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# The State of Food and Agriculture in the Syrian Arab Republic





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# Abbreviations

ACB	Agricultural Cooperative Bank
CBS	Central Bureau of Statistics
CMO	Cotton Marketing Organization
CPI	Consumer Price Index
DRC	Domestic Cost Resources Ratio
FAO	Food and Agriculture Organization
FCB	Financial Cost Benefit ratio
FOJC	Fresh Orange Juice Concentrate
GAFTA	Great Arab Free Trade Area
GCSAR	General Commission for Scientific Agricultural Research
GDP	Gross Domestic Product
GEC	General Establishment for Cattle
GECPT	General Establishment for Cereal Processing and Trade
GEF	General Establishment for Fodder
GESM	General Establishment for Seed Multiplication
GET	General Establishment for Tobacco
GFCF	Gross Fixed Capital Formation
GOCM	General Organization for Cotton Ginning and Marketing
ICARDA	International Center for Agricultural Research in Dry Areas
IPM	Integrated Pest Management
MAAR	Ministry of Agriculture and Agrarian Reform
NAPC	National Agricultural Policy Center of the Syrian Arab Republic
PAM	Policy Analysis Matrix
POSF	Post Office Saving Bank
SAT	Syrian Agricultural Trade
SOFAS	State of Food and Agriculture in Syria
WTO	World Trade Organization



## **Acknowledgments**

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# Foreword

The agricultural sector plays a foremost role in the economic and social development of Syria, contributing to more than a quarter of the employment and income of the country. It is vital for the achievement of the national food security, to enhance Syrian trade position and to foster the development of other economic sectors.

In recognition of the role of the sector, the National Agricultural Policy Center (NAPC) is committed to publish the State of Food and Agriculture in Syria (SOFAS), providing policy makers, researchers and stakeholders with an updated overview of agricultural issues and related information as an instrument for dealing with the challenges facing the sector in the current process of opening and liberalization of the economy.

SOFAS 2005 is one of the first accomplishments of the recently established Agro-Food Systems (AFS) Division of the NAPC, and its production provided a valuable occasion for the on-the-job training of its staff. The group of NAPC researchers in charge of drafting the report, Ms B. Atieh, Ms W. Shhaideh, Mr M. Karkout, Mr B. Al Hamwi, Ms S. Zoughbi, and Mr S. Grad, was coordinated by Mr H. Al-Ashkar, and guided by Mr B. Amouri, FAO International Consultant under Project TCP/SYR/2906 (A), in the production of a first comprehensive draft. The contribution of the Information and Communication division of the NAPC is also to be acknowledged in both the provision of data and the finalization of the present publication.

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# Introduction

The present study is the second edition of the biennial report on the " State of Food and Agriculture in Syria" (SOFAS) issued by the National Agricultural Policy Center of the Syrian Arab Republic (NAPC). The first edition was published in 2003<sup>1</sup>.

The objectives of this periodic publication are to provide, every two years, researchers, policy makers and stakeholders with comprehensive information of relevance to agricultural development and useful for debating a

nd enhancing agricultural plans and policies as well as for offering an updated review of agricultural issues. It also aims at presenting, in a special section, selected policy issue(s) based on the most recent studies and research undertaken by NAPC.

The first edition of SOFAS, published in 2003, reviewed the agriculture situation up to 2000, the latest year on which agricultural statistics and national accounts were available. Considerable improvements in the timeliness of the publication of official statistics occurred since then, with the result that data on 2003 were made available to users by mid 2005. To take advantage of this improvement the present issue of SOFAS will exceptionally cover the three-year period from 2001 to 2003 instead of the two years originally planned.

Data used are official statistics available as of the end of June 2004 as reported in the official publications and/or in the computerized database developed by NAPC<sup>2</sup>. In some cases, the presentation and analysis relied upon unpublished information provided directly by concerned Government offices or specialists.

Given the periodical character of SOFAS, the present report will not deal with issues like land tenure, farm structure or household expenditure on food already discussed in the previous edition, in consideration of the fact that no significant additional information or data was produced with reference to the period 2001-2003, baseline of the current issue.

In this report, the focus will be on the changes that occurred in the agricultural sector in the years from 2001 to 2003. Whenever useful and possible, data on this period will be compared to the preceding three years in order to give a picture on the evolution of agriculture over a longer period.

The Report is composed of two Parts. Part I, the main one, is devoted to the review of the performance and present situation of the agricultural sector, while Part II presents the results of a study undertaken by NAPC in 2004 on the Comparative Advantages of Selected Syrian Commodity Chains.

Part I is divided into six chapters. Chapter 1 provides a brief presentation of the natural resources available for agricultural production activities as well as a succinct review of the climatic conditions prevailing during the period under study.

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<sup>1</sup> The State of Food and Agriculture in the Syrian Arab Republic, 2002.

<sup>2</sup> NAPC maintains and update continuously a comprehensive computerized database covering all fields related to agricultural development available on CD-ROM and on the website [www.napcsyr.org/sad.htm](http://www.napcsyr.org/sad.htm)

Chapter 2 provides the reader with information on the economic importance of agriculture and its contribution to the national economy, using available national accounts data.

Chapter 3 presents the changes in the economic and institutional policies affecting agriculture. Macroeconomic policies, having a bearing on agricultural activities, and sector specific policies are presented with the objective of providing a reference framework to be used, whenever possible and feasible, to explain the performance of agriculture in the period under study.

Chapter 4 is devoted to the review and analysis of agricultural output in 2001-2003. Changes within this period and in comparison with the levels reached in the preceding three-year period (1998-2000) are analyzed. Whenever data permit, factors determining these changes are identified using the information on rainfall, policy instruments and technology as well as farmers responses to incentives. Crops, livestock, fisheries and forestry are covered. For crops, area, yield and production data are reviewed, distinguishing between irrigated and rainfed agriculture.

The last two chapters review some aspects of the utilizations of agricultural food production. Chapter 5 describes the latest developments in the agro-food industrial sector. It provides information on the roles of the public and private agents in the processing of local food commodities. In Chapter 6 the evolution of food availability is reviewed in light of production and trade data. This chapter also discusses food consumption comparing Syria to other countries.

Data availability has constrained the extent of the analysis included in some part of the report. This is particularly the case for Chapters 5 and 6. However, they represent an initial step in systematically addressing issues such as food consumption, food security and agro-processing. They can constitute a baseline reference for further studies and data gathering need.

# **PART I - Food and Agriculture in 2001-2003**



# Chapter 1 – Climatic Conditions and Natural Resources

## 1.1. Climatic Condition

The levels and distribution in time and space of rainfall have considerable effects on agricultural activities and output. This is especially the case in Syria, where 75% of the cultivated area is rainfed. It is therefore important to recall briefly the main climate characteristics of the country and the prevailing conditions in 2001-2003.

Syria is considered a semi arid country with an annual average rainfall of less than 250 mm. It is characterized by rainy winters and hot summers separated by two short transitional seasons. In addition, in winter, snow regularly falls over areas with an altitude exceeding 1500 m above sea level.

The country can be divided into four distinct geographic regions: *the coastal region*, that lies between the mountains and the sea; *the mountainous region*, that includes the mountains stretching from north to south, in the western part of the country; *the interior region*, composed of the interior plains, located to the east of the mountainous region; and *the Al Badia*, in the south and east, which consists of semi desert plains. The coastal region is characterized by a high rate of relative humidity, with heavy rainfall in winter and moderate temperatures in summer. In the mountainous region, rainfall may exceed 1000 mm and the climate in summer is moderate. The interior region is characterized by rainy winters and hot and dry summers with considerable differences between the maximum and minimum intra day temperatures. In the Al Badia region, the levels of rainfall in winter are low and the summers are dry. Map 1.1 represents the geographical regions in combination with the 5 agro-ecological (climatic) zones described in section 1.2.1.

A good part of the country is subject to large differences between night and daytime temperature. Such differences in summer may reach 23 degrees in the inland and 13 degrees in the coastal region. Temperatures can be as high as 48 degrees in summer and fall short below zero degree in winter. Annex table 1.1 provides some indicators on these weather phenomena. During the period 2001-2003, temperatures were close to the average levels. In 2003, however, in February, temperature fell about six degrees below the average, while in May, it was seven degrees higher. These unusual temperatures, accompanied by dry hot winds and low moisture of soils, affected the yields of some crops, particularly cereals and tree crops such as citrus and olives.

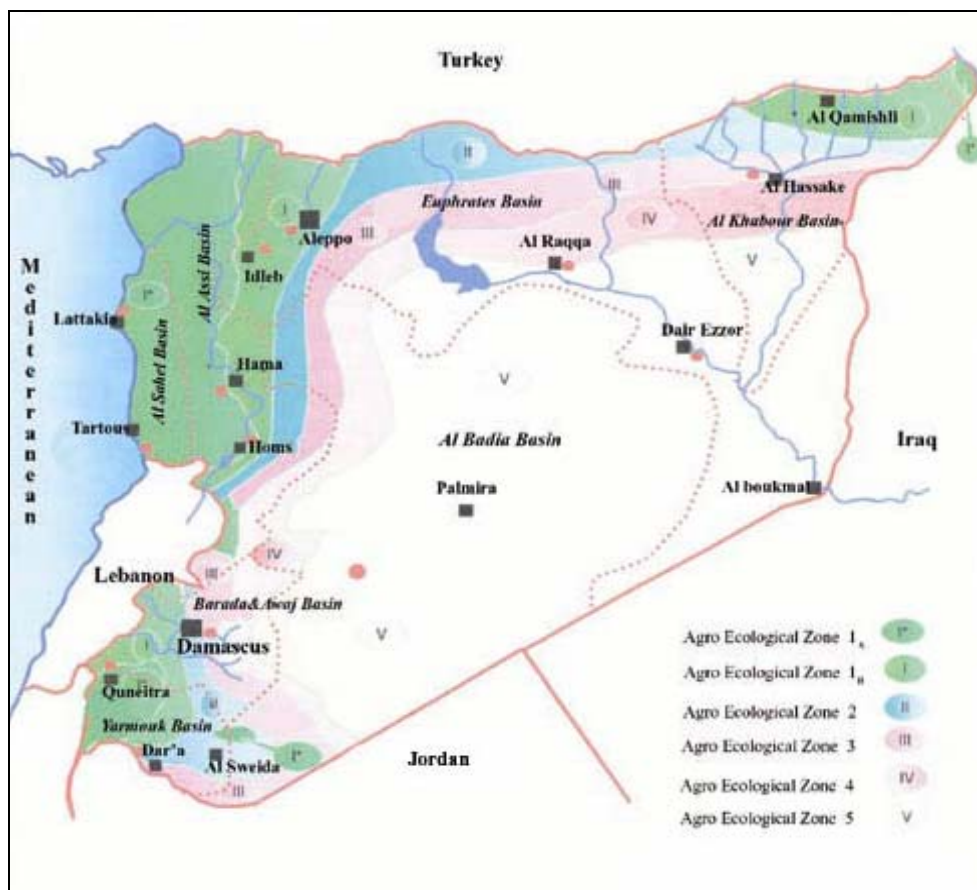
The country is recurrently subject to drought waves, during which rainfall shortages are severe. The last severe drought occurred in 1999-2000.

Rainfall fluctuated widely during 2001-2003. It averaged 266 mm, much above the 198 mm of the period 1998-2000 (annex table 1.2). The season 2002/2003 was characterized by high rainfall, exceeding the annual averages in all regions of the country. Moreover, snowfalls improved considerably the water table levels and increased most of the drainage water sources.

However, heavy rainfall and snowfall affected negatively winter crops, especially in Al Hassakeh, Dar'a, Aleppo, Quneitra, Homs, Hama, and Al Ghab.

Despite these drawbacks, climatic conditions were generally more favorable in the period under study than in the late 90s, with positive impacts on yields, particularly on rainfed agriculture, and on the expansion of irrigated areas (see Chapter 4).

**Map 1.1.** Map of Syria by Agro-Ecological Zones and Water Basins



## 1.2. Natural Resources

### 1.2.1. Land Resources

Syria has a total area of 18.5 million ha, out of which 5.9 million ha (32%) is cultivable land and 20% uncultivable land (rocky and sandy land, buildings and public roads, rivers and lakes). Steppe and pasture cover 45% of total area and the rest (3%) is forest (Figure 1.1).

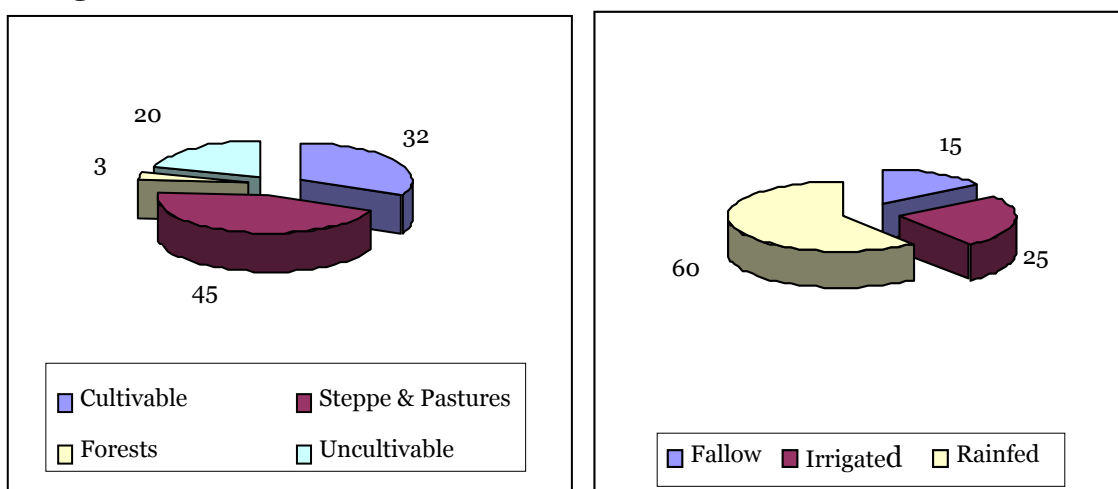
Total cultivable area decreased between the periods 1998-2000 and 2001-2003, due to the expansion of the pasture and forests land. Fallow land, which forms part of the cultivable land, rose in all regions. This practice has an important impact on the conservation of soil fertility as well as on the reduction of land degradation. Irrigated areas increased from an annual average of 1.2 million hectares in 1998-2000 to 1.3 million on average in the period in 2001-2003, as a result of the expansion of public irrigation schemes and the increase in the number of wells in most Governorates.

Agricultural land use varies from year to year depending on annual production plans, weather conditions and farmers' response to market conditions and policies. Official statistics indicate that in 2003 cultivated land represented 93% of total cultivable land. Cultivated land was



distributed as follows: 25% irrigated, 75% rainfed (60% cultivated, 15% fallow), (annex table 1.3).

**Figure 1.1.** Land Use and Composition of Cultivated Land, 2003 (%)



Source: Annex table 1.3

### Agro-climatic zones (settlement zones) and holding size

The country is divided into five agro-climatic zones (see map 1.1), which are referred to for definition of the agricultural production plan. The main criterion used for this zoning is the level of rainfall as shown in table 1.1 below:

**Table 1.1.** Total and Cultivated Land by Agro-Climatic Zone, 2003 (1,000 ha and %)

Agro-Climatic Zone	Average Rainfall	Total Area	% of Total Area	Cultivated Land	% of Total Cultivated Land
1	> 350 mm	2,689	15	1,538	28
2	250-350	2,444	13	1,810	33
3	250	1,325	7	816	15
4	200-250	1,842	10	985	18
5	< 200	10,217	55	329	6

Source: NACP Database

The level of rainfall determines to a large extent the allocation of land to specific rainfed crops within each zone. For example, land in zone 5 is used for pasture and is unsuitable for rainfed cultivation, while the zone 1 is the major producing area of wheat, legumes and summer crops.

Available data on land distribution by size of holdings show that small and medium size farms are predominant in Syria. Their number has been increasing in the past decades as a consequence of high population growth, which increased the population pressure on land, as shown by the last agricultural censuses (1981, 1994)<sup>3</sup>. In the inter census period, the total number of households increased from 486 thousands to 614 thousands, representing an increase of 26%. Given the fact that the total cultivable land is relatively stable, the size of holdings has therefore decreased so that more than a third of the holdings had an area of 2 hectares or less in 1994.

These trends are likely to have continued. The number of holdings has likely increased leading to a further decline in the average size of holdings. Indeed, rural population has been growing

<sup>3</sup> The last census was conducted in 2004, but related data are not yet available.

almost at the same rate of total population and increased from 7.760 million, in 1998, to 8.744 million, in 2003, maintaining its share of about 50% of total population (annex table 1.5). In 2003, the agriculture labor force accounted for about 30% of the total labor force, and 8.5% of the Syrian population (17.5 million). It is likely that the number of absentee farmers (as a result of the pace of rural to urban migration) and part-time farmers in the peri-urban areas have increased, too.

The small size of farms and the fragmentation of land pose serious problems for the efficient use of resources and the modernization of agriculture, making the sustainability of income generation especially hard for small farmers that largely rely on farming as main livelihoods source.

The averages referred to above hide large differences between regions and zones. Table 1.2 shows that the average size of holdings and parcels is much lower in zone 1 than in the other zones. This may be explained by the higher population pressure in this zone that is supported by the higher productivity allowed by the more abundant rainfall. It should be noted that zone 4 and zone 5 contain large areas of open pasture land (common land used by livestock breeder) which are not accounted for in table 1.2.

**Table 1.2.** Holdings, Parcels and Areas by Agro-Climatic Zones, 1994 (ha)

Item	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
<b>Number of holdings</b>	306854	128692	35582	28968	73097	573193
<b>Number of parcels</b>	1038163	393251	103050	74535	149973	1758974
<b>Total area</b>	1472569	1692050	542761	409651	570516	4687547
<b>Average holding size</b>	4.80	13.15	15.25	14.14	7.80	8.18
<b>Average parcel size</b>	1.42	4.30	5.27	5.50	3.80	2.66

Source: NAPC Database at the URL [www.napsyr.org/sad.htm](http://www.napsyr.org/sad.htm)

## Land resource degradation and protection

The Syrian soil is affected by three main types of degradation namely water, wind and chemicals. It is estimated that 17% of the country is affected by some form of degradation and that up to 12 tons/ha/year of soil are eroded in Al Badia alone (Jones, 2001). Various programs of land resource conservation and rehabilitation are being implemented to address this major environmental and economic problem. Indeed, the overgrazing and the overexploitation of the Al Badia rangelands, due to the increasingly high density of sheep per hectare and other socioeconomic factors, led to land resource degradation and to changes in the plant composition as well as to the decline of wild grazing plants. Regulations and decrees have been issued to reverse this situation and preserve natural pastures<sup>4</sup>. For example, crop cultivation in Al Badia has been prohibited and protected pasture zones have been established. Furthermore, the government implemented a number of projects for the development of Al Badia and enhancement of the population living conditions. Programs of land reclamation are also in place outside Al Badia accounting for an annual average of almost 19.5 thousand hectares of reclaimed land in the period 2001-2003 (annex table 1.4). In addition various reforestation activities contribute to soil and water conservation (see section 1.2.4).

### 1.2.2. Water Resources

Syria has limited water resources compared to the needs of the country. The volume of water from all sources averages 67 billion m<sup>3</sup>/year. Rainfall, the main water source, accounts for more than two thirds (46 billion m<sup>3</sup>/year), rivers contribute about one fifth, while springs and underground water account for less than one tenth (SOFAS, 2002).

<sup>4</sup> Natural pastures in Al Badia account for more than 40% of the total area of Syria.

The above figures hide the increasing water shortage Syria has been experiencing as result of the continuously increasing demand and of frequent droughts. Indeed, only 9% of the annual rainfall flows as surface water, the major part either evaporating or descending in aquifers.

The country is endowed with 17 rivers. The two largest rivers are the Euphrates and the Al-Khabour, running through the country for 680 km and 552 km, respectively. In 2003, the Euphrates had a flow of 564 m<sup>3</sup>/second, while the Al-Khabour and its tributaries had a flow of 6.6 m<sup>3</sup>/second. Moreover, Syria has one large dam on the Euphrates and four medium sized dams: Al Rasten, Kateneh, Taldo, and Mouhardeh. Furthermore, there are 154 small dams out of which three account for 87% of their total storage capacity.

Available water varies considerably from year to year according to weather conditions. Groundwater increased from an annual average of 3.8 billion m<sup>3</sup> in the period 1998-2000 (period of drought years) to an annual average of 4.7 billion m<sup>3</sup>, in the period 2000-2003. Similarly, the surface water resources improved from 6.7 to 7.1 billion m<sup>3</sup> (table 1.3).

**Table 1.3.** Available Water resources, 1998-2003 (billion m<sup>3</sup>)

Item	1998	1999	2000	2001	2002	2003
<b>Ground water</b>	4.7	3.55	3	3.75	4.37	6.11
<b>Surface water</b>	7.02	6.68	6.42	6.67	7.13	7.48
<b>Total: Ground and Surface</b>	<b>11.71</b>	<b>10.22</b>	<b>9.42</b>	<b>10.42</b>	<b>11.5</b>	<b>13.59</b>
<b>Other sources*</b>	3.02	3.01	3.1	3.24	3.41	3.51
<b>Total supply</b>	<b>14.73</b>	<b>13.23</b>	<b>12.52</b>	<b>13.66</b>	<b>14.91</b>	<b>17.1</b>

Source: MAAR, the current situation of the agricultural sector, 1992-2003

\* Drainage water, wastewater, etc.

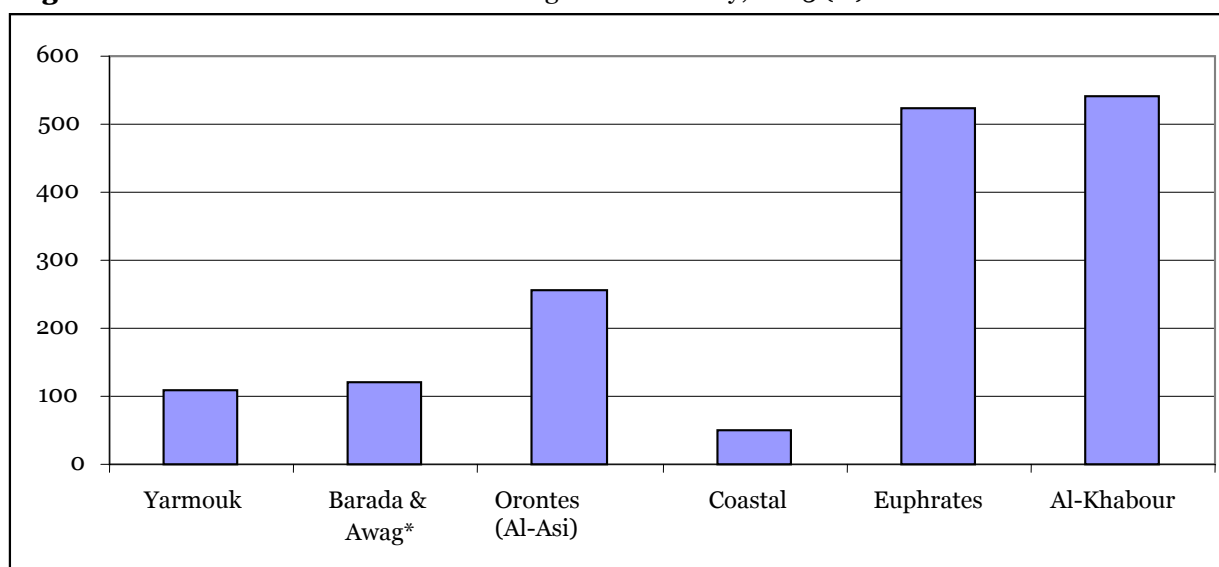
Syrian water resources are distributed among seven water basins (see Map 1.1), whose characteristics in terms of size, precipitation and water endowment are quite diversified. The Al Badia basin, for example, is the largest in terms of area (representing 38% of the total area of the country), but has the lowest amount of total surface and ground water (2.1% of the total water supply, in 2003). On the contrary, the coastal basin, which is the smallest and accounts for only 2.8% of the total area, receives 14% of the total water supply. The Euphrates basin is the most important basin. In 2003, it received 45% of the total water supply (annex table 1.6a).

Syria is facing an increasing water deficit due to the expanding demand for this scarce resource and the repeated droughts. The deficit mainly concentrates in the Al Khabour and the Euphrates basins (annex table 1.6b), where water exploitation ratios (actual annual water use over water availability) can exceed 500% for ground water (Figure 1.2)<sup>5</sup>.

Major crops such as wheat and cotton, which are highly demanding in terms of water, are grown in basins with high water exploitation ratios (Euphrates and Al-Khabour). The climatic conditions prevailing in these zones (hot and dry weather), together with low moisture of soils and low efficiency traditional irrigation technologies, result in unsustainable water exploitation rates.

Agriculture is by far the sector that demands the largest share of water at national as well as basin level (table 1.4).

<sup>5</sup> Data availability does not include the Al-Badia basin.

**Figure 1.2.** Use of Groundwater as Percentage of Availability, 2003 (%)

\* Mixed: Ground and surface water.

Source: Annex table 1.6

**Table 1.4.** Water Uses by Basin, 2001-2002 (Million m<sup>3</sup> and %)

Basin	Agriculture	Industry	Domestic	Evaporation	Total	Agriculture (%)
<b>Barada &amp; Aawag</b>	577.6	76	269	6	<b>928.6</b>	62.2
<b>Yarmouk</b>	360.1	38	76	31	<b>505.1</b>	71.3
<b>Al Badia</b>	983.6	2	44	15	<b>1,044.6</b>	94.2
<b>Orontes</b>	1735	229	240	148	<b>2,352</b>	73.8
<b>Coastal</b>	458.9	85	81	16	<b>640.9</b>	71.6
<b>Al Khabour</b>	4,017.7	45	38	132	<b>4,232.7</b>	94.9
<b>Euphrates</b>	5,498.2	86	322	1,614	<b>7,520.2</b>	73.1
<b>Total</b>	<b>13,631.1</b>	<b>561</b>	<b>1,070</b>	<b>1,962</b>	<b>17,224.1</b>	<b>79.1</b>

Source: Somi et al. (2002)

### 1.2.3. Development of Irrigated Areas

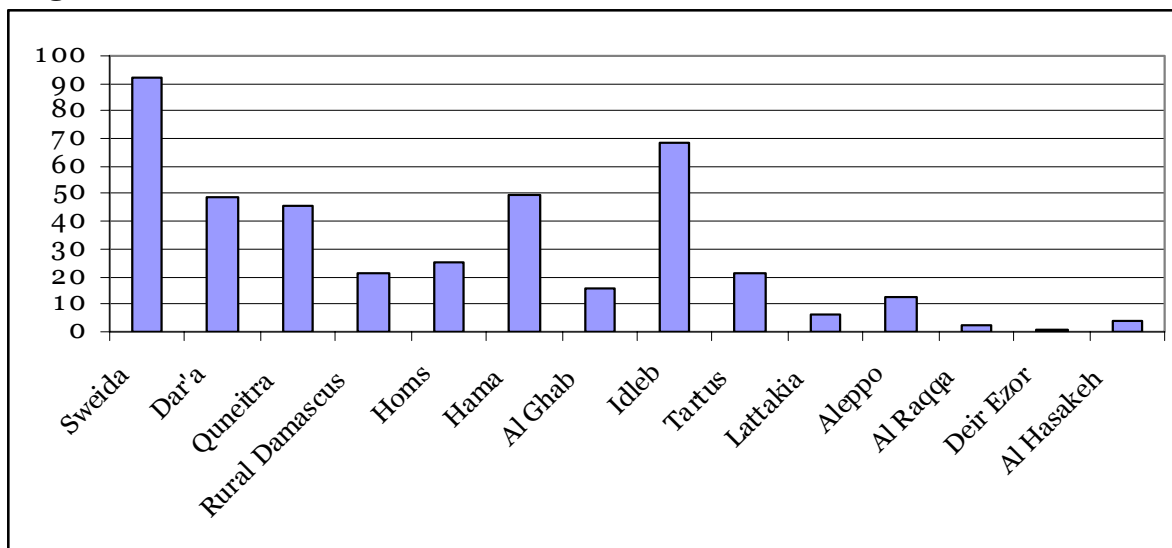
Irrigated areas continued to expand in the period under study reaching 1.36 million ha in 2003, in line with the Government policy aiming at increasing land productivity, diversifying production, reducing the negative effects of rainfall fluctuations on agricultural production and increasing domestic supply.

In view of the limited water resource availability and of the water deficit in some basins, the Government is giving great attention to the efficiency of water use for irrigation, especially in consideration of the fact that agriculture is using about 85% of surface and underground water. To this effect, a number of regulations have been enacted. The Government prepared a plan<sup>6</sup> to modernize all traditional irrigation schemes using up-to-date technology and water-saving practices. Loans were granted to farmers to purchase modern equipment for irrigation. The main aim of the irrigation policy modernization is to reduce the annual consumption per hectare from 12400 m<sup>3</sup> to 7000 m<sup>3</sup>. However, the implementation of the plan is facing many technical and financial constraints. At present, 204 thousand hectares (15% of total irrigated areas) are irrigated with modern methods, while the rest still relies on traditional systems.

<sup>6</sup> Decree No. 23 dated 30/04/2001

Irrigated areas differ by Governorates. Official figures indicate that 31% of the total irrigated area is in Al Hassakeh, 14% in Al Raqqa, 13% in Aleppo, 11% in Deir Ezzor, and 5.8% in Al Ghab (annex table 1.7). Equally differentiated is the distribution of land using modern irrigation technologies. In some Governorates, modern irrigation covers even more areas than traditional irrigation. In Sweida, for example, 92% of the irrigated area has been modernized (the irrigated area in this governorate constitutes only 1% of the total irrigated area in Syria), in Idleb 69%, in Hama 50% and in Dar'a 49% (see figure 1.3).

**Figure 1.3.** Area under Modern Irrigation in Total Irrigated Area, Selected Governorates, 2003 (%)



Source: Annex table 1.7

#### 1.2.4. Forestry

Artificial and natural forests cover about 3.2% of Syria. In recent years, the area under forests grew by 1.8% annually, expanding from 537 thousand hectares in 1998 to 590 thousand hectares in 2003 (MAAR, 2004). This expansion is due to the increased efforts in land reclamation and tree planting. In 2001, 2002 and 2003, about 23, 21, and 17 thousand hectares were planted respectively (annex table 1.8).



## Chapter 2 – Agriculture in the National Economy

### 2.1. Contributions of Agriculture to the National Economy: Recent Trends

Agriculture plays a central role in Syrian economic and social development. This is illustrated not only by its contribution to Gross Domestic Product, employment, and trade (table 2.1 below) but also by its effects on the development of non-farming activities such as marketing and processing. Indeed, it supplies the raw commodities necessary for the development of the agro industrial sector and stimulates the development of other sectors through its demand for non agricultural goods and services used in agricultural production. Moreover, agriculture is vital for the achievement of national food security (see chapter 5).

**Table 2.1.** Share of Agriculture in GDP, Employment and Trade for the Period 1995 - 2003

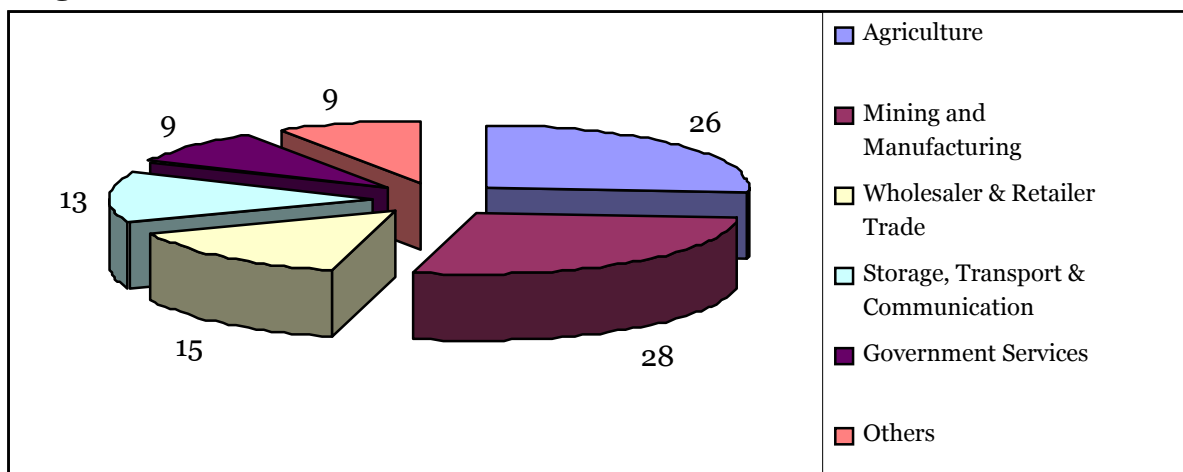
Item	1995	1998	1999	2000	2001	2002	2003
<b>Share of agriculture in GDP (constant price 2000)</b>	23.4	25.9	22.8	24.7	25.9	26.9	25.5
<b>Share of agriculture in employment</b>	28.0	28.0	27.9	32	29.6	30.3	26.2
<b>Share of agriculture in foreign trade</b>	18.3	26.6	24.2	18.6	16.3	18.3	18.2
<b>Share of agriculture in exports</b>	19.7	32.4	22.8	16.7	15.6	18.2	16.8

Source: Calculated on the basis of data from the Central Bureau of Statistics (CBS), 2004

#### 2.1.1. Contribution to GDP

In the period 2001-2003, the share of the agricultural sector in total GDP was about 26%, second only to the mining and manufacturing sector (including oil) which recorded a share of 28% (Fig.2.1), followed by the storage, transport and communication sector (13%), government services (9%) and other sectors (9%). Agricultural GDP at constant prices grew by almost 13.7% from 1998-2000 to 2001-2003, compared to a total GDP growth of 6.8%. In this way, the share of agriculture on GDP increased from 24.5% to 26.1% (annex table 2.1 to 2.3).

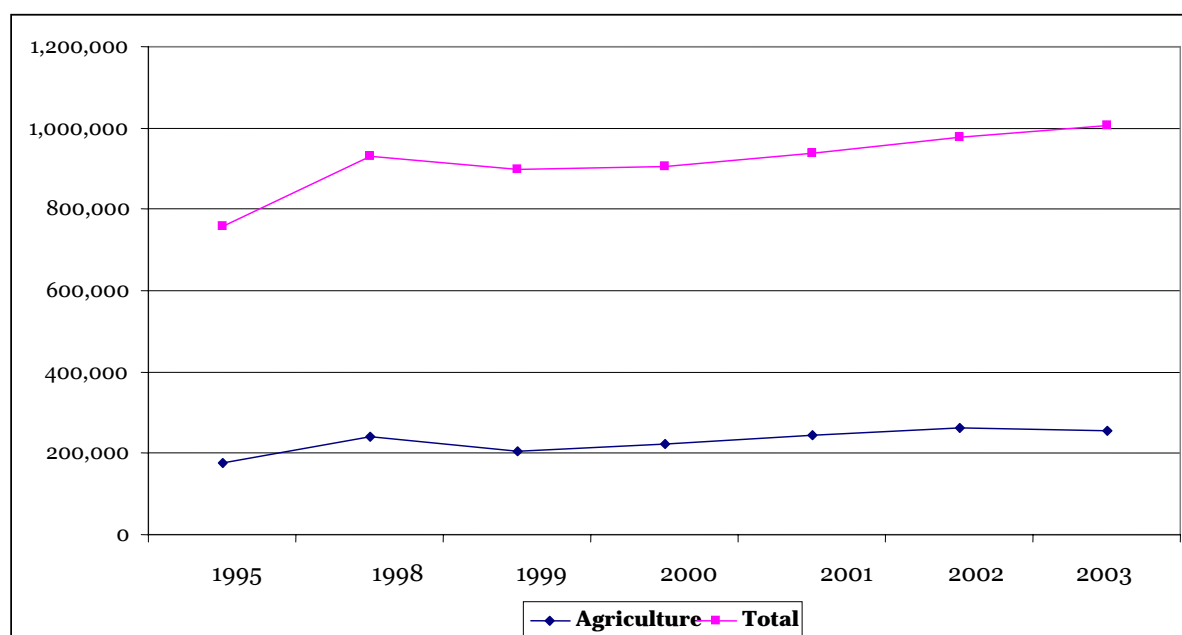
**Figure 2.1.** Distribution of GDP by Sector, 2001- 2003 (%)



Source: Annex table 2.3

Figure 2.2 suggests a sound correlation between the growths of agricultural and total GDP. This is particularly evident in years of drought, such as in 1999, when the drop of the value of agricultural GDP coincided with a less marked, but still significant, decline in total GDP (annex table 2.2). This is an indication of the strong backward and forward linkages of agriculture with other sectors of the economy and of the still relatively strong dependence of Syrian economic growth on the development of the agricultural sector.

**Figure 2.2.** Agricultural GDP and Total GDP, 1995 and 1998-2003 (Million SP, 2000 constant prices)



Source: Annex table 2.2

### 2.1.2. Contribution to Employment

Agricultural labor force is estimated at 1.4 million corresponding to almost 30% of total labor force. On average, it provided 29% of total employment in the three-year period under study, declining from 31% in 2000 to 26% in 2003. Despite this decrease, its contribution to employment remained the highest among all sectors, equal only to that of the Other Services



sector, followed by hotels, restaurants and communications (15%), mining & manufacturing (14%), building & construction (11%) and transport & communication (6%) (see annex table 2.4).

Noticeably, female workforce formed only 30% of the total employment, 50% of which worked in the agricultural sector in 2003. In other words, the sector, compared to the others, occupied the highest share of female employment. Agriculture is also characterized by the prevalence of family labor. Indeed, in 2002 it employed only 13% of the total hired workers, against an average of 48% for the entire economy (annex tables 2.5 to 2.7).

Unemployment was estimated at 11.7% of total labor force in 2002 (CBS, 2002). The respective figures for male and female are 8.3% and 24.1%. The country faces a tremendous challenge to generate employment opportunities for the increasing labor force. Indeed, population projections for 2010-2020 indicate that the growth rate of total population would be high, in the range of 2.2-2.7%, so that total population will rise by about two thirds by 2020 (Salem, 2002). This will result in an increasing pressure on existing resources, especially if the country's needs for food and agricultural commodities are to be at least partly met by domestic production. Moreover, given high population growth, it has been estimated that preventing further increases of unemployment requires the creation of 200,000 additional employment opportunities per year.

While the objective of creating a substantial number of additional employment opportunities can only be pursued through the development of other sectors, agriculture will have to contribute in meeting the employment challenge directly as well as indirectly through its effects on the other sectors of the economy and the strengthening of its interrelationship with them.

Agricultural growth should be seen as complementary to rather than competitive with the development of other sectors and, within this view, agricultural growth needs to be accelerated. Employment creation should be one of the major objectives of agricultural development programs, jointly with an increasing focus on the enhancement of agricultural marketing and processing as well as the promotion of price policies able to stimulate the complementarities between agricultural and non agricultural activities. In this respect, it should be noted that the Government is giving significant attention to these aspects in policy formulation and in the elaboration of development programs. For example, job creation is considered as an essential component of investment promotion policies, while cotton price policy has been adjusted in such a way to maximize contribution of domestic cotton production to the growth of the textile industry (see Chapter 3 below). Additional emphasis should be given to rural development beside and beyond the agricultural sector in such a way to augment employment opportunities and diversify livelihood sources for the population currently employed in agriculture, in order to couple employment generation with mitigation of rural-to-urban migration.

### *2.1.3. Contribution to Trade*

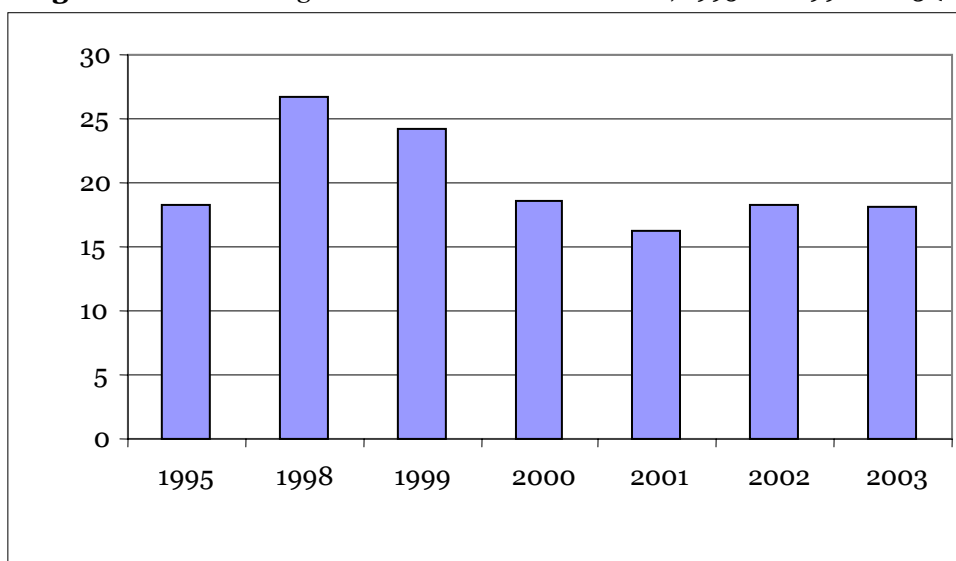
Trade liberalization policies put in place by the Government, also through the negotiation of various trade agreements, were instrumental to the expansion of agricultural trade in recent years.

