1988

Fruit or vegetable	1970	1975	1980	1985	1986–1988	Index (1970 = 100)
Fruit						
Apple	748	900	1 430	1 900	1 832	245
Lemon	126	290	283	188	337	267
Mandarin	68	105	167	257	293	431
Orange	445	540	679	505	730	164
Hazelnut	255	317	250	180	328	129
Pistachio	14	31	8	35	25	179
Grape	3 850	3 247	3 600	3 300	3 217	84
Peach	112	200	240	200	280	250
Vegetables						
Melon and water melon	3 490	4 000	4 450	5 500	5 200	149
Tomato	1 810	2 150	3 550	4 900	5 083	281
Pepper	307	375	580	725	740	241
Eggplant	480	485	650	680	730	152
Cucumber	400	388	500	780	783	196
Dry onion	680	670	960	1 270	1 315	193
Snap bean	250	250	300	400	403	161

Source: DIE, various years

For a more meaningful evaluation of fruit and vegetable production, the data were compared with those for field crop production (*Table 8*). Significant production increases were also recorded for field crops: cereals (87%), pulses (380%), industrial crops (260%), oilseeds (205%), and tuber crops (212%). The increase in pulses is mainly due to the policy of decreasing fallow areas and replacing them mainly by lentil and chickpea.

Table 8. Increase in field crop production (in '000 t) in Turkey, 1970–1988

Crops	1970	1975	1980	1985	1986–1988	Index (1970 = 100)
Cereals	15 882 580	22 111 050	24 323 400	26 385 152	29 736 331	187
Pulses	561 800	674 500	817 657	1 467 154	2 135 030	380
Industrial crops	4 364 243	7 662 090	7 551 837	10 579 564	12 470 494	256
Oilseeds	1 120 700	1 354 555	1 653 923	1 867 736	2 293 270	205
Tuber crops	2 672 000	3 240 000	4 110 000	5 510 000	5 659 667	212
Fodder						
Grain	4 800	6 000	10 950	23 550	14 568	304
Green	1 440 685	1 580 100	1 733 600	2 264 769	2 668 257	185
Hay	883 424	935 000	1 242 200	1 695 791	1 509 940	171

Source: DIE, various years

Production of many crops rose substantially during 1970–1988 mainly because of higher yields. But yield increases are not completely satisfactory and there is still more potential for increase.

III. – Prospects for fruit and vegetable production

The trend analysis results that were calculated using 1970–1988 data are presented in *Table 9*. If the same growth rate is maintained, then production of fruit and vegetables is expected to reach to 15.8 million t and 25.3 million t, respectively, by 2000. A decrease is expected only in grape production due to a fall in the number of vineyards.

Table 9. Results of the trend analysis of vegetable and fruit production trends in Turkey

Crop or crop group	Trend equation				R ²
Total vegetables	Y=	7 770 827	+	422 667 X	0.9495
Leaf or stem	Y=	1 010 736	+	12 473 X	0.5968
Fruit-bearing	Y=	6 241 596	+	387 324 X	0.9488
Pod-bearing	Y=	349 563	+	10 808 X	0.8266
Root, bulb, tuber	Y=	106 664	+	16 258 X	0.9679
Other vegetables	Y=	33 568	+	1 918 X	0.8492
Melon and watermelon	Y=	3 329 605	+	114 692 X	0.8047
Cucumber	Y=	305 236	+	25 394 X	0.8517
Eggplant	Y=	454 268	+	16 654 X	0.8779
Tomato	Y=	1 547 210	+	198 614 X	0.9634
Total fruit	Y=	6 995 904	+	167 879 X	0.7998
Pome fruit	Y=	845 300	+	91 269 X	0.9378
Stone fruit	Y=	1 060 395	+	45 599 X	0.3322
Citrus	Y=	703 370	+	40 572 X	0.8322
Nuts	Y=	410 147	+	9 729 X	0.4531
Grape	Y=	3 865 374	-	1 134 X	0.0008

Y = Production in tons; X = Year; Sd = 17

Further increases in fruit and vegetable production are expected as a result of the expansion in irrigated area since the majority of the vegetable and fruit crops are grown in the irrigated areas. In the State Water Department project areas, nearly 10% of the irrigated land is used for fruit and vegetables (*Table 10*). This means that the fruit and vegetable area can be expanded by decreasing that of cereals and other crops in the irrigated areas. Moreover, application of new production techniques should also increase fruit and vegetable production.

Table 10. Crop distribution pattern (%) in the irrigation scheme managed by the State Water Department

Year	Irrigated area (ha)	Cereals	Sugar beet	Cotton	Paddy	Fodder	Fruit and vegetables	Others
1970	284 775	27.1	5.0	37.2	3.6	3.8	7.2	16.1
1975	420 003	14.7	6.2	42.9	3.7	3.2	8.8	20.5
1980	493 604	11.7	6.6	43.9	2.8	4.0	9.6	21.4
1985	794 850	17.9	6.2	35.6	2.3	2.7	9.5	25.8
1988	816 274	16.4	7.0	36.0	1.9	3.2	10.2	25.3

Source: State Water Department files

Scientists report that it is economically and technically feasible to expand the current irrigated area of 3.6 million ha to 8.5 million ha. Many irrigation projects will be implemented in the future. Among these, the Southeast Anatolian Project (SAP) has a special place in the Turkish economy. It is expected that this project will be completed by 2000 and will add 1.6 million ha of irrigated land. It is projected that 7.4% of the SAP area will be allocated to vegetable crops and 7.2% to fruit crops.

With the completion of SAP and other projected irrigation schemes it is estimated that 6 million ha of land will be irrigated in Turkey by 2000. This means that 22% of the cultivated area will be irrigated. The expansion of irrigated area combined with yield increases will ensure a high production potential for fruit and vegetables. However, it is not simple to optimize this potential; various other measures concerning input supply, marketing, and food processing are needed to attain these objectives.

References

- Devlet İstatistik Enstitüsü (DİE) (State Institute of Statistics), various years.- Agricultural structure and production.- Ankara, Turkey: DİE.
- Devlet Planlama Teskilatı (DPT) (State Planning Office), 1976.- Toprak ve Su Kaynakları Özel İhtisas Komisyonu Raporu (Report of the specialised Commission on Soil and Water Resources).- Report No. 1517.- Ankara, Turkey : DPT.
- Devlet Planlama Teskilatı (DPT) (State Planning Office), 1989.- Beşinci Beş Yıllık Kalkınma Planı 1989 Yılı Programı. DPT yayınları 1989, Ankara. [Fifth five-year plan, 1989 program]. SPO Publication, Ankara, Turkey: DPT.
- Devlet Su İşleri Dosyaları (State Water Department files).
- Food and Agriculture Organization of the United Nations (FAO), 1989.- Production Yearbook. 1988. Vol. 42.- Rome, Italy: FAO.
- Sürmeli (H.) ve Erkal (S.), 1988.- Altıncı Beş Yıllık Kalkınma Planı, Açıkta Sebze Yetiştiriciliği Özel İhtisas Komisyonu Raporu [Sixth five-year plan. Vegetable Production Specialization Commission Report].- Yalova, Turkey: Atatürk Bahçe Kültürü Araştırma Enstitüsü.