The share of agriculture in total trade<sup>7</sup> increased from 16.3% in 2001 to 18% in 2003 (figure 2.3). Both imports and exports contributed to this increase. Indeed, the share of agricultural imports in total imports raised from 17.1% to 20% while the share of agriculture in total exports increased from 15.6% to 17%. These figures were however well below the levels reached in the period 1998-2000, when the shares of agriculture in total trade averaged 23.3% (SOFAS 2002). The decline is due to the jump in exports of other commodities, including oil and oil products. Indeed, total agricultural trade increased significantly from 1998-2000 to 2001-2003 (11.3%),

<sup>7</sup> For details see SAT 2004.

mainly as a result of a sustained export growth (20%), largely exceeding the growth of agricultural imports (2.3%) and reflecting the improvement of total agricultural production.

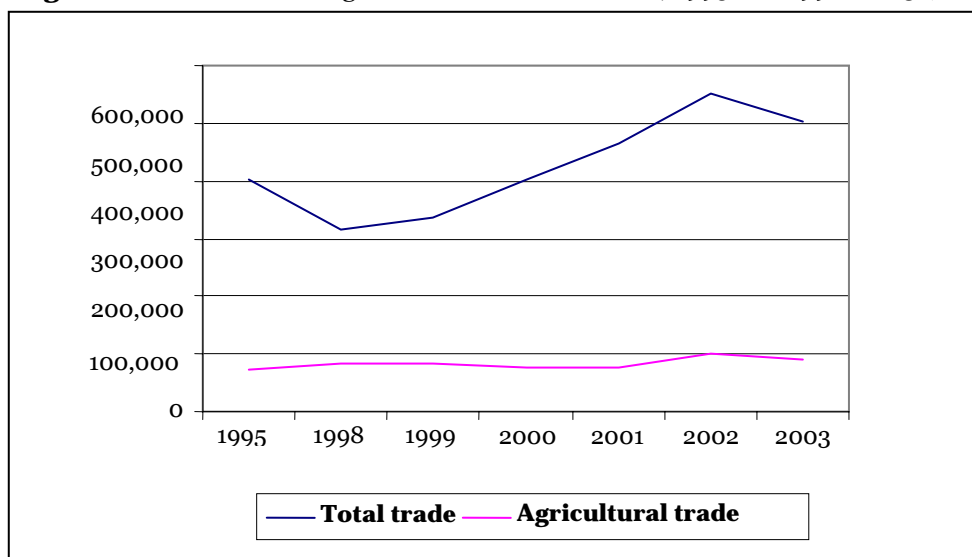
**Figure 2.3.** Ratio of Agricultural Trade to Total Trade, 1995 and 1998-2003 (%)



Source: Annex table 2.10

Total trade value increased by about 43.8% from 1998-2000 to 2001-2003, as a result of a sound 61.9% increase in total exports and 27% increase in total imports (annex tables 2.8 to 2.10). Figure 2.4 depicts the evolution of total agricultural trade.

**Figure 2.4.** Evolution of Agricultural and Total Trade, 1995 and 1998-2003 (Million SP)



Source: Annex tables 2.8 and 2.9

The most important exported agricultural commodities in 2002 were meat (28.2%), cotton (16.5%), spices, cumin and aniseed (11.3%), vegetables (10.6%), cereal (10.1%), fruit (8.9%). The main imported agricultural commodities were cereals (20.1%), sugar and sugar confectionary (18.9%), coffee, tea and spices (10.2%), oilseeds (8.1%), and residues of food industry (7.9%).

#### 2.1.4. *Investment in Agriculture*

Investment flows are a major determinant of growth and job creation. This section focuses on the evolution of the share of agriculture on total investments with a view to assessing priority given to the sector. To this effect, national account statistics (more precisely those relating to the Gross Fixed Capital Formation, GFCF, and to the Expenditures on GDP) as well as data on Government expenditures were used.

Official information shows that GFCF (at 2000 constant prices) increased by 28% from 1998-2000 to 2001-2003, while GFCF in agriculture, including irrigation, grew by 9.1% only. The volume of GFCF has been characterized by wide yearly fluctuations. For example, it increased by 7.3% in 2001 and decreased by 1.4% the following year (annex table 2.11).

Data on expenditures on GDP provide information on the shares of public and private sectors in both consumption and gross domestic investment. Figures available clearly show that the levels and growth of gross domestic investments of the public sector have been constantly higher than those of the private sector (annex table 2.12).

The agricultural share of GFCF including irrigation in the years 2001-2003 was 12.6%, which is much lower than the agricultural share in GDP<sup>8</sup>. The same is true for expenditures on the consolidated budget: only less than 10% of total expenditures are allocated to agriculture, including irrigation (annex table 2.13). These ratios indicate that the priority given to agriculture in the development plans is not reflected in sector allocations of investments, neither by the public nor by the private operators. This situation should receive the attention of both policy analysts and policy makers. Agriculture is facing considerable challenges with the opening and liberalization of the economy (see chapter 3). It is called upon to play a leading role particularly as regards food security, employment creation and agro- industrial development. To fulfill its functions it is essential that it continues to grow at high rates. To this effect, adequate investments flows should be channeled to it.

The governmental investments aim at providing services to improve the infrastructure and productivity in the agricultural sector through the projects of land reclamation and irrigation. These services include also rural roads, forestry roads, agricultural research, extension, and others. In 2003, the number of agricultural projects excluding the projects of the Ministry of Irrigation amounted to 68 projects with an expenditure of SP 8070 million. The public establishments are economically independent. The General Establishment for Poultry, the General Establishment for Cattle, the General Establishment for Feed and the General Establishment for Seed Multiplications are examples of leading public companies. Table 2.2 traces the evolution of the expenditure related to the most important public investments, which are service and production oriented, from 1995 to 2003. It can be noticed that the public expenditure is increasing.

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<sup>8</sup> Some sectors received more investments compared to their share in GDP and this is the case of mining & manufacturing (30.2%) and transportation & communication (16.6%).

**Table 2.2.** Public Expenditure for Agricultural Investments, 1995, 2000 and 2003 (SP million)

Item	1995	2000	2003
<b>Total service oriented public investments</b>	<b>2,465</b>	<b>5,725</b>	<b>7,490</b>
Rural roads	327	750	1,209
Crops and fruit trees	728	2,288	1,612
Research on plant and animal production	312	624	780
Soil sorting and classification	42	43	26
Irrigation research	44	70	115
Development of veterinary care	79	72	162
Improvement of local cattle	33	114	89
Extension	90	158	237
Pest control	95	154	401
Al Badia projects	270	274	379
Forestry projects	399	849	1,534
Other services	46	329	946
<b>Investments of public establishments</b>	<b>354</b>	<b>322</b>	<b>580</b>
General Establishment for Poultry	52	26	21
General Establishment for Cattle	16	10	0.3
General Establishment for Seed Multiplication	57	47	88
Others	229	239	471
<b>Total agricultural investments</b>	<b>2819</b>	<b>6047</b>	<b>8070</b>

Source: MAAR, Directorate of Planning and Statistics

Note: Ministry of Irrigation expenditure is excluded

Agricultural private investments conduct the activities of plant and animal production. Table 2.3 gives examples of private projects related to agriculture established by law no. 10 of 1991 (see chapter 3) over the period 1991-2003.

**Table 2.3.** Private sector investments established by law no. 10, 1991-2003

Goal	No. of Projects	Total Investments		Imported Equipment		Employment opportunities generated
		Million SP	Million US\$	Million SP	Million US\$	
<b>Agricultural production and animal breeding</b>	47	13,305	256	4,726	91	3,598
<b>Animal breeding and fattening</b>	30	7,634	147	2,980	57	1,808
<b>Irrigation, wells digging and agricultural services</b>	8	2,094	40	1,793	34	409
<b>Total agricultural sector</b>	<b>85</b>	<b>23,033</b>	<b>443</b>	<b>9,499</b>	<b>182</b>	<b>5,815</b>

Source: Fiorillo and Vercueil (2003)

## 2.2. Labor Productivity and Income

The ratio of agricultural GDP to agricultural labor force (productivity of agriculture labor) improved steadily in the period 2001-2003 and was almost equal to the ratio of total GDP to total labor force in 2003. Moreover, the growth of the productivity of labor in agriculture was higher than in the other sectors of the economy (annex table 2.14) taking into consideration that the labor productivity in agriculture is lower than that of the non-agricultural activities. This can

be explained by the government price and credit policies favorable to agriculture (see chapter 3), but it is also due to the relatively low labor productivity in sectors other than agriculture.

The increase in the yields of crops per hectare of most of the crops in the period under consideration contributed to this situation, too (see chapter 4). The productivity of land, measured as ratio of the value of crop production to arable land, increased by 12% between 1998-2000 and 2001-2003. The increase in productivity from 2001 to 2003 was about 2.9%.

According to the available data, rural population represented about 50% of the total population. There is no breakdown of these figures by agriculture and non-agriculture population, and therefore there is no possibility to compute the per capita agricultural GDP. However, given the fact that agriculture GDP represented on average 27% of total GDP and assuming that 60% of the rural population can be classified as agricultural population, the income in agriculture is almost equal to the per capita total GDP. This is in line with the findings on productivity of labor previously referred to (annex table 1.5) and confirms the positive effects on farmers' income of the agricultural oriented policies of the Government.



## **Chapter 3 – Developments in Agricultural Policies and Supporting Services**

In the second half of the 80s, Syria started a policy reform process aimed at promoting private sector participation in national economic development with a move to indicative planning. The reform initiated with the sixth Five Year Plan (1986-1990). In this context private sector was allowed to engage in activities previously under State monopoly and a series of incentives was provided to promote private investments.

The pace of reform accelerated at the end of the 90s when a renewed effort in moving from central planning to market oriented economy was reinforced by an increasing focus on the capacity of the economy to integrate in the changing international economic environments. As a result, policy changes have been introduced at both macro and agricultural sector levels. At the macroeconomic level, reforms covered exchange rate and currency regulations, banking and credit system, custom duties and procedures as well as the promotion of trade through the involvement in various trade agreements and negotiations, including the implementation of the Great Arab Free Trade Area (GAFTA), the initialization of the Association Agreement with the European Union and the application for membership in the World Trade Organization (WTO). At the sector level, reforms included price and subsidies, credit, incentives for the promotion of the private sector participation in production and marketing activities and the development of support services such as research and extension. Overall, an orientation toward self-reliance started taking over the former strategy of self-sufficiency, implying an increasing focus on efficient use of resources on the basis of comparative advantages and enhanced integration into the world markets. The approach followed in implementing the reform was characterized by gradualism in response to changing national and international economic conditions.

This chapter presents the most important policy changes, of relevance for the performance of the agricultural sector, which occurred over the period 2001-2003. An attempt is made to identify the policy setting within which farmers and other agents operated, distinguishing between general (macro) policies and agricultural sector specific policies.

### **3.1. Developments in General Policies Affecting Agriculture**

#### *3.1.1. Exchange Rate Policies*

The Syrian Government has been giving increased attention to the adoption of exchange rate and currency use regulations conducive to a positive domestic business environment and its integration in the international context. The reforms undertaken in 2001-2003 simplified the exchange rate regime and currency use regulations and aimed at reducing the negative impacts of past policies as well as protecting the purchasing power of the Syrian Pound. The multiple exchange rate policy was discontinued and considerable steps were taken in 2003 towards the

unification of the exchange rate<sup>9</sup>. Already in 2002, an important step was taken towards facilitating external transactions and enhancing transparency of the trading system, allowing exporters to keep 90% of their export earnings so as to reduce to 10% only the obligation to surrender the foreign currency to the Commercial Bank of Syria<sup>10</sup>. A further substantial step forward was represented by the elimination, in 2003, of the obligation to finance import through export earnings<sup>11</sup>.

In 2004, the Government took a new decision on the exchange rate and announced the adoption of a flexible approach in revising the exchange rate (see box below).

**Box 3.1** - Introduction of flexibility in fixing exchange rate (Decision No.3 of 3/1/2004)

The exchange rate for the Government and the public sector transactions is set at 48.5 SP/US\$ for purchasing and 48.65 SP/US\$ for selling.

The exchange rates list issued by the Commercial Bank of Syria entitled "list of exchange rates in neighboring markets for non- commercial transactions" is renamed "list of free exchange rates of foreign currencies".

The Commercial Bank will move the exchange rates in the above mentioned list continuously and in a flexible manner to reflect the effective value of the Syrian Pound in the market.

Custom duties are computed using the exchange rate of the Government and public sector in place of the exchange rates in neighboring markets.

At present the system of exchange rate is composed of<sup>12</sup>:

1. The official exchange rate used for repayment of the external debt (fixed at 11.20 SP/US\$ for purchase and 11.25 SP/US\$ for sale).
2. The public and transaction exchange rate set at 48.5 SP/US\$ for purchase and 48.65 SP/US\$ for sale (these exchange rates replaced the neighboring countries exchange rate fixed at 46 SP/US\$ for purchase and 46.5 SP/US\$ for sale).
3. The free foreign currency exchange rate replaced the neighboring countries exchange rate for non trade transactions. It is fixed by the Commercial Bank of Syria in collaboration with the Central Bank of Syria on the basis of the exchange rate registered in Beirut and Amman (in the range 51-53 SP/US\$ in 2004).

### 3.1.2. Monetary and Credit Policies

As part of the policy reform process, the Credit and Monetary Council issued a legislation to stimulate economic growth through the mobilization of savings and the promotion of investment. Issues relating to the structure of interest rates were tackled with the aim to unify all the interest rates applied by public sector banks to loans of similar terms and purposes. In particular, interest rates on current accounts and saving deposits were reduced gradually from 9% to 5.5% in 2003<sup>13</sup>. Management boards of the banks were authorized to provide loans for high technology projects in the areas of computer, biotechnology, medicine, and environment at an interest rate below 5.1%, subject to the approval of the Central Bank of Syria.

In order to foster the modernization of the banking sector, the creation of private banks was permitted in 2002. By 2004, four private banks started their activities, operating under the same set of norms regulating the public banks.

<sup>9</sup> For more information refer to SAT 2003 and SAT 2004.

<sup>10</sup> Decision no. 1184 dated 19/9/2002

<sup>11</sup> Decision no. 1100 dated 15/7/2003

<sup>12</sup> For more details refer to SAT 2004.

<sup>13</sup> Decision no. 39 dated 3/12/2003, decree no 4 dated 28/5/2003, and decree no. 43 dated 5/1/2004.



It should be noted that previously, the financial sector consisted of state institutions only, namely: the Central Bank of Syria, the Commercial Bank of Syria, Post Office Saving Bank (POSF), and four specialized banks: the Agricultural Cooperative Bank (ACB), the Popular Credit Bank, the Real Estate Bank, and the Industrial Development Bank. The ACB finances most of agricultural production activities, deals directly with farmers, and organizes the distribution of inputs to them according to the detailed plan drawn by the Ministry of Agriculture and Agrarian Reform.

### *3.1.3. Fiscal Policies*

The main objective of the policy reform in this area is to develop and modernize the legislations related to the taxation of income, wealth and capital. A program of tax reform has been devised in the period under consideration to ensure tax equity and increase tax revenues.

The system of tax exemptions was modified in line with the economic and social objectives of the country. Farm income tax and agricultural cooperatives continue to be exempted from income taxes.

Regarding trade taxes, all custom duties and other fees were unified and the harmonized system was adopted to simplify tariff calculation and avoid duplications of taxation<sup>14</sup>.

### *3.1.4. Marketing and Trade Policies*

Trade policies implemented in the past aimed at developing local production, promoting exports and discouraging imports. They served also the purpose of ensuring sufficient supply of commodities for consumption and processing. To achieve these objectives, the Government monopolized trade of most commodities and provided incentives for the export of processed products. It provided also subsidies on production inputs.

This system started facing a series of problems, exacerbated by the absence of private sector participation in trade activities. Indeed, export services and quality control of exported commodities did not develop as required and competitiveness of some products in international markets started decreasing.

Trade policies have been revised in the 80s to address these problems and since then are being substantially adjusted in the framework of the on-going economic reform. In this respect, import subsidies on inputs were eliminated and some import restrictions were removed. The private sector was allowed to export and import commodities, which were previously under the monopoly of the public sector (See section 3.2.4 below).

### *3.1.5. Trade Agreements*

In its efforts towards trade liberalization, Syria concluded a series of trade agreements and engaged negotiations with the European Union and WTO. The agreements call for a reduction of custom duties and for the removal of non-tariff barriers to facilitate and develop trade flows with the trading partners<sup>15</sup>.

Syria is enlarging its trade relations with Arab countries under the umbrella of the Arab League taking part in the establishment of the Great Arab Free Trade Area (GAFTA) initiated in 1997. It signed bilateral trade agreements with most Arab countries and with a number of other countries. Economic cooperation agreements were concluded with Egypt and Lebanon in 2000 and with Jordan, Saudi Arabia, United Arab of Emirates, and Sudan in 2001. Most of the bilateral agreements with Arab countries were concluded with a view to speeding up the implementation of the Great Arab Free Trade Area, that has been completed by the end of 2004 with the abolition of all custom duties on products of originating in GAFTA countries members.

<sup>14</sup> Decree no. 265 of 2001.

<sup>15</sup> For detailed review of agricultural trade see the SAT 2003 and SAT 2004.

Syria is looking forward to joining the WTO to develop further its trade relations with the members of this Organization. It presented its application in 2001 and confirmed it recently. The country is trying also to expand its trading activities with the members of the European Union. Negotiations for an Association Agreement were finalized and the agreement has been initialed on 19 October 2004.

Agriculture is expected to be a major beneficiary of these measures. Indeed, they foster the opening of foreign markets for Syrian agricultural products (raw and processed) and contribute to foster the diversification and competitiveness of agricultural production by creating the economic incentive for a better allocation of resources. Furthermore, the development of trade is also likely to induce the technological improvement of the commodity chains that aim to meet the international market standards and requirements. On the other side, costs of adjustment to the new trade environment are expected to arise with the increasing competition from foreign exporters. Syrian agents shall adapt to the variable conditions of an open international trade and, for example, bear the risk of price uncertainty characterizing an open market environment.

Specific policies relating to the sector have therefore been put in place to facilitate and take advantage of the international trade liberalization process, limiting as much as possible the related drawbacks. Such policies are presented in the next section.

### **3.2. Developments in Policies Specific to Agriculture**

Agricultural policies are identified and formulated in the framework of development planning. Syrian agricultural development planning is done in three stages: long term planning, medium term planning and annual planning. The long-term plan defines the orientation and strategy of agricultural development, which in turn serve as the framework for the preparation of the medium term plan (five year plan). The latter is implemented through annual plans. All concerned parties participate in the planning process; village level parties as well as governorate and national level ones. The Ministry of Agriculture and Agrarian Reform, the Ministry of Irrigation, the State Planning Commission, the National Peasant Office, and the General Peasant Federation contribute to this activity and to the finalization of the corresponding planning documents, which are ultimately approved by the Office of the Prime Minister.

The document "Orientations for Agricultural Development Strategy 2001-2010" provides the basis for the on-going medium-term plan. It states the long-term goals for agricultural development, presents the strategic choices made to achieve them, and defines specific objectives (on the basis of the analysis of the situation in the period 1995-1999 and of the potential and constraints facing the sector). It also identifies the policy orientations to be adopted, in line with the on-going gradual economic liberalization. Agro industrial development and marketing issues are also covered in this document.

The long-term agricultural development goals for the current decade aim at:

- improving the producers' income, increasing the contribution of agriculture to the GDP;
- achieving self sufficiency of the main food staples and ensuring food security based on the comparative advantages in crop production;
- enhancing the competitiveness of Syrian commodities in local and international markets, introducing alternative crops and adopting modern technology;
- promoting agro processing and marketing activities so to have products with higher value added and foster exports.

The current medium plan is the 9<sup>th</sup> Five Year Plan, covering the period 2001-2005. It defines in a more precise manner the programs, measures and policies to be implemented in order to achieve the objectives pursued. It sets also quantitative targets for the agricultural sector (annex table 3.1).

Annual Plans set production targets for areas and production of agricultural commodities at the village level, the lowest administrative unit. Under these plans, farmers are given licenses to use the land for specific crops. Various policy instruments such as price, subsidy, credit and provision of seeds and other inputs are put in place to induce farmers to implement these plans.

### 3.2.1. *Inputs and Credit*

#### 3.2.1.1. *Seeds*

All seed requirements for cotton and sugar beet as well as a great portion of potato seeds are provided by the General Establishment for Seed Multiplication (GESM). They are distributed according to the licensed area to each farmer, in conformity with the annual plan. Regarding tobacco, the General Establishment for Tobacco provides the required seeds and fungicides in proportion to the licensed area.

The GESM provides only part of the seeds for wheat, barley, lentils and chickpeas. For the rest and for all the seeds of other crops, farmers rely on their production in preceding years or on local markets.

Prices of seeds are set by the Management Board of the GESM and approved by the Ministry of Agriculture and Agrarian Reform (MAAR). Prices in 2003 are reported in table 3.1.

**Table 3.1.** Seed Prices Set by the General Establishment for Seed Multiplication, 2003

<b>Crop</b>	<b>Unit</b>	<b>Price</b>
<b>Cotton</b>	SP/Kg	10
<b>Potato</b>	SP/Kg	12.5
<b>Sugar beet mono embryo</b>	SP/ seed unit*	4200
<b>Sugar beet multi embryo</b>	SP/Kg	320
<b>Durum wheat</b>	SP/Kg	16
<b>Soft wheat</b>	SP/Kg	15
<b>Barley</b>	SP/Kg	12.1
<b>Lentil</b>	SP/Kg	25
<b>Chickpea</b>	SP/Kg	27

Source: MAAR

\*Seed unit is 1.5 Kg

Total quantities of cottonseed as well as the quantities of improved cottonseed decreased from 1998-2000 to 2001-2003 as result of the decline in the average quantities used per hectare induced by the adoption of better agricultural practices (following recommendations by the Cotton Bureau). There was also a decline in the share of improved seeds of wheat because farmers have been using seeds from their own production of previous years. This share was as high as 58% in 2000 and decreased to 26% in 2003. On the contrary, the average share of improved potato seeds over the total increased from 39% in 1998-2000 to 43% in 2001-2003. The quantities of improved seeds of lentils and chickpeas have been fluctuating considerably from one year to the other, according to weather conditions (drought). Annex table 3.2 presents available data on the quantities of seeds used in the period 1995-2003

#### 3.2.1.2. *Fertilizers*

The Agricultural Cooperative Bank distributes imported and locally produced fertilizers either directly or through the cooperatives as an in-kind credit. The bank distributes nitrogen, potassium, and phosphate fertilizers to farmers according to the demand schedule available at the bank and to the licensed area. The remaining part of fertilizers is provided by the private sector, which is playing an increasing role.

Imports of fertilizers increased from an annual average of 185 thousand ton in 1998-2000 to an average of 250 thousand ton in 2001-2003. According to 2003 statistics, during winter season the ACB supplied 106% of the amount needed for the licensed area of nitrogen fertilizers, 98% of the phosphates, and 100% of the potassium, while a deficit of 28 thousand ton of fertilizer units was registered for the nitrogen needed for the summer season.

It should be noted that, apart from the year 2003, the amount of nitrogen fertilizers available at the Agricultural Cooperative Bank exceeded largely the quantities effectively used. Quantities of phosphate used were below the total availabilities in the period, except for the years 2002 and 2003. Moreover the total volume of fertilizers used in 2001-2003 was smaller than the level reached in 1998-2000. The decline amounted to 20% for nitrogen, 14% for phosphate and 4% for potash. These issues deserve careful analysis to identify the factors (such as improvement in the use of fertilizers, prices, distribution, extension) limiting the demand for fertilizers and to devise policies to ensure the efficient use of this important input. Moreover, the quantities used for all types of fertilizers are generally far below those indicated in the annual plans (annex table 3.3).

#### *3.2.1.3. Pest and Weed Control*

The Committee for Pesticides assesses the country's needs for pesticides taking into account the areas planned for cultivation, the expected diseases and the area expected to be infested. The required compulsory chemicals, pesticides, and herbicides are imported by the Government, whereas the private sector imports the rest of chemicals needed for pest control.

The value of pesticides used in Syrian agriculture decreased by 16% between 19998-2003 and 2001-2003 due to the adoption of the Integrated Pest-control Management (IPM) and the development of non chemical treatments, particularly biological control. The latter is applied to various crops, especially tree crops such as citrus, as described in section 3.3.3 below.

Weed control covered on average about 900 thousand hectares per year in the period 2001-2003, with the area treated increasing by about 25% over the period. For other Government interventions, such as disease control and insect control, the areas treated remained stable.

#### *3.2.1.4. Feed*

The General Establishment for Fodder (GEF) provides only part of the feed needed for livestock production, leaving the main role to the private traders, which were allowed to enter this activity in 1987. There is however no systematic quantitative information on the volume of feed handled by the private agents.

The GEF gets the raw products from both the private and public sector: barley from the General Establishment for Cereal Trade and Processing, bran from the General Establishment for Milling and oilcake from public vegetable oil factories. It sells the processed feed to sheep and cattle breeders at the beginning of the agricultural season.

Quantities of feed processed and quantities sold by the GEF decreased respectively by 30% and 17% from 1998-2000 to 2001-2003. This is most likely explained by the effective competition of the private sector (annex table 3.5).

#### *3.2.1.5. Agricultural Machinery*

There was a notable increase in the number of agricultural machines in the period under consideration, in line with the expansion of the cultivated areas. Tractors increased by 9% from 1998-2000 to 2001-2003. Sprayers (motorized and manual) used in the tree crop cultivation, increased by about 3.3% (annex table 3.6). The number of irrigation pumps rose by 6.4% as a result of the increasing water pumping. It is to be noted that heavy equipment, such as the combines (the number of which has declined) is usually hired, especially by small farmers.

### 3.2.1.6. Credit

Agricultural activities are financed by the ACB, which provides short, medium and long-term loans to public, cooperative, and private agents. These loans finance crops and livestock production, poultry farms, irrigation, land reclamation, greenhouses, tractors, harvesters, and other agricultural machines and equipment. The ACB is also concerned with natural resources development and preservation; it finances activities that enhance the adoption of modern irrigation technologies (sprinkle and drip) as well as the establishment of water tankers for well-irrigated lands. Loans are extended in kind and/or in cash. In kind loans are provided for seasonal activities, and in cash loans are provided for medium and long-term investments in agriculture.

Short-term loans are provided in kind - seeds and fertilizer - and in cash to finance agricultural operations. They are granted for periods not exceeding 300 days. Interest rates vary according to the volume of the loan and are different for cooperative members and individuals: 4% for cooperatives' members and 5.5% for individuals, for loans less than SP 50 thousand, and 6% and 7.5%, respectively, for loans exceeding SP 50 thousand. These loans have to be reimbursed by the first of August for winter crops and by the first of December for summer crops.

Medium term loans (maximum duration of 5 years) are used to finance greenhouses, purchase animals, irrigation channels construction, poultry farm equipments, land reclamation, fence and terrace construction, and banana planting. These loans bear an interest rate of 5.5%.

Long-term loans do not exceed 10 years. They are intended for land development and improvement, building storage facilities including cold storage units, forestation projects and fruit trees crops. These loans are subject to an interest rate of 5.5%.

In 2002, the ACB adjusted the scope and coverage of its activities<sup>16</sup> to include watermelon production in greenhouses, kaki trees, and palm trees in the green belt, kiwifruit, silk worm, loquat, and avocado within land reform projects. It also started financing the installation of greenhouses that use Byrin (olive by-product after pressing) heating systems, poultry farms and tobacco ovens. Due to the significant reduction in the cost of establishing vegetables and bananas greenhouses, loans provided for this purpose were reduced. The bank waived also the collateral requirement<sup>17</sup> for cooperative members, with the aim of increasing the number of beneficiaries of its lending activities.

In order to help farmers overcome the effects of the drought, the ACB rescheduled the repayments on short-term loans for the seasons from 1999/2000 to 2001/2002 following law no. 57 of 2000, to be reimbursed in equal installments over 5 years with the first installment to be paid on 1/8/2003<sup>18</sup>. Interest rates started being applied on 1/1/2003 and are equal to interest rates for the medium term loans. In addition, all overdue interests and deferral penalties were waived.

The total volume of loans decreased from SP 7.5 billion in 2001 to SP 6.7 billion in 2002. Short and long terms loans decreased by SP 1.3 billion and SP 0.836 billion respectively, while medium term loans increased by SP 0.576 billion. The decline in total volume of loans is the consequence of existing credit regulations and drought occurrence. Indeed, farmers cannot obtain new loans in case of non-compliance with previous loans' declared purposes, as well as in case of default in repayment of previous loans. The cases of default have substantially increased during drought periods due to farmers' income deterioration. As shown in table 3.2 the distribution of loans by term registered some significant changes contrary to the distribution by sector, which remained unchanged.

<sup>16</sup> Decision no. 246 dated 31/12/2003 (decree of management council of ACB)

<sup>17</sup> Instructions no. 41 dated 2/11/2000

<sup>18</sup> law no. 57 for year 2000

**Table 3.2.** Distribution of ACB Loans by Term, 2001 and 2002 (%)

	<b>2001</b>	<b>2002</b>
<b>Short term loans</b>	87	77
<b>Medium term loans</b>	12	22
<b>Long term loans</b>	1	1

Source: ACB

### 3.2.2. Price and Marketing Policies

As far as output policies are concerned, agricultural products are classified as strategic and non-strategic crops, according to the degree of Government intervention in their pricing and marketing.

#### 3.2.2.1. Strategic Crops

There are seven crops considered as strategic crops, for which the Government sets the price: cotton, wheat, barley, sugar beet, tobacco, lentils, and chickpeas. They are further divided into two sub groups in light of the differences of Government involvement in their marketing. Cotton, sugar beet, and tobacco farmers should sell all their production to public sector agencies that have the monopoly of marketing and processing. Wheat, barley, lentils, and chickpeas farmers have the choice of selling their production either to the public or to the private sector. For the latter group, procurement price levels determine to a large extent the share of public and private sector in the market. When the procurement price level is above the market price, the public sector retains the main role in marketing (as in the case of wheat), while it acts only as a buyer of last resort when the procurement price is below parity (this is typically the case of lentils and chickpeas). Policy changes related to individual crops within these two sub groups are presented below.

#### **Cotton**

The production has to be delivered to the General Organization for Cotton Ginning and Marketing (GOCM), which has the monopoly of cotton marketing and ginning in Syria.

**Table 3.3.** Cotton Pricing System According to Delivery Time

<b>Period</b>	<b>Price</b>
<b>From the beginning of the season to November 15<sup>th</sup></b>	30.75
<b>From November 16<sup>th</sup> to November 30<sup>th</sup></b>	26.25
<b>From December 1<sup>st</sup> to the end of the season.</b>	19.75

Source: CMO

The Government sets the prices of cotton to be produced from licensed areas (see section 4.1 in the next chapter). Prices vary according to the time of delivery<sup>19</sup> as indicated in table 3.3. Cotton produced on unlicensed areas is procured by the GOCM at a price close to the world market one, which is far below the official prices shown above. The objective of this pricing policy is to discourage cotton production on areas additional to those licensed according to the annual production plans, in such a way to avoid excessive pressure on Government budget and unsustainable use of land and water.

#### **Sugar beet**

The General Establishment for Sugar procures sugar beet and processes it in its five plants located in Deir Ezzor, Al Raqqa, Maskana, Tal Salhab, and Al Ghab. The sugar processed in these plants covers about 1/5 of total Syrian demand.

<sup>19</sup> Decree 40 dated 28/5/2001

Farmers are committed to deliver the crop directly to the factory, where the sugar content is calculated from a sample of the produce. Prices are determined with reference to a base price, which is fixed each year for a given sucrose content. The price paid to farmers is adjusted according to the actual sucrose content of the product delivered on the basis of the schedule described in table 3.4 below.

**Table 3.4.** Evolution of Sugar Beet Pricing Criteria

Season	Base Percentage Contents of Sucrose	Base Price	Price Variation for One Point Variation from the Base Percentage Contents of Sucrose	Sucrose Content at Which the Crop Is Rejected
<b>Before 2002/2003</b>	16%	2250	<b>-25 SP for one point below +100 SP for one point above</b>	-
<b>2002/2003</b>	14%	2250	<b>-25 SP for one point below +100 SP for one point above</b>	-
<b>2003/2004</b>	14%	2250	<b>-150 SP for one point below +150 SP for one point above</b>	10%
<b>2004/2005</b>	15%	2250	<b>- 250 SP for one point below +250 SP for one point above</b>	11%

Source: MAAR

### **Tobacco**

Farmers have to deliver the totality of their production to the committees set up by the General Establishment for Tobacco (GET) in the producing regions. Farmers are provided with the boxes needed for leaves packing. Tobacco collected by the GET is processed at its plants located in Lattakia, Hama, Aleppo, and Damascus.

Prices set by the GET differ according to the variety and quality of tobacco. For the Virginia variety for example, price of medium quality is set at 45 SP/kg, while good quality is priced at 75 SP/kg and excellent quality at 101 SP/kg.

### **Other strategic crops**

Wheat, barley, lentils, and chickpeas are covered under this heading. The Government fixes the prices for the deliveries to the General Establishment for Cereal Processing and Trade (GECPT). Prices have not changed since 1996 and are based on the cost of production plus a profit margin.

Unlike cotton, sugar beet and tobacco, the production of wheat, barley, lentils, and chickpeas can be sold freely on the market. The competition from the private sector reduced the share of total production purchased by the General Establishment for Cereal Trade and Processing, GECTP. This share amounts now to 70% for wheat and 50% for barley<sup>20</sup>. Only small quantities of chickpeas and lentils go through the marketing channels of GECTP. In fact, procurement price are below market prices. In such a situation, the State actually acts only as a buyer of last resort.

<sup>20</sup> GECPT did not purchase any barley in the season 2003/2004.

**Table 3.5.** Prices of Selected Strategic Crops

<b>Crop</b>	<b>Price Sp/Kg</b>	<b>Delivery Bonus Sp/Kg</b>
<b>Durum wheat</b>	11.30	0.5
<b>Soft wheat</b>	10.30	0.5
<b>Barley</b>	7.50	
<b>Chickpeas</b>	17.80	
<b>Red lentils</b>	16	
<b>White lentils</b>	17	

Source: General Establishment for Cereal Processing and Trade

### 3.2.2.2. *Non Strategic Crops*

This group comprises vegetables, fruits, and animal products. There were no changes in policies regarding crops other than those considered as strategic. For fruit and vegetables, production is marketed freely in local or central wholesale markets. Farmers either sell directly to traders or request traders to market their production providing a 5% commission of the total value. The public sector also buys fruit and vegetables through the General Establishment for Fruit and Vegetables (now forming part of the General Establishment of Storage and Marketing) and sells them through its market outlets in urban areas.

Livestock products (meat & milk) are sold by farmers freely in local or central markets. Milk fresh and dairies are collected by traders directly from the farms and then sold to public or private companies or to retail sellers.

The Government sets an indicative milk price (13 SP/kg). The actual price in the market, even in winter, is generally lower than this indicative price<sup>21</sup>.

### 3.2.3. *Investment Promotion Policies*

Most of the new investment projects are established under the Investment Law no. 10 of 1991, as amended per Legislative Decree no. 7 of 2000. The law provides a series of incentives for investors.

Under this law, a new investment project is allowed to import all the capital and inputs (raw materials, processed and semi-processed) goods needed for its implementation, development and expansion free from any import restriction. These goods are also exempted from taxes, custom duties and other central or municipal taxes, provided that they are used exclusively for the project.

Law No 10 is applicable to all agricultural investments, covering plant and animal production and all related activities (i.e. greenhouses), cold storage facilities, grading, packing, and plant and animal product processing. It applies to industrial projects established separately or jointly by public and private investors, to investments in transport, and to all other projects approved by the Supreme Investment Council.

To further facilitate investments the so-called "single stop window" was established in the Investment Office in 2002 to ease project proposal approval. The investors present their application and related documents to this "window" where representatives of concerned

<sup>21</sup> Prices of milk are higher in winter than in summer.



ministries take care of the procedures and present, for approval in the shortest possible time, the project proposal with all needed documents to the Supreme Agricultural Council.

The number of projects licensed under law 10 increased to 981, in 2002, from 227, in 2000. It decreased however to 572 in 2003. The increase observed in 2002 is explained by the further incentives and easing of administrative procedures introduced by the Decree no. 7 of 2000, amending Law no. 10. Also relevant is the general improvement in the Syrian economic environment. However, in 2003, investments contracted, mainly as a consequence of the unstable economic perspectives in the region.

The total number of projects approved during the period 1991 to 2003 reached 3575, out of which 85 relate to agriculture with a total investment of SP 23 billion (representing 4.5% of the total). In addition, in the same period, 267 projects, valued SP 69 billion, in food packing and drying, and other agro-food industries were licensed.

#### *3.2.4. Agricultural Trade Policies*

In the framework of the trade liberalization policy described above, the Syrian Government has been taking concrete measures to promote agricultural trade.

All exports of agricultural products have been exempted from income and agricultural production taxes<sup>22</sup>. The exchange rate applied to the part of export earnings to be converted in Syrian Pound at the Commercial Bank of Syria has been replaced by the neighboring countries exchange rate<sup>23</sup>. In addition, strict instructions have been given to the Export Committee<sup>24</sup> to ensure that quality standards are respected and that the control of the quality of the exports is effective. Exporters of agricultural processed products are asked to label on the export packages indicating the nature of the product exported, its components, name and address of the factory, and the mention "for export"<sup>25</sup>. Moreover, exporters have the obligation to comply with the standards and specifications defined by the destination country.

##### *3.2.4.1. Measures Specific to Exports*

In order to promote private exports of olive oil, the Government reduced, in 2001, taxes and other fees imposed on exporting companies<sup>26</sup>. In addition, all taxes and fees levied on olive oil processing companies that produce less than 2 tons per day have been eliminated and long-term loans have been made available to modernize traditional olive oil mills.

To encourage export of fruit and vegetables, the tax on the profit from fruit and vegetables exports was reduced from 1.9% to 1% and financial facilities were provided to exporters by the Commercial Bank of Syria. The link of banana imports to the export of apples and citrus was abolished in 2003<sup>27</sup>. Indeed, in the past, to encourage the export of surplus production, only exporters of citrus and apples could import bananas.

Regarding sheep exports, the Government allowed the General Establishment for Meat, the breeding associations, the sheep fattening associations, and the breeders from private and joint venture sectors to export male sheep in conformity with the quantities and the timetable fixed by the Ministry of Agriculture. In response to requests made by sheep exporters, quantitative restrictions were removed in 2003<sup>28</sup> on the condition that export proceeds are returned to the Commercial Bank of Syria for the financing of imports.

<sup>22</sup> Legislative decree no. 15 dated 3/7/2001.

<sup>23</sup> Decision no. 4667 dated 21/8/2001 (Office of the Prime Minister).

<sup>24</sup> Instructions no. 5536 dated 2001.

<sup>25</sup> Exporters of textile were exempted from the provision of writing the name and address of the factory as a concession and an export enhancement procedure.

<sup>26</sup> Decision no. 69 dated 19/11/2001.

<sup>27</sup> Decision no. 1100 dated 15/7/2003

<sup>28</sup> Instruction no 8573/4/9 dated 20/8/2003

There was no change in trade policies regarding strategic crops; exports of wheat, cotton, and tobacco continue to be a monopoly of State agencies. However, private traders can re-export imported wheat for the purpose of processing and milling.

#### *3.2.4.2. Measures Specific to Imports*

The various custom duties and taxes on imports were unified in 2001 in one single tariff schedule (the Systematic tariff). The Harmonized System was adopted in the same year to ensure consistency between Syrian and international trading systems (Decree no. 265 of May 9, 2001).

Syria has also been progressively removing some of non-tariff import constraints on agricultural commodities. Import licenses required from the Ministry of Economy and Trade (previously, from the Ministry of Supply and Internal Trade) were cancelled for all goods except wheat, flour, barley, lentils, and chickpeas<sup>29</sup>. Regarding grains, in 2002, the Ministry of Supply and Internal Trade decided<sup>30</sup> that wheat, barley, and lentils imports are suspended during the period May 1 – September 1, which is the peak period for domestic harvesting and marketing

Wheat importers are requested to pay a deposit in Syrian Pounds equivalent to the value of the imported wheat, which is reimbursed upon the presentation of documentation proving that the imported wheat has been either re-exported or milled locally and sold for domestic consumption. This policy aims at utilizing the existing private mills and pasta factories capacity; it has also the objective of avoiding that the imports of wheat are sold locally to the public procurement system at the domestic price level, which is normally above the import price.

Circular no. 74 of November 14, 2002, has allowed barley to be imported differently from the past when imported barley should have been colored in order to distinguish it from the domestically produced one.

As regards fruit and vegetables, while a general ban on imports is still in place, liberalization is taking place under various trade agreements and, especially, under GAFTA.

In addition to the above, agricultural imports are subject to the certification of compliance with the sanitary and phytosanitary regulations, to be obtained from the MAAR.

Regarding agricultural inputs, the private sector is now allowed to import seeds for sowing, except seeds of cotton and potatoes. It is also allowed to import fertilizer and pesticides after obtaining the approval of MAAR and the Ministry of Health.

### **3.3. Agricultural Support Services**

Public agricultural support services are provided to achieve a series of intermediate goals in order to improve the performance of the agricultural sector. The most important activities are shown in table 3.6.

#### *3.3.1. Agricultural Research*

The General Commission for Scientific Agricultural Research (GCSAR), established under Law no. 42 of 2001, plays a key role in the improvement of agricultural research in Syria. It is formed by all the directorates of MAAR involved in agricultural research, namely: the directorates of agricultural scientific research, lands and irrigation, as well as the Bureaus of cotton, olives, citrus, apple, and sugar beet research. The commission aims at coordinating agricultural research activities and at enhancing research quality and researchers' skills. The GCSAR deals with crops, horticulture, cotton, natural resources, socio-economic studies, plant protection, livestock, finance, and administrative technical affairs. Its research divisions comprise biotechnology, food technology, genetic resources, and technology transfer.

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<sup>29</sup> Decision n. 1515 of December 12, 2002, Ministry of Economy and Foreign Trade.

<sup>30</sup> Instructions no. 9 of October 9, 2002 and no. 74 of November 11, 2002

**Table 3.6.** The most important intermediate goals

Item	1992	1995	2003
<b>Agricultural research</b>			
Number of research and experiments	<b>627</b>	<b>866</b>	<b>1104</b>
Number of irrigation research	35	59	106
<b>Extension</b>			
Number of extension units	760	816	1,043
<b>Support of pest and weed control</b>			
Area covered (000 ha)	973	1,613	1,547
<b>Development of veterinary care</b>			
Artificial insemination (Million doses)	94.7	20.2	120
<b>Grading and sorting local cattle</b>			
Artificial shots (000)	400	430	787
<b>Rural roads</b>			
Length of roads (Km)	347	614	1,578
Area served (000ha)	34	46	167
<b>Reclamation projects</b>			
Trees (ha)		25,682	7,090
Crops (ha)		2,707	2,848

Source: MAAR

The GCSAR is supervised by a management board chaired by the Minister of Agriculture and composed of representatives of the Agricultural Extension Department, the State Planning Commission, Universities and the Farmers' Federation. Furthermore, it enjoys administrative and financial autonomy.

The commission contributes to the preparation of legislations related to the improvement of agriculture (such as the genetic resources law). It is also expanding its collaboration with regional research institutions such as the International Center for Agricultural Research in Dry Areas (ICARDA) and the research units of international organizations such as the Food and Agriculture Organization (FAO).

Investment expenditure on agricultural research grew from SP 458 million, in 2001, to SP 950 million, in 2003, in line with the objectives of annual growth of 10 to 15 percentage points set in the agricultural development strategy.

Main results achieved in recent years include the adoption of 17 high yielding varieties of wheat, barley, lentils, cotton, maize, and sorghum during the period 2001-2003 and the distribution of hundreds of improved animal breeds, especially Al Awasi sheep and Shami goats in order to improve livestock productivity. The commission received in 2003 the Arab Organization for Agricultural Development Award for Scientific Innovation in the field of water harvesting and spreading.

Plans for 2004 include 1017 research investigations and experiments in priority areas of agricultural development, such as drought and water management, resources conservation, quality improvement, integrated pest management, biotechnology and organic production, yields' increase and reduction of production costs.

### *3.3.2. Agricultural Extension, Training and Education*

Agricultural extension is performed essentially by the Agricultural Extension Directorate of MAAR. Extension programs ensure the transfer to farmers of the knowledge and technology needed for the development of crop and livestock production. Government extension services are provided free of charge through a countrywide network of extension units (1,043 units in 2003). Extensionists ensure that farmers' needs are well understood by agronomists and duly taken into account by researchers. They adopt a participatory approach in order to involve

farmers in identifying their problems and in devising feasible and suitable solutions. Extension activities are implemented through extension fields and field visits (143 extension fields and 231 field visits, in 2003).

The plan of work of the Agricultural Extension Directorate is prepared in collaboration with GCSAR, universities and international research institutions. Extension programs cover essentially eight crops (wheat, maize, sugar beet, cotton, olives, citrus, grapes, pistachios), as well as cattle and sheep.

Rural women are receiving significant attention in, in order to promote their participation to the development of local communities in general, and to agriculture development in particular. The number of seminars directed at women, increased from 2,482 in 2001 to 2,763 in 2003. Moreover, the Rural Woman Section of the Agricultural Extension Directorate is granting loans to finance small-scale income generating projects. In 2003, it planned to provide 25 thousand loans, out of which 15 thousand were actually granted. Notably, 80% of the total loans financed livestock related activities.

Regarding training and skill enhancing activities, there are five training institutes, located in various Governorates, which provide courses and training programs on the country agricultural priority issues and on technological development. In 2003, 1,340 internal training courses were organized for the benefit of 17,457 farmers, 16,741 agronomists and about 10000 students. In the same year, 32 courses abroad were provided to 46 trainees. Furthermore, in 2003-2004, four new agricultural high schools, covering all fields of agriculture including veterinary services and agricultural machinery, were established in the Governorates of Idleb, Tartous, and Deir-Ezzor, bringing the total of the country to 47.

### *3.3.3. Plant Protection Services*

The Plant Protection Directorate of MAAR, implements a comprehensive program of plant protection to reduce the crop losses due to plant pests. A system of continuous monitoring and control of possible infestations is in place and treatments are done on the basis of up-to-date scientific knowledge and with due consideration of human health and environmental protection.

The Committee for Pesticides assesses the country's needs of pesticides taking into account the areas planned for cultivation, the expected diseases and the area expected to be infested. The needed pesticides for compulsory control of pests of a general nature and/or of public concern are provided by the Government for free.

The Government discourages the use of chemicals and promotes the adoption of Integrated Pest Management (IPM) to preserve the ecosystem, including the parasites used for biological control. A Center for breeding and multiplication of bio enemies was established in the coastal area in 1996. It conducts experiments on bio enemies to assess their effectiveness in protection. The MAAR started the implementation of IPM programs in 1992, covering all stages of crop production, from the planting to the harvesting operations. In this context, farmers are encouraged to implement specific agricultural practices, mechanical operations, and biological control and use of appropriate chemicals.

IPM has been widely applied on Syrian citrus crops, which are now considered free from any chemical residues. The program started in 1992 and covers at present an area of about 30 thousand hectares. Twenty local bio enemies have been classified and proved very effective in citrus protection. The same path is being followed in apple cultivation protection.

The successful implementation of the IPM programs and the increasing demand for organic agricultural products encouraged MAAR to increase the areas of field crops and fruit trees under IPM. An IPM Project was prepared in 2003 to cover 1 million hectares all over the country in a three-year period. Furthermore, the Government is taking other initiatives to expand the IPM activities in Syria and is increasing its cooperation with neighboring countries.

#### *3.3.4. Veterinary Care and Vaccinations*

Veterinary care and vaccination services are provided by MAAR through the Department of Livestock Health. A network of veterinary clinics and centers has been established to this effect. Veterinary care and vaccination services use both locally produced and imported vaccinations which are provided free of charge for all livestock with the exception of poultry.

In addition, the MAAR has been implementing a cattle improvement project through artificial insemination. In order to improve the veterinary services, the Government is also implementing several projects in collaboration with international organizations. A successful project was executed in 2001 with the support of FAO to conduct livestock diseases surveys, particularly for transboundary diseases such as small ruminants plague, foot and mouth disease etc. Another cooperation project with FAO started producing Brucellosis Vaccine, with the objective of providing 4 million dosages for sheep and 160 thousand for cattle. Investigations on BSE (mad cow) disease are conducted with the support of the Government of France through clinical diagnosis and field surveys<sup>31</sup>. Moreover, a new national project related to the epidemic diseases investigation is under discussion with the State Planning Commission.

In compliance with the Government orientation to certify that the exported livestock products are free from the residual effect of hormones and veterinary medicines, a new laboratory will be established by the end of 2005.

#### *3.3.5. Infrastructure*

The Government of Syria has been devoting significant attention to rural infrastructures development, such as rural roads. Annex table 3.7 presents the data available on rural road construction and on areas served during the period 1995-2003. It is worth indicating that the responsibility for the construction of agricultural roads was within the mandate of MAAR until 2003, in consideration of the positive impact of infrastructures development on agricultural production and marketing as well as on the living conditions in rural areas. At present, the Ministry of Transport and the Ministry of Local Management are in charge of this activity.

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<sup>31</sup> Syria is classified as a suspected country according to the classification of the International Epidemics Bureau.



## Chapter 4 - Agricultural Production

An agricultural production plan is prepared annually, setting quantitative production targets for crops at village level. The agricultural plan indicates the crop rotations to be adopted for irrigated and rainfed agriculture and by agro climatic zone. It is an important component of the Syrian planning system, described in the preceding chapter, and is the instrument for the achievement, on a yearly basis, of the quantitative production targets set for individual crops in the Five-Year Development Plan.

The mechanism followed for the preparation of the annual production plan has not changed in the period under study. The iterative and participatory approaches are adopted to ensure that the views and knowledge of all concerned parties are taken into account. The plan preparation starts with the issuance by the MAAR of the indicative figures of area and production for all Governorates, which takes into account specific objectives set for agriculture in the medium and long-term plans. These indicative figures serve as reference to develop a plan of the Governorates. It is discussed and reviewed at all administrative levels, down to the village, and eventually agreed upon by all concerned parties. All plans approved are subsequently submitted to the MAAR, for their review at the national level with the participation of the General Peasant Federation, the Ministry of Irrigation and the relevant MAAR departments. Finally, they are consolidated in a national plan and submitted to the Monitoring Committee chaired by the Minister of Agriculture, and then to the Prime Minister's Office for endorsement (prior to 2002, the national plan was approved by the Supreme Agricultural Council).

The preparation of the annual plan for irrigated land takes into account the irrigation capacity of each water basin<sup>32</sup>, as estimated by the Ministry of Irrigation at the beginning of the agriculture season as well as the crops needs of water. For the year 2002/2003, field surveys were conducted on the irrigated areas and on the sources of water used. As a result, dry wells in zone 4 and zone 5 and those existing in water basins having insufficient resources were excluded from the annual irrigation plan.

The approved national plan serves as the reference for the issuance of agricultural licenses to individual and cooperative farmers. Licenses are permissions to plant specific crops on specific irrigated and rainfed land in compliance with the plan. If correctly implemented, they give access to Government credit, inputs and services. Farmers are legally bound to comply with these licenses and face, in theory, penalties if they deviate from dispositions without the approval of concerned Government services.

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<sup>32</sup> In 2002-2003 total water supply was about 16 billion m<sup>3</sup>, distributed as follows:

- 6 billion m<sup>3</sup> from ground water with utilization rate 302%
- 8 billion m<sup>3</sup> from surface water with utilization rate of 54%
- 2 billion m<sup>3</sup> from mixed water source

Water needs for agricultural production (including winter, summer intensive crops and perennials) represent 87% of the total.

A comprehensive monitoring system ensures that the plan is adhered to and that farmers respect their obligation as stated in the licenses. The monitoring of the plan implementation is initiated immediately after the issuance of agricultural licenses and is done periodically: daily, monthly, and seasonally. Special monitoring exercises are undertaken when there are exceptional situations such as droughts and unforeseen epidemic diseases.

The annual plan, although indicative, determines to a large extent, the allocation of cultivable areas to specific crops, especially to the major strategic crops. Licenses play an important role in this respect as well as in the use of modern agricultural inputs and practices.

This report classifies agricultural production in Syria into four sub-sectors namely crops, animal production, fisheries and forestry. Fisheries and forestry contribution to agricultural production are very small (less than 0.5% of the total). Crops represent about 54% of total agricultural production and animal production about 27 % (table 4.1).

**Table 4.1.** Share of Agricultural Production by Sectors, av. 1998-2000 and 2001-2003 (%)<sup>33</sup>

	<b>Average 1998-2000</b>	<b>Average 2001-2003</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Crop production</b>	53.2	54.9	54.9	56.1	53.9
<b>Animal production</b>	27.7	27.3	28.7	27.3	26.0
<b>Fisheries</b>	0.4	0.3	0.3	0.3	0.4
<b>Others<sup>34</sup></b>	18.7	17.5	16.1	16.3	19.7
<b>Total</b>	100	100	100	100	100

Source: NAPC Data Base

The value of agricultural production increased by 12%, from 1998-2000 to 2001-2003, and crops have grown at a higher rate than livestock. Indeed, the share of crops in the total has risen while the livestock contribution remained almost stable in the period under review (annex table 4.1). Moreover, inputs used for agricultural production increased only by 4%, which is an indicator of the increased productivity of the agricultural sector in the period 2001-2003 compared to the period 1998-2000.

A detailed review of the performance of the different sub sectors of Syrian agriculture is presented in this chapter, concentrating on the output side of agricultural production because of the lack of data regarding agricultural inputs.

#### **4.1. Crop Production**

The total value of crop production<sup>35</sup> increased by 15%, from an annual average of 215 billion SP, in 1998-2000, to an annual average of 247.5 billion SP, in 2001-2003. The value of crop production in 2003 was 12% higher than in the year 2000. This increase is due to the changes in the allocation of land to different crops as well as to the improvement in the average yield per hectare. The latter accounted for 38% of the observed rise in the value of crop production. Prices have declined however and reduced this value by about 30%. The productivity of land increased therefore from 37 thousand SP/ha in 2000 to 40 thousands SP/ hectare in 2003 (table 4.2).

Crops grown in Syria can be divided into the following groups: cereals, legumes, grazing crops, industrial crops, vegetables, and fruit. Cereals and fruit are the most important groups, contributing each around one fourth of the total value of crop production. Grazing crops and legumes together accounted for less than 3% of this value. The contribution of cereals and

<sup>33</sup> Forestry is not included.

<sup>34</sup> Others include seeds and seedlings, rural industries, cotton ginning, public sector products and other plant products.

<sup>35</sup> MAAR, Analysis of the Current Situation of Agricultural Sector, 1992-2003.



vegetables increased from 1998-2000 to 2001-2003, whereas the share of fruit and industrial crops in the value of crop production declined during the same period (table 4.2 and annex table 4.2).

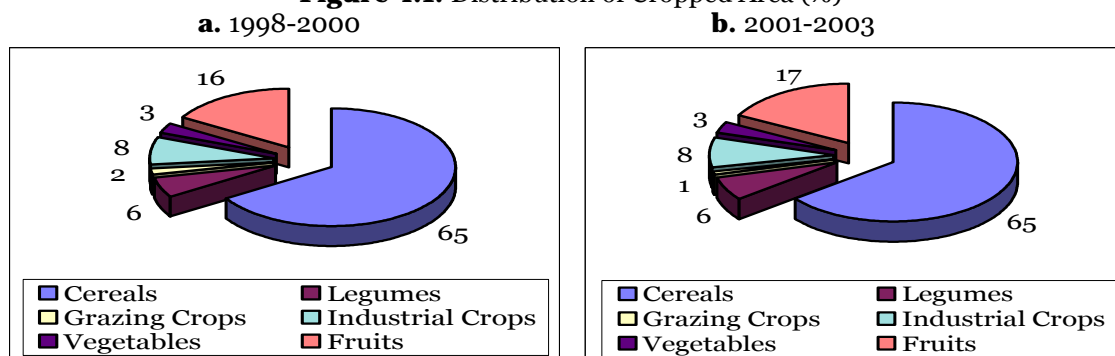
**Table 4.2.** Value of Crop Production, av. 1998/2000 and 2001-2003 (%)

Item	Average 1998-2000	Average 2001-2003	2001	2002	2003
<b>Cereals</b>	20.5	27.7	31.2	25.5	26.4
<b>Legumes</b>	1.7	2.4	2.6	2.2	2.4
<b>Grazing crops</b>	0.6	0.5	0.5	0.5	0.5
<b>Industrial crops</b>	16.2	14.3	15.6	14.6	12.7
<b>Vegetables</b>	6.0	6.6	5.9	6.8	7.1
<b>Fruits</b>	27.6	23.5	21.60	27.5	21.3
<b>Others<sup>36</sup></b>	27.3	25.1	22.7	22.9	29.5
<b>Crop production</b>	100	100	100	100	100

Source: MAAR (2004)

The total area devoted annually to crops declined from 4778 thousand hectares, in 1998-2000, to 4722, in 2001-2003. However, the distribution of total crop areas by groups of crops has not changed significantly as shown in figure 4.1; most of these areas continue to be devoted to cereals, rather than to grazing crops.

**Figure 4.1.** Distribution of Cropped Area (%)



Source: NAPC database

The following sections discuss the performance of main crops. As part of this, index or factor analysis<sup>37</sup> is used to break down the value of agricultural production into its determinants - area, yield, and price. Table 4.3<sup>38</sup> summarizes the results of this analysis for selected agricultural products, while the methodology is summarized in the following text box. More significant results are discussed in the sections referring to individual crops.

<sup>36</sup> Others are crops not included in the above-mentioned groups

<sup>37</sup> Sadoulet and De Janvry (1995), Deaton and Muellbauer (1993), Walter and Beyer (1977).

<sup>38</sup> Unless stated, the paper refers to S.A.R. official data and not to table 4.2.

**Table 4.3.** Analysis over Selected Agricultural Products, 2000 and 2003

Item	Index				Productivity 000 SP/ha 2000 2003	
	Area effect	Yield Effect	Price effect	Total Effect		
<b>Crop Production</b>	<b>1.16</b>	<b>1.38</b>	<b>0.70</b>	<b>1.12</b>	<b>37</b>	<b>40</b>
Wheat	1.07	1.48	1.00	1.58	21	32
Irrigated	1.17	1.22	1.00	1.43	40	49
Rainfed	1.00	2.11	1.00	2.11	8	18
Barley	0.95	5.35	1.00	5.09	1	7
<b>Legumes</b>	<b>1.27</b>	<b>1.44</b>	<b>1.07</b>	<b>1.96</b>	<b>12</b>	<b>22</b>
Lentil	1.13	1.74	1.18	2.32	11	22
Chickpeas	0.98	1.37	1.01	1.36	11	15
<b>Fodder crops</b>	<b>0.91</b>	<b>2.65</b>	<b>1.00</b>	<b>2.41</b>	<b>4</b>	<b>9</b>
Dry fodder crops	1.03	2.94	1.00	3.03	3	8
Grazing crops	0.61	1.35	1.03	0.85	19	25
<b>Industrial crops</b>	<b>0.86</b>	<b>1.02</b>	<b>1.00</b>	<b>0.88</b>	<b>100</b>	<b>91</b>
Cotton	0.76	0.99	1.00	0.75	110	108
Sugar beet	1.03	1.00	1.00	1.03	102	102
Tobacco	0.93	1.08	1.00	1.00	109	118
Sesame	2.00	0.95	0.95	1.81	46	44
Aniseed	0.83	2.07	0.86	1.48	138	286
Cumin	2.99	1.28	0.96	3.67	37	48
Black cumin	1.06	1.41	0.77	1.15	134	188
<b>Vegetables</b>	<b>1.14</b>	<b>4.01</b>	<b>0.29</b>	<b>1.31</b>	<b>142</b>	<b>137</b>
Potato	1.09	0.92	1.00	1.00	255	236
Tomato	0.81	1.40	1.00	1.13	158	221
<b>Fruit</b>	<b>1.01</b>	<b>0.81</b>	<b>1.00</b>	<b>0.82</b>	<b>83</b>	<b>66</b>
Olive	1.08	0.59	1.00	0.64	69	41
Apple	0.88	1.22	1.00	1.07	92	112
Citrus	1.07	0.76	1.00	0.81	286	218
Grapes	0.75	1.00	1.00	0.75	79	79

Source: NAPC estimations

**BOX 4.1 - Methodology for Index Analysis**

The methodology refers to the index of the value change in agricultural production and uses a combination of Laspeyres and Paasche indexes for the interpretation of its components.

Given the quantity and price composition of agricultural crops at, let's assume, current time 1 and at base time 0, the index of the value change in agricultural production expressed as,  $I_V$ :

$$I_V = \frac{\sum q_1 p_1}{\sum q_0 p_0}$$

Where:

- $q$  and  $p$  are the quantity and price of a given crop;
- $\sum q_1 p_1$  is the value of a given agricultural production mix in current time;
- $\sum q_0 p_0$  is the value of a given agricultural production mix at base time.

Multiplying and dividing  $I_V$  by the same factor  $\sum q_1 p_0$  and algebraically rearranging,  $I_V$  can be rewritten as follows:

$$I_V = \frac{\sum q_1 p_0}{\sum q_0 p_0} \cdot \frac{\sum q_1 p_1}{\sum q_1 p_0}$$

$\frac{\sum q_1 p_0}{\sum q_0 p_0}$  is a Laspeyres index applied to quantities, while  $\frac{\sum q_1 p_1}{\sum q_1 p_0}$  is a Paasche index applied to prices. The former measures the effect of just the quantity change over the change in agricultural value between the current and base time, the latter instead measures just the effect of price change.

Calling

$$I_Q = \frac{\sum q_1 p_0}{\sum q_0 p_0}$$

$$I_P = \frac{\sum q_1 p_1}{\sum q_1 p_0}$$

$I_V$  can be expressed as follows:

$$I_V = I_Q \cdot I_P$$

Given that the quantity produced of a certain crop results from the multiplication of the area under that crop by its yield,  $I_Q$  can also be expressed as follows:

$$I_Q = \frac{\sum a_1 y_1 p_0}{\sum a_0 y_0 p_0}$$

Where

$a$  and  $y$  are the area and yield of a given crop.

Multiplying and dividing  $I_Q$  by the same factor  $\sum a_1 y_0 p_0$  and algebraically rearranging  $I_V$  can be written as follows:

$$I_V = \frac{\sum a_1 y_0 p_0}{\sum a_0 y_0 p_0} \cdot \frac{\sum a_1 y_1 p_0}{\sum a_1 y_0 p_0} \cdot \frac{\sum a_1 y_1 p_1}{\sum a_1 y_1 p_0}$$

Calling:

$$I_A = \frac{\sum a_1 y_0 p_0}{\sum a_0 y_0 p_0}$$

$$I_Y = \frac{\sum a_1 y_1 p_0}{\sum a_1 y_0 p_0}$$

$$I_P = \frac{\sum a_1 y_1 p_1}{\sum a_1 y_1 p_0}$$

The value change in agricultural production can be written as:

$$I_V = I_A \cdot I_Y \cdot I_P$$

Where:

$$I_i > 0 \quad i = V, A, Y, P$$

$I_A$  measures the effect of just the area change over the change in agricultural value, between the current and base time, keeping constant the yield and the price;  $I_Y$  measures the effect of just the yield change, keeping constant the area and the price;  $I_P$  measures the effect of just the price change, keeping constant the area and the yield.

The effect can also be expressed in percentage share equal to  $(I_i - 1) \cdot 100$ .

If:

- $0 < I_i < 1$  the effect of factor  $i$  on the change of agricultural production is negative;
- $I_i = 1$  factor  $i$  has no effect on the change of agricultural production;
- $I_i > 1$  the effect of factor  $i$  on the change of agricultural production is positive.

#### 4.1.1. Cereals

Wheat and barley are the main cereals grown in Syria, followed by maize and sorghum (table 4.4 and annex tables 4.2 and 4.3). Land devoted annually to cereals decreased from an average of 3156 thousand hectares in 1998-2000 to an average of 3048 thousand in 2001-2003. The decline only interested rainfed cereals, whose share on total cereal area declined from 76% to 72%. Conversely, area planted with irrigated cereals increased by 14%.

**Table 4.4.** Distribution of Total Area and Value of Cereals by Individual Crop (%)

Item	Average 1998-2000		Average 2001-2003	
	Area	Value	Area	Value
<b>Wheat</b>	52.9	86.5	56.4	81.5
<b>Barley</b>	45.1	9.4	41.5	15.7
<b>Maize and Sorghum</b>	2.0	4.1	2.1	2.8
<b>Total</b>	100.0	100.0	100.0	100.0

Source: annex tables 4.2 and 4.3

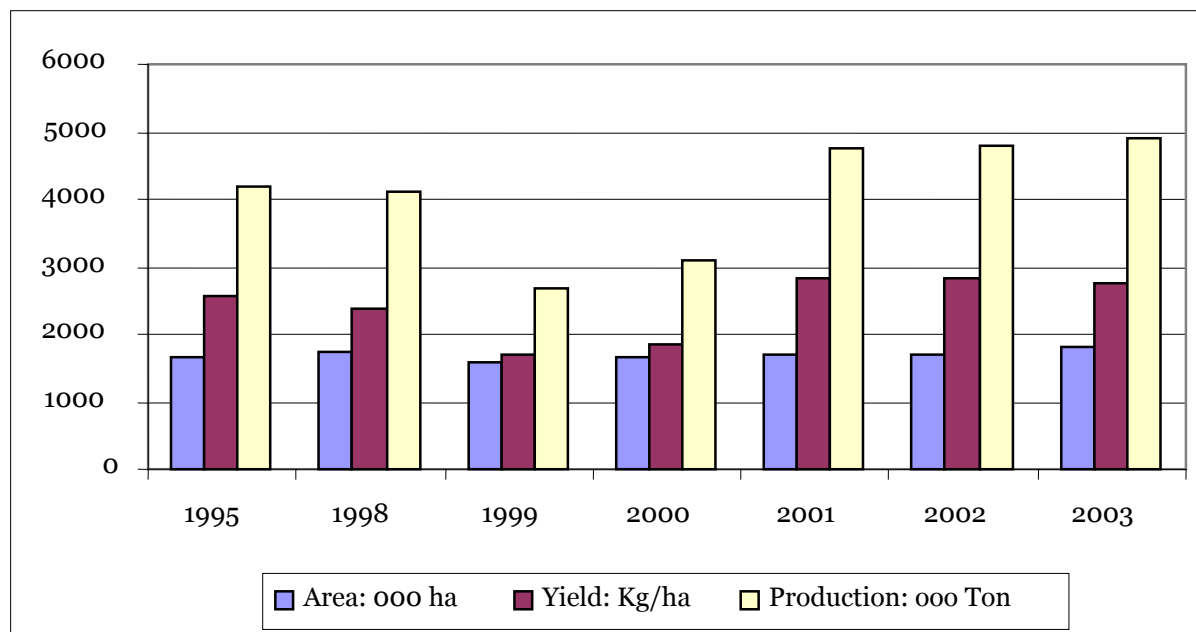
#### Wheat

Wheat is one of the major winter crops. It is a strategic crop and is of paramount importance for food security in the country. Both soft and durum wheat are planted in Syria, covering almost equal areas. In 2003, wheat represented 12% of total value of agricultural production, 22% of the value of crop production and 84% of the value of cereal production (annex tables 4.1 and 4.2). This crop covered 37% of total area under crops and about 58% of total cereal area.

On average, the area under wheat increased by 3.1% from 1998-2000 to 2001-2003, as a result of policies favoring wheat cultivation (chapter 3). Area under soft wheat expanded by 24% whereas durum wheat area decreased by 12% (annex table 4.3). On the yield side, production per hectare rose considerably as a result of the adoption of new varieties, improved seeds, extension of irrigated areas and the improvement in the technical know-how of farmers. The yield of soft and durum wheat (irrigated and rain-fed) increased in the period under consideration by 49% and 38% respectively (annex table 4.4). Soft wheat production increased by 86%, compared to a production increase of only 20% for durum wheat. As a result, the total production of wheat increased by 46% (annex table 4.5). Figure 4.2 shows the improvement in area, yield and production of wheat during 1995-2003.

Irrigated wheat area covered 55% of total irrigated area of the country in 2003. The share of irrigated land used for soft wheat has grown by 32% from 1998-2000 to 2001-2003 against a decline by 5%, for durum wheat (annex table 4.6). With reference to the same periods, yield and production of irrigated wheat improved by 24% and by 36%, respectively (annex tables 4.7 and 4.8). The increase in yield of irrigated wheat resulted from the combination of the following factors: selection of seeds adapted to each region; adoption of high yield varieties; improved farmers' skills, pest control and crop related extension services; and increase in irrigation efficiency through the adoption of modern irrigation technologies (sprinkle). The value of production per hectare for irrigated wheat reached SP 49 thousand in 2003 (table 4.3).

The distribution of irrigated wheat area by governorate is lead by Al-Hassakeh, with 43% of the total area (annex table 4.9), while, concerning productivity, Al-Ghab recorded the highest yield (5.1 tons/ha), and Al Quneitra the lowest (3.2 tons/ha).

**Figure 4.2.** Area, Yield, and Production of Wheat, 1995 and 1998-2003 (ha, kg/ha, ton)

Source: annex tables 4.3, 4.4 and 4.5.

The value of rainfed wheat production increased by 68% between 1998-2000 and 2001-2003, mostly due to the increase in yield, although both yield and production experienced wide annual variations because of the variations in rainfall. Rainfed wheat accounted for 30% of all rain-fed cultivated area (17% soft wheat and 13% durum wheat) and 20% of the total area under crops in 2003 (annex tables 4.10, 4.11, 4.12). Comparing the average of 1998-2000 and 2001-2003, it can be noticed that the area of total rainfed wheat did not change significantly; soft wheat expanded however by 19% while durum wheat decreased by 18%. On the side of productivity, yield of soft and durum rainfed wheat jumped by 89%, and 60%, respectively (annex table 4.11). The value of rainfed wheat production per hectare amounted to SP 18 thousand, representing less than 40% of the corresponding value for irrigated areas (table 4.3).

In 2003, Al-Hassakeh Governorate contributed 47% of total rain-fed wheat area, followed by Aleppo with 22% (annex table 4.13). There are also large differences in yield per hectare among the various governorates. Al-Ghab recorded the highest level of productivity (3.3 ton/ha), while Al-Raqqa recorded the lowest level of productivity (0.7 ton/ha). This difference reflects the differences in rainfalls among agro-ecological zones. In fact, Al Ghab is located totally in zone 1 whereas Al Raqqa is distributed among 4 agro-ecological zones (2, 3, 4, and 5).

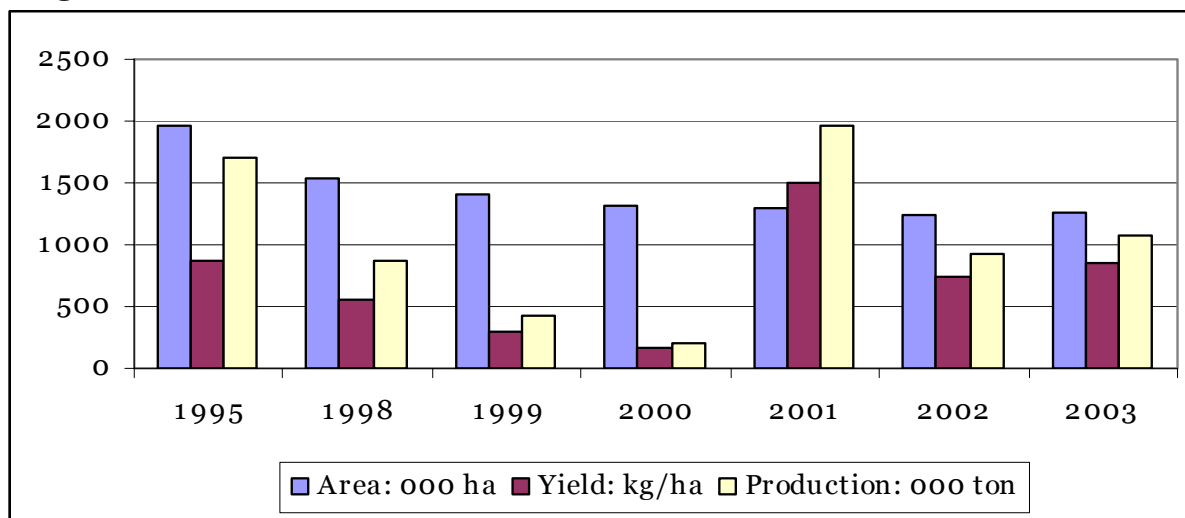
### Barley

Barley is the most important feed crop in the country, accounting for 3.5% of total value of crop production and 13.2% of the value of cereals production in 2003.

Barley covers more than 96% of the rain-fed fodder crops area and is expanding in irrigated areas (annex table 4.10). In 2003, it accounted for 26% of total area under crops (36 % if area under fruit and vegetables is excluded) and 40% of the area under cereals (annex tables 4.3). It should be noted, however, that the area under barley declined by 11% from 1998-2000 to 2001-2003, because of the substitution of barley with other crops, the drought effects impeding the planting of barley in some regions, the prohibition of planting in Al Badia region, and the introduction of fallow practices in crop rotation. In the same period, the yield per hectare soundly increased by 205% due to the rainfall and the favorable weather conditions (annex table 4.4). The value of barley production per hectare amounted to SP 7 thousand in 2003 (table 4.3).

Graph 4.3 shows the evolution in area, yield and production of barley during the period 1995-2003.

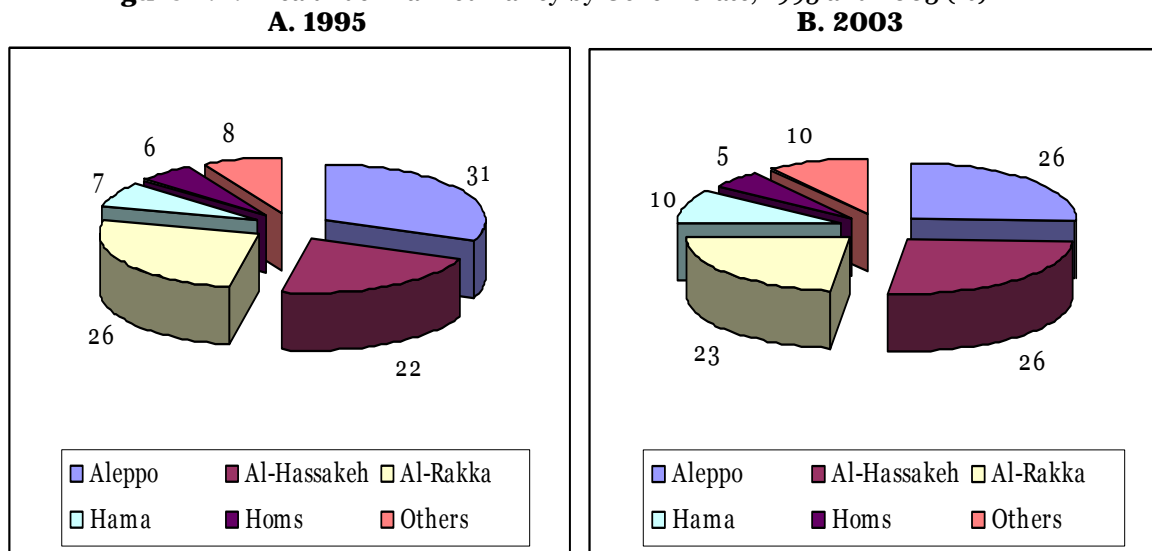
**Figure 4.3.** Area, Yield, and Production of Barley, 1995 and 1998-2003 (ha, kg/ha, ton)



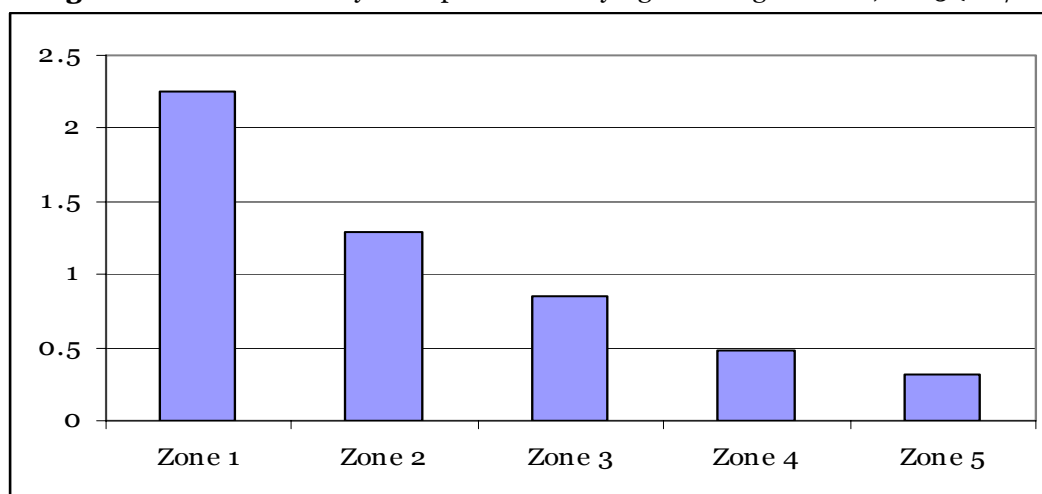
Source: annex tables 4.3, 4.4, and 4.5

In 2003, Aleppo and Al-Hassake registered the highest shares of rain-fed barley area (26%), followed by Al-Raqqa (23%). Figure 4.4 shows how the distribution of rainfed barley area by governorate changed during the past decade. As far as yield is concerned, Idleb recorded the highest productivity (2 ton/ha), and Al-Raqqa the lowest (0.4 ton/ha), as expected due to the location of the two Governorates (annex table 4.14). Figure 4.5 shows the difference in productivity by agro-ecological zones.

**Figure 4.4.** Area under Rainfed Barley by Governorate, 1995 and 2003 (%)



Source: NAPC database

**Figure 4.5.** Rainfed Barley Yield per Hectare by Agro-Ecological Zone, 2003 (ton/ha)

Source: NAPC database

#### 4.1.2. Legumes

The main legumes grown in Syria are lentils and chickpeas. Other legumes include dry broad beans, haricot dry beans, dry peas, dry kidney beans, bitter vetch, flowering, rambling vetch, and oat. These other legumes though accounted for only 19% of the area under legume in 2003 (annex table 4.3). The share of these crops is increasing as result of the higher priority received in the crop rotations suggested by the annual agricultural plan, as well as of the farmers' interest in planting legumes to preserve soil fertility. Table 4.5 shows the distribution of legumes area and production value by individual crop.

**Table 4.5.** Distribution of Total Area and Value of Legumes by legume Crop (%)

Item	Average 1998-2000		Average 2001-2003	
	Area	Value	Area	Value
<b>Lentil</b>	50.3	44.2	45.7	48.5
<b>Chickpeas</b>	31.7	27.3	33.1	22.4
<b>Other legumes</b>	18.0	28.5	21.1	29.1
<b>Total</b>	100	100	100	100

Source: annex tables 4.2 and 4.3

In 2003, legumes covered about 258 thousand hectares, representing about 6% of total cropped area. Most of the legumes are grown in rainfed zones. The value of total production of legumes amounted to 2.4% of crop production and 1.3% of total agriculture production. Legumes area and value have increased by 6.3% and 61% respectively from 1998-2000 to 2001-2003 (annex tables 4.2 and 4.3).

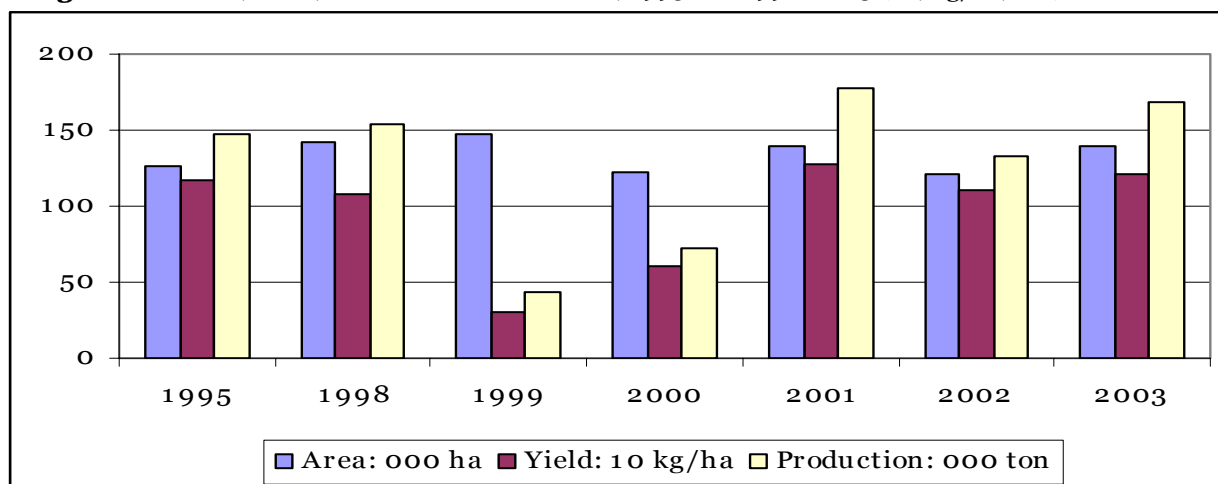
#### Lentil

Lentil is one of the main food crops in Syria and is an important export commodity. Comparing the average of 2001-2003 with the average of 1998-2000, the value of lentil production increased by 77% (from 1633 million SP in the first period to 2890 million SP in the second period), despite a decline of 3.4% of the planted area, due to increasing productivity, favorable weather conditions and increase in price.

However, the area under lentils grew by 13% from 2000 to 2003 in response to its increasing share in crop rotation, especially in zone 2, which aimed at improving the soil quality and preventing soil degradation by increasing the use of natural fertilization.

The yield of this crop is particularly affected by climatic conditions. It increased by 81%, comparing the averages of 1998-2000 to 2001-2003, due to the improvement in rainfall, crop related supporting services, and the use of improved seeds (annex table 4.4). Consequently, the production of lentil increased by 77%, when comparing the two reference periods, and by 131%, when comparing 2003 with 2000. Graph 4.6 shows the change in area, yield and production for lentil crop during the period 1995-2003.

**Figure 4.6.** Area, Yield, and Production of Lentil, 1995 and 1998-2003 (ha, kg/ha, ton)



Source: annex tables 4.3, 4.4 and 4.5

In terms of area, lentil cultivation concentrates in Al-Hassake, Aleppo and Idleb governorates (annex table 4.15). These three governorates account for almost 90% of the total area planted in the country. Yield per hectare present wide differences among Governorates. In 2003, it ranged from 0.2 ton/ha in Lattakia to 1.4 ton/ha in Al-Ghab.

### Chickpeas

Chickpea is another major legume food crop for local consumption and export. Comparing average 2001-2003 with average 1998-2000 (annex tables 4.2, 4.4 and 4.5), the value of chickpea production increased by 32% (from 1007 million SP, to 1334 million SP). In the same period, its production increased by about the same (33%) value, mainly due to the increase in the yield per hectare (21%).

Graph 4.7 illustrates the development of area, productivity and production of chickpea during the period 1995-2003.

In 2003, the governorates of Dar'a and Al-Sweida contributed each about one third of the area planted with chickpeas followed by Aleppo (16%). As for lentils and other rain fed crops, the yield varies greatly. It amounted to 0.1 ton/ha, in Al-Raqqa and was as high as 1.8 ton/ in Al-Hassake (annex table 4.16).

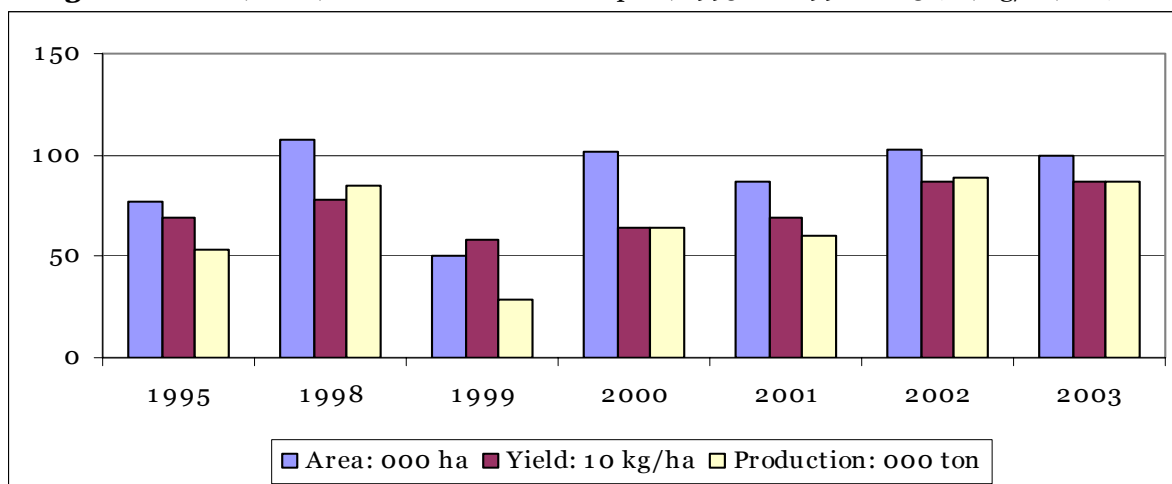
#### 4.1.3. Grazing Crops

The main grazing (fodder) crops grown in Syria are grazing barley and alfalfa. Other fodder crops include in particular grazing flowering, grazing maize, and grazing clover (annex table 4.2 and 4.3). These other fodder crops play an important role in livestock development and in the integration of crop and livestock production. They cover, however, a very small area, which



represents only about 1% of total crop and their share in total value of crop production is even smaller.

**Figure 4.7.** Area, Yield, and Production of Chickpeas, 1995 and 1998-2003 (ha, kg/ha, ton)



Source: annex tables 4.3, 4.4 and 4.5

**Grazing barley** is planted in both irrigated and rainfed areas. The area under this crop decreased by 38%, from 1998-2000 to 2001-2003 (as a result of its substitution with more competitive crops), while the yield per hectare noticeably increased by 58% due to the favorable weather conditions, leading to a 1.6% decrease in production. As shown in tables 4.6 and 4.10 in annex, the expansion of the crop cultivated under irrigation (26%) was more than offset by the decline in the rainfed areas (90%), causing a decrease in production in spite of considerable yield improvement.

In 2003, planting of grazing barley concentrated in Deir-Ezzor (56.4%) and Al-Raqqa (16.6%). According to table 4.17 in annex, there are large differences in yield among governorates. The highest yield has been observed in Homs (25 ton/ha) and the lowest in AlQuneitra (0.48 ton/ha).

**Alfalfa** is an irrigated crop grown mainly in the governorate of Damascus (74%). The area planted with alfalfa decreased by 8% from 1998-2001 to 2001-2003 and, together with a decrease of 13% in the yield, lead to a reduction of production by 21%.

The differences in yield among governorates result in diverse production levels that, in turn, affect the level of total production.

#### 4.1.4. Industrial Crops

This group comprises three major strategic crops, cotton, sugar beet and tobacco, as well as a number of other relatively minor crops such as soybeans, oily sunflower, peanut, aniseed, black cumin, sesame and cumin. Some of these are considered high value crops and will be reviewed below separately.

Industrial crops represented about 10% of agricultural production in the period under consideration, increasing, from 1998-2000 to 2001-2003, by 1.6% in value and 4.9% in area (annex tables 4.2 and 4.3). Table 4.6 traces the evolution of industrial crops over the periods 1998-2000 and 2001-2003.

With reference to table 4.3, the value of industrial crops decreased by 12% from 2000 to 2003, mainly as a result of the negative effect of the area cultivated, that could not be counterbalanced by the slightly positive yield effect, being null the price effect. Indeed, between 2000 and 2003, the area under this group decreased by 2.6% (annex table 4.22) as a result of a water policy that restricted the expansion in irrigated areas. It is to be noted that these are summer crops, which

require larger amounts of water per hectare than winter crops. This explains the high priority given to the adoption of modern irrigation technologies, which, according to research results allows 32-50% saving of water and 32% increase in yield.

**Table 4.6.** Distribution of Total Area and Value of Total Industrial Crops by Individual Crop (%)

Item	Average 1998-2000		Average 2001-2003	
	Area	Value	Area	Value
<b>Cotton</b>	72.2	79.4	57.8	67.8
<b>Sugar beet</b>	7.9	8.5	7.4	8.9
<b>Tobacco</b>	4.4	4.9	4.2	5.3
<b>Others</b>	15.5	7.1	30.6	18.0
<b>Total</b>	100	100	100	100

Source: annex tables 4.2 and 4.3

### Cotton

Cotton is the most important export oriented cash crop and the major irrigated summer crop of the country. It is a strategic crop receiving particular attention by the Government through both the agricultural production plans and the agro industrial development policies (see Chapter 3). In 2003, the production value reached 8.7% of the value of crop production and 68% of the value of industrial crops (annex table 4.2). The share of cotton in total value of industrial crops amounted to 79% in 1998- 2000 against only 67% in 2001-2003.

In 2003, cotton covers respectively 4.3% and 14% of the area under crops and of the total irrigated area of the country (annex tables 4.3 and 4.6). On average, between 1998-2000 and 2001-2003 there has been a reduction of 16% in the area under cotton, due to the decline in water levels and to related policies tackling drought and water scarcity. The improvement in the yield of cotton in the same period (3.4%) did not offset this reduction with the result that production declined by 13%.

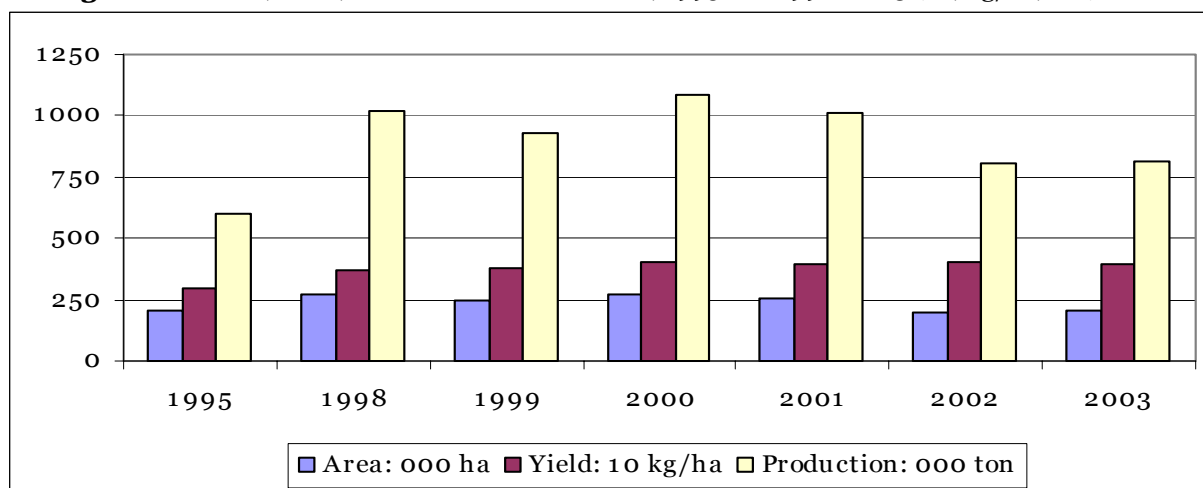
With reference to the analysis reported in table 4.3, the reduction in the value of cotton production (25%), observed in the period 2000 to 2003, was almost entirely due to the decrease in the area under cultivation (24%), while the value of production per hectare decreased from SP 110 thousand to SP 108 thousand.

The increase in the level of yield per hectare, from 1998-2000 to 2001-2003, results from the implementation of targeted policies, as well as from the improvement in farmers know-how. Among these policies due mention should be made of:

- The adoption of region oriented improved seeds,
- The policy for enhancing early production aiming at avoiding adverse weather effects and especially the rainfall that might damage production at the end of the season,
- The improvement in irrigation efficiency resulting from the adoption of new irrigation technologies that saved 2.25 billion SP and increased production by 318 thousand tons.
- The improvement in crop related services.

In 2003, cotton production concentrated in Al-Hassake (36%), Al-Raqqa (22%) and Aleppo (16%). Yield varied from 3.5 ton/ha in Deir-Ezzor to 4.5 ton/ha in Al-Hassake (annex table 4.9).

Figure 4.8 shows the development in cotton area, yield, and production during the period 1995 through 2003.

**Figure 4.8.** Area, Yield, and Production of Cotton, 1995 and 1998-2003 (ha, kg/ha, ton)

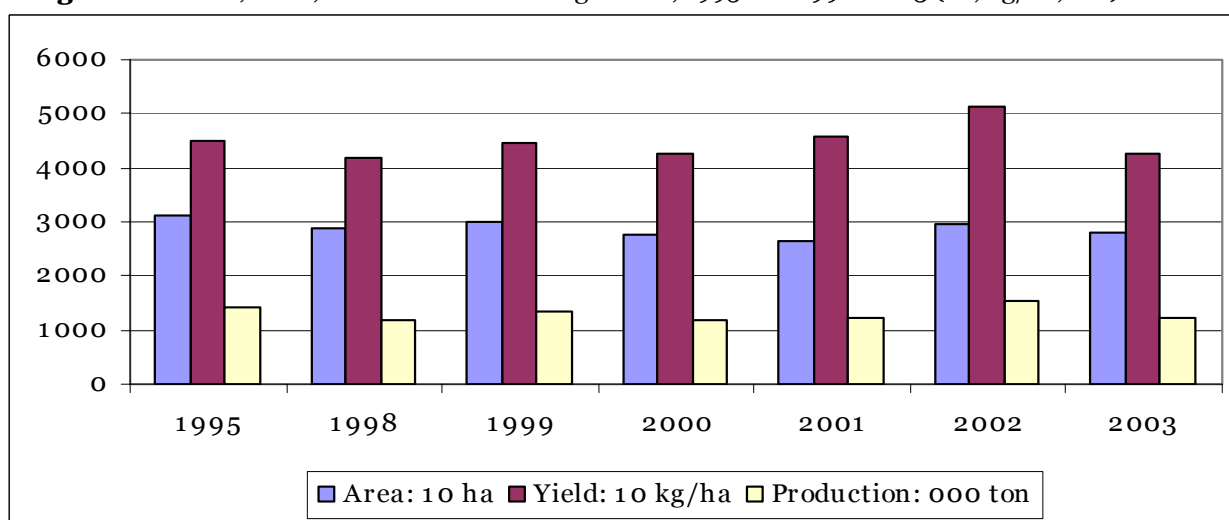
Source: annex tables 4.3, 4.4 and 4.5

### Sugar beet

Sugar beet is planted during three irrigation seasons: fall, winter, and summer. The production is processed in the five plants of the General Establishment for Sugar located in Deir Ezzor, Al-Raqqa, Maskana, Tal Salhab, and Al Ghab. The Government price support policy provides incentives to farmers to grow this crop.

The value of sugar beet production increased by 6% from 1998-2000 to 2001-2003, while its value share in industrial crops remained almost stable at 8.5% and 8.8%, respectively (annex table 4.22) and its area declined by 1.9 % (annex tables 4.2, 4.3 and 4.5).

In 2003, it covered 1.9% of total area under irrigated agricultural crops and 11% of the area under irrigated industrial crops. Production has been increasing in recent years despite the decline in the area planted because of the use of the improved seeds, the improvement in crop related services, and the Government support policies (Figure 4.9). The value of production per hectare remained relatively stable at about SP 102 thousand (table 4.3).

**Figure 4.9.** Area, Yield, and Production of Sugar Beet, 1995 and 1998-2003 (ha, kg/ha, ton)

Source: annex tables 4.3, 4.4 and 4.5

The area under sugar beet concentrates in Al Ghab (24%) and Al-Raqqa (20.3%). Yields vary from 30 ton/ha (in Homs) to 53 ton/ha (in Hama) (annex table 4.20).

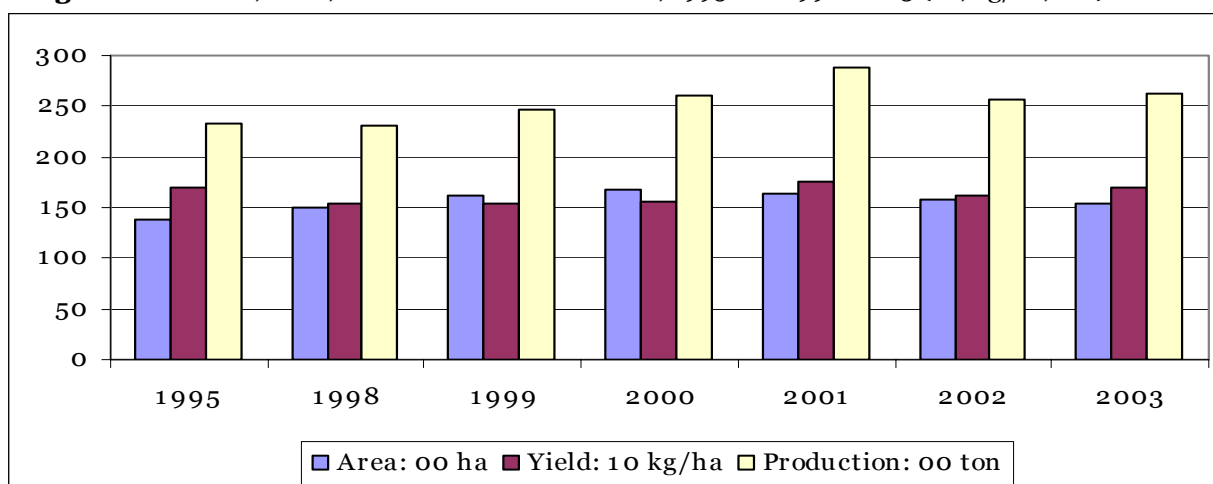
### Tobacco

Tobacco, a strategic crop, is grown in irrigated and non-irrigated areas. The entire production is delivered to the General Establishment for Tobacco (GET), which pays the procurement price.

The value of tobacco production constituted 0.7% of the value of total plant production and 5.6% of the value of industrial crops (2003). Comparing averages of 1998-2000 and 2001-2003, the value of tobacco increased by 9%, in spite of the fact that its area remained almost stable (annex tables 4.2 and 4.3). Indeed, production increased by 10%, mainly as a result of yield improvements (9.5%) (annex tables 4.4 and 4.5). Productivity of tobacco was 109 thousands SP/ha in 2000 and amounted to 118 thousand SP/ha in 2003.

In 2003, the area planted under tobacco accounted for 0.3% of the total area under crops and 4.3% of the area under industrial crops. In this regard, it should be noticed that, although the tobacco area remained relatively stable in comparison with reference period averages, from 2000 to 2003 it decreased by 7.4%, mainly due to water scarcity. Figure 4.10 depicts the evolution in area, yield and production of tobacco.

**Figure 4.10.** Area, Yield, and Production of Tobacco, 1995 and 1998-2003 (ha, kg/ha, ton)



Source: annex tables 4.3, 4.4 and 4.5

### Other Industrial crops: the case of high value industrial crops

(Cumin, Sesame, Aniseed, and Black cumin)

Since the mid 80s, the cultivation of high value industrial crops has been soundly promoted in line with the Government policy aiming at enhancing the integration of national agriculture in international markets. Consequently, farmers are encouraged to produce high value crops<sup>39</sup> that have comparative advantages and do not face marketing problems. The production value of these crops has generally increased. For instance, the value of cumin production increased from 2% of the total industrial crops, in 1998-2000, to 12%, in 2001-2003, and the value of sesame production increased from 0.8% to 1.2%. The productivity of aniseed and black cumin increased from 138 and 134 thousand SP/ha in 2000, respectively, to 286 and 188 thousand SP/ha in 2003 (table 4.3). It is noticeable that the value of the production of one hectare cultivated with

<sup>39</sup> High value crops other than industrial crops are very promising. Indeed the internal and foreign demand for early season crops (such as watermelon) and/or the organic crops is very high.

cumin is six times the value of the production on one hectare of barley (see table 4.7, annex tables 4.4 and 4.5).

**Table 4.7.** Average Area and Value of Production of Selected Crops, 2001-2003.

Item	Area (ha)	Value (Mill Sp)	Value/ha
<b>Barley</b>	1263452	10898	<b>8625</b>
<b>Cumin</b>	83928	4319	<b>51460</b>
<b>Sesame</b>	10456	443	<b>42368</b>

Source: The Current Situation of Agricultural Sector, 1992-2003

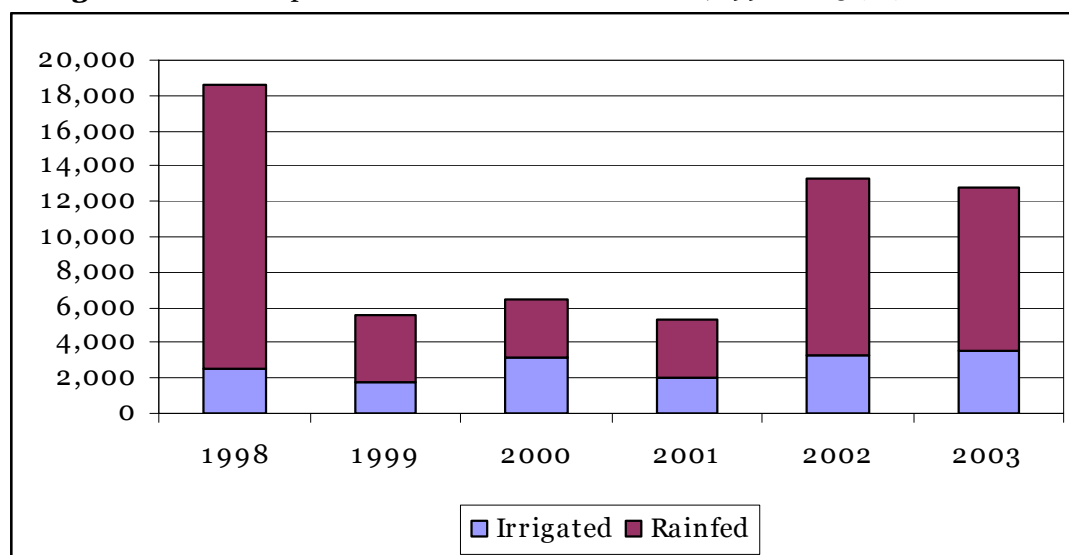
### Cumin

Cumin is grown mostly on rainfed land (98% of the total area, in 2003 - see annex tables 4.3 and 4.17). Evidence of the interest in cumin cultivation is that, during the period 2001-2003, the total area of cumin was more than four times that of 1998-2000, the production almost six times higher and the yield increased by 36% (see annex tables 4.3, 4.4, 4.5). With reference to table 4.3, comparing 2003 with 2000, it is possible to highlight that the sound increase in the value of cumin production (267%) was mainly due to the increase in area, while the value of production per hectare increased from SP 37 thousand in 2000 to SP 48 thousand in 2003, in spite of cumin price decline (table 4.3).

### Sesame

Still referring to table 4.3 comparing 2003 with 2000, the 81% increase in the value of sesame production was even solely due to the expansion of the area (Figure 4.11) which more than counterbalanced the (slightly) negative yield and price effect. Nevertheless, the negative yield and price effect, accounting for a total 10% dampening of the value, led to the decline of productivity per hectare from SP 46 thousand in 2000 to SP 44 thousand in 2003.

**Figure 4.11.** Development of Area Planted with sesame, 1998-2003 (ha)



Source: annex tables 4.6 and 4.10

As a result of the increase in the area and the yield, the average annual production of sesame increased by 49%, between 1998-2000 and 2001-2003 (see annex tables 4.3, 4.4 and 4.5), positively responding to the increasing demand of sesame oil at world level. Rainfed areas contributed 46% of total production in 1998-2000, increasing up to 63% in 2001-2003 (see table 4.8). The yield per hectare improved during the two reference periods as well. It increased

from 0.5 ton/ha to 0.6 ton/ha. These improvements allowed Syria to export an annual average of 384 ton of sesame oil during the period 2001-2003, against only about 100 ton in 1998-2000.

**Table 4.8.** Production of Sesame, distribution by land use, 1998/2000 - 2001/2003 (%).

	<b>Average 1998-2000</b>	<b>Average 2001-2003</b>
<b>Irrigated</b>	53.8	37.3
<b>Rainfed</b>	46.2	62.7

Source: Annex tables 4.8 and 4.12

#### 4.1.5. Vegetables

This group includes a large variety of winter and summer crops. Tomato and potato are the main vegetables in terms of area and value of production (table 4.9 and annex tables 4.2 and 4.3)

**Table 4.9.** Area and Value of Vegetable Crops by Crop (%)

<b>Item</b>	<b>Average</b>		<b>Average</b>	
	<b>1998-2000</b>		<b>2001-2003</b>	
	<b>Area</b>	<b>Value</b>	<b>Area</b>	<b>Value</b>
<b>Field Tomatoes</b>	12.8	29.0	11.5	31.1
<b>Potatoes</b>	18.6	45.4	17.3	35.5
<b>Others</b>	68.6	25.6	71.2	33.5
<b>Total</b>	100	100	100	100

Source: annex tables 4.2 and 4.3

The area under vegetables totaled about 135 thousand hectares in 2001-2003, representing 2.9% of total area under crops (annex table 4.3). In the same period, irrigated vegetables accounted for 70% of the area under vegetables and 7.1% of the total area under irrigated crops (annex tables 4.3 and 4.6). With reference to table 4.3, the value of production between 2000 and 2003 increased by 21%, due to both the change in the production mix and, above all, the increase in yield, that more than compensated the decline in prices; the latter, though, determined a decline of the value of production per hectare from SP 142 thousand to SP 137 thousand. It should be noted that the shares of vegetables in the value of agricultural and crop productions remained relatively stable from 1998-2000 to 2001-2003. They stood at around at 3.9% and 7.1% respectively.

### Tomatoes

#### *Field Tomatoes*

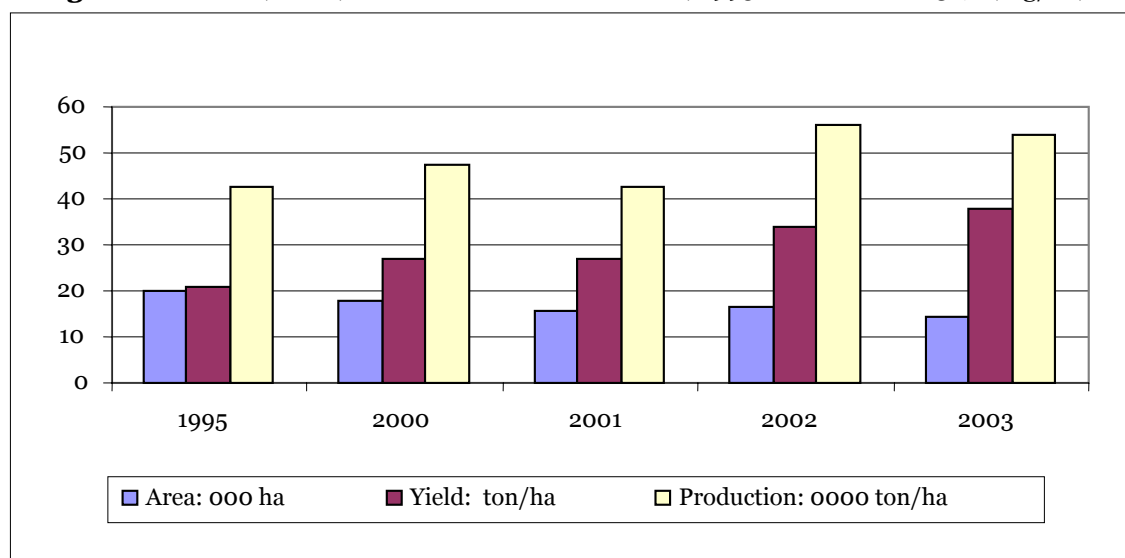
Tomato is grown in three irrigated seasons (summer, autumn, and spring) to meet the high growing local demand for fresh and processed consumption. Besides, there is a high demand of tomato from foreign markets, especially from the neighboring countries. Syrian farmers have therefore strong incentives to grow tomato, in both irrigated and rainfed areas. Nevertheless, field tomato share in vegetable production only increased from 29% to 31%, when comparing averages 1998-2000 to 2001-2003 (Table 4.9).

The area under field tomatoes decreased by 2.7% from 1998-2000 to 2001-2003, while the value of production increased by 35%. In 2003, the total area under irrigated field tomato accounted for 7.6% of the total irrigated vegetables (annex table 4.6).

Farmers have recently been using intensification and diversification strategies instead of expansion. Yields per hectare have grown substantially, as shown in Figure 4.12. and the value

of production per hectare rose from SP 158 thousand in 2000 to SP 221 thousand in 2003 (table 4.3).

**Figure 4.12.** Area, Yield, and Production of Tomatoes, 1995 and 2000-2003 (ha, kg/ha, ton)



Source: annex tables 4.3, 4.4 and 4.5

In 2003, irrigated field tomato was cultivated mainly in Dara'a (15% of the total tomato area), Aleppo (14%), Homs (7%), Tartous (5%) and Lattakia (4%). In 2003, the highest yields were in Dar'a (96 ton/ha) and in Quneitra (80 ton/ha), while the lowest yield was in Idleb 12 ton/ha (annex table 4.22).

#### *Green House Tomato*<sup>40</sup>

Tomato is also grown in greenhouses adopting new irrigation technologies and new high yielding varieties. Greenhouse tomatoes cover the need for fresh consumption. This production activity provides high returns to farmers.

As for field tomato, the average area under greenhouse tomato decreased between 1998-2000 and 2001-2003 by 11%, mainly due to the area expansion of other more profitable crops. Nevertheless, the production rose by 36% on average because of the increase.

In 2003, the cultivation of tomato in green houses concentrated mainly in Tartous (84% of areas and green houses) and Lattakia (14%).

#### **Potatoes**

Potato is cultivated on irrigated land in three seasons and is an important crop for food consumption as well as for food industry.

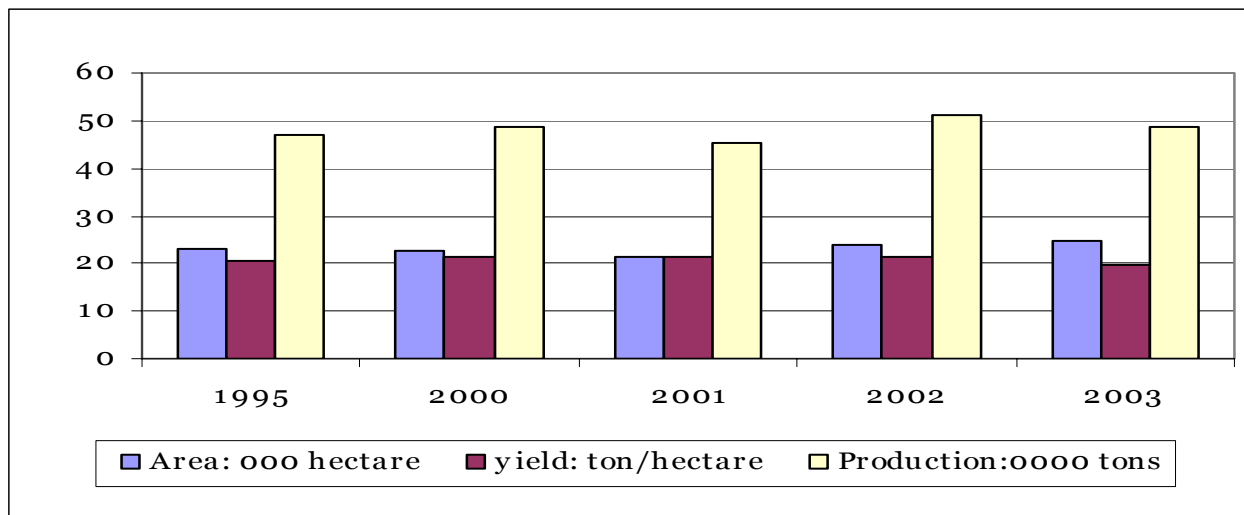
As depicted in table 4.8 and annex table 4.3, the value of potato production decreased by 1.4%, between 1998-2000 and 2001-2003 and its share in total value of vegetable production declined from 45% to 36%. The share of the area under potatoes remained stable at about 19% of the total vegetable area, while the value of production per hectare declined from SP 255 thousands in 2000 to SP 236 thousand in 2003. Figure 4.13 shows the evolution in area, yield, and production of potatoes.

Potato is mostly grown in irrigated areas (98% of the total potato area is irrigated) in all Syrian governorates. 27% of the total potato area is located in Aleppo, 23% in Idleb, 19% in Hama, 12%

<sup>40</sup> MAAR (2003a)

in Al Ghab, and 7% in Homs. According to 2003 statistics, Dar'a, Quneitra, and Rural Damascus had the highest yield of potato (25, 22, and 22.5 ton/ha), whereas Al-Hassake had the lowest (2 ton/ha); see annex table 4.23.

**Figure 4.13.** Area, Yield, and Production of Potatoes, 1995 and 2000-2003



Source: annex tables 4.3, 4.4 and 4.5

#### 4.1.6. Fruit Tree Crops

Syria produces a wide variety of fruits, the most important of which are olives, citrus, apples and grapes. The area under fruit trees represents more than 17% of the total crop area in Syria (annex table 4.3). This area has been increasing steadily in the past six years. It has risen from 775 thousand hectares in 1998 to 829 thousands in 2003. According to 2003 statistics, the rainfed area represented 83% of the total area under tree crops.

The value of fruit trees production increased by 2.1% from 1998-2000 to 2001-2003, but its share in total agricultural production decreased from 15% to 13% (annex table 4.29). The same value decreased by 18% from 2000 to 2003. The value of production per hectare declined from SP 83 thousand in 2000 to SP 66 thousand in 2003 (table 4.3). Table 4.10 illustrates the evolution of total area and value of fruit trees from 1998-2000 to 2001-2003.

**Table 4.10.** Distribution of Total Area and Value of Total Fruit Tree Crops by Individual Tree Crop (%), 1998-2000 and 2001-2003

Item	Average 1998-2000		Average 1998-2001	
	Area	Value	Area	Value
<b>Olives</b>	59.5	43.7	61.3	43.3
<b>Citrus</b>	3.4	12.4	3.5	12.5
<b>Apples</b>	6.2	8.3	5.7	7.1
<b>Grapes</b>	8.8	10.3	7.1	7.9
<b>Others</b>	22.1	25.3	22.4	29.2
<b>Total</b>	100	100	100	100

Source: annex tables 4.2 and 4.3

The expansion of the area under fruit trees is due to the profitability of tree production as well as to the expansion of fruit trees plantation conducted in several land reclamation projects and to the availability from international and national sources of loans for land reclamation activities.

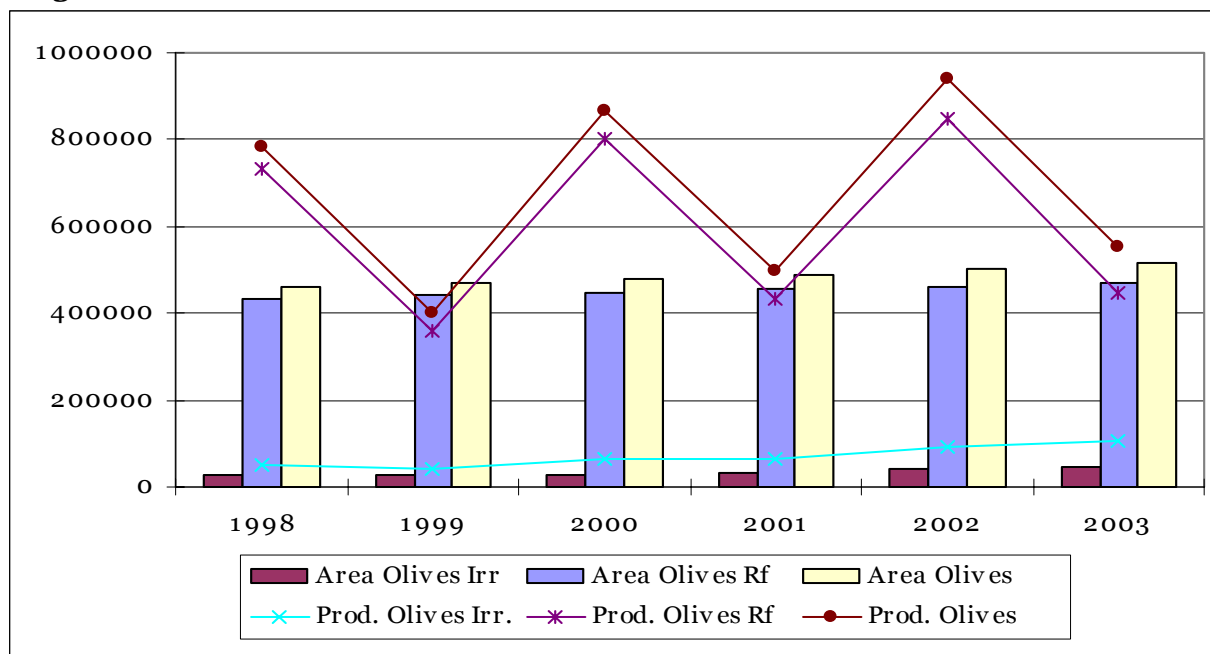


## Olives

Olive and olive oil productions provide income and job opportunities to a large number of people in the rural areas. They contribute to the industrial development of the country as well as to its agricultural exports (see chapters 5 and 6).

Olive tree is mostly grown rainfed playing a positive role in soil protection. Area under olive tree (rainfed and irrigated) expanded from an average of 469 thousand hectares in 1998-2000 to 502 thousand hectares in 2001-2003. Despite area expansion, olive production decreased by 3.0% its share in total value of fruit production, declined from 44% to 43%. The value of the production per hectare decreased from SP 69 thousand in 2000 to SP 41 thousand in 2003 (table 4.3). As noticeable in figure 4.14, olive production is characterized by alternate bearing (full production occurs once every two years). Accordingly, the production trend measured between two periods of three years is negatively influenced by the fact that the second period includes two years of low production, while considering annual values, as in Figure 4.14, it is evident that the alternate production cycle coexists with an increasing trend.

**Figure 4.14.** Area and Production of Olives Trees, 1998-2003 (ha and ton)



Source: annex tables 4.3, 4.5, 4.6, 4.8, 4.10, 4.12.

Significant investments have been made to expand the area of rainfed olives, which took place mainly on rainfed land. Comparing averages of 1998-2000 with 2001-2003, it increased by 42% (annex table 4.6).

According to 2003 statistics, the largest area under rainfed olive is located in Aleppo (33% of the total rainfed olive area), followed by Idleb (23%), Tartous (14%), and Lattakia (7.9%), whereas rainfed olive is not cultivated in Al Hassake and Deir Ezzor due to the prevalence of adverse climatic conditions. The highest yield was attained in Al Ghab area (18 kg/tree), the lowest in Tartous (3 kg/tree) (see annex table 4.25).

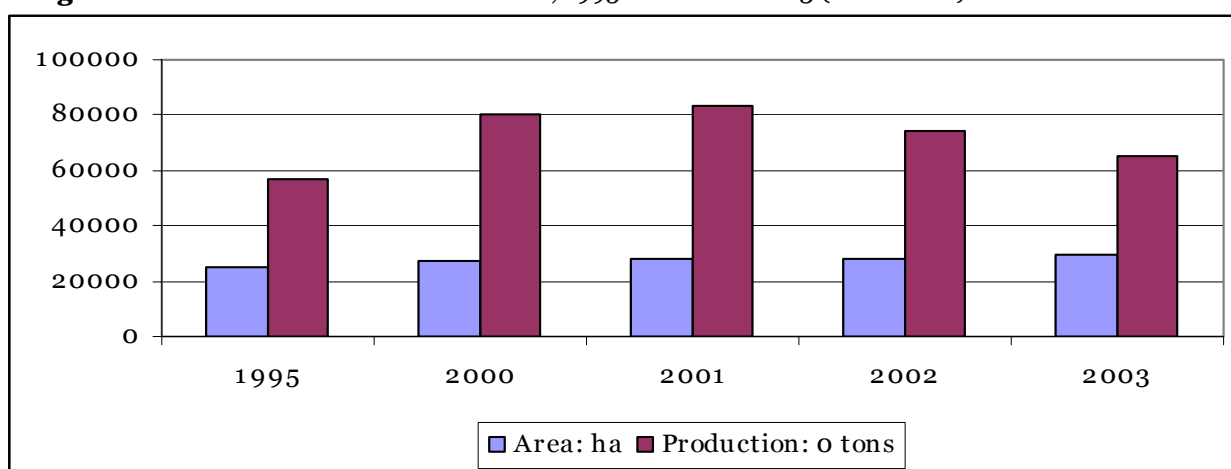
Irrigated area under olive trees is concentrated in Rural Damascus (23% of the total irrigated area), Homs (16%), Al- Raqqa (17%), and Dara'a (12%). Al Ghab and Dar'a recorded the best yield 37.5 kg/tree and 35 kg/tree, respectively (annex table 4.24).

## Citrus

Citrus planting is concentrated in the coastal area. It is considered as one of the most important irrigated fruit trees and includes a large variety of species, such as lemon, orange, grapefruit, and mandarin).

The area under citrus trees amounted to 29 thousand ha in 2001-2003. The value of citrus production decreased by 18% from 2000 to 2003 despite the expansion in area. The decline in yield has been registered for old Lemon and Orange trees due to the weather conditions and the replacement of the old trees with new varieties trees like Clementine, Mandarin, Gryphon, and Valencia, which did not yet enter the production stage. The value of the production per hectare decreased from SP 286 thousands in 2000 to SP 218 thousand in 2003. Figure 4.15 shows the evolution of the area and production related to citrus trees over the period 1995-2003.

**Figure 4.15.** Area and Production of Citrus, 1995 and 2000-2003 (ha and ton)



Source: Annex tables 4.3, 4.4 and 4.5.

In 2003, Lattakia accounted for 75% of citrus area and Tartous for 22%. Lattakia recorded the highest yield in 2003 (75 kg/tree), followed by Idleb (63 kg/tree), and Tartous (61 kg/tree). In 2000, Lattakia achieved even a higher yield (105 kg/tree), as shown in annex table 4.26.

## Apples

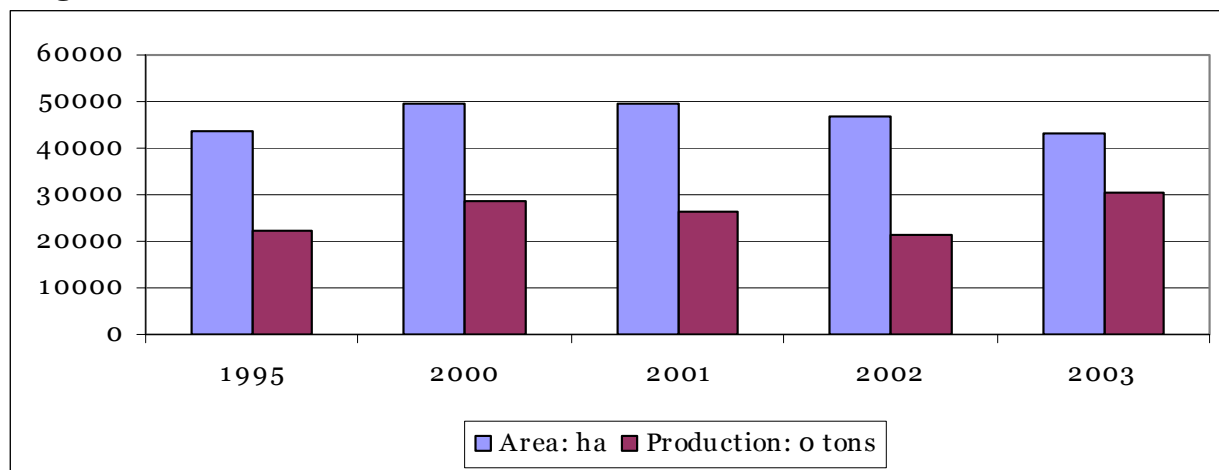
The total area planted with apple decreased from 49 thousand ha in 1998-2000 to 47 thousand hectares in 2001-2003 due to the increase in production costs, mainly resulting from diseases control expenditures. This is particularly the case for rainfed tree crop, which occupies 65% of the total area under apples. Diseases led to a significant reduction in yield per tree, also contributing to a decrease in the value of apple production (16%, between 1998-2000 and 2001-2003). Figure 4.16 traces the evolution of the area and production related to apple trees over the period 1995-2003.

The rainfed areas under apple are mostly located in the south (Sweida), while irrigated apples are mostly found in the coastal zone. In 2003, Rural Damascus accounted for 30% of the total apple production followed by Sweida with 25%. The highest yield was recorded in Damascus and Sweida (37 and 39 kg/tree), while the lowest yield was in Al-Hassake and Hama (6 and 15 kg/tree)- see annex table 4.27.

## Grapes

Grape is an important crop in Syria. It is exported and consumed domestically fresh (table grapes), dry and in the form of juice (processed products).

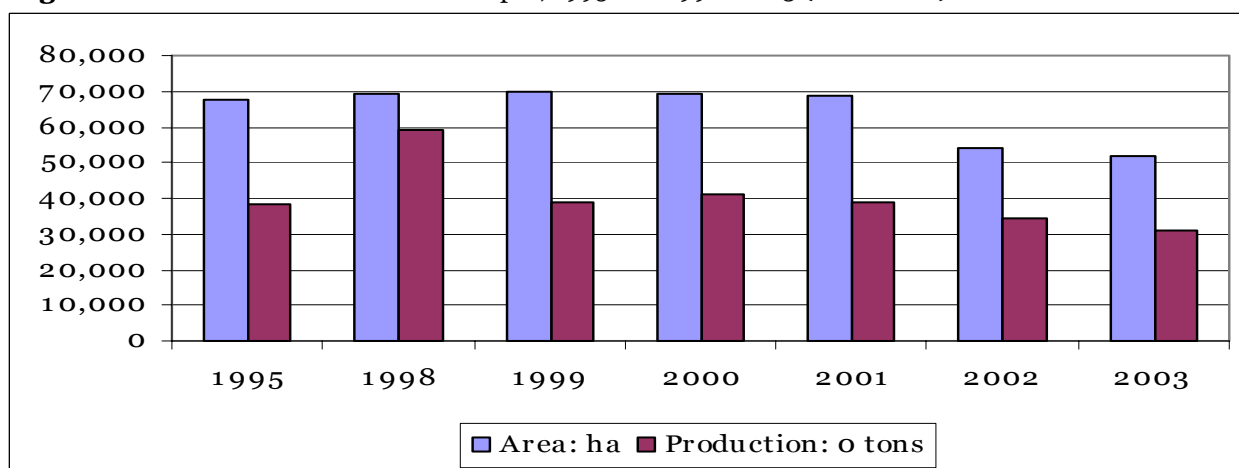
**Figure 4.16.** Area, Production of Apples, 1995 and 2000-2003 (ha and ton)



Source: Annex tables 4.3, 4.4 and 4.5

Total area planted with grapes (irrigated and rainfed) declined from an annual average of 64 thousand hectares in 1998-2000 to 58 thousand in 2001-2003. In the same period, average annual production decreased from 462 thousand ton to 346 thousand ton (annex tables 4.3 and 4.5). These developments are explained by the decrease of grapes price and the replacement of grape tree by other profitable tree crops. The value of grape production and its share in the value of fruit production decreased by 25%. The value of production per hectare remained stable at SP 79 thousand in 2000 and 2003 (table 4.3). Figure 4.17 shows the evolution of the area and production of grape over the period 1995-2003.

**Figure 4.17.** Area and Production of Grapes, 1995 and 1998-2003 (ha and ton)



Source: Annex tables 4.3, 4.4 and 4.5

Although the area of both rainfed and irrigated grapes decreased, the production of irrigated grapes increased as a result of the improvement in yield per tree between 1998-2000 and 2001-2003 (annex tables 4.6, 4.8, 4.10 and 4.12). The production of irrigated grapes rose from 137 thousand ton, to 142 thousand, while the production of rainfed grapes declined from 325 to 204 thousand tons.

## 4.2. Livestock and Animal Production

The Syrian main livestock is represented by sheep, goats, cattle and poultry (see annex table 4.11). Comparing 1998-2000 with 2001-2003 averages, only poultry increased (19%), while sheep (4.1%), goats (8.4%) and cattle (8.8%) decreased. However, available data clearly indicate that the negative trend prevailed until 2001 and that the livestock sector significantly recovered in numbers and production during the last 2 years (see annex tables 4.28 and 4.29a).

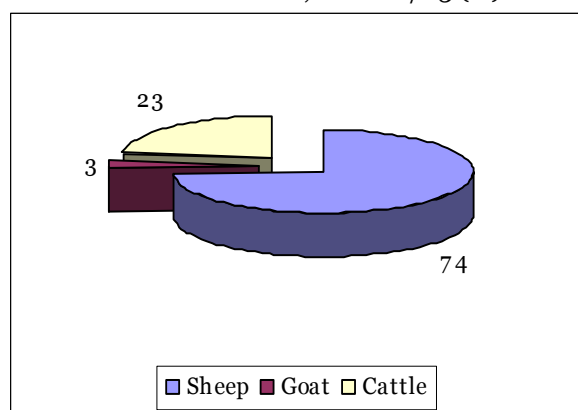
**Table 4.11.** Population of Main Livestock (thousands)

	1998	1999	2000	2001	2002	2003
<b>Sheep</b>	15425	13998	13505	12362	13497	15293
<b>Goats</b>	1101	1046	1050	979	932	1017
<b>Cattle</b>	932	978	984	837	867	937
<b>Poultry</b>	20422	21009	21629	21122	28634	25058

Source: Annex table 4.28

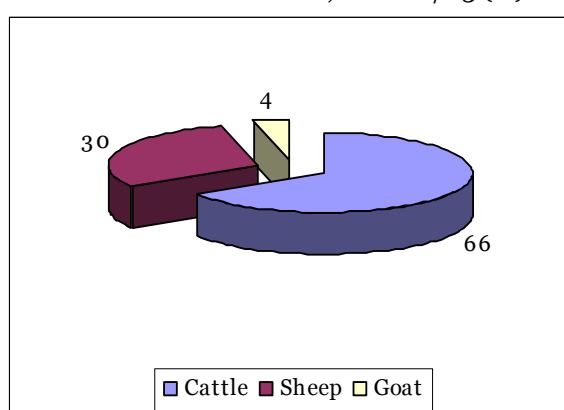
Animal production amounted to 27% of the value of agricultural production in 2001-2003 (annex table 4.1). Moreover, it is a major source of income for thousands of rural families. In 2003, meat accounted for 52% of the value of animal production, followed by milk and dairy products (37%), eggs (6.6%) and fish (5.3%). The contribution of the various livestock to milk and meat production is illustrated in figures 4.18 and 4.19.

**Figure 4.18.**  
Red Meat Production, av 2001/03 (%)



Source: Annex table 4.29a

**Figure 4.19.**  
Milk Production Milk, av 2001/03 (%)



Source: Annex table 4.29a

The Government strategic goals for livestock development for the period 2000-2010, aim at an annual increase of 5% in the production of red and white meat and 4% in milk. The Ministry of Agriculture and its institutions provide support to the animal sub-sector through various services, especially veterinary care, race improvements (cross breeding, artificial insemination, and embryo planting), fodder supply, and collection and diffusion of information on the sector. The public sector (General Establishment of Cereal Trade and Processing and General Establishment of Fodder) purchases, stores, and markets a part of the feed needs of the farmers; a portion is distributed through the cooperative sector. The private sector is involved in the supply and marketing of fodder and provides the largest share of poultry feed. The share of the private sector in the marketing of feed is increasing as a result of the Government policies to promote the involvement of private operators in the national economy.

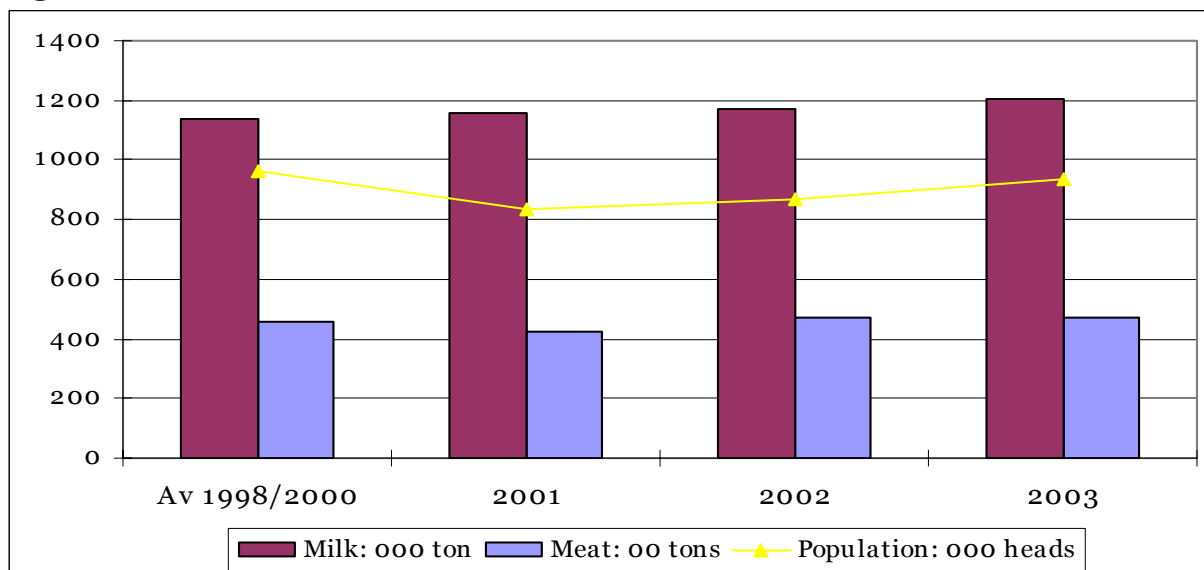
### 4.2.1. Cattle

Cattle concentrate mainly in the first and second ecological zones, which enjoy high rainfall levels, as well as in the irrigated areas. The main production of cattle breeding is milk. Breeders

rely on feed concentrates, crops residues and by-products, and green fodder (forage) to feed their livestock. Recourse to natural grazing is very limited. The relative stability of feed and fodder prices helped reduce the fluctuations in the cattle population (MAAR 2003b and MAAR 2004).

Cattle are the major source of milk in Syria. Despite the decrease in the average cattle number, from 1998-2000 to 2001-2003, milk production rose by 3.4%, reaching 1.2 million tons, thanks to the productivity increase due to the use of foreign and improved cows (annex table 4.30 and figure 4.20).

**Figure 4.20.** Cattle Population, and Meat and Milk Production, av 1998/2000 and 2001-03



Source: Annex tables 4.28 and 4.29a

In 2003, cow milk represented 66% of total milk in Syria. Most of this production is from the private sector. Indeed, the public sector production amounted to only 1.8% of the total.

Cattle concentrate mainly in three governorates: Deir-Ezzor (22%), Damascus rural (18%), and Homs (10%) (MAAR 2003a).

Cow milk production concentrates in just four governorates accounting for almost 60% of the production (annex table 4.31). In 2003, Damascus accounted for 21%, Deir-Ezzor for 14%, Homs for 13% and Aleppo for 11%.

According to 2003 statistics, about 37% of milk was consumed fresh and the rest was processed as yogurt, labneh, ghee, butter, cheese, and other products and sold in the local market. Exports of dairy products are limited (mostly white cheese).

Beef production did not vary significantly in the period under study. The demand for beef was also stable because of the stability in prices compared to sheep meat. The share of beef production in total red meat production amounted to 23% in the period 2001-2003 (annex table 4.29a). Most of the beef production comes from the private sector; the production of the public sector amounts to only 1.3% (MAAR 2003c).

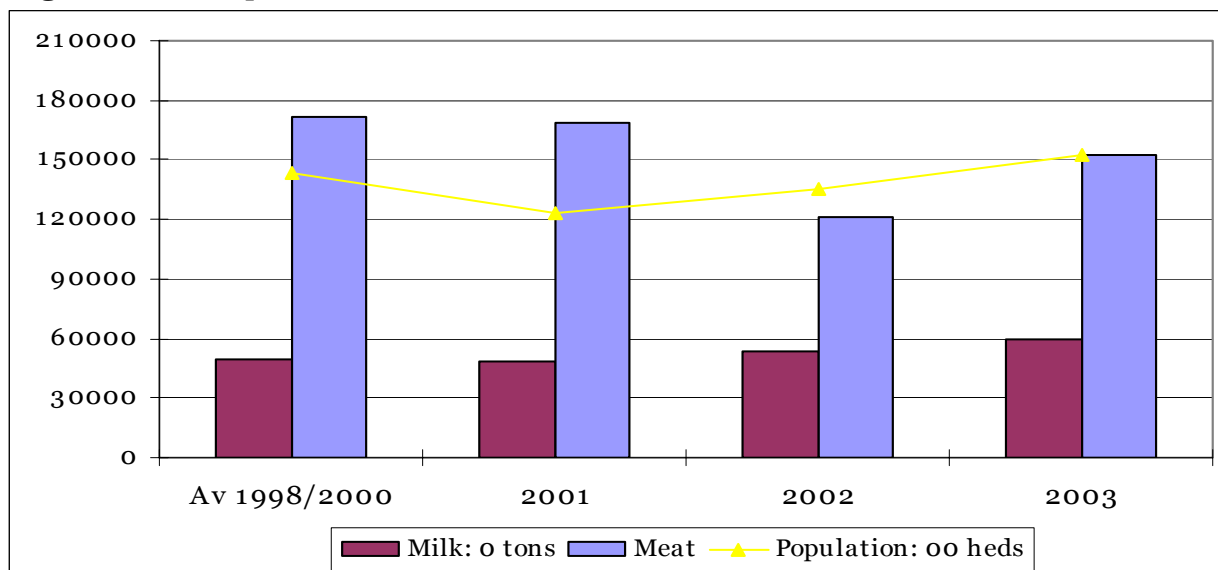
#### 4.2.2. Sheep

Livestock population, especially the populations of sheep and goats, is affected by weather conditions. Rainfall has in fact a direct impact on feed availability and prices. Thus, due to the droughts in the years 1999 and 2000 the number of sheep gradually decreased from 15.4 million heads, in 1998, to 12.4 million heads, in 2001. Since then sheep population increased (annex

table 4.28). However, this growth was below the target of 6% set for Awasi sheep in the Agricultural Development Strategy.

With regard to milk production, the 4.1% decrease in sheep population, between 1998- 2000 and 2001-2003, was more than offset by the improvement of productivity per head (+11%), leading to an increase in milk production of 9.6% (annex tables 4.28, 4.29, 4.30 and figure 4.21). Furthermore, pastures and breeding systems, as well as feed composition and veterinary care, improved. The distribution of improved breeds of sheep particularly of Awasi sheep contributed also to the observed growth in milk production- see figure 4.21.

**Figure 4.21.** Sheep Population, and Meat and Milk Production, av 1998/2000 and 2001-03



Source: Annex tables 4.28 and 4.29a

According to official statistics, in 2003, more than 70% of sheep population was found in Al Badia with the following distribution among governorates (annex table 4.33): Deir-Ezzor (16%), Aleppo (16%), Homs (14%), Al-Raqqa (13%), and Hama (13%).

Sheep milk is produced only for about four months each year and accounts for about 30% of Syrian milk production. Produced quantities are processed in a traditional way and transformed into ghee, butter, white cheese and labneh. A portion of these products is retained for self-consumption, while the rest is sold in rural as well as in urban areas.

The share of sheep meat production in total Syrian red meat production reached 74% in 2001-2003 (annex table 4.29a). Compared to 1999-2000, sheep meat production decreased by 14%, in 2001-2003, resulting in a substantial increase of domestic prices, relative to other meats. About 60% of sheep meat is produced in 3 governorates, namely Al Raqqa, Homs and Deir Ezzor (annex table 4.34).

On the other hand, the demand for Syrian Awasi sheep by the Gulf countries, especially Saudi Arabia, increased considerably. Syrian exports of sheep fluctuated substantially in the period 1995-2002. They decreased from 16 thousand tons in 1995 to one thousand tons only in 1999; total exports were as high as 53 thousand tons in 2002. These fluctuations are due to changes in trade policies as well as in livestock population<sup>41</sup>.

Portions of sheep by-products (skin and wool) are delivered through private agents to the public sector establishments concerned with these products, namely the General Establishment for Wool and the General Establishment for Leather.

<sup>41</sup> SAT, various issues.

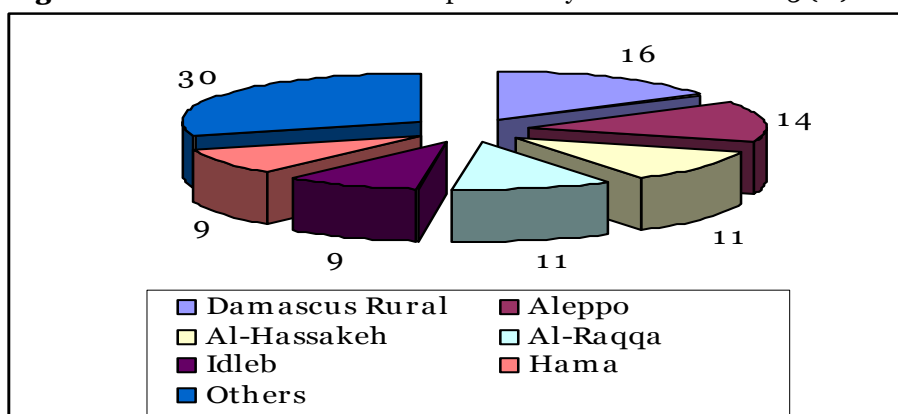
Animal production systems underwent important changes in recent years; this is particularly true for sheep. Traditionally, sheep livestock is raised in arid areas located in eastern and south eastern zones of Syria (the Syrian steppe). Sheep breeding relies on natural pastures as a main feed source. Historically, sheep production was based on a system of seasonal movement between the Syrian steppe (rangeland) and the rainfed and irrigated crop areas located in western zones. However, with the decreasing availability of pasture resources in Al Badia, especially in drought periods, livestock farmers started to keep the sheep flocks longer in the latter zones. This forced sheep breeders to increase the use of supplementary feed and to shift from a transhumant to a sedentary breeding system, based on early weaning and feedlotting of young animals. This modernization of sheep breeding is helping to meet the increasing export demand for live sheep. It also enables farmers to market higher quantities of milk.

#### 4.2.3. Goats

Goat population has been decreasing as a result of a Government policy to prohibit grazing in forest areas, areas located in the first agro-ecological zone, as well as in large areas of the second agro-ecological zone. Goat population declined therefore from an annual average of 1065 thousand in 1998-2000 to 976 thousand heads in 2001-2003, with a decline of 8.4%.

As represented in figure 4.22, six governorates account for more than two thirds of the population of goats. Rural Damascus is the main one with 16%, followed by Aleppo, Al Hassakeh, Al Raqqa, Idleb and Hama.

**Figure 4.22.** Distribution of Goat Population by Governorate 2003 (%)



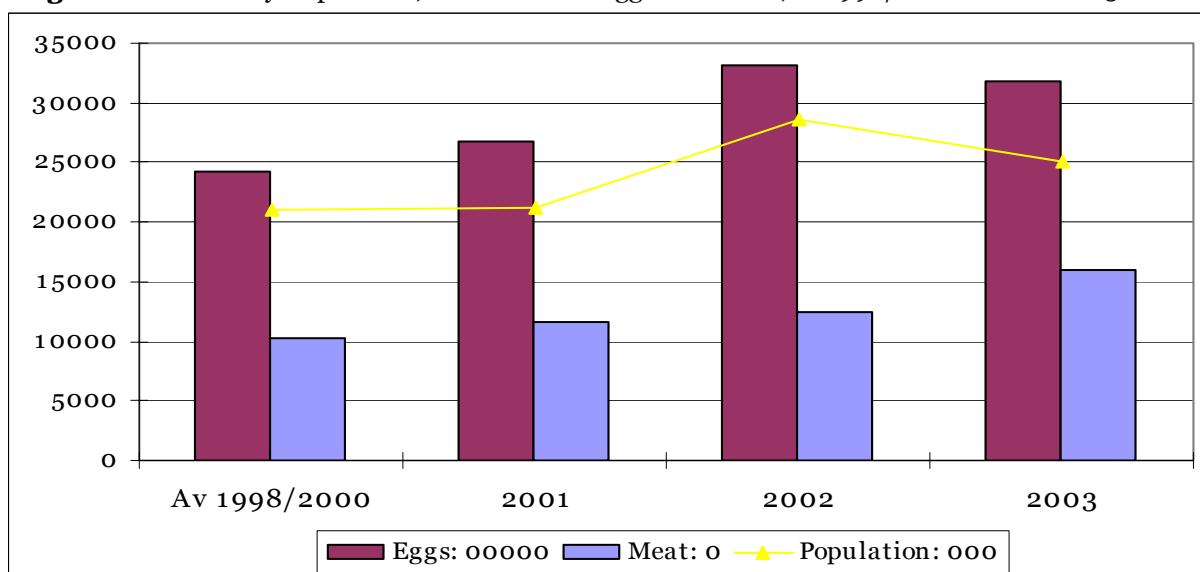
Source: MAAR, The Annual Statistical Abstract, 2003.

Goat milk production and goat productivity fluctuated considerably. Milk decreased by 13% (from 72 thousand tons to 63 thousand tons) from 1998-2000 to 2001-2003 (annex table 4.29a). In general, goat milk accounts only for less than 5% of the total milk production. Production of milk per head instead rose by about 15% for Shami goats while remained stable for mountain goats (annex table 4.30).

Goat meat increased by 5.5% (from 5.3 thousand tons to 5.6 thousand tons) representing 3% of the total red meat production of the country (annex table 4.29a).

#### 4.2.4. Poultry and Eggs

Poultry production increased considerably in the last six years as a result of the significant expansion of an intensive production system. Egg production and poultry meat increased, from 1998-2000 to 2002-2003, by 26% and 30%, respectively (annex table 4.29).

**Figure 4.23.** Poultry Population, and Meat and Egg Production, av 1998/2000 and 2001-03.

Source: Annex tables 4.28 and 4.29a

This increase responded to the growing demand for poultry products, especially for poultry meat. The demand for the latter is accelerating also as a result of the increase in the relative price of red meat which induces consumers to substitute red with poultry meat. Table 4.12 illustrates the price evolution of the different meats in the period 2000-2003.

**Table 4.12.** Evolution of Prices of Meat, 2000-2003 (SP)

Year	Sheep meat		Cattle meat		Poultry meat	
	Retail price	Index (2000=100)	Retail price	Index (2000=100)	Retail price	Index (2000=100)
2000	154	100	128.9	100	59.7	100
2001	188.4	122	141.6	110	66.6	112
2002	191.4	124	154.5	120	59.4	99
2003	202	131	157	122	66.4	111

Source: Annual Statistical Abstract, CBS, 2004

The private sector plays an important role in poultry production. In 2003, it provided 50% of the total chicken meat against 5% for the public sector (produced by the General Establishment of Poultry), and 37% of total egg production compared to 13% for the public sector. The private sector share in broiler chicken and layer chicken amounted to 74% and 75%, respectively, against 5% and 8% for the public sector. The remaining share, in all cases, is produced by the cooperative sector (CBS 2004).

### 4.3. Fish<sup>42</sup>

Fish is an important source of animal protein. The fishery sector in Syria is small and represented only 1.6% of the total value of animal production in 2003. Nevertheless, this sector grew annually by an average of 2.4% in the period 1998-2003 (annex table 4.1).

Fish farming is the main fishery sub-sector in Syria. It contributed 45% of total production followed by captures in rivers and lakes (36%) and marine fish (19%). Al-Ghab region supplies

<sup>42</sup> MAAR (2003a).



more than 50% of total fish farming. Marine fish is concentrated in Lattakia and Tartous, while captures in rivers and lakes come from Al-Raqqa and Aleppo.

The private sector provides the major part of fish production in Syria. In 2001-2002, the distribution of fish production according to the sectors engaged in this activity was as follows: 63% private, 25% cooperative, 11% public and 1% joint-venture.



## Chapter 5 -Agro-Food Industry

In the period 2001-2003, agro-food, beverages and tobacco accounted for 26% of the total value of the manufacturing industries in Syria (annex table 5.1), confirming the share observed in the period 1998-2000.

Detailed data on the volume of processed agricultural commodities is limited. However, it is important to note that in the period 2001-2003 total sugar beet production, total wheat consumed in the country and 80% of olive production has been processed in domestic industrial plants. Furthermore, the agro-food industry processes around 35% of grape production and approximately 22% of milk production (MAAR, 2003).

Agro-food industries were initially developed in Syria by the private sector more than fifty years ago. Many important industrial plants such as the Modern Company for Conserved Food and Agricultural Industries, Al-Shark Company for Food Products, Syrian Arab Dairy Company of Damascus, and Bakery Ka'ak Sons Company were established in the 50s. The nationalization of several industrial companies in the mid 60s provided the public sector with the nucleus of industries on the basis of which it started developing. Public companies expanded rapidly thereafter in line with the Government policy regarding the role of the public sector in economic activities. Recently, and as a part of the economic modernization policies (see chapter 3), private investors were allowed to enter areas of food processing reserved to the public sector.

At present, both private and public companies operate in traditional activities such as dairy products, biscuits, oils, tomatoes, pasta, storage and cooling. The private sector is more active in relatively new markets such as frozen products, fruit juices, snacks and pickles, and nuts and olive oil, which account for a significant share of agro-food industries.

### 5.1. Public Agro-Food Industry

Public agro-food industry represented 11% and 13% of the total value of the manufacturing industries during the periods 1998-2000 and 2001-2003, respectively. It employed more than 23500 workers, on average, during the period 2001-2003, accounting for 22% of the total workers employed in the manufacturing sector (annex table 5.2).

The public sector is composed of the General Establishment for Food Industries (GEFI) and of the Public Establishment for Sugar Industry, both under the Ministry of Industry, as well as of the General Company for Bakeries under the Ministry of Economy. The GEFI is composed of 17 companies operating 26 industrial plants<sup>43</sup>. Highlights of selected production activities of the General Establishment for Food Industries in 2003 are presented in box 5.1

In annex table 5.3, it can be noticed that, between 1995 and 2003, the production of the public sector grew for mineral water, flour, bread, vegetable oil, pasteurized milk, dry onion, and wine. The rise in bread production likely relates to the growth of demand for subsidized bread (normal quality), since high quality bread does not receive any Government support. The General

<sup>43</sup> It should be noticed that, in the period 2001-2003, some companies and plants merged. This explains some of the differences that the reader can see in the figures, comparing this current SOFAS with the previous issue.

Establishment of Mills distributes flour at a subsidized price to public bakeries as well as to authorized private bakeries that sell bread directly to consumers at a price fixed by the Government<sup>44</sup>.

**Box 5.1 - General Establishment for Food Industries (selected activities)**

**Dairy industry:** Dairy companies located in Damascus, Homs (in production for more than 20 years), and Aleppo accounted for a total production capacity of 36,8 thousand ton/year, but operated at 76% of the capacity. In 2003, these companies produced 10,5 thousand tons of pasteurized milk to drink, 6,8 thousand tons of yogurt and 2,7 thousand tons of condensed yogurt. The rest was used for the production of cheese. Moreover, 400 tons of ghee and 300 tons of imported butter were packed, as processing of local production proved uneconomical.

**Vegetable oil industry (cotton seeds):** The total processing capacity of the Aleppo Oils Company and the Hama Oils Company (Homs and Hama plants) is 330 thousand tons of cottonseeds. The Aleppo Company processed 239,3 thousand tons and produced 37,3 thousand tons of oil with a conversion rate of 15.6%. The Homs and Hama companies processed respectively 41 thousand tons and 26 thousand tons of the cottonseeds at a capacity utilization ratio as high as 93%.

**Grapes processing:** Two companies operate in this field, Al Ryan Company in Sweida and Mimas Company in Homs. Their total processing capacity is 29 thousand tons/year of grapes (about 10% of total production of grapes in 2003), out of which 400 tons are transformed into wine and the remaining quantity is used for the production of arak with a conversion rate of 15%. It is estimated that around 62% of the grapes is consumed fresh, 22% transformed into beverages and the rest used for treacle (grape molasses) and raisin production.

**Pasta and biscuits production:** The Yarmouk Company for pasta production processed 1,2 thousand tons of flour for the production of pasta at a conversion rate of 93%, operating only at 54% of its production capacity. Biscuits industry processed a total of 1,6 thousand tons of flour in the three public companies (Ghrawi, Camellia, and Al-Shark). These quantities represent only 43% of planned production.

**Beer:** The two public companies (Barada Company in Damascus and Shark Company for Agro-industry in Aleppo) produced 11 million bottles of beer, using around 4 thousand tons of barley.

Production remained almost stable for beer, arak and sugar. Sugar beet processing is done entirely by the public sector, which produced on average about 153,000 ton of sugar in 2001-2003<sup>45</sup>. Imported raw sugar is refined locally. It should be noticed that imported quantities vary from one year to another (i.e. no imports of raw sugar occurred in 2000, while 109,000 and 53,000 tons have been imported in 2002 and 2003 respectively), explaining the fluctuations in the annual production of refined sugar. The Government distributes at a subsidized price 1 kg of sugar per person/month. Part of the distributed sugar at subsidized price is produced by the General Establishment of Sugar, while the rest is imported.

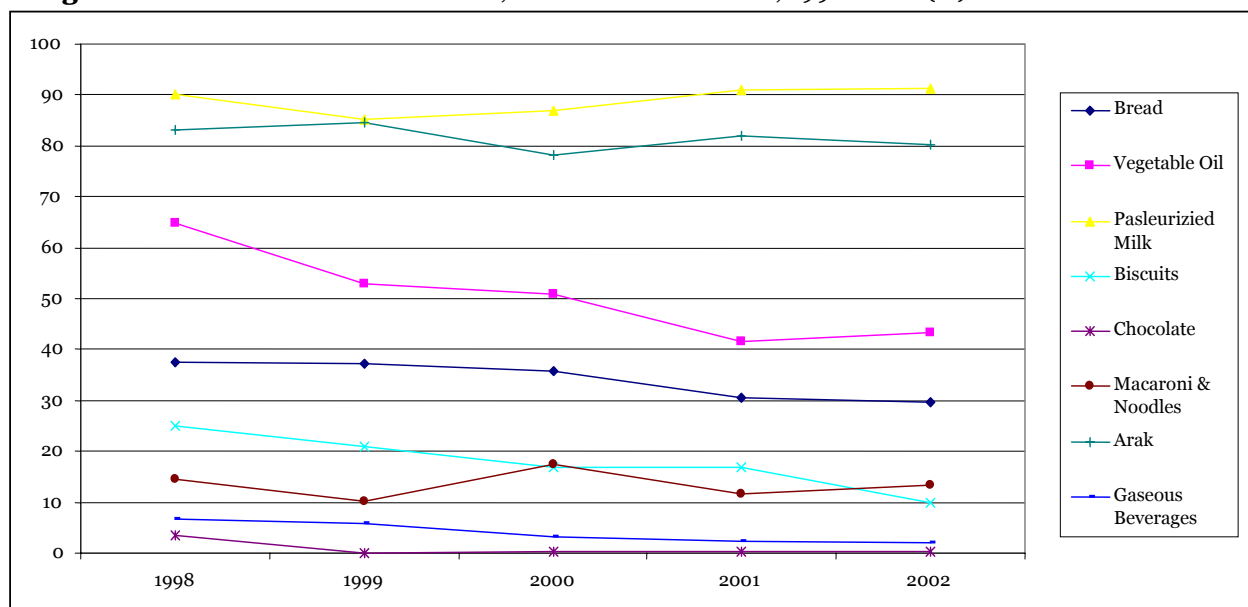
Following a decline started in the mid 90s, public production of margarine and butter, tomato paste<sup>46</sup>, other canned food, biscuits, gaseous beverages, other alcoholic drinks and chocolate (in this latter case soundly) kept a downward trend, suffering from the competition of imported and privately produced products.

As noticeable in figure 5.1, between 1998 and 2002, the public sector share of tomato paste production decreased, as well as the share of biscuits, chocolate, gaseous beverages. Also, the share of public produced bread and vegetable oil decreased, although their total production increased.

<sup>44</sup> This price is formed by the price of subsidized flour plus estimated cost of bread production and a profit margin

<sup>45</sup> Local production of sugar from sugar beet covers approximately one sixth of the local requirement of this commodity (MAAR estimates).

<sup>46</sup> Data available since 2000.

**Figure 5.1.** Share of Public Production, Selected Commodities, 1998-2002 (%)

Source: Annex table 5.6

A number of industrial plants in the public sector are operating below their production capacity (annex table 5.4) with the exception of vegetable oil mills, breweries, and wineries. The ratios of actual production to the production capacity have been declining for tomato paste, canned food, biscuits, pasta, and soft drinks.

Indeed, the public sector has been losing shares of the market in favour of private companies that use more modern technologies and efficient management. Rama (2000) identified the difficulties faced by public sector companies, stressing that these factories are relatively old and need to be modernized focusing on product quality and production costs. Public companies should also enhance their marketing capacity in order to compete on local and international markets.

## 5.2. Private Agro-Food Industry

Available information on private agro-food industry is limited in scope and coverage. No comprehensive survey exists so far to build a database for the analysis of this important and fast expanding component of the food-processing sector.

In the period 2000-2002, bread production increased by 42%, vegetable oil by 48%, olive oil by 18%, biscuits by 44%, chocolate by 27%, alcoholic drinks by 22% and soft drinks by 14% (annex table 5.5). The production of fruit juice and pasteurized milk declined however by 33% and 21% respectively. Noticeably, olive oil production has been increasing steadily and has more than doubled in the period 1996- 2002 (Box 5.2).

Figure 5.1 shows (above) that private participation in agro-food production has been increasing. The private sector is producing almost all the chocolate and fruit juice. Its output of pasteurized milk represented 9% of the total in 2002 but its share in dairy processed products other than pasteurized milk is far higher (annex tables 5.5 and 5.6).

**Box 5.2 - The Olive Oil Sub- Sector in Syria**

Syria is the sixth most important olive oil producing country in the world, accounting for 6.5% of world production (2002 data).

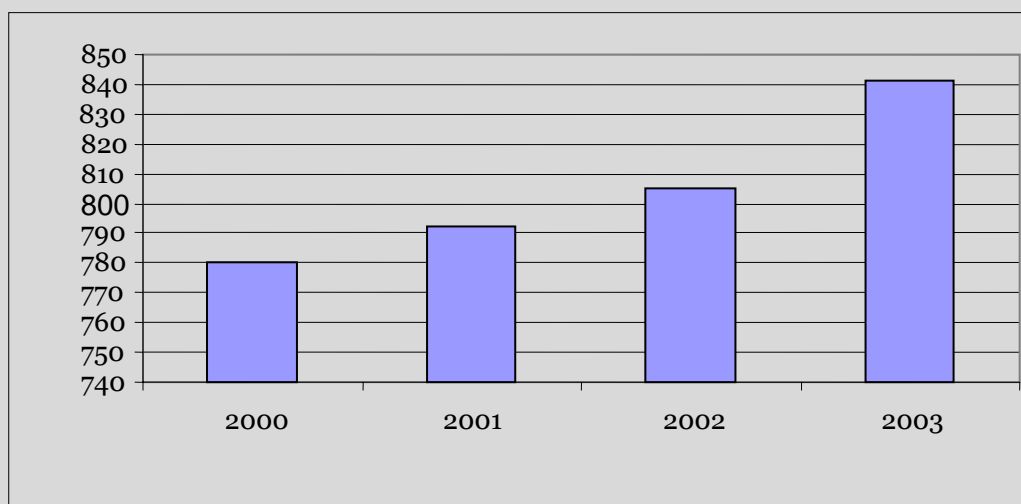
Olive oil production in Syria has increased considerably in the last decade, following the substantial expansion in olive production (see table below).

**Evolution of Olive and Olive Oil Production 1986, 1996, 2000, and 2002, (thousand tons)**

Years	1986	1996	2000	2002
<b>Olive production</b>	415	401	866	941
<b>Olive oil production</b>	72	80	165	195

NAPC. Database

The number of mills has also been increasing to meet the demand for olive processing. Their total, in 2003, reached 841, against 780 in the year 2000 (see figure below).

**Evolution in the Number of Olive Oil Firms**

The oil mill system is composed of 15% old presses, 66% hydraulic presses and 19% continuous systems\*. Given the projected increase in olive production, a large number of mills will have to be established and existing processing plants will have to be modernized in order to cope with the demand for olive processing. Appropriate technology should be adopted to produce olive oil with international markets quality standards.

\* see "The Syrian Olive and Table Olive Sub-sector", by I. Malevolti, NAPC, 2001.

The private agro-food sector consists mainly of companies established under investment law no. 10 of 1991<sup>47</sup>, requiring a minimum level of investment equal to 10 million SP, or under law no. 21 of 1958, that also enables the creation of industrial as well as handicraft businesses, since it does not require a minimum level of investment.

So far, under law no. 10, around 267 food processing and packaging projects have been established, accounting for 23% of the total number of all industrial projects. To be eligible for the incentives provided for by this law, any investment project has to fulfill the following requirements: increase the value added of the industry, use as much as possible domestic

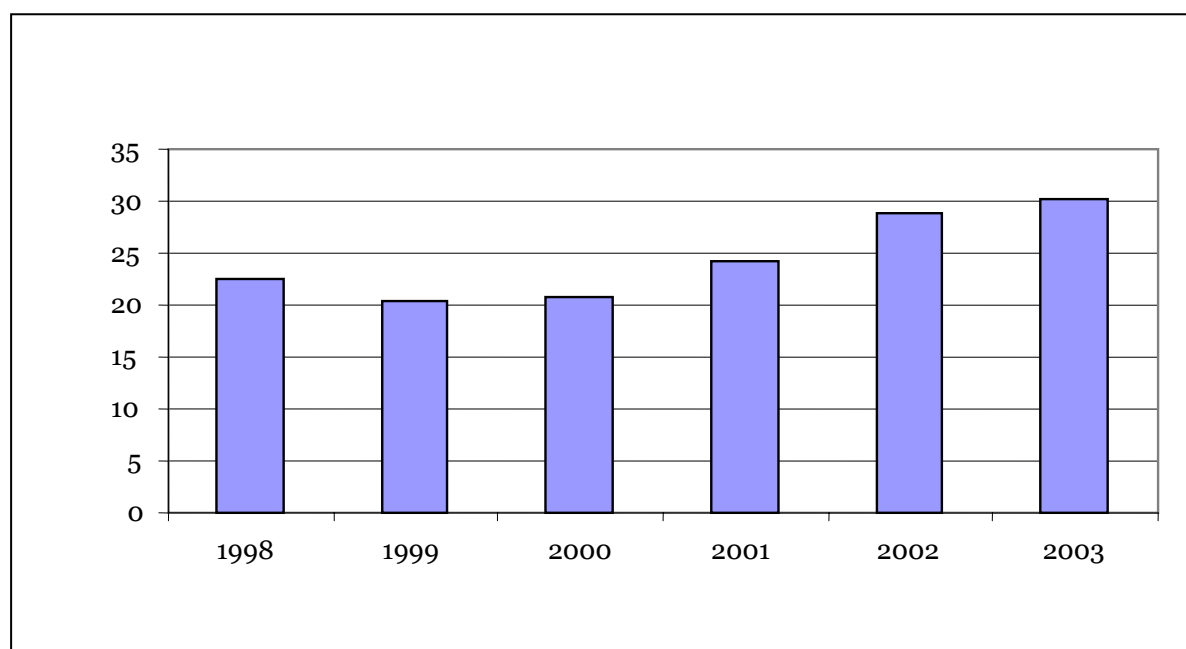
<sup>47</sup> See chapter 3.

resources and labor, enhance export or reduce import, ensure compatibility with the development strategy and adopt modern technology.

All other private food-processing establishments registered in the Industrial Directorates of Syria have been authorized under the provisions of law no. 21. In the period 2001-2003, 561 projects started under this law.

The ninth five-year plan, currently under implementation, encourages the private sector to establish agro-industry, packaging and storing enterprises, through the provision of the various facilities and concessions described in Chapter 3. As a result, many industrial plants have been recently established. According to the Central Bureau of Statistics, the number of food processing investment projects under law no. 21 represented 30% of the total licensed projects, in 2003, against 24%, in 2001 (see figure 5.2).

**Figure 5.2.** Share of Agro-Food Industry in the Number of Total licensed Investment under Law no. 21 of 1958, 1998-2003 (%)



Source: CBS, Statistical Abstract, 1998- 2003.

It should be noted that the private sector also comprises small but relevant producers specialized in traditional products such as apricot sheets (kamareddin) and raisins. Moreover, there is a significant number of household food industries producing bread, burgul (cuscus), yogurt, white cheese, dry figs, molasses, tomato paste, different kinds of jams, pickles, table olives, fruit juices and wine. No information is published on these enterprises, some of which are part of the informal sector of the economy.

### 5.3. Joint Ventures in Food Industry

Legislative Decree no. 10 of 1986 was issued to develop joint ventures in the area of food processing with a view to further enhancing the contribution of the private sector to investment and job creation. Three types of joint ventures have been launched under this law and subsequent legislation, particularly the mentioned Law No. 10 of 1991:

- joint ventures between the Public and the Private Sectors;
- joint ventures between Syria and other countries (between states);
- joint ventures between national and foreign private sectors.

In the first type of joint ventures, the public sector contribution is in the form of public agricultural land, accounting for 25% of the capital of the project. Seven agricultural production projects have been established so far, including the “Ghadak Company” which includes agro-food processing in its activities. This project aims to annually produce and package 2750 tons of tomato paste, 2500 tons of fruit and vegetable conserves, canned chickpeas with sesame paste, and cooked broad beans, 1760 tons of “halawah”<sup>48</sup>, 880 tons of sesame paste, 2000 tons of pickles, 600 tons of mushroom, and 430 tons of packed cheese, olive oil, and distilled flower.

Five joint ventures between Syria and other countries have been launched: the Syrian-Lybian Company for Industrial-Agro Investments; the Arab Company for Livestock Development, the Syrian-Saudi Company for Industrial-Agro Investments, the Arab Union Company for Agricultural Development, and the Syrian-Finnish Company for dairy products.

### **The Syrian Libyan Company for Industrial-Agro Investments**

This company was established in 1978 in Damascus following the agreement between the Syrian Arab Republic and the Libyan Republic. Its capital is US\$200 million and it operates in the following fields:

- Production of wheat, barley, cotton and grazing crops.
- Sheep breeding and fattening (11 thousand heads).
- Corn drying and processing of Alfa Alfa and by-products.
- Digging and equipping wells and implementing irrigation nets.
- Production of 50 million eggs and breeding of 1.3 million chickens.
- Managing 35 stalls for cattle breeding and fattening including milk production.
- Producing 750 kg of Kashkaval cheese per day.

### **The Arab Company for Livestock Development**

This company was established in 1975 as a result of the cooperation among several Arab countries. Its capital amounts to 105 Kuwait Dinar and deals with agricultural crops, sheep and cattle breeding and fattening, poultry and layer hens.

### **The Syrian Saudi Company for Industrial-Agro Investments**

This company was established in 1976 after the signature of the agreement between the Government of the Syrian Arab Republic and the Government of the Kingdom of Saudi Arabia. Its capital is US\$ 50 million.

### **The Arab Union Company for Agricultural Development**

This company was established in 1974 with a capital of 10 million Libyan Dinar. Its activities pertain to production under greenhouses, fresh mushroom, potatoes, breeding of camels and sheep.

### **The Syrian-Finnish Company**

This company produces white, Kashkaval and processed cheese with a capacity of 1700 ton of fresh milk annually.

Concerning the joint ventures between national and foreign private sectors, there are presently more than 25 food-processing companies, with foreign and local capital, established and registered as private industrial companies under law no. 10 of 1991. They have 1300 employees,

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<sup>48</sup> Sweets made of sugar and sesame.



working in the area of cooling, storage, olive oil and other vegetable oils production, vegetable ghee, fruit juice, appetizers, baby food, pasta, pasteurized and powder milk, different kinds of cheese, condensed yogurt, and frozen and smoked fish.

#### 5.4. Exports of Processed Food

The contribution of food processing to Syrian total and agricultural exports is limited. Exports of processed food started expanding with the development of the private sector and thanks to the Government policies for the promotion of agricultural exports (see Chapter 3).

The private sector became the major exporter of food-processed products in the period 2001-2003. The share of the public sector in the total food-processed exports decreased significantly in this period. Indeed, some of its traditional export commodities, such as tomato paste, white cheese and conserved foods ceased to be exported or registered a decline in the volume of their exports, like vegetable oils and some kinds of alcoholic beverages.

The total annual exports of the General Establishment for Food Industries averaged 9.5 million US\$ (Ministry of Industry, 2003), in 2001-2003, accounting for a small share of the total exports of processed food commodities (table 5.1)<sup>49</sup>.

**Table 5.1.** Quantity and Value of Syrian Exports Processed Food Commodities, 1995-2002<sup>50</sup>.

Years	1995	1996	1997	1998	1999	2000	2001	2002
<b>Quantities (ton)</b>	88	82	55	69	52	99	100	130
<b>Value (million US\$)</b>	70	80	65	80	70	58	90	111

Source: General Customs Directorate

Food processed products are exported mainly to neighboring countries, Gulf states, Saudi Arabia and Egypt. Only limited quantities of some processed food, such as alcoholic beverages are exported to some European countries, USA, and Japan; see table 5.2 below.

Although Syria is facing strong international competition, prospects for a further expansion of processed food exports are promising. The flourishing of a dynamic private sector, Government trade liberalization policies and the various trade agreements provide a conducive framework for this expansion. Present efforts to adopt modern technologies in food industries and Government action to ensure compliance of exporters with international standards and specifications will give a further impetus to exports.

<sup>49</sup> For more details see SAT, various issues.

<sup>50</sup> The exchange rate used for the years 1995 to 1999 is 11.2 SP/US\$, from 2000 onwards 46 SP/US\$.

**Table 5.2.** Exports of Selected Processed Food Commodities, 2000-2002  
(destination, quantity and value)

Products	Destination Countries	2000		2001		2002	
		ton	000\$	ton	000\$	ton	000\$
<b>Apricot paste and grapes paste</b>	Egypt, Saudi Arabia, Jordan, Kuwait, Lebanon, Iraq, UAE	6446	7600	9236	10400	11304	11600
<b>Olive oil</b>	Saudi Arabia, Turkey, Kuwait, UAE, Lebanon	1597	4600	1727	4900	3628	9300
<b>Refined and raw vegetable oil</b>	Egypt	28136	10318	28421	11310	12430	4977
<b>White cheese</b>	Lebanon, Kuwait, UAE, Saudi Arabia, , Qatar	1005	3100	1250	3700	2619	7100
<b>Dairy products</b>	Gulf states, neighboring countries, USA, Germany, Australia	56	0.6	13	0.02	48	0.8

Source: General Customs Directorate

## **Chapter 6 - Food Availability and Food Consumption**

Food security has been constantly a major and fundamental objective of Syrian agricultural strategy. Up to the mid 80s, agricultural strategies and policies were strictly geared towards assuring self-sufficiency in important and strategic food commodities. Large-scale exploitation of natural resources for agricultural production (i.e. land reclamation and expansion of irrigated areas based also on infrastructures' creation) and Government intervention in agricultural activities under a central planning system led the achievement of self sufficiency in strategic food crops. The price policies for inputs and outputs as well as other Government intervention measures, particularly in marketing, introduced however serious price distortions which led to inefficiencies in resource use and proved ineffective in ensuring high levels of overall self sufficiency. They represented also a heavy burden on Government budget.

The policy reform program, introduced thereafter, aimed at removing or reducing these distortions, thus ensuring increasing efficiency in domestic resources use. Initially input subsidies were reduced, producer prices were augmented and planning intervention started being less rigid. Subsequently, toward the 90s, trade liberalization started. Crop diversification policies were also promoted and increased attention was given to the comparative advantages of Syrian agriculture. The concept of self-reliance has been gradually substituting the concept of self-sufficiency, implying a more active participation of the country in international trade (see chapter 3). Agricultural trade expanded and played a more important role than in the past in achieving food security. Policies aiming at making exports more competitive in international markets were implemented with success. At present, agricultural trade is considered an essential element in ensuring national food security.

A detailed analysis of the state of food and food security using the appropriate criteria and indicators agreed upon internationally has not been possible because of the lack of a comprehensive database covering food consumption by regions and groups of population and the access to food. This chapter presents only a general review of the food security situation in 2001 and 2002 based on relevant official statistics available.

The objective of food security, as defined by the Food and Agriculture Organization of the United Nations, is to assure that all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. This has to be achieved at three levels simultaneously: individual, household, and national/regional levels. According to this internationally agreed definition, food security has three main dimensions: availability, stability, and access. It implies that there is the need not only to have adequate supplies of food available, but also to maximize their stability and to secure their access.

## 6.1. Availability of Foodstuffs for Consumption

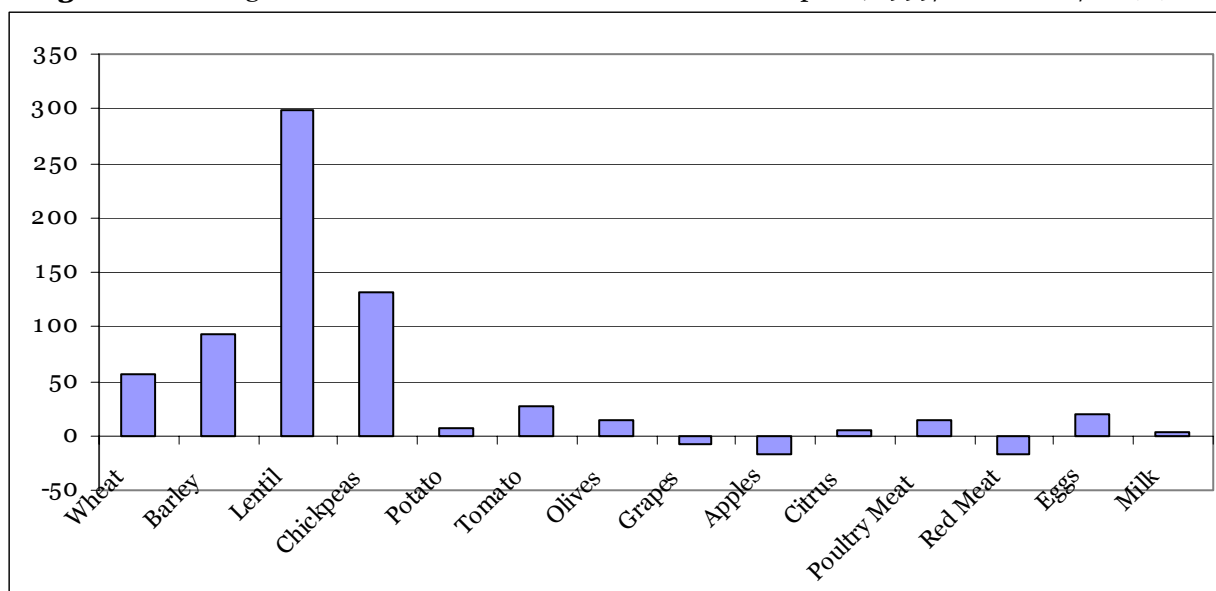
### 6.1.1. Total Availabilities

The considerable growth of agricultural production realized in the last decades enabled Syria to meet the fast growing demand for food, resulting from high population growth and improvement in income, as well as the demand for raw commodities of the expanding agro industrial sector. Self-sufficiency ratios improved for a wide range of food commodities. There were even large surpluses in some commodities, which started being exported such as wheat, vegetables and fruit (Fiorillo and Vercueil, 2003).

In this section, "Availability for Consumption" is defined as Production + Imports – Exports, according to the definition used in the annual commodity balances prepared by the MAAR. Therefore, commodities available for consumption include availability for food consumption as well as for other uses.

A comparison of data for the two periods 1999-2000 and 2001-2002 shows that the percentage changes in the availability for consumption, as defined above, varied considerably among commodities (Fig. 6.1).

**Figure 6.1.** Change Selected Commodities Available for Consumption, 1999/2000-2001/02 (%)



Source: Annex table 6.1

Changes in the availability for consumption of selected commodities are positive for most food products. More specifically, availability rose (see annex table 6.1) for:

- field crops, such as wheat (57%), barley (93%), lentils (300%) and chickpeas (132%), but also sugar beet (9.3%), thanks to the production increase following the expansion in the cultivated area after the drought in 1999 and 2000;
- vegetables, such as potato (6.6%) and tomato (27%), but also dry onion (27%) and green broad beans (44%), as a result of changes in production levels;
- fruits, such as citrus (5.5%), olives (14%), but also pistachios (22%), since in addition to area expansion, the number of fruit trees in the production stage increased;
- poultry meat (14%), eggs (20%), milk (3.7%) and fish (57%), the latter benefiting from the increase in its imports.

However, availabilities for consumption declined for:

- summer vegetables, due to a decrease in cultivable area that followed the reduced availability of water;
- some fruit such as apples (16%), grapes (8.3%), and pears (15%);
- cattle meat (4.4%), sheep meat (35%) and goat meat (44%).

### 6.1.2. Availability Per Capita

Availabilities per capita changed, between 1999-2000 and 2001-2002, in line with the evolution of total availabilities for almost all commodities mentioned above (see table 6.1). Substantial increases in the per capita availability were attained for the following products: wheat, barley, lentils, chickpeas, water and muskmelon, fish. A reduction in availability per capita occurred, however, for maize, peanuts, grapes, apples, cabbage and cauliflower, red meat, milk.

**Table 6.1.** Average Per Capita Availability of Selected Food Commodities, 1999-2002, (Kg /person)

<b>Commodity</b>	<b>1999-2000</b>	<b>2001-2002</b>	<b>Change (%)</b>
<b>Wheat</b>	177.0	264.6	49.5
<b>Barley</b>	56.2	103.4	84.0
<b>Lentil</b>	1.9	7.2	280.0
<b>Chickpeas</b>	2.2	4.8	120.9
<b>Maize</b>	60.7	48.4	-20.3
<b>Sugar Beet</b>	77.8	80.9	4.0
<b>Peanuts</b>	1.8	1.5	-19.4
<b>Watermelon</b>	13.8	20.4	48.7
<b>Muskmelon</b>	1.8	4.2	137.7
<b>Potato</b>	28.1	28.5	1.5
<b>Tomato</b>	32.0	40.2	25.7
<b>Eggplant</b>	7.3	7.3	0.8
<b>Olives</b>	39.3	42.5	8.0
<b>Grapes</b>	22.9	20.0	-12.7
<b>Apples</b>	16.5	13.1	-20.1
<b>Pistachio</b>	1.9	2.3	16.4
<b>Citrus</b>	44.8	44.9	0.3
<b>Cabbage &amp; Cauliflower</b>	5.3	4.3	-19.9
<b>Dry Onion</b>	4.9	5.9	20.5
<b>Cucumber &amp; Snake Cucumber</b>	11.1	12.4	11.8
<b>Poultry Meat</b>	6.5	7.1	8.3
<b>Sheep Meat</b>	11.0	6.9	-37.8
<b>Goat Meat</b>	0.3	0.2	-46.5
<b>Cattle Meat</b>	2.9	2.7	-9.0
<b>Eggs</b>	154.2	176.3	14.3
<b>Milk</b>	103.3	101.9	-1.3
<b>Fish</b>	0.9	1.3	49.7

Source: Annex table 6.1. Population figures are taken from 'Syrian Statistical Abstract', MAAR 2004.

Comparison with levels of per capita food availabilities in other countries has not been possible because of problems in data comparability. This will be attempted on the basis of data on food intake shown in section 6.3 below.

## 6.2. Contribution of food trade to food supplies

While production is the pillar of food security, trade is an essential element for its stability dimension, as it provides needed complements to domestic production as well as necessary non-locally produced food commodities. Its role is particularly important in a country like Syria where large fluctuations in the levels of local production can occur because of changes in the levels and distribution of rainfall.

Trade liberalization policies, started in Syria in the mid 80s, led to considerable increases in total as well as agricultural trade. Export earnings grew at a fast rate enabling to finance the increasing imports needed to ensure the stability of food and non-food supplies. With the substitution of the objective of self-reliance with the one of self-sufficiency pursued in the past, more attention is being given to the comparative advantages of Syrian agriculture, to the access to foreign markets and to the diversification of trading partners.

An attempt is made below to briefly present the contribution of agricultural trade to food supplies referring to the evolution of the volume of trade, imports, exports, trade balance, and the share of agriculture in total trade (Table 6.2)

**Table 6.2.** Total and Agricultural Trade, 1998-2002, sp million

Item	1998	1999	2000	2001	2002	2003	Average Annual Growth Rate% 1998-2003
<b>Import</b>							
<b>Total imports</b>	180,730	177,770	187,535	220,744	235,754	236,768	5.6
<b>Agricultural</b>	40,457	45,384	38,993	37,656	43,403	46,602	2.9
<b>Agricultural/Total</b>	22.4	25.5	20.8	17.1	18.4	19.7	
<b>Export</b>							
<b>Total exports</b>	133,262	159,666	216,190	243,149	315,919	265,039	14.7
<b>Agricultural</b>	43,211	36,365	35,997	37,863	57,361	44,626	0.6
<b>Agricultural/Total</b>	32.4	22.8	16.7	15.6	18.2	16.8	
<b>Balance</b>							
<b>Total trade</b>	-47,468	-18,104	28,655	22,405	80,165	28,271	
<b>Agricultural trade</b>	2,754	-9,019	-2,996	207	13,958	-1,976	
<b>Volume</b>							
<b>Total trade</b>	313,992	337,436	403,725	463,893	551,673	501,807	9.8
<b>Agricultural trade</b>	83,668	81,749	74,990	75,519	100,763	91,228	1.7
<b>Agricultural/Total</b>	26.6	24.2	18.6	16.3	18.3	18.2	

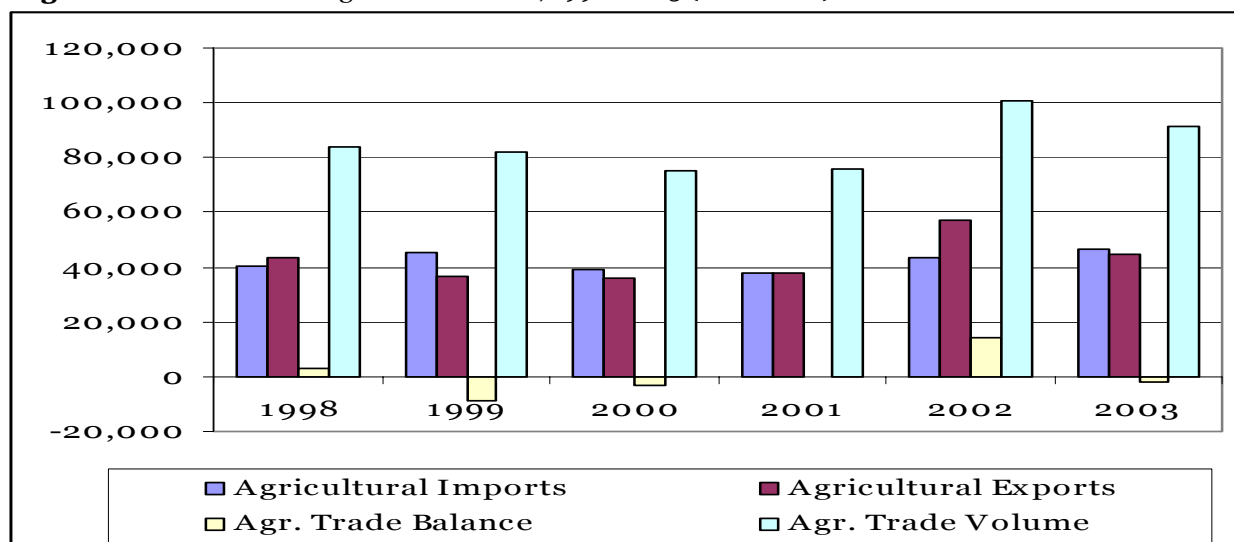
Source: General Department of Customs

Exchange rate:46.5 SP for imports and 46 SP for exports per USD

Total volume of trade increased by an average growth rate of 9.8%, during the period 1998-2003, reaching a maximum of 18.9% in 2002, a level higher than in 2001. This positive development is mainly due to the increase in export volume, thanks to the increase in international oil prices and to the implementation of the Great Arab Free Trade Area. Agricultural trade (see figure 6.2) increased by an average growth rate of only 1.7%, a much lower rate than that of total trade. Agricultural export was seriously affected by the draught in 1998 and 1999, while agricultural import dropped in 2000 and 2001. In 2002, agricultural trade registered a remarkable recovery increasing by 33.4% on the previous year, as result of the joint recovery of import and export leading to a striking positive agricultural trade balance. Comparing the averages of 1998-2000 and 2001-2003, it is noticeable that agricultural exports grew faster than agricultural imports, with a broadly positive effect on the agricultural trade

balance. However, over the longer run (1998-2003), agricultural export grew by 0.6% compared to a growth of 2.9% of agricultural import and a consequent deterioration of the agricultural balance, which is highlighted by return to a negative agricultural trade balance registered in 2003. It is also noticeable that the share of agriculture over total trade decreased significantly mainly as a result of non-agricultural trade growth, led, but not restricted to, oil.

**Figure 6.2.** Evolution of Agricultural Trade, 1998-2003 (Million SP)



Source: Table 6.2

The most important food commodities exported and imported in the period 2001-2003 are shown below (Table 6.3). Sugar, rice, banana and milk powder are leading imports of food commodities, while, on the export side, the most important food exports are sheep, tomatoes and olive oil.

**Table 6.3.** Major Exported and Imported Food Commodities, 2001- 2003 (000 tons and Million SP)

	2001		2002		2003	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Agricultural exports</b>		37863		57361		44626
Sheep	10.9	1388	109.3	15026	67.8	9231
Tomatoes	168.1	3184	210	2783	218	2384
Lentil	20.8	555	27.7	752	56.7	1021
Potatoes	11	207	16.2	249	16.8	140
Olive oil	1.7	227	3.6	429	23.1	1905
White cheese	1.3	168	2.6	327	3.3	341
Chickpeas	1.1	34	0.5	19	8.3	291
<b>Agricultural imports</b>		37656		43403		46602
Refined sugar	525.7	6323	591.3	6591	613.6	6927
Rice (paddy and husked)	281.8	3352	180.4	2303	92.5	1296
Banana	63.4	921	75.8	952	80.6	1025
Sheep	0.96*	52	0	0	5.1	236.4
Oil (maize, soybean, and sunflower)	15.3	541	22.3	632	6.9	230
Butter and ghee	6.8	590	10.7	756	9	680
Milk powder	8.9	1053	14.8	1681	4.7	986

Source: General Department of Customs and, for 2003, Central Bureau of Statistics

\* Elaborated from CBS assuming live animal weight id 40kg.

### 6.3. Food Consumption

In the absence of official data on food consumption, Food Balance Sheets published by FAO, according to MAAR statistics, have been used to illustrate the evolution and levels of food consumption and calories, protein and fat intakes.

In the period between 1999 and 2002, per capita calories intake in Syria remained at 3038 calories per day, with the exception of the year 2000 when it reached 3052<sup>51</sup>. The protein intake increased by 4.5% (from 73.7 g to 77.0 g per day), while the fat intake remained almost stable, short below 105 g, with the exception of the year 2001 when it was at 100.4. With reference to 2002, the largest share of calories consumed is of vegetable origin (2625 calories per day making 86.4% of total daily calories). Livestock products accounted for 413 calories per day, representing 13.6% of total daily calories intake (annex table 6.2).

It is useful to compare the per capita intake of calories, proteins, and fats distributed by vegetable and animal origin in Syria to other countries. For this purpose, four Arab countries have been selected, namely Lebanon, Jordan, Morocco and Tunisia, in addition to Turkey, France, Italy and USA. The choice of countries of different levels of income is made to show the effect of per capita income on the structure of calories and nutrient intake.

In 2002, the total daily per capita calories intake was 3153 in Lebanon, 3038 in Syria, and 2673 in Jordan. Calories of animal sources amounted to 469 in Lebanon, 413 in Syria, and 246 in Jordan. Also per capita consumption of protein was higher in Lebanon (85.4 g /day) than in Syria (77 g /day) and in Jordan (67.4 g /day). A similar pattern is observed for fat consumption (annex table 6.2).

Not taking into account the high income countries, with reference to our sample, Syria had about the same level of calories intake as Morocco, while daily calories consumption in Syria, in 2002, was lower than in Tunisia and Turkey. Protein intake was also lower than in these two latter countries and Morocco.

Table 6.4 compares food consumption of Syria in terms of calories and nutrient intake to high income countries. In 2002, the daily-consumed calories were 3653 in France, 3670 in Italy, and 3774 in US. These levels are higher than in Syria (by more than 600 calories per day) and reflect the income effect and the differences in consumption patterns (the same stands for daily protein intake). Moreover, the share of calories of animal sources in these countries is higher than in Syria: 37% in France, 26% in Italy, and 28% in USA. Such evidences confirm the literature argument that calories and protein of animal origin in total calories and protein intake increase with the level of per capita income.

**Table 6.4.** Per Capita Food Consumption in Syria and Selected High Income Countries, 2002

Country	Daily calories			Daily protein grams		
	Total	From vegetal sources	From animal sources	Total	From vegetal sources	From animal sources
<b>Syria</b>	3,038	2,625	413	77	55.4	21.6
<b>Italy</b>	3,670	2,718	952	113.1	51.1	62
<b>France</b>	3,653	2,296	1,357	119.2	41.1	78.1
<b>USA</b>	3,774	2,727	1,047	114	40.2	73.8

Source: Annex table 6.2

<sup>51</sup> FAOSTAT



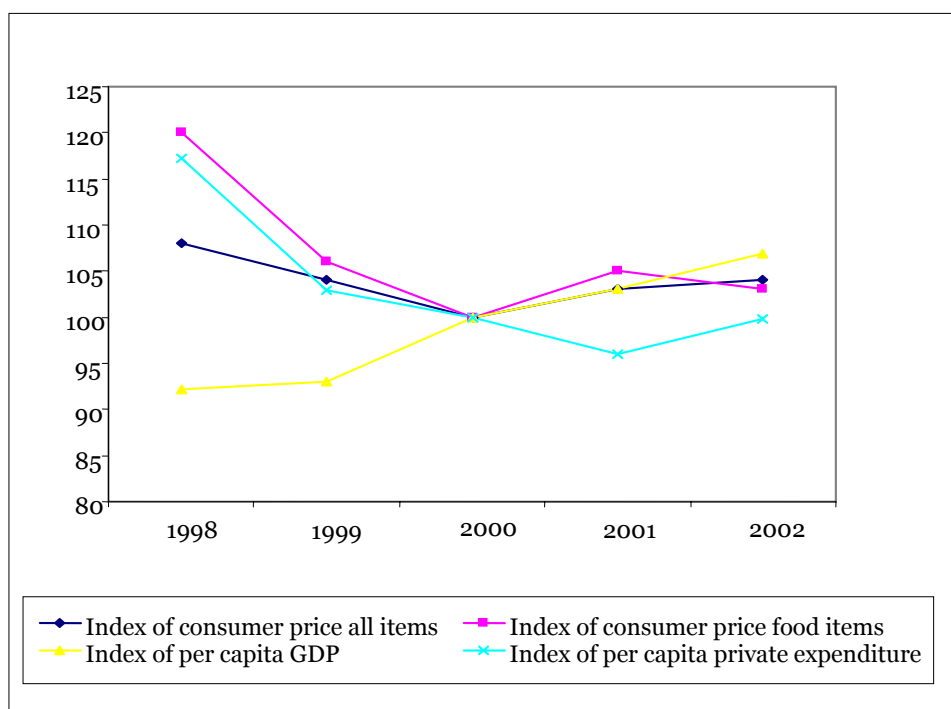
## 6.4. Acquisition of Food

Access to food depends on different factors, among which price and income that are very important. In fact, the evolution of price and income affect not only the quantities of food consumed but also the structure of this consumption.

In the absence of time series on household expenditure on food by income group<sup>52</sup>, data on Consumer Price Index (CPI), GDP per capita, and private expenditure on GDP per capita were reviewed to assess the possible effect of the evolution of price and income on access to food in the period 1998-2002.

Figure 6.3 shows that until 2000, prices increased at a higher rate than per capita GDP at current prices, affecting income negatively. However, the trend has been improving so that prices grew less than income per capita in 2002. Figure 6.3 also shows that private expenditure has been declining until 2001, but has grown in 2002. Overall, a negative effect on private expenditure, that may have extended to access to food, can be seen up to 2001. However, in 2002 the recovery of private consumption was accompanied by a growth of income exceeding the one observed for food prices that facilitated access to food. It should also be noticed that access to basic foodstuff (particularly bread and sugar) has certainly been supported by the consumption subsidies that neutralized the negative effect of the general price trends at least for these products.

**Figure 6.3.** Evolution of Price Index and Other Economic Aggregates Indexes, 1998-2002 (2000 base)



With regard to rural areas, it can be assumed that, given the increase in agricultural production and agricultural GDP in the recent period, compared to 1998-2000, revenues of rural population may have improved. As these groups devote a high share of incremental income to

<sup>52</sup> Syria conducts periodically household expenditure and food consumption surveys, which give detailed information on the expenditure and consumption patterns of the socio economic groups of the population, distinguishing between rural and urban population. The most recent published data refer to 1994.

food, their consumption of food may have risen. The resulting increase in food demand may explain the considerable expansion in food availabilities in the period under study, described above. Suffice to recall that according to the agricultural census of 1994, holdings with 2 ha and less accounted for 72% of the total in irrigated areas and 52% in rain fed areas. In conclusion, it should be noted that the level of per capita daily calories intake in Syria is well above the UN established minimum daily requirements according to the average nutritional food standards (annex table 6.3). Availability of food commodities and stability of supplies have been secured in line with the demand and the changing consumption habits. Data available suggest that both availability and access may have improved as result of the producer and consumer support policies.

## **Part II- Special Chapter: Comparative Advantages of Selected Commodity Chains in Syria**



## Introduction

This Part is a new feature in this periodical report on the state of food and agriculture in Syria. It presents the results of a major policy study undertaken by the National Agricultural Policy Center with the assistance of the Food and Agriculture Organization of the United Nations in the interval period between two issues of SOFAS in view of raising relevant policy issues for debate and further investigation by all concerned stakeholders, including policy makers, analysts, researchers and professional associations. The ultimate aim is to broaden the debate on policy and contribute to the mobilization of all stakeholders for the success of the on-going policy reform. As indicated in Part I, a process of economic reforms and modernization is underway in Syria. It requires careful attention towards policy analysis, formulation, implementation and follow-up, with the participation of all stakeholders. This may allow continuous adjustment of the policies in response to the changing economic conditions.

This issue of SOFAS presents the findings of the most recent research work on comparative advantages of selected commodity chains. It raises essential issues relating to the efficiency of resource use and presents policy options for the implementation of the current development strategy and agricultural production plans, particularly as regards agricultural export promotion and crop diversification.

The study assessed the relevance of the options of import substitution or export promotion (based on the comparative advantage of Syrian Agriculture) for a sample of representative agricultural commodities produced in Syria. The comparative advantages of the Syrian agriculture are a crucial reference for policy formulation especially in consideration of the fact that the country is increasingly opening to the world economy, facing growing competition from foreign suppliers. The study allows policy makers to consider to what extent the production of certain agricultural products allows to use efficiently domestic resources, or, in another words, if it is worthwhile to substitute local production with imports. Conversely, it allows identifying which products can be promoted to supply the local market and to export, making the most efficient use of the available domestic resources.

It is worth recalling here that the existence of comparative advantages indicates that a country can efficiently produce a good with its own domestic resources (labor, capital, land) to supply the national market and to export in absence of subsidies. On the contrary, if a product does not enjoy comparative advantages it is economically more rational to import the good and to concentrate the limited domestic resource on the production of goods enjoying comparative advantages. This conceptual framework also implies that the best allocation of domestic resources is the one achieved in an open trade and competitive environment, where a country effectively leaves out the production of goods for which it does not have comparative advantages and concentrates on the productions for which it has comparative advantages.

### II.1 Commodities Covered by the Study

In selecting the commodities to be covered by the study, due consideration was given to their representation of the diversity of Syrian agriculture and of different policy issues with respect to their role in international trade (export or import). In this respect, field crops (wheat and cotton), perennials (olives), vegetables (tomatoes), fruit (oranges) and livestock (cattle) were retained for the analysis; wheat and cattle product are likely import substitutes, while the others are targeting both foreign and domestic markets. Strategic crops (wheat and cotton) and other crops that are estimated to have an exports potential, such as oranges and tomatoes, are both considered.

Most of these crops are not consumed and/or traded in raw form. For instance, raw cotton should be ginned into lint cotton before being used as input by the textile industry; similarly, the largest share of olive production is consumed under the form of oil. It is therefore necessary to

take into consideration processing and marketing operations in order to calculate prices and production costs of the products in the form in which they can be compared internationally. For this reason, the analysis is based on entire commodity chains and not on raw agricultural products. The commodity chain approach also enables to take into account the weight of post harvest operations for the efficiency of the whole system. The share of post-harvest operations represents more than one third of total costs for certain products, such as flour pasta and packed fresh tomatoes. Moreover, it is also relevant to assess to what extent agro-food industries contribute positively or negatively to the overall efficiency of the agro-food sector. This is particularly important in the Syrian context where agro-industries play a major role in the process of industrialization of the country.

Each commodity system has been further differentiated by type of farming technology (with a particular emphasis on the type of water management technologies), processing technology and size of processing unit<sup>53</sup> and, when applicable, by the intuitional setting of marketing and processing (public or private agents). For each system, the geographical point at which the comparative advantage has been examined, was defined: local market for commodity substituting import, and regional or European market for commodities that can be promoted for export.

The use of the above classification criteria led to the identification of 28 representative systems, summarizing the diversity of the agro-food sector in Syria. They are listed in box 1 below with indications of their characteristics.

### Box II 1. The 28 adopted representative systems

#### Cotton

*1a Lint cotton all*

- 1 Lint cotton network irrigated
- 2 Lint cotton well irrigated

#### Wheat Flour

*3a Flour all*

- 3 Flour soft wheat network irr. large pub. mill
- 4 Flour soft wheat well irr. public mill
- 5 Flour soft rainfed irr. public mill
- 6 Flour durum wheat network irr. large pub. mill
- 7 Flour durum wheat well irr. large pub. mill
- 8 Flour durum wheat rainfed large pub. mill
- 9 Flour soft wheat network irr. small pub. Mill
- 10 Flour soft wheat network irr. large priv. mill

#### Wheat Pasta

*11a Pasta low quality all*

- 11 Pasta low quality network irr.
- 12 Pasta low quality well irr.
- 13 Pasta low quality rainfed
- 14 Pasta high quality rainfed

#### Filtered olive oil

- 15 Olive oil filtered centrifuge rainfed
- 16 Olive oil filtered hydraulic rainfed

#### Tomato

- 17 Tomato fresh open field regional market
- 18 Tomato fresh green house regional market
- 19 Tomato fresh green house European market
- 20 Tomato paste open field regional market .

#### Orange

- 21 Orange fresh network irr. regional market
- 22 Orange fresh well irr. regional market
- 23 Orange fresh rainfed regional market
- 24 Orange fresh network irr. European Market
- 25 FOCJ network irr.

#### Livestock

- 26 Fresh meat
- 27 Live animal
- 28 Packed milk

## II.2 Measuring Comparative Advantage

Comparative advantages are measured using as a reference the social price, that is the price that would prevail in absence of policy or market induced distortions, which reflects the scarcity of any resources for the entire society. Social prices are different from the observed market prices.

<sup>53</sup> Alternative technologies can be used to produce the product, which have an impact on the efficiency of the system since a different combination of domestic factors and other inputs is associated with a given technology.

The latter are indeed influenced by policy measures such as tariff and non-tariff barriers; prices generated by domestic markets do not reflect therefore the true scarcity of domestic resources. That is to say, the price system on the basis of which private agents take their decisions in allocating their resources is distorted.

The study of comparative advantages used the Policy Analysis Matrix (PAM), represented in table II.1 below. The related method enables the computation of social prices and derives a set of indicators of comparative advantages. The methodology establishes an aggregated budget for a representative system using private prices (observed market prices) and then a second budget calculated at social prices, by adjusting private prices for any known distortions. These budgets distinguish tradable goods, which include the good produced by the system (the output) and intermediate inputs that are used to produce the output, whereas domestic resources that cannot be internationally traded such as labor, land, and capital are accounted for separately. Sales represent the revenue, out of which the profit is computed by subtracting the value of the tradable inputs and of domestic factors used. If the system generates a positive profit at private prices, the system is said to be competitive, while if it generates a positive profit at social prices the system has a comparative advantage and is said to be economically efficient. The third line of the matrix (referring to as “divergences”) indicates the value of the distortions, which are equal to the value at private prices minus the value at social prices (Figure 2).

**Table II.1.** The Policy Analysis Matrix

	<b>Revenue</b>	<b>Tradable input</b>	<b>Domestic factors</b>	<b>Profit</b>
<b>Private prices</b>	A	B	C	D
<b>Social prices</b>	E	F	G	H
<b>Divergence</b>	I	J	K	L

A set of indicators allows the comparison of the efficiency of different systems either in terms of the domestic resource utilization efficiency or in terms of the magnitude of the distortions. The most commonly used indicators are the Financial Cost Benefit (FCB) ratio and the Domestic Resources Cost (DRC) calculated from the data developed in the PAM as shown in table II.2. If their value is below one for a given system or commodity, the system and commodity is said, respectively, to be competitive or to have a comparative advantage (Figure 3).

**Table II.2.** Selected PAM's Indicators

<b>Financial cost benefit ratio</b>	$FCB = C/(A-B)$	$FCB < 1$ Competitive
<b>Domestic resource cost</b>	$DRC = G/(E-F)$	$DRC < 1$ Comparative advantage

### II.3 Results of the Study

Selected values and indicators generated from the Policy Analysis Matrix are shown in table II.3 below.

**Table II.3.** PAM's Selected Values and Indicators.

N.	System	PAMs selected values						Selected ratio	
		Per ton of main output			Per hectare (or head of animal) in '000 SP			FCB	DRC
		FINANCIAL PROFIT-ABILITY	SOCIAL PROFIT-ABILITY	TRANSFERS	FINANCIAL PROFIT-ABILITY	SOCIAL PROFIT-ABILITY	TRANSFERS		
		(D)	(H)	(L = D-H)	(D)	(H)	(L = D-H)	C/(A-B)	G/(E-F)
1a	Lint cotton all	32 369	-53 207	85 577	40	-67	107	0.62	2.60
1	Lint cotton network irrigated	45 310	-42 440	87 751	55	-52	107	0.50	2.22
2	Lint cotton well irrigated	27 719	-58 982	86 701	35	-75	111	0.68	2.81
3a	Flour all	-2 997	-7 593	4 596	-14	-24	10	1.34	2.80
3	Flour soft wheat network irr. large pub. mill	2 446	-4 607	7 054	14	6	9	0.73	1.97
4	Flour soft wheat well irr. public mill	-904	-7 047	6 143	-3	-24	21	1.11	2.72
5	Flour soft rainfed irr. public mill	6 430	3 671	2 759	12	7	5	0.30	0.40
6	Flour durum wheat network irr. large pub. mill	-873	-5 385	4 512	-3	-17	14	1.11	2.13
7	Flour durum wheat well irr. large pub. mill	-800	-5 426	4 626	-3	-18	15	1.11	2.19
8	Flour durum wheat rainfed large pub. mill	3 446	1 946	1 500	8	4	3	0.68	0.77
9	Flour soft wheat network irr. small pub. mill	2 446	-4 921	7 368	7	-14	21	0.73	2.08
10	Flour soft wheat network irr. large pub. mill	2 795	-6 542	9 337	7	-16	23	0.75	2.20
11a	Pasta low quality all	3 228	-1 093	4 321	7	-3	10	0.78	1.11
11	Pasta low quality network irr.	3 020	-4 481	7 501	9	-13	21	0.83	1.40
12	Pasta low quality well irr.	2 185	-5 605	7 790	6	-15	21	0.87	1.54
13	Pasta low quality rainfed	5 717	1 832	3 885	11	4	8	0.71	0.88
14	Pasta high quality rainfed	26 358	-758	27 117	29	-1	30	0.50	1.03
15	Olive oil filtered centrifuge rainfed	97 268	77 290	19 978	127	73	55	0.25	0.28
16	Olive oil filtered hydraulic rainfed	67 664	34 900	32 764	91	47	44	0.53	0.67
17	Tomato fresh open field regional market.	4 476	1 453	3 024	235	76	159	0.57	0.81
18	Tomato fresh green house regional market.	10 123	5 211	4 912	601	310	292	0.48	0.67
19	Tomato fresh green house European market.	14 779	26 285	-11 505	559	994	-435	0.46	0.45
20	Tomato paste open field regional market.	11 344	16 764	-5 420	177	262	-85	0.55	0.54
21	Orange fresh network irr. regional mrkt	11 341	4 600	6 741	112	45	66	0.66	0.85
22	Orange fresh well irr. regional market	9 225	1 807	7 418	91	18	73	0.70	0.93
23	Orange fresh rainfed regional market	6 753	1 739	5 014	66	17	49	0.70	0.91
24	Orange fresh network irr. European market	13 516	9 366	4 150	133	92	41	0.63	0.75
25	FOCJ network irr.	15 985	-31 331	47 315	5	-9	14	0.82	1.71
26	Fresh meat	68 337	-13 800	82 137	14	-3	16	0.50	1.30
27	Live animal	17 541	-2 832	20 372	9	-1	10	0.56	1.17
28	Packed milk	8 343	1 805	6 538	32	7	25	0.55	0.84



The left hand columns provide the results for one ton of main output, including the profit at private prices (column 1), the value at social price (column 2), while the net transfer is listed in column 3. Columns 4 to 6 provide the same figure, but with reference to one hectare of cropped area (or head of animal). The right hand columns provide the indicators of the systems (columns 7-8).

The following conclusions are drawn from the results displayed in this table: \_

### 1) **Competitiveness**

- All systems covered in the study achieved a positive profit at private prices (i.e.  $D = \text{Revenue} - \text{Costs}$  is positive, the first line of table II.1) under the current policy and market conditions and are said therefore to be competitive. The highest profit per hectare has been achieved by tomato, followed by fresh orange (with the exception of system 25 for Fresh Orange Juice Concentrate, FOJC, production) and olive oil filtered centrifuge rain fed production (column 4 of table II.3).
- Cotton<sup>54</sup> achieved a positive profit at private prices, but a much lower return per hectare compared to the tomato and perennial production systems.
- The highest profit at private prices of wheat systems is achieved only by systems producing pasta, and the lowest profit by systems producing flour.
- Fresh Orange Juice Concentrate (FOJC) is profitable at private prices.

### 2) **Comparative advantage**

- Looking at the profit obtained at social price, i.e. having comparative advantage, the groups that achieved the highest profit at social price (H is positive in Figure 2) are tomatoes, fresh oranges and olive oil.
- Cotton is not profitable at social prices (it does not have comparative advantage) for both network and well irrigated systems.
- Only rainfed systems producing pasta, durum wheat flour and some of the systems producing soft wheat (flour soft wheat network irrigated - system3 -, flour durum wheat well irrigated - system7) maintain their profitability at social prices. The highest profitability at social prices is achieved by flour soft wheat rainfed (system 5).
- Fresh Orange Juice Concentrate (FOJC) is not profitable at social prices.
- In the livestock group, only the production of packed milk is profitable at social price, while meat production is unprofitable for both live animals and fresh meat.

The results indicate that the systems of tomato, fresh oranges, olive oil and pasta, which are already exporting a share of their output, enjoy a comparative advantage under the current policies and would maintain their comparative advantage even without any policy or market induced distortion. However, the positive transfers computed for most of the systems (columns 3 and 6 in table II.3) indicate that the current policy still results in a transfer of resources from the other sectors of the economy to these commodity chains. Fresh tomato (system 19), oranges export to European markets (system 24) and the production of tomato paste (system 20) display a negative transfer, indicating a shift in the transfer of resources from these commodity chains to the rest of the economy. Indeed, these three systems get a higher profit at social prices than at private prices.

The results in table 1 confirm the limited impact of processing technology and institutional status on the efficiency of the systems, which is explained by the relatively small share of the processing in the total cost (it represents on average less than 9% of the total systems' costs). Accordingly, the impact of farm level technologies on the performance of the systems studied is

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• <sup>54</sup> Cotton profit is around four times the profit per hectare obtained by wheat.

far more important. Regarding irrigation, all systems relying on wells irrigation generate the lowest profit for all field crops concerned.

With reference to the DRC indicator (column 7 in table II.3), it is clear that olive, tomato, orange (except FOJC) and one flour system “flour soft rainfed/irrigated public mills” have a strong comparative advantage (DRC around 0.5). On the contrary, cotton systems, fresh orange juice concentrate and livestock system (except packed milk DRC=0.84) have no comparative advantage (DRC>1).

### **Impact of international price volatility and yields variations on the comparative advantages.**

The establishment of the PAM relies on the collection of primary and secondary data combined with a number of hypothesis made about the value of parity prices for tradable outputs, macro-economic aggregates, such as exchange rate, interest rate and prevailing distortions in domestic factors markets. Several of these parameters vary from one year to the other; this is particularly the case for yields per hectare, for crops (that are affected by climatic conditions), and for the world prices of agricultural commodities and derived processed products.

An analysis was carried to evaluate the sensitivity of PAM’s indicators to the instability of the following parameters: interest rate, exchange rate, labor market distortion, conversion ratio, parity price of the main output, yield achieved at farm level and, in special cases, items that account for the largest share of the system costs (more than 5%). The results of this analysis indicate that the parity price of the main output and yield achieved at farm level are the most unstable parameters among the ones that influence significantly the value of the DRC. The variations of the parity price and yield retained in the analysis follow the pattern of variations observed during the last decade. A simulation was carried out for the systems using this hypothesis of variations of the above mentioned parameters to evaluate the probability of having a DRC below one, the minimum DRC and the maximum DRC. Table II.4 shows figures obtained through this simulation. The results of are summarized as follows:

- **For cotton:** taking into account world cotton price and yield variations there is a probability of 39% that the network irrigated cotton systems can have comparative advantages. The lowest DRC achievable is about 0.5 and the highest is 3.
- **For wheat:** given the uncertainty about the future trends on the wheat markets and the absence of a clear pattern emerging from the yield level achieved in the past decade, two scenarios have been developed to assess the impact of the variations of wheat parity price and yields on the comparative advantage of network irrigated soft wheat flour system. The first scenario traces back the impact of world price variations of wheat and yield levels for the last ten years. Under these conditions, the systems would never have any comparative advantage. If we assume a higher tension on the world cereals market, with an average price above 147 USD/ton of soft wheat and an average yield at 3.9 t/ha, then irrigated soft wheat would have a probability of only 11% to get a comparative advantage.
- **For olive, tomato and orange:** olive oil, fresh tomatoes and oranges based systems have a probability of 100% to have a comparative advantage, under the same price and yield condition as the one recorded in the past ten years. This indicates the strong comparative advantage enjoyed by these systems.
- **FOJC commodity** chains have a probability of 30% to have a comparative advantage, which corresponds to the probability of having a parity price above 1700 USD per ton.

In summary, the sensitivity analysis confirms the strong comparative advantages of olive oil, fresh tomatoes, and oranges based systems.

**Table II.4.** Sensitivity of the Domestic Cost Resources Ratio to Parity Price and Yield Instability for Selected Systems.

N.	Systems	Scenarios	Probability for a DRC<1	Lowest DRC	Highest DRC
1	Lint cotton produced from network irrigated system exported to Europe	Prevailing conditions from 1990 - 2002 Parity price = 157 USD/t Average yield=3.9 t/ha	39%	0.5	3
3	Standard flour produced from network irrigate soft wheat	Prevailing conditions from 1990 - 2002 Parity price = 133 USD/t Average yield=3.7 t/ha	0%	1	2.8
		Increase in Parity price and yield Parity price = 147 USD/t Average yield=3.9 t/ha	11%	0.8	2.42
15	Filtered olive oil centrifuge exported to Europe		100%	0.25	0.7
17	Fresh tomato from open field exported to AFTA countries		100%	0.51	0.6
20	Tomato paste export to AFTA countries		98%	0.13	2.1
21	Fresh orange from network irrigation exported to AFTA countries		100%	0.3	0.7
25	Fresh Orange Concentrated Juice from network irrigation		30%	0.85	4

## II.4 Policy Implications

### General Policies

The study demonstrates that the current policy setting is supporting the development of most of the selected systems as evidenced in columns 3 and 6 of table II.3. Indeed, as stated above, apart from fresh tomato and oranges export to European markets (system 19 and system 24) and the production of tomato paste (system 20), all the selected representative systems benefit from a net transfer of resources from the whole economy.

In light of the on-going policy reform process, it may be relevant and useful to review the present situation regarding these transfers to agriculture and to critically analyze the policies instruments used to this effect and their relative impact on economic development in general and on agriculture in particular. In this respect, the following main determinants of the transfers and causes of distortions need to be taken into account:

- Trade protection (tariff and non-tariff barriers) which leads to domestic prices of commodities produced in the country higher than prices prevailing on the world market.
- Subsidies and fixed support prices for cotton and wheat.
- Non-accountability of the opportunity cost for natural resources, water in particular.
- The fee paid by farmers for network irrigation utilization, which represents only 1/3 of the social cost of irrigation.
- The low price of energy compared to the prevailing parity price for diesel on the world market price, which is an implicit subsidy to systems that are energy-intensive.
- A high tariff on the imports of packaging devices (cans, bottles, etc) has an impact on the profitability of agro-food industries.

Other factors and general policy instruments are also relevant, although their distortion effect is relatively limited. In particular:

- On the input side, the current policy generates limited distortions as the average level of custom duty applied on agricultural input imports is quite low.
- The current official labor regulations do not have a significant impact on the efficiency of the systems under study because of the limited share of hired labor employed on a permanent basis in agriculture (chapter 2). The evolution of the wage level for casual labor should be carefully monitored as new job opportunities arise on the domestic or regional labor market. In fact, the profitability at private prices and the efficiency at social prices of the commodity chains that are relatively labor intensive may be significantly affected by the increases in casual labor costs.
- Exchange rate variations have limited impacts on the efficiency of the systems under study because the high share of tradable commodities in total cost (45%) offsets the effect of exchange rate on the tradable output.
- Interest rate variations, alike, have a limited impact on the efficiency of these systems due to the low share of capital cost in total costs (17%).

## **Crop-Related Policies**

### **Cotton and Wheat**

Under the current level of technology and within the current trends of world market prices, irrigated wheat and cotton systems have a low probability to have a comparative advantage. The simulation done with the highest level of prices recorded in the past decades indicates that the probability would be still very low for the wheat systems to have a comparative advantage. The least efficient systems are, for both commodities, those based on wells irrigation as they combine most of the distortions: subsidy, high cost in energy due to the pumping and higher volume of water used because of the lack of any restriction. Rainfed systems have a comparative advantage, but while there is no rainfed cotton, rainfed wheat roughly represent only 40% of the total wheat supply, and therefore has a relatively low weight for the overall efficiency of the wheat commodity chains.

To enhance the comparative advantage of wheat and cotton, alternative courses of action have been identified. They are presented below in view of pointing out policy issues, which deserve further investigation and debate.

1) Exploring ways to improve the productivity of these commodity chains through yield increase or costs reduction. Due to the rather high level of yield already achieved, the most promising ways would be to improve the water use efficiency of the irrigated cotton and wheat systems. Water use efficiency can be improved in the short term through the adoption of new irrigation technologies (such as drip irrigation), although the current study was not in a position to thoroughly assess the relative gain in economic efficiency that can be obtained through alternative irrigation technologies. Another option that can be explored in the medium term is the use of new varieties that are less demanding in water for an equivalent yield level. The technical efficiency of the system can also be improved by ensuring improvements of the post-harvest activities. For instance, the ginning throughput recorded for the ginneries (32 kg of lint cotton for 100 kg of raw cotton) is rather low compared to the ginning throughput achieved in other major exporting areas (38 kg of lint cotton for 100 kg of raw cotton). Therefore, there is an urgent need to identify and exploit source of productivity increase at the post-harvest level.

2) Promoting the systems that are less costly in social terms, i.e., rainfed and network irrigation. The area available for rainfed and network irrigation systems is limited, which implies a net reduction in the cotton and wheat output at the national level. Furthermore, irrigated and rainfed systems do have peculiar environmental costs that should be accounted for. While the level of wheat output should be in line with the food security objectives, it would be rational in the short term to limit as much as possible the allocation of the wells irrigated land to cotton, given that it is less efficient than wheat.

3) Promote crop substitution from cotton and wheat to promising crops, at least for the systems that are the least economically efficient. However, this crops substitution strategy would be constrained by the absorption capacity of the domestic and world market for the crops that would be promoted. This is a factor given the large areas involved.

A combination of these three options may be needed to mitigate the high social cost induced by cotton and wheat production. Moreover, the establishment of appropriate institutional mechanism may be required to internalize the cost of water in the business plans of cotton and wheat farmers, in such a way to create an incentive to shift toward less water intensive crops.

### **The Promising Crops**

It should be noted that having comparative advantage does not mean being automatically able to export. To promote and develop the exports of selected commodity chains having comparative advantage such as olive oil, fresh tomatoes and oranges the following policies and courses of action should be given attention:

- Reinforcing the current policy pursuing trade agreements to enhance market access.
- Improving quality and sanitary control to up to the prevailing international standards. Indeed, quality and sanitary norms are becoming a key determinant of market access.
- Explore new market opportunities taking into account the changing consumption habits especially on market characterized by rapid income growth.

## **II.5 Conclusion**

Comparative advantage should not be the sole parameter to decide whether or not policy should support or discourage the development of a production system. Particular attention should be given to the social costs, such as rural livelihood, rural-urban migration and uncontrolled urbanization, before making the decision of eliminating the subsidy to a system that does not enjoy a comparative advantage. The PAM assists decisions makers in selecting the least costly policies in economic efficiency terms when there are alternative activities possible. Accordingly, it provides a consistent framework to assess the impact of alternative policy options on the comparative advantages of selected commodity chains. However, it should be seen as only one element in the formulation of agricultural policy. Comparative advantages can change dramatically as result of both the evolution of the world markets for tradable outputs and inputs, and of technical changes or changes in the prices of domestic factors. It is important to keep in mind that this method does not take into account non-efficiency policy objectives, such as income distribution along the commodity chain and/or among different socio-economic groups involved in the production process. Nonetheless, it provides a means to estimate the social cost associated with policy options pursuing non-efficiency objectives and therefore to better assess the trade-off between different courses of action. In this regard, it is useful to periodically update the assessment of the comparative advantages and to further articulate the analysis for the different agro-climatic environments. Indeed, expanding the analysis to other commodity systems allows considering a larger number of alternative crops for farms located in different agro ecological environments, while updating the PAM calculations allows monitoring the impact of changes in policy and market environment on the performance of the selected agricultural production systems.



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**Table 1.1 - Weather phenomena, 2002**

Station	Number of days					Precipitation in mm						
	Dust/sand Storms	Thunder Storms	Hail	Snow	Rain	Max. in one month		Max. in 24 hours			Year Total	Percent of mean
						Month	Quantity	Month	Day	Quantity		
<b>Damascus</b>	3	13	0	3	54	12	50.4	11	24	16	156	113
<b>Homs</b>	0	17	2	4	67	12	192	12	19	75	486	109
<b>Palmyra</b>	1	12	0	2	59	11	64	11	4	31	171	130
<b>Hama</b>	0	2	0	1	67	12	89	12	19	48	307	90
<b>Lattakia</b>	0	32	0	0	74	12	145	12	19	79	665	66
<b>Aleppo</b>	1	22	0	6	68	12	70	12	19	40	308	92
<b>Deir Ezzor</b>	11	10	1	0	49	12	36	4	20	12	154	97
<b>Al-Qamishly</b>	1	13	0	3	67	12	101	12	19	33	350	78
<b>Safita</b>	0	44	0	1	83	12	257	12	19	113	1047	92
<b>Dar'a</b>	0	8	0	1	68	12	107	12	17	30	296	115

Source: CBS, Annual Statistical Abstract, 2003

**Table 1.2 - Average rainfall by agro-ecological zone, 1998/99-2002/03 (mm/year)**

Year	Total	Agro- ecological zones				
		1	2	3	4	5
<b>1998/99</b>	144	465	182	140	110	56
<b>1999/2000</b>	157	513	193	166	132	67
<b>2000/01</b>	247	633	193	214	122	83
<b>2001/02</b>	232	662	316	177	229	196
<b>2002/03</b>	318	819	296	270	192	134

Source: NAPC Database, 2003

**Table 1.3 - Land use, 1995-2003 (ha)**

<b>Year</b>	<b>Fallow</b>	<b>Irrigated</b>	<b>Rainfed</b>	<b>Cultivated</b>	<b>Un-cultivated</b>	<b>Cultivable</b>	<b>Steppe &amp; Pasture</b>	<b>Forests</b>	<b>Un-cultivable</b>	<b>Total</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>1995</b>	520,156	1,088,891	3,892,730	5,501,777	477,218	5,978,995	8,286,831	492,926	3,759,219	18,517,971
<b>1996</b>	827,708	1,126,096	3,515,963	5,469,767	478,651	5,948,418	8,319,909	509,744	3,739,900	18,517,971
<b>1997</b>	718,064	1,167,633	3,635,486	5,521,183	465,178	5,986,361	8,283,041	521,525	3,727,044	18,517,971
<b>1998</b>	615,851	1,213,108	3,655,071	5,484,030	497,381	5,981,411	8,269,841	536,836	3,729,883	18,517,971
<b>1999</b>	961,702	1,185,679	3,354,909	5,502,290	494,656	5,996,946	8,264,858	546,416	3,709,751	18,517,971
<b>2000</b>	805,857	1,210,650	3,335,890	5,352,397	552,926	5,905,323	8,358,880	556,867	3,696,901	18,517,971
<b>2001</b>	901,099	1,266,889	3,281,992	5,449,980	537,837	5,987,817	8,273,339	566,347	3,690,468	18,517,971
<b>2002</b>	829,756	1,332,781	3,258,117	5,420,654	490,015	5,910,669	8,338,433	575,281	3,693,588	18,517,971
<b>2003</b>	817,435	1,361,211	3,299,704	5,478,350	384,756	5,863,106	8,334,836	589,894	3,730,135	18,517,971

Source: MAAR, The Annual Agricultural Statistical Abstract, 2003.

(4) = (1)+ (2)+(3)

6= (4)+(5)

10= (6)+ (7)+ (8)+ (9)

**Table 1.4 - Reclaimed area by project, 1995 and 1998-2003 (ha)**

Year	Fruit Trees Project	Green Belt Project	Ali Alali Project	Second Fruit Trees in Quneitra Project	Southern Area Development Project			Total		
					Fruit	Crops	Total	Fruit	Crops	Total
1995	10941	6440	4752	141	3408	2707	6115	25682	2707	28389
1998	11335	7097	4815	294	3063	3146	6209	26604	3146	29750
1999	9060	6861	4690	238	3101	3211	6312	23950	3211	27161
2000	8696	5909	4548	212	2776	2721	5497	22141	2721	24862
2001	2780	4293	na	255	3575	3126	6701	6610	3126	9736
2002	7620	3813	3034	309	1235	464	1700	9164	464	9629
2003	4283	3386	3410	347	2460	2848	5308	7090	2848	9938

Source: MAAR, Department of Agricultural Affairs.



**Table 1.5 - Population and labor force in Syria, 1998-2003 (Thousand and %)**

	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Total population</b>	15,473	15,891	16,320	16,720	17,130	17,550
<b>Rural population</b>	7,760	7,963	8,177	8,344	8,531	8,744
<b>Total labor force</b>	4,291	4,603	4,937	5,275	5,459	
<b>Total employment</b>	4,539	4,688	4,468	4,730	4,822	
<b>Employment in agriculture</b>		1,306	1,430	1,473	1,462	
<b>Share</b>						
<b>Rural population over total population</b>	50.20	50.10	50.10	50.10	49.80	49.82
<b>Labor force over total population</b>	27.70	29.00	30.30	31.55	31.87	
<b>Agricultural employment over total population</b>		8.22	8.80	8.81	8.53	
<b>Agricultural employment over total employment</b>		27.86	32.00	31.14	30.32	
<b>Average annual growth rate (available years)</b>						
<b>Total population</b>		2.70	2.70	2.45	2.45	2.45
<b>Rural population</b>		2.62	2.69	2.43	2.24	2.50
<b>Total labor force</b>		7.26	7.27	6.85	3.49	
<b>Total employment</b>		3.28	6.86	5.86	1.95	
<b>Employment in agriculture</b>			9.49	3.01	-0.75	

Source: MAAR, Statistical Abstract, and CBS several issues

**Table 1.6a - Available water resources by Basin, 2003 (km<sup>2</sup>, Million m<sup>3</sup>, %)**

Basin	Area	Surface water	Ground water	Total Supply	Share of Area	Share of Water Supply
Yarmouk	6,724	267	180	447	3.6	2.7
Barada & Awag	8,560	578	272	850	4.6	5.1
Orantoes (Al Asi)	21,643	2,244	473	2,717	11.7	16.4
Coastal	5,100	2,045	290	2,335	2.8	14.1
Euphrates	51,238	7,167	304	7,471	27.7	45.1
Al Khabour	21,129	1,905	483	2,388	11.4	14.4
Al Badia	70,786	167	176	343	38.2	2.1
<b>Total</b>	<b>185180</b>	<b>14373</b>	<b>2178</b>	<b>16551</b>	<b>100</b>	<b>100</b>

**Table 1.6b - Water Exploitation by Basin, 2001-2003 (Million m<sup>3</sup> and %)**

		2001		2002		2003		2001	2002	2003
		Water use	Water availability	Water use	Water availability	Water use	Water availability	Exploitation Ratio		
<b>Yarmouk</b>	Underground	130	180	196	180	195	180	72	109	108
	Surface	238	267	171	267	190	267	89	64	71
<b>Barada &amp; Awag*</b>	Underground	998	850	1056	850	1018	850	117	124	120
	Surface									
<b>Orantos (Al Asi)</b>	Underground	1006	473	1013	473	1208	473	213	214	255
	Surface	936	2244	994	2244	929	2244	42	44	41
<b>Coastal</b>	Underground	125	290	116	290	147	290	43	40	51
	Surface	449	2045	473	2045	421	2045	22	23	21
<b>Euphrates</b>	Underground	1036	304	1451	304	1590	304	341	477	523
	Surface	4116	7167	4482	7167	5127	7167	57	63	72
<b>AlKhabour</b>	Underground	2124	483	2528	483	2617	483	440	523	542
	Surface	661	1905	703	1905	848	1905	35	135	45

Source: MARR, Irrigation Department

Note: With regard to underground water supply, the yearly replenished water is accounted for.

\* Mixed

**Table 1.7 - Irrigated areas by source of irrigation and governorate, 2003 (ha)**

Governorate	Total irrigated area	Irrigated areas			Modern irrigated		
		Wells	Public nets	Rivers & springs	Sprinkles	Drip	Total
<b>Sweida</b>	2077	2030	47	0	501	1417	1918
<b>Dar'a</b>	32477	14546	17451	480	3890	11950	15840
<b>Quneitra</b>	4388	2944	1094	350	72	1942	2014
<b>Rural Damascus</b>	67401	49534	0	17867	2477	12070	14547
<b>Damascus City</b>	1555	980	0	575	4	8	12
<b>Homs</b>	57085	28566	22422	6097	7674	6781	14455
<b>Hama</b>	71550	58245	8046	5259	33821	1721	35542
<b>Al Ghab</b>	80235	33310	39666	7259	12752	163	12915
<b>Idleb</b>	52410	44663	4638	3109	31644	4461	36105
<b>Tartus</b>	26383	11833	11361	3189	345	5344	5689
<b>Lattakia</b>	28304	4115	21719	2470	61	1788	1849
<b>Aleppo</b>	181445	100103	55240	26102	21456	1770	23226
<b>Al Raqqa</b>	187039	72252	73697	41090	3610	539	4149
<b>Deir Ezor</b>	143490	42347	20813	80330	300	795	1095
<b>Al Hasakeh</b>	425372	389187	13170	23015	14731	1400	16131
<b>Total</b>	1,361,211	854,655	289,364	217,192	133,338	52,149	185,487

Source: MAAR, The Agricultural Statistical Annual Abstract 2003.

**Table 1.8 - Forestry development activities, 1995 and 1998-2003**

	1995	1998	1999	2000	2001	2002	2003
<b>Forest seedlings (million)</b>	31	31	38	37.7	26.7	22.9	22
<b>Reforestation (000 ha)</b>	23	26	21.8	9	22.7	20.9	16.8
<b>Forest roads and fire lines (km)</b>	1083	2450	1323	1265	1754	1453	797

Source: MAAR, Forests Department, Various Issues.

**Table 2.1 - GDP at market prices by sector, 1995 and 1998-2003 (Million SP, current prices)**

<b>Sectors</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Agriculture</b>	161,024	232,283	199,415	223,702	247,695	256,175	266,410
<b>Mining and Manufacturing</b>	78,864	179,687	217,922	272,629	264,554	268,481	263,556
<b>Construction &amp; Building</b>	24,518	29,470	27,513	28,857	29,358	31,924	38,240
<b>Wholesaler &amp; Retailer Trade</b>	148,650	152,130	152,913	134,431	151,322	176,268	178,903
<b>Storage, Transport &amp; Communication</b>	66,357	88,876	104,097	113,826	120,854	129,036	135,174
<b>Insurance, Finance &amp; Real Estates</b>	27,393	29,971	35,014	32,444	31,606	33,546	35,715
<b>Community &amp; Personal Services</b>	10,872	15,935	19,173	21,189	23,205	25,650	28,444
<b>Government Services</b>	53,097	61,789	62,681	76,392	85,002	92,903	105,865
<b>Private Non-Profit Services</b>	200	303	364	444	541	558	614
<b>Total</b>	<b>570,975</b>	<b>790,444</b>	<b>819,092</b>	<b>903,944</b>	<b>954,137</b>	<b>1,014,541</b>	<b>1,052,921</b>
<b>GDP per Capita</b>	<b>39,970</b>	<b>51,085</b>	<b>51,544</b>	<b>55,389</b>	<b>57,066</b>	<b>59,226</b>	<b>59,995</b>

Source: CBS, several issues

**Table 2.2 - GDP at market prices by sector, 1995 and 1998-2003 (Million SP, 2000 constant prices)**

<b>Sectors</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Agriculture</b>	177,215	241,172	204,771	223,702	242,981	262,806	255,673
<b>Mining and Manufacturing</b>	209,170	307,138	296,658	272,629	277,668	270,920	267,562
<b>Construction &amp; Building</b>	25,724	29,861	28,348	28,887	29,279	29,644	32,021
<b>Wholesaler &amp; Retailer Trade</b>	157,149	143,921	145,962	134,431	134,876	141,990	155,941
<b>Storage, Transport &amp; Communication</b>	84,212	99,398	107,994	113,826	119,750	127,146	130,859
<b>Insurance, Finance &amp; Real Estates</b>	28,387	29,561	35,037	32,444	30,802	33,516	35,095
<b>Community &amp; Personal Services</b>	12,076	15,562	16,872	21,189	22,940	27,580	28,325
<b>Government Services</b>	62,226	64,706	62,681	76,392	78,867	84,315	98,253
<b>Private Non-Profit Services</b>	247	342	229	444	515	565	619
<b>Total</b>	756,404	931,660	898,552	903,944	938,678	978,482	1,004,348
<b>GDP per Capita (SP)</b>	52,951	60,212	56,545	55,389	56,141	57,121	57,228
<b>Agricultural GDP per Capita of Rural Population (SP)</b>	28,441	38,705	25,125	27,304	29,120	30,806	29,240

Source: CBS, several issues

**Table 2.3 - Distribution of GDP at market prices by sector, 1995 and 1998-2003 (%)**

Sectors	1995	1998	1999	2000	2001	2002	2003
<b>Agriculture</b>	23	26	22	25	26	27	26
<b>Mining and Manufacturing</b>	28	33	34	30	30	28	27
<b>Construction &amp; Building</b>	3	3	3	3	3	3	3
<b>Wholesaler &amp; Retailer Trade</b>	21	15	16	15	15	15	15
<b>Storage, Transport &amp; Communication</b>	11	11	12	13	13	13	13
<b>Insurance, Finance &amp; Real Estates</b>	4	3	4	4	3	3	3
<b>Community &amp; Personal Services</b>	2	2	2	2	2	3	3
<b>Government Services</b>	8	7	7	8	8	9	10
<b>Private Non-Profit Services</b>	0	0	0	0	0	0	0
<b>Total</b>	100	100	100	100	100	100	100

Source: CBS, several issues

**Table 2.4 - Employment by sector and gender, 2003 (Thousand and %)**

Economic Activity	Male		Female		Total	
	No	%	No	%	No	%
<b>Agriculture and Forests</b>	816,598	22	352,145	46	1,168,743	26
<b>Industry</b>	558,324	15	50,381	7	608,705	14
<b>Building &amp; Construction</b>	492,657	13	7,727	1	500,384	11
<b>Hotels, Restaurants and Communication</b>	650,835	18	26,394	3	677,229	15
<b>Storage, Transport &amp; Communication</b>	258,541	7	6,946	1	265,487	6
<b>Finance, Insurance and Properties</b>	78,585	2	11,162	2	89,747	2
<b>Other Services</b>	851,357	23	306,922	40	1,158,279	26
<b>Total</b>	3,706,897	100	761,677	100	4,468,574	100

Source: CBS, 2004

**Table 2.4 - Employment by activity and gender, 2003 (Thousand and %)**

Economic Activity	Male		Female		Total	
	No	%	No	%	No	%
<b>Agriculture and Forests</b>	816,598	22	352,145	46	1,168,743	26
<b>Industry</b>	558,324	15	50,381	7	608,705	14
<b>Building &amp; Construction</b>	492,657	13	7,727	1	500,384	11
<b>Hotels, Restaurants</b>	650,835	18	26,394	3	677,229	15
<b>Storage, Transport</b>	258,541	7	6,946	1	265,487	6
<b>Finance, Insurance and Properties</b>	78,585	2	11,162	2	89,747	2
<b>Other Services</b>	851,357	23	306,922	40	1,158,279	26
<b>Total</b>	3,706,897	100	761,677	100	4,468,574	100

Source: CBS, 2004

**Table 2.5 - Employment in agriculture, by gender, 1999-2003 (Thousand and %)**

Gender	1999		2000		2001		2002		2003*	
	No	%	No	%	No	%	No	%	No	%
<b>Male</b>	859	66	910	64	1,006	68	946	65	817	70
<b>Female</b>	447	34	520	36	467	32	516	35	352	30
<b>Total</b>	1,306	100	1,430	100	1,473	100	1,462	100	1,169	100

\* Labor force survey 2003

Source: MAAR, The annual agricultural statistical abstract, various years.

**Table 2.6 - Employment in agriculture over total employment by gender, 1999-2003 (%)**

Gender	1999	2000	2001	2002	2003
<b>Male</b>	23.5	25	24.9	24.1	22
<b>Female</b>	51.2	58	53.6	58.1	46.2
<b>Total</b>	28	32	29.6	30.3	26.2

Source: CBS, 2004

Source: Calculated on MAAR, The annual agricultural statistical abstract, various years.



**Table 2.7 - Hired workers by sector, 2002 (unit and %)**

<b>Sectors</b>	<b>Hired workers</b>	<b>Total employment</b>	<b>Share</b>
<b>Agriculture</b>	186,715	1,461,855.00	13
<b>Manufacturing</b>	439,768	661,446.00	66
<b>Construction &amp; Building</b>	381,891	634,271.00	60
<b>Trade, Restaurants, and Hotels</b>	211,320	724,420.00	29
<b>Storage, Transport &amp; Communication</b>	116,125	264,881.00	44
<b>Insurance, Finance &amp; Real Estates</b>	22,153	61,140.00	36
<b>Community &amp; Personal Services</b>	941,980	1,013,579.00	93
<b>Not allocable</b>	165	165.00	100
<b>Total</b>	2,300,117	4,821,757.00	48

source: Results of Employment Survey, CBS, 2002

**Table 2.8 - Total trade, 1995 and 1998-2003 (Million SP)**

Items	1995	1998	1999	2000	2001	2002	2003
<b>Imports</b>	218,472	180730	177,770	187535	220,744	235754.3	236,768
<b>Exports</b>	183,021	133262	159,666	216190.4	243,149	315919.3	265,039
<b>Total trade</b>	401,492	313992	337,436	403725	463,893	551674	501,807
<b>Balance of trade (Exports-Imports)</b>	-35,451	-47468	-18,104	28655.4	22,405	80165	28,271

Source: CBS, 2004, NAPC datatbase

**Table 2.9 - Agriculture trade, 1995 and 1998-2003 (Million SP)**

Items	1995	1998	1999	2000	2001	2002	2003*
<b>Imports</b>	37,420	40,457	45,384	38,993	37,656	43,403	46,602
<b>Exports</b>	36,039	43,211	36,365	35,997	37,863	57,361	44,626
<b>Total agricultural trade</b>	73,459	83,668	81,749	74,990	75,519	100,763	91,228
<b>Agricultural trade balance</b>	-1,381	2,754	-9,019	-2,996	207	13,958	-1,976

Source: CBS, 2004, NAPC datatbase

Note: The exchange rate applied is SP 46.5/US\$ for imports and SP 46/US\$ for exports.

\* Provisional

**Table 2.10 - Agricultural trade over total Trade, 1995 and 1998-2003 (%)**

Items	1995	1998	1999	2000	2001	2002	2003
<b>Agricultural Imports/Total Imports</b>	17	22	26	21	17	18	20
<b>Agricultural Exports/Total Exports</b>	20	32	23	17	16	18	17
<b>Total agricultural trade/total trade</b>	18	27	24	19	16	18	18
<b>Agricultural trade balance/total trade balance</b>	4	-6	50	-10	1	17	-7
<b>Agricultural trade/Agriculture GDP</b>	41	35	40	34	31	38	36

Source: CBS, 2004, NAPC datatbase

**Table 2.11 - Gross fixed capital formation by sector, 1995 and 1998-2003 (Million SP, 2000 constant prices)**

<b>Sectors</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Agriculture, Forestry &amp; Fisheries (including irrigation)</b>	25,090	24,338	22,229	24,431	26,220	25,843	25,399
<b>Mining and Manufacturing</b>	45,998	50,334	48,649	45,918	57,572	56,468	72,470
<b>Transport &amp; Communication</b>	23,603	25,023	30,929	29,379	35,007	35,183	31,569
<b>Dwellings</b>	32,513	25,711	23,186	17,621	26,986	17,305	16,394
<b>Other Sectors</b>	40,643	38,659	34,800	38,743	50,775	61,702	77,667
<b>Total</b>	167,846	164,065	159,793	156,092	196,560	196,501	223,499

Source: CBS, several issues

**Table 2.12 - Expenditures on GDP, 1995 and 1998-2003 (million SP, 2000 constant prices)**

<b>Items</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Total Consumption</b>	636,862	713,375	683,954	685,005	664,254	691,704	771,439
<b>Private</b>	544,335	617,605	589,730	572,761	549,815	571,690	637,005
<b>Public</b>	92,527	95,770	94,224	112,244	114,439	120,014	134,434
<b>Gross Domestic Investment</b>	167,846	164,065	159,793	156,092	196,560	196,501	223,499
<b>Private</b>	94,358	67,749	64,667	56,761	80,701	75,418	76,412
<b>Public</b>	73,488	96,316	95,126	99,331	115,859	121,083	147,087
<b>Net External Transaction</b>	-48,304	54,220	54,805	62,847	77,864	90,277	9,410
<b>Export of Goods &amp; Services</b>	225,960	296,637	32,171	326,715	369,068	401,305	307,712
<b>Import of Goods &amp; Services</b>	274,264	242,417	270,366	263,868	291,204	311,028	298,302
<b>Gross Domestic Product</b>	756,404	931,660	898,552	903,944	938,678	978,482	1,004,348

Source: CBS, several issues

**Table 2.13 - Estimated expenditures in the consolidated budget, 1995 and 1998-2003 (Million SP)**

<b>Sector</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Agriculture, Forestry, &amp; Fishing (including irrigation)</b>	15,281	25,059	24,580	26,123	27,487	29,375	32,074
<b>Total</b>	162,040	237,300	255,300	275,400	322,000	356,389	420,000
<b>% Agriculture/total</b>	9	11	10	9	9	8	8

Source: CBS, several issues

**Table 2.14.a - Agricultural production, 1998-2003 (Million SP and %, 2000 constant prices)**

Items	1998		1999		2000		2001		2002		2003	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
<b>Plant production value (1)</b>	236,186	68	193,563	63	215,383	63	233,476	65	253,292	66	237,380	64
<b>Animal Production Value</b>	107,510	31	111,054	36	121,716	36	123,378	34	124,641	32	127,763	34
<b>Fees &amp; taxes</b>	5,772	2	3,239	1	3,425	1	5,105	1	6,159	2	7,375	2
<b>Agricultural production value</b>	349,468	100	307,856	100	340,523	100	361,959	100	384,092	100	372,518	100
<b>Intermediate consumption</b>	108,295	31	102,006	33	116,821	34	118,963	33	121,286	32	116,845	31
<b>Agricultural value added</b>	241,173	69	205,850	67	223,702	66	242,996	67	262,806	68	255,673	69

**Table 2.14.b - Some indicators of agricultural productivity and income, 1998-2003**

	1998	1999	2000	2001	2002	2003
<b>Arable land (2), ha</b>	5,981,411	5,996,946	5,905,323	5,987,817	5,910,669	5,910,670
<b>Land productivity (1)/(2), SP/ha</b>	39,487	32,277	36,473	38,992	42,853	40,161
<b>Agricultural labor force (000)</b>	1,117	1,306	1,430	1,473	1,462	1,169
<b>Productivity of agricultural labor force, SP</b>	31,286	23,572	23,813	24,573	26,272	31,866
<b>Total GDP/total labor force, 000 SP</b>	217	195	183	178	179	198
<b>Agricultural GDP/Total GDP, per capita (%)</b>	64	44	49	52	54	51

Source: CBS & MAAR statistical abstract, several issues

**Table 3.1 - Selected objectives of the 9th five-year plan (2001-05)**

<b>Objective</b>	<b>000 hectares</b>
<b>Increase public networks irrigated area</b>	118
<b>Increase well irrigated area</b>	22
<b>Increase invested area</b>	181
<b>Increase cultivated area</b>	113
<b>Increase fallow area</b>	68
<b>Increase irrigated area</b>	21
<b>Decrease raifed area</b>	98
<b>Decrease unoperated</b>	232
<b>Decrease uncultivable area</b>	40
<b>Increase steppe and pasture area</b>	26
<b>Increase forest area</b>	65
<b>Increase irrigated trees area</b>	65
<b>Increase rainfed trees area</b>	22

Source: Document of 9th 5-year plan

**Table 3.2 - Quantities of improved seeds for selected crops, 1995 and 1998-2003 (000 tons and %)**

<b>crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>Average 1998-2001</b>	<b>Average 2001-2003</b>	<b>Change between av.</b>
<b>Wheat</b>	200.50	186.65	148.53	212.27		140.14	101.00	182.49	80.38	-55.95
<b>Dry broad beans</b>				0.38		0.24	0.33	0.13	0.19	52.39
<b>Barley</b>	9.46	2.11	1.16	1.07	9.65	10.00	0.97	1.45	6.87	375.27
<b>Lentils</b>	3.48	1.04	0.17	0.40	5.26	2.96	0.55	0.54	2.93	444.79
<b>Chickpeas</b>	0.34	1.01	0.17	0.40	5.26	0.90	0.55	0.53	2.24	324.65
<b>Cotton</b>	26.20	39.51	33.83	29.26	21.97	14.18	18.67	34.20	18.27	-46.57
<b>Maize</b>	2.40	2.14	1.59	0.53	0.41	1.00	1.00	1.42	0.80	-43.33
<b>Potato</b>	26.64	26.64	20.72	21.39	23.78	31.89	25.11	22.92	26.93	17.51
<b>Soybean</b>	0.13	0.19	0.07	0.13	0.09	0.05	0.10	0.13	0.08	-38.11
<b>Peanut</b>	0.00			0.00		0.00	0.00	0.00	0.00	
<b>Sesame</b>	0.00			0.00		0.00	0.00	0.00	0.00	
<b>Sugar beet</b>	0.00					0.00	0.42	0.00	0.14	

Source: MAAR, Analysis of the Current Stituation of Agricultural Sector, 1992-2003

**Table 3.3 - Fertilizers per season, 1994/95, 1997/98-2002/03 (ton)**

<b>Fertilizers</b>		<b>94-95</b>	<b>97-98</b>	<b>98-99</b>	<b>99-00</b>	<b>00-01</b>	<b>01-02</b>	<b>02-03</b>
<b>Nitrogen</b>	planned	300,000	300,000	280,000	260,000	265,000		
	available	236,000	294,500	265,817	268,230	303,000	170,090	180,527
	used	217,000	236,800	218,436	250,565	211,000	160,047	194,502
<b>Phosphate</b>	planned	210,000	180,000	170,000	155,000	155,000		
	available	170,000	196,200	167,100	166,020	191,000	65,463	98,262
	used	128,000	117,600	105,000	113,829	93,000	93,236	102,875
<b>Potash</b>	planned	23,500	20,000	20,000	20,000	20,000		
	available	14,000	13,500	10,167	14,008	19,400	4,506	10,020
	used	6,300	6,950	7,360	8,253	6,500	7,371	7,772

Source: MAAR, The Annual Agricultural Statistical Abstract, 2000 and unpublished information provided by MAAR.

**Table 3.4 - Public intervention in pest control, 2001-2003 (ha)**

<b>Type</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Insect control</b>	305201	432958	294199
<b>Disease control</b>	179328	214054	178933
<b>Weeds control</b>	792870	938340	1007402
<b>Spider control</b>	72581	71038	64658
<b>Field mouse control</b>	5000	3330	1998

Source: MAAR, Report on the performance of the Plant Protection Department, 2001-2003

**Table 3.5 - Feed market, General Establishment of Feed, 1995, 1998-2003 (000 ton)**

<b>Years</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Purchase</b>	894	947	1033	1061	765	748	1002
<b>Imports</b>	0	731	0	0	0	1	na
<b>Manufacture</b>	168	327	319	177	176	136	265
<b>Sales</b>	856	883	983	886	643	750	894
<b>Exports</b>	0	0	0	0	0	0	na

Source: MAAR



**Table 3.6 - Agricultural machinery, 1998-2003**

Year	Tractors		Ploughs	Seeders	Stationary Threshers	Combine Harvesters (Various Types)	Water Pumps		Sprayers		Dusters	
	< 50 HP	> 50 HP					< 10 Inch	> 10 Inch	Manual	Motorized	Manual	Motorized
<b>1998</b>	30467	62860	103722	15442	5251	4936	149121	4184	63511	29263	9101	636
<b>1999</b>	31688	63961	106007	16272	5303	5038	157870	3651	65788	29297	9622	532
<b>2000</b>	32551	65109	108459	15652	5278	4734	156190	3257	65834	29504	9319	495
<b>2001</b>	34010	67379	84824	15305	4850	4500	142658	2588	65868	30759	9253	388
<b>2002</b>	34545	69091	95555	15260	4842	4786	170283	446	60821	36630	8732	524
<b>2003</b>	34742	68884	110900	17209	4829	5249	187106	1590	67220	31499	8295	1205

Source: MAAR, The Annual Agricultural Statistical Abstract, various issues; CBS Statistical Abstract, various issues.

**Table 3.7 - Rural roads construction and served areas, 1995, 1998-2003**

	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>
<b>Length (Km)</b>	614	1418	812	1741	1196	1578
<b>Area served (000 ha)</b>	46	178	74	148	80.9	167

Source: MAAR, The Annual Agricultural Statistical Abstract, various issues.

**Table 4.1 - Agricultural production, 1998-2003 (Million SP, 2000 constant price)**

<b>Crop category</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Cereals</b>	57,057	36,110	39,208	72,768	64,691	67,636
<b>Legumes</b>	5,745	2,014	3,316	5,980	5,666	6,224
<b>Grazing crops</b>	1,347	1,221	1,455	1,146	1,152	1,190
<b>Industrial crops</b>	34,891	32,483	36,932	36,502	36,958	32,469
<b>Vegetables</b>	14,267	12,248	12,436	13,673	17,202	18,276
<b>Fruits</b>	65,814	45,825	66,701	50,431	69,584	54,603
<b>Others<sup>1</sup></b>	57,065	63,662	55,335	52,976	58,039	75,600
<b>Crop production</b>	236,186	193,563	215,383	233,476	253,292	255,998
<b>Animal production</b>	105,832	109,413	120,452	122,036	123,205	123,808
<b>Fisheries</b>	1,678	1,641	1,264	1,342	1,436	1,944
<b>Others*</b>	74,537	79,055	72,793	68,180	73,491	93,566
<b>Agricultural production</b>	418,233	383,672	409,892	425,034	451,424	475,316

Source: MAAR, The Current Situation of Agricultural Sector, 1992-2003

Note: Forestry is not included

1- Crops that can not be classified in the above mentioned categories

\* Includes: Seedlings and seeds, rural industry, cotton ginning, and other agricultural products, and the value of public sector production.

**Table 4.2 - Crop production, 1998-2003 (Million SP, 2000 constant price)**

<b>Crops</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Cereals</b>	<b>57,057</b>	<b>36,110</b>	<b>39,208</b>	<b>72,768</b>	<b>64,691</b>	<b>67,636</b>
Wheat	47,502	31,095	35,878	54,815	55,170	56,760
Barley*	7,184	3,518	1,752	16,169	7,603	8,922
Maize and sorghum*	2,371	1,497	1,578	1,784	1,918	1,954
<b>Legumes</b>	<b>5,745</b>	<b>2,014</b>	<b>3,316</b>	<b>5,980</b>	<b>5,666</b>	<b>6,224</b>
Lentil	2,791	787	1,322	3,214	2,405	3,051
Chickpeas	1,436	490	1,095	1,019	1,507	1,476
Other legumes	1,518	737	899	1,747	1,754	1,697
<b>Grazing crops</b>	<b>1,347</b>	<b>1,221</b>	<b>1,455</b>	<b>1,146</b>	<b>1,152</b>	<b>1,190</b>
Grazing barley	652	698	816	561	728	843
Grazing alfa-alfa	205	176	163	136	135	159
Other grazing	490	347	476	449	289	188
<b>Industrial crops</b>	<b>34,891</b>	<b>32,483</b>	<b>36,932</b>	<b>36,502</b>	<b>36,958</b>	<b>32,469</b>
Cotton	27,873	25,362	29,629	27,655	21,968	22,211
Sugar beet	2,867	3,173	2,803	2,899	3,599	2,874
Tobacco	1,605	1,716	1,814	2,001	1,775	1,820
Other industrial crops	2,546	2,232	2,686	3,947	9,616	5,564
<b>Vegetables</b>	<b>14,267</b>	<b>12,248</b>	<b>12,436</b>	<b>13,673</b>	<b>17,202</b>	<b>18,276</b>
Tomato	3,265	3,589	4,430	4,539	5,294	5,429
Potato	5,910	5,961	5,820	5,444	6,161	5,842
Other vegetables	5,092	2,698	2,186	3,690	5,747	7,005
<b>Fruits</b>	<b>65,814</b>	<b>45,825</b>	<b>66,701</b>	<b>50,431</b>	<b>69,584</b>	<b>54,603</b>
Olive	29,830	15,219	32,910	18,884	35,756	20,987
Grape	7,834	5,138	5,437	5,165	4,540	4,081
Apple	5,725	4,487	4,536	4,159	3,412	4,851
Citrus	7,252	7,052	7,840	8,168	7,313	6,395
Other fruit	15,173	13,929	15,978	14,055	18,563	18,289
<b>Other crops**</b>	<b>57,065</b>	<b>63,662</b>	<b>55,335</b>	<b>52,976</b>	<b>58,039</b>	<b>75,600</b>
<b>Total Value</b>	<b>236,186</b>	<b>193,563</b>	<b>215,383</b>	<b>233,476</b>	<b>253,292</b>	<b>255,998</b>

Source: MAAR, The Current Situation of Agricultural Sector, 1992-2003

\* They are classified also as fodder crops.

\*\* Crops that can not be classified in the above mentioned categories.

**Table 4.3 - Area under crops, 1995 and 1998-2003 (ha)**

Crop	1995	1998	1999	2000	2001	2002	2003
<b>Wheat</b>	<b>1,643,643</b>	<b>1,721,412</b>	<b>1,603,020</b>	<b>1,678,797</b>	<b>1,683,784</b>	<b>1,679,350</b>	<b>1,796,015</b>
Soft	1,361,984	629,853	706,783	756,574	800,361	847,419	952,307
Durum wheat	281,659	1,091,559	896,237	922,223	883,423	831,931	843,708
<b>Legumes</b>	<b>215,804</b>	<b>260,756</b>	<b>206,759</b>	<b>232,427</b>	<b>243,957</b>	<b>241,443</b>	<b>258,120</b>
Lentil	126,406	142,649	147,641	122,774	139,091	121,156	138,847
Chickpeas	77,050	108,014	50,644	101,434	87,134	102,161	99,537
Dry broad beans	8,405	7,841	7,394	6,931	15,109	15,509	16,396
Dry haricot beans	3,113	2,014	1,027	1,197	1,200	1,136	2,170
Dry peas	830	238	53	91	1,423	1,481	1,170
Dry kidney beans	0	0	0	0	0	0	0
<b>Fodder</b>	<b>2,149,880</b>	<b>1,735,969</b>	<b>1,574,852</b>	<b>1,491,087</b>	<b>1,464,368</b>	<b>1,391,122</b>	<b>1,404,851</b>
<b>Dry fodder</b>	<b>2,073,920</b>	<b>1,672,869</b>	<b>1,499,080</b>	<b>1,412,205</b>	<b>1,418,238</b>	<b>1,339,263</b>	<b>1,357,211</b>
Barley	1,963,249	1,542,619	1,414,227	1,316,893	1,302,761	1,234,010	1,253,584
Maize	68,763	72,627	49,832	55,316	63,794	57,266	61,946
Sorghum	4,592	4,653	3,851	3,522	3,712	3,579	5,133
Bitter vetch	11,384	14,228	7,012	9,638	9,544	12,410	9,894
Flowering	7,866	20,415	11,470	12,840	20,080	14,875	7,164
Rambling vetch	18,016	18,002	12,524	13,829	18,243	17,116	19,489
Oats	50	325	164	167	104	7	1
<b>Green fodder</b>	<b>75,960</b>	<b>63,100</b>	<b>75,772</b>	<b>78,882</b>	<b>46,130</b>	<b>51,859</b>	<b>47,640</b>
Grazing barley	55,275	41,513	56,982	59,374	23,917	36,583	37,676
Grazing flowering	9,742	8,011	10,018	11,211	14,531	6,882	3,253
Grazing maize	5,537	6,887	2,502	2,494	3,252	2,534	1,725
Grazing alfa-alfa	4,553	4,701	3,888	3,849	3,417	4,225	3,764
Grazing clover	361	247	208	468	256	282	452
Other fodder	492	1,741	2,174	1,486	757	1,353	771
<b>Industrial crops</b>	<b>320,615</b>	<b>379,057</b>	<b>343,739</b>	<b>368,989</b>	<b>371,237</b>	<b>414,405</b>	<b>359,316</b>
Sugar beet	31,311	28,666	29,954	27,472	26,600	29,597	28,212
Cotton	204,339	274,585	243,836	270,290	257,063	199,773	205,360
Soybeans	7,120	4,458	3,161	2,787	2,418	2,653	1,877
Oily sunflower	797	3,133	418	257	1,491	1,111	947
Indian millet	2,676	1,898	352	698	1,440	238	426
Sunflower	4,328	4,016	7,289	3,330	6,300	5,628	7,273
Tobacco	13,838	15,023	16,162	16,727	16,339	15,811	15,482
Peanut	14,876	11,421	12,965	10,261	10,446	6,661	5,231
Sesame	17,964	18,625	5,632	6,399	5,327	13,262	12,780
Aniseed	851	854	1,381	1,422	1,383	1,235	1,580
Cumin	20,829	15,000	21,135	25,912	40,418	133,843	77,523
Lupines	126	84	51	59	49	63	71
Black cumin	272	64	228	2,056	1,495	3,869	2,173
Other crops	1,288	1,230	1,175	1,320	468	661	382

Source: MAAR, Statistical Abstract

**Table 4.3 (continued) - Area under crops, 1995 and 1998-2003 (ha)**

<b>Crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables</b>	<b>156,077</b>	<b>143,745</b>	<b>114,826</b>	<b>116,530</b>	<b>115,967</b>	<b>146,299</b>	<b>142,958</b>
Green peas	1,735	1,814	2,234	2,552	2,966	3,901	3,417
Green borad beans	4,853	4,706	4,512	4,054	4,984	5,278	5,311
Green Haricot beans	4,347	3,594	3,331	2,930	3,093	3,718	2,522
Green kidney	1,674	1,601	978	945	1,818	1,648	1,591
Snake cucumber	11,280	10,172	6,810	6,783	6,292	9,735	10,535
Eggplant	6,312	6,924	5,143	5,763	5,057	6,128	6,178
Pumpkins	5,990	3,420	2,122	2,851	3,375	2,923	2,920
Lettuce	2,953	2,826	2,355	2,092	1,732	2,217	2,385
Green onion	3,577	2,814	2,899	3,043	3,009	3,959	2,750
Leaf beet	1,137	983	1,092	1,029	876	1,124	1,077
Cauliflower	2,941	2,617	2,559	1,479	1,505	1,678	1,589
Cabbages	3,302	3,231	2,858	2,042	1,898	2,426	1,836
Potato	23,024	22,175	24,779	22,785	21,244	24,100	24,789
Tomato	20,224	16,815	13,596	17,656	15,820	16,601	14,332
Dry onion	6,076	5,503	4,730	4,356	4,610	5,429	4,668
Green pepper	2,527	2,803	2,360	2,845	2,928	2,827	3,114
Okra	4,254	6,704	3,460	3,842	4,460	3,688	5,656
Squash	7,827	5,835	5,192	4,072	3,530	5,394	4,346
Dry garlic	2,313	2,176	2,238	2,263	2,706	2,802	4,320
Water melon	26,229	24,049	11,576	13,605	13,161	23,202	24,856
Musk melon	7,746	7,182	5,215	4,628	6,044	9,739	7,438
Others	5,756	5,801	4,787	4,915	4,859	7,782	7,328
<b>Fruit trees</b>	<b>704,375</b>	<b>775,344</b>	<b>789,623</b>	<b>800,232</b>	<b>813,321</b>	<b>817,186</b>	<b>828,893</b>
Olive	421,583	459,666	469,855	477,992	488,955	501,467	516,950
Grapes	67,343	69,475	69,872	69,285	68,813	54,312	52,036
Apple	43,513	48,488	48,668	49,375	49,476	46,622	43,406
Pistachio	55,900	59,432	59,135	58,838	58,471	57,589	57,261
Citrus	25,221	26,905	26,906	27,402	28,195	28,161	29,260
Pomegranate	6,553	6,647	6,606	6,462	6,330	5,634	5,317
Apricots	11,315	12,411	12,399	12,419	12,501	12,612	12,879
Cherries	15,367	19,304	21,008	21,480	22,511	22,560	23,819
Almonds	25,032	38,197	39,878	41,577	41,715	55,826	57,334
Green plums	1,508	1,603	1,540	1,521	1,566	1,561	1,554
Plums	2,523	2,584	2,628	2,660	2,782	2,570	2,413
Pears	5,247	5,518	5,720	5,834	5,826	4,972	4,228
Peaches	4,870	5,229	5,316	5,324	5,608	6,239	5,868
Quince	932	951	928	905	880	574	523
Nuts	4,360	4,548	4,652	4,761	5,338	3,632	3,278
Figs	10,687	10,720	10,725	10,647	10,740	10,072	9,960
Loquats	127	110	105	107	110	88	73
Palm	90	1,000	1,000	1,009	1,037	435	350
Others	2,205	2,556	2,682	2,634	2,468	2,260	2,384
<b>Area of fruits and vegetables</b>	<b>860,452</b>	<b>919,089</b>	<b>904,449</b>	<b>916,762</b>	<b>929,288</b>	<b>963,485</b>	<b>971,851</b>
<b>Area of other field crops</b>	<b>4,329,942</b>	<b>4,097,194</b>	<b>3,728,370</b>	<b>3,771,300</b>	<b>3,763,346</b>	<b>3,726,320</b>	<b>3,818,302</b>
<b>Total area under crops</b>	<b>5,190,394</b>	<b>5,016,283</b>	<b>4,632,776</b>	<b>4,688,065</b>	<b>4,692,633</b>	<b>4,689,805</b>	<b>4,790,153</b>

Source: MAAR, Statistical Abstract

**Table 4.4 - Crops yield, 1995 and 1998-2003 (kg/ha)**

<b>Crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>2,550</b>	<b>2,390</b>	<b>1,680</b>	<b>1,850</b>	<b>2,820</b>	<b>2,840</b>	<b>2,740</b>
Soft	2,830	2,270	1,530	1,820	2,890	2,900	2,580
Durum wheat	1,180	2,460	1,790	1,870	2,750	2,790	2,910
<b>Legumes</b>							
Lentil	1,170	1,080	300	600	1,280	1,100	1,210
Chickpeas	690	780	580	640	690	870	870
Dry broad beans	1,890	2,000	1,870	1,850	1,870	2,020	1,950
Dry haricot beans	1,520	1,510	1,560	1,610	1,510	1,600	1,530
Dry peas	1,422	1,097	1,547	1,231	1,211	1,204	1,892
Dry kidney beans							
<b>Fodder</b>							
<b>Dry fodder</b>							
Barley	870	560	300	160	1,500	750	860
Maize	2,890	3,920	3,630	3,440	3,380	4,050	3,660
Sorghum	1,020	870	560	670	700	780	830
Bitter vetch	540	630	240	510	410	420	740
Flowering	910	840	520	560	920	970	700
Rambling vetch	810	760	350	530	720	730	840
Oats	1,000	1,209	805	724	798	833	1,000
<b>Green fodder</b>							
Grazing barley	10,060	8,980	7,000	7,860	13,410	11,370	12,780
Grazing flowering	16,640	15,770	11,570	13,570	12,890	13,040	17,570
Grazing maize	17,179	18,486	12,697	27,082	11,518	17,885	14
Grazing alfa-alfa	30,517	24,936	25,933	24,130	22,783	18,211	24,196
Grazing clover	22,873	22,049	20,779	16,514	14,898	16,287	20,241
Other fodder	14,870	11,843	20,364	29,510	40,487	36,898	0
<b>Industrial crops</b>							
Sugar beet	44,910	41,941	44,416	42,780	45,695	51,449	42,717
Cotton	2,940	3,710	3,800	4,000	3,930	4,020	3,950
Soybeans	1,580	1,620	790	1,360	1,530	1,780	1,850
Oily sunflower	1,610	1,600	1,730	1,220	1,770	1,370	2,120
Indian millet	800	1,080	3,060	1,170	1,780	1,400	1,910
Sunflower	1,590	2,190	1,820	2,590	1,530	1,940	1,690
Tobacco	1,690	1,540	1,530	1,560	1,760	1,620	1,690
Peanut	2,040	2,560	2,680	2,740	2,830	3,080	3,090
Sesame	460	270	510	620	530	550	600
Aniseed	955	995	842	922	1,035	1,491	1,450
Cumin	820	700	320	480	710	720	610
Lupines	1,444	1,857	961	855	184	825	1,489
Black cumin	654	797	412	646	963	1,052	908

Source: MAAR, Statistical Abstract

**Table 4.4 (continued) - Crops yield, 1995 and 1998-2003 (kg/ha)**

<b>Crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables (kg/tree)</b>							
Green peas	6,660	6,600	6,780	5,780	5,880	6,040	5,360
Green borad beans	7,800	8,010	8,130	7,550	9,120	10,010	8,446
Haricot beans	7,110	8,880	9,260	7,830	8,700	9,710	7,940
Green kidney	3,553	4,143	2,706	2,711	3,307	2,974	2,983
Snake cucumber	12,580	12,460	13,780	13,460	16,210	14,480	14,430
Eggplant	22,330	22,490	22,280	21,460	21,940	21,770	22,290
Pumpkins	5,293	6,952	5,453	5,605	4,924	5,567	6,354
Lettuce	22,929	20,924	21,105	22,125	24,686	24,214	24,788
Green onion	18,640	15,690	14,130	16,880	16,990	19,150	16,030
Leaf beet	14,895	15,983	13,524	11,715	15,648	17,830	13,951
Cauliflower	26,500	21,901	19,677	20,151	22,576	20,781	19,512
Cabbages	26,240	22,120	19,990	20,990	22,760	21,110	21,420
Potato	20,460	22,200	20,040	21,280	21,340	21,290	19,630
Tomato	21,090	21,300	24,260	26,870	26,850	33,840	37,620
Dry onion	23,640	19,040	19,240	16,510	18,330	17,850	20,290
Green pepper	14,110	13,700	14,130	15,120	15,460	14,330	15,720
Okra	2,965	2,549	3,377	2,991	2,876	3,320	3,567
Squash	16,140	16,770	17,040	15,850	17,200	17,430	16,890
Dry garlic	9,400	8,380	8,070	8,660	10,560	9,540	9,614
Water melon	9,800	16,740	22,330	14,810	17,320	20,690	27,120
Musk melon	8,060	9,390	8,570	10,410	12,170	10,280	15,610
<b>Fruit trees</b>							
Olive	13.3	21.4	10.5	21.5	11.3	18.3	10.5
Grapes	8.8	12.6	8.5	9.3	9.3	11.3	11.1
Apple	28.4	37.3	28.0	26.9	25.3	21.0	31.4
Pistachio	5.2	8.9	6.9	8.5	7.3	9.4	8.0
Citrus	90.5	99.7	91.7	98.4	99.1	86.9	73.2
Lemons	82.3	80.4	94.4	91.8	80.1	70.2	47.0
Oranges	95.2	117.6	91.4	100.7	112.9	95.6	82.5
Other citrus	83.1	81.5	90.8	97.4	87.6	80.3	70.9
Pomegranate	20.3	26.6	24.7	22.0	24.6	20.6	22.3
Apricots	14.1	20.1	25.1	31.2	25.9	46.0	47.8
Cherries	17.3	18.5	16.6	16.6	14.5	10.6	13.3
Almonds	6.0	7.9	6.8	7.2	5.7	11.8	12.0
Green plums	16.9	20.0	25.0	21.4	21.8	27.0	24.4
Plums	19.0	22.2	25.0	24.4	21.2	25.4	26.2
Pears	18.2	19.9	18.8	21.1	18.7	15.4	19.6
Peaches	14.0	22.2	20.5	20.4	18.0	18.9	25.3
Quince	18.6	19.6	23.5	23.9	20.8	22.7	24.2
Nuts	13.9	30.5	29.3	26.0	20.6	27.0	26.4
Figs	20.3	19.6	17.2	18.0	16.3	19.0	18.7
Loquats	23.9	21.2	22.2	21.7	26.1	26.1	27.6
Palm	40.0	38.5	42.9	40.1	51.6	64.7	72.6

Source: MAAR, Statistical Abstract

**Table 4.5. - Crops production, 1995 and 1998-2003 (tons)**

<b>Crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>4,184,144</b>	<b>4,111,625</b>	<b>2,691,504</b>	<b>3,105,489</b>	<b>4,744,623</b>	<b>4,775,442</b>	<b>4,912,993</b>
Soft	3,851,091	1,426,809	1,083,193	1,377,967	2,315,874	2,455,771	2,456,857
Durum wheat	333,053	2,684,816	1,608,311	1,727,522	2,428,749	2,319,671	2,456,136
<b>Legumes</b>							
Lentil	147,546	154,120	43,470	73,018	177,467	132,805	168,437
Chickpeas	53,513	84,616	28,881	64,538	60,052	88,781	86,956
Dry broad beans	15,857	15,712	13,862	12,812	28,251	31,301	32,035
Dry haricot beans	4,733	3,039	1,604	1,928	1,812	1,816	3,309
Dry peas	1,180	261	82	112	1,723	1,783	2,214
Dry kidney beans	0	0	0	0	0	0	0
<b>Fodder</b>							
<b>Dry fodder</b>							
Barley	1,705,142	868,848	425,528	211,905	1,955,566	919,514	1,079,067
Maize	198,782	285,000	181,000	190,504	215,663	231,888	226,713
Sorghum	4,688	4,070	2,167	2,372	2,607	2,782	4,281
Bitter vetch	6,131	8,905	1,671	4,910	3,888	5,268	7,276
Flowering	7,135	17,109	6,004	7,208	18,482	14,478	5,036
Rambling vetch	14,520	13,648	4,331	7,395	13,074	12,490	16,433
Oats	50	393	132	121	83	5	1
<b>Green fodder</b>	<b>969,086</b>	<b>769,641</b>	<b>697,592</b>	<b>831,286</b>	<b>655,103</b>	<b>658,152</b>	<b>679,762</b>
Grazing barley	556,092	372,658	398,868	466,418	320,775	416,004	481,672
Grazing flowering	162,123	126,332	115,885	152,132	187,272	89,720	57,148
Grazing maize	95,120	127,316	31,768	67,543	37,456	45,325	23,868
Grazing alfa-alfa	138,944	117,223	100,829	92,876	77,850	76,940	91,061
Grazing clover	8,257	5,446	4,322	7,727	3,814	4,593	9,139
Other fodder	8,550	20,666	45,920	44,590	27,936	25,570	16,874
<b>Industrial crops</b>							
Sugar beet	1,406,086	1,202,153	1,330,387	1,175,326	1,215,477	1,522,702	1,205,159
Cotton	600,100	1,017,800	926,096	1,081,888	1,009,826	802,178	811,026
Soybeans	11,247	7,233	2,513	3,804	3,693	4,712	3,465
Oily sunflower	1,284	5,009	722	314	2,638	1,526	2,010
Indian millet	2,130	2,042	1,076	818	2,562	333	814
Sunflower	6,889	8,788	13,253	8,631	9,621	10,946	12,259
Tobacco	23,361	23,114	24,700	26,112	28,802	25,561	26,209
Peanut	30,368	29,254	34,684	28,106	29,574	20,485	16,154
Sesame	8,272	5,011	2,872	3,958	2,822	7,288	7,513
Aniseed	813	850	1,163	1,311	1,432	1,841	2,252
Cumin	17,096	10,442	6,755	12,412	28,579	96,650	47,534
Lupines	182	156	49	50	9	52	105
Black cumin	178	51	94	1,328	1,439	4,070	1,973

Source: MAAR, Statistical Abstract



**Table 4.5. (continued) - Crops production, 1995 and 1998-2003 (tons)**

<b>Crop</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables</b>							
Green peas	11,558	11,975	15,143	14,754	17,429	23,578	18,314
Green borad beans	37,833	37,691	36,695	30,592	45,465	52,847	54,404
Haricot beans	30,893	31,896	30,831	22,938	26,890	36,092	20,027
Green kidney	5,947	6,633	2,646	2,562	6,013	4,903	4,746
Snake cucumber	141,894	126,728	93,813	91,302	102,004	140,953	152,025
Eggplant	140,927	155,759	114,594	123,670	110,931	133,402	137,722
Pumpkins	31,703	23,776	11,571	15,980	16,620	16,269	18,551
Lettuce	67,710	59,132	49,702	46,285	42,757	53,683	57,417
Green onion	66,657	44,135	40,949	51,360	51,136	75,825	44,070
Leaf beet	16,936	15,711	14,768	12,055	13,708	20,041	14,221
Cauliflower	77,937	57,314	50,354	29,804	33,977	34,871	25,749
Cabbages	86,654	71,453	57,124	42,876	43,193	51,216	39,342
Potato	470,971	492,264	496,503	484,778	453,435	513,153	486,605
Tomato	426,532	358,239	329,321	474,548	424,714	561,562	539,228
Dry onion	143,617	104,779	91,000	71,917	84,489	96,880	94,731
Green pepper	35,643	38,376	33,379	42,999	45,261	40,496	48,948
Okra	12,612	17,089	11,684	11,490	12,827	12,246	20,171
Squash	126,325	97,876	88,469	64,535	60,728	94,020	73,408
Dry garlic	21,731	18,213	18,057	19,590	28,574	26,712	41,533
Water melon	257,111	402,485	258,523	201,531	227,939	480,087	674,193
Musk melon	62,418	67,440	44,706	48,172	73,567	100,084	116,146
<b>Fruit trees</b>							
Olive	423,358	784,999	400,508	866,052	496,952	940,941	552,277
Grapes	383,980	590,000	386,986	409,450	388,983	341,886	307,343
Apple	224,002	362,001	283,713	286,773	262,963	215,762	306,715
Pistachio	14,538	35,684	30,133	39,923	37,434	52,853	47,547
Citrus	565,681	739,662	719,589	799,941	833,380	746,061	652,420
Lemons	49,559	67,711	82,821	83,412	79,360	84,808	71,353
Oranges	303,086	438,959	356,550	407,064	464,892	427,105	398,727
Other citrus	213,036	232,992	280,218	309,465	289,128	234,148	182,340
Pomegranate	62,040	84,926	78,491	69,164	74,843	55,958	61,682
Apricots	30,393	67,190	62,912	78,873	66,023	100,902	104,915
Cherries	40,798	56,003	54,112	56,285	50,795	39,707	54,794
Almonds	33,663	67,149	57,697	62,289	49,487	139,028	140,249
Green plums	8,720	12,745	14,938	13,078	13,014	14,027	10,465
Plums	16,968	22,226	26,081	26,168	22,841	22,742	20,507
Pears	18,973	26,659	26,603	30,618	27,591	20,142	20,383
Peaches	21,310	43,087	41,595	42,034	37,635	35,320	35,037
Quince	5,329	6,719	8,119	8,245	6,996	4,732	4,320
Nuts	6,212	16,378	16,053	15,005	12,543	12,766	11,900
Figs	48,106	47,049	41,718	44,071	40,018	43,400	41,089
Loquats	850	934	964	966	1,237	1,183	1,407
Palm	2,400	2,500	3,000	3,051	3,921	3,064	4,033

Source: MAAR, Statistical Abstract

**Table 4.6 - Area under irrigated crops, 1998-2003 (ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>689,868</b>	<b>669,937</b>	<b>694,469</b>	<b>682,786</b>	<b>752,524</b>	<b>814,533</b>
Soft wheat	211,433	267,719	318,037	293,525	351,075	407,810
Durum wheat	478,435	402,218	376,432	389,261	401,449	406,723
<b>Legumes</b>	<b>7,753</b>	<b>6,483</b>	<b>7,271</b>	<b>12,911</b>	<b>14,947</b>	<b>17,177</b>
Lentil	94	214	400	813	612	258
Chickpeas	153	218	488	475	1,051	1,054
Dry broad beans	5,422	4,984	5,144	9,979	11,996	13,491
Dry haricot beans	2,014	1,027	1,196	1,200	1,128	2,145
Dry peas	70	40	43	444	160	229
Dry kidney beans	0	0	0	0	0	0
<b>Fodder</b>	<b>117,937</b>	<b>92,870</b>	<b>100,949</b>	<b>137,045</b>	<b>149,832</b>	<b>148,727</b>
<b>Dry fodder</b>	<b>79,104</b>	<b>56,530</b>	<b>64,300</b>	<b>104,158</b>	<b>107,964</b>	<b>103,617</b>
Barley	3,903	5,266	8,542	36,418	48,771	40,957
Maize	72,622	49,825	55,310	63,763	57,225	61,797
Sorghum	8	44	103	145	312	144
Bitter vetch	0	0	0	0	0	0
Flowering	2,366	1,264	284	3,567	1,656	719
Rambling vetch	205	131	61	265	0	0
Oats	0	0	0	0	0	0
<b>Green fodder</b>	<b>38,833</b>	<b>36,340</b>	<b>36,649</b>	<b>32,887</b>	<b>41,868</b>	<b>45,110</b>
Grazing barley	22,810	24,317	24,150	20,423	32,416	37,027
Grazing flowering	4,794	4,912	5,603	7,278	3,407	2,409
Grazing maize	4,541	760	1,093	756	908	956
Grazing alfa-alfa	4,701	3,888	3,849	3,417	4,225	3,764
Grazing clover	247	208	468	256	282	452
Other fodder	1,740	2,255	1,486	757	630	503
<b>Industrial crops</b>	<b>333,924</b>	<b>305,179</b>	<b>323,945</b>	<b>312,838</b>	<b>258,060</b>	<b>259,831</b>
Sugar beet	28,666	29,954	27,472	26,600	29,597	28,212
Cotton	274,585	243,835	270,290	257,063	199,773	205,360
Soybeans	4,458	3,161	2,787	2,418	2,653	1,877
Oily sunflower	3,133	418	257	1,491	1,111	947
Indian millet	526	129	322	133	36	144
Sunflower	2,875	5,809	1,747	4,662	4,748	6,404
Tobacco	4,892	5,853	5,795	5,592	4,896	5,110
Peanut	11,421	12,964	10,260	10,446	6,661	5,231
Sesame	2,509	1,803	3,150	2,005	3,264	3,563
Aniseed	829	1,098	1,358	1,361	1,232	1,172
Cumin	20	144	378	942	3,710	1,367
Lupines	0	0	0	0	0	0
Black cumin	10	0	11	59	112	23
Other crops	0	11	118	66	267	421

Source: MAAR, Statistical Abstract

**Table 4.6 (continued) - Area under irrigated crops, 1998-2003 (ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables</b>	<b>91,465</b>	<b>86,794</b>	<b>85,211</b>	<b>81,070</b>	<b>115,261</b>	<b>104,934</b>
Green peas	1,373	2,006	2,212	2,656	3,612	3,113
Green borad beans	2,932	3,016	2,351	3,481	4,007	4,165
Haricot beans green	3,585	3,327	2,921	3,084	3,674	2,484
Green kidney	323	249	199	795	411	449
Snake cucumber	5,746	5,061	4,675	4,347	6,485	6,106
Eggplant	6,923	5,142	5,763	5,057	6,128	6,178
Pumpkins	353	216	318	172	325	201
Lettuce	2,533	1,964	1,677	1,433	1,878	197
Green onion	1,874	1,958	2,061	1,990	3,219	1,842
Leaf beet	806	825	770	674	841	727
Cauliflower	2,617	2,544	1,462	1,489	1,664	1,575
Cabbages	3,190	2,816	1,999	1,856	2,384	1,772
Potato	21,670	24,251	22,299	20,891	23,692	24,440
Tomato	9,853	9,751	13,338	9,966	12,380	10,925
Dry onion	4,856	4,079	3,711	4,028	5,037	4,176
Green pepper	2,802	2,363	2,844	2,928	2,827	3,114
Okra	1,435	1,198	1,598	1,090	1,206	2,102
Squash	5,588	4,490	3,971	3,373	5,162	4,208
Dry garlic	1,622	1,638	1,697	2,187	2,238	3,808
Water melon	4,405	4,774	4,597	4,572	16,377	13,011
Musk melon	1,806	1,343	1,311	1,841	6,867	2,858
Others	5,173	3,783	3,437	3,160	4,848	7,483
<b>Fruit trees</b>	<b>120,181</b>	<b>121,948</b>	<b>122,489</b>	<b>129,397</b>	<b>135,818</b>	<b>141,153</b>
Olive	26,841	28,584	28,994	32,254	40,935	46,799
Grapes	10,340	10,705	10,341	10,498	9,623	8,468
Apple	16,813	16,734	16,928	17,064	16,569	15,143
Pistachio	2,612	2,608	2,738	5,309	5,643	6,178
Citrus	26,906	26,907	27,338	28,129	28,094	29,193
Pomegranate	5,827	5,754	5,608	5,465	4,968	4,811
Apricots	9,414	9,258	9,133	9,077	9,453	10,132
Cherries	1,815	1,813	1,826	1,832	1,854	2,840
Almonds	864	760	667	670	1,448	1,707
Green plums	1,471	1,462	1,443	1,499	1,493	1,402
Plums	1,908	1,943	1,931	2,024	1,927	1,706
Pears	2,944	2,970	2,958	2,934	2,367	2,247
Peaches	4,324	4,380	4,332	4,580	5,243	5,195
Quince	716	689	672	651	398	380
Nuts	3,643	3,616	3,619	3,648	2,570	2,216
Figs	963	870	813	802	999	481
Loquats	72	68	68	65	65	56
Palm	786	786	793	822	427	343
Others	1,922	2,041	2,287	2,074	1,742	1,855
<b>Area under irrigated fruits and vegetables</b>	<b>211,646</b>	<b>208,742</b>	<b>207,700</b>	<b>210,467</b>	<b>251,079</b>	<b>246,087</b>
<b>Total area under irrigated crops</b>	<b>1,361,128</b>	<b>1,283,211</b>	<b>1,334,334</b>	<b>1,356,047</b>	<b>1,426,442</b>	<b>1,486,355</b>

Source: NAPC, Data Base, 2003 &amp; Statistical Abstract

**Table 4.7 - Irrigated crops yield, 1998-2003 (kg/ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>3,593</b>	<b>3,083</b>	<b>3,451</b>	<b>4,019</b>	<b>4,352</b>	<b>4,200</b>
Soft	3,604	3,001	3,503	4,111	4,489	4,188
Durum wheat	3,587	3,138	3,407	3,950	4,233	4,213
<b>Legumes</b>						
Lentil	1,089	1,000	1,165	2,272	864	1,411
Chickpeas	1,967	1,573	1,057	1,688	1,537	1,510
Dry broad beans	2,170	2,163	2,050	2,261	2,301	2,178
Dry haricot beans	1,509	1,564	1,612	1,510	1,603	1,532
Dry peas	1,443	1,725	1,744	1,676	2,000	2,135
Dry kidney beans						
<b>Fodder</b>						
<b>Dry fodder</b>						
Barley	2,999	2,187	1,665	2,438	1,748	1,252
Maize	3,924	3,633	3,444	3,382	4,051	3,664
Sorghum	2,500	1,000	2,756	1,000	917	912
Bitter vetch						
Flowering	1,120	1,172	1,120	1,873	1,684	1,229
Rambling vetch	1,634	2,122	1,656	1,947		
Oats						
<b>Green fodder</b>						
Grazing barley	13,561	15,149	16,444	15,047	12,604	12,908
Grazing flowering	21,167	20,965	21,652	18,984	20,625	19,339
Grazing maize	20,830	14,657	20,506	20,978	23,732	19,683
Grazing alfa-alfa	24,936	25,933	24,130	22,783	18,211	24,196
Grazing clover	22,049	20,779	16,514	14,898	16,287	20,241
<b>Industrial crops</b>						
Sugar beet	41,941	44,416	42,780	45,695	51,449	42,717
Cotton	3,707	3,798	4,003	3,928	4,015	3,949
Soybeans	1,624	795	1,365	1,527	1,776	1,846
Oily sunflower	1,600	1,731	1,222	1,769	1,374	2,123
Indian millet	1,787	1,713	1,523	3,203	3,562	2,547
Sun flower	2,429	1,961	3,966	1,555	2,119	1,690
Tobacco	2,507	2,482	2,548	2,569	2,699	2,752
Peanut	2,562	2,675	2,739	2,831	3,075	3,088
Sesame	821	727	951	790	624	830
Aniseed	1,010	936	946	1,046	1,493	1,455
Cumin	1,200	951	682	1,146	960	898
Lupines						
Black cumin	1,000		818	1,237	1,357	933

Source: MAAR, Statistical Abstract

**Table 4.7 (continued) - Irrigated crops yield, 1998-2003 (kg/ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables (kg/tree)</b>						
Green peas	7,120	7,090	5,980	5,920	6,130	5,450
Green borad beans	9,710	9,410	8,720	10,470	11,150	9,070
Haricot beans	8,880	9,260	7,830	8,700	9,760	7,980
Green kidney	7,474	7,076	7,518	5,600	7,450	6,982
Snake cucumber	18,560	17,140	17,730	21,570	19,190	18,350
Eggplant	22,490	22,280	21,460	21,940	21,770	22,290
Pumpkins	18,637	15,366	21,528	17,941	16,992	22,471
Lettuce	21,740	22,790	24,634	27,264	26,289	26,316
Green onion	18,370	16,500	20,120	20,880	21,390	18,690
Leaf beet	17,120	14,596	12,217	17,619	20,329	14,742
Cauliflower	21,901	19,735	20,272	22,713	20,871	19,611
Cabbages	22,210	20,070	21,120	22,930	21,220	21,660
Potato	22,450	20,210	21,500	21,520	21,460	19,720
Tomato	31,680	31,120	33,750	38,420	43,530	47,400
Dry onion	20,420	21,020	17,960	19,920	18,600	21,100
Green pepper	13,700	14,130	15,120	15,460	14,330	15,720
Okra	5,561	6,257	5,146	4,877	5,764	6,167
Squash	17,200	18,290	16,170	17,860	18,030	17,140
Dry garlic	9,980	9,880	10,370	12,240	10,890	10,310
Water melon	47,850	43,440	29,760	32,990	20,360	29,630
Musk melon	20,220	17,780	21,220	18,030	11,340	20,190
<b>Fruit trees</b>						
Olive	22.7	16.0	23.5	19.3	22.3	21.5
Grapes	18.1	21.7	21.7	25.1	27.9	30.1
Apple	39.3	34.6	33.7	33.3	25.5	40.7
Pistachio	12.5	12.4	13.0	10.8	15.1	12.4
Citrus	99.7	91.7	98.6	99.3	87.0	73.3
Lemons	81.7	96.6	92.1	80.3	70.4	47.2
Oranges	117.5	91.4	100.7	112.9	95.7	82.6
Other citrus	81.5	90.8	97.8	87.9	80.6	71.3
Pomegranate	26.4	25.4	21.2	23.9	21.3	22.7
Apricots	29.9	27.7	34.0	29.3	53.0	55.8
Cherries	24.7	27.6	24.2	23.5	18.9	20.8
Almonds	14.5	11.6	12.5	19.3	21.6	22.6
Green plums	22.0	25.0	21.7	22.0	27.5	24.6
Plums	24.1	24.1	23.7	18.9	23.7	26.0
Pears	20.3	19.9	22.7	20.5	17.9	23.5
Peaches	23.0	21.2	21.0	18.4	20.0	26.8
Quince	17.7	22.5	23.0	19.2	21.7	23.1
Nuts	33.2	31.7	27.3	21.3	29.8	28.2
Figs	24.4	22.3	24.6	23.4	26.5	26.8
Loquats	22.3	25.2	24.1	27.6	27.4	30.8
Palm	38.5	43.6	41.0	54.4	64.3	72.7

Source: MAAR, Statistical Abstract

**Table 4.8 - Irrigated crops production, 1998-2003 (tons)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>2,478,440</b>	<b>2,065,483</b>	<b>2,396,573</b>	<b>2,744,203</b>	<b>3,275,222</b>	<b>3,421,429</b>
Soft	762,057	803,473	1,114,028	1,206,811	1,575,830	1,708,087
Durum wheat	1,716,383	1,262,010	1,282,545	1,537,392	1,699,392	1,713,342
<b>Legumes</b>						
Lentil	102	214	466	1,847	529	364
Chickpeas	301	343	516	802	1,615	1,592
Dry broad beans	11,766	10,781	10,546	22,564	27,604	29,382
Dry haricot beans	3,039	1,604	1,928	1,812	1,816	3,309
Dry peas	101	69	75	744	320	489
Dry kidney beans	0	0	0	0	0	0
<b>Fodder</b>						
<b>Dry fodder</b>						
Barley	11,705	11,518	14,223	88,772	85,232	51,261
Maize	285,000	180,996	190,501	215,641	231,839	226,427
Sorghum	40	44	285	145	286	131
Bitter vetch	0	0	0	0	0	0
Flowering	2,651	1,482	318	6,681	2,788	884
Rambling vetch	335	278	101	516	0	0
Oats	0	0	0	0	0	0
<b>Green fodder</b>						
Grazing barley	309,334	368,385	397,111	307,295	408,568	477,947
Grazing flowering	101,475	102,978	121,318	138,167	70,268	46,586
Grazing maize	94,588	11,139	22,413	15,859	21,546	18,971
Grazing alfa-alfa	117,223	100,829	92,876	77,850	76,940	91,061
Grazing clover	5,446	4,322	7,727	3,814	4,593	9,139
Other fodder	20,666	45,920	44,590	27,936	24,814	15,578
<b>Industrial crops</b>						
Sugar beet	1,202,153	1,330,387	1,175,326	1,215,477	1,522,702	1,205,159
Cotton	1,017,800	926,096	1,081,888	1,009,826	802,178	811,026
Soybeans	7,233	2,513	3,804	3,693	4,712	3,465
Oily sunflower	5,009	722	314	2,638	1,526	2,010
Indian millet	940	221	492	426	130	368
Sunflower	6,985	11,390	6,920	7,249	10,060	10,822
Tobacco	12,266	14,525	14,764	14,364	13,215	14,064
Peanut	29,254	34,684	28,106	29,574	20,485	16,154
Sesame	2,059	1,311	2,995	1,583	2,038	2,959
Aniseed	837	1,028	1,284	1,423	1,839	2,232
Cumin	24	137	258	1,080	3,560	1,228
Lupines	0	0	0	0	0	0
Black cumin	10	0	9	73	152	21
Other crops	153	47	86	54	66	853

Source: MAAR, Statistical Abstract

**Table 4.8 (continued) - Irrigated crops production, 1998-2003 (tons)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables</b>						
Green peas	9,755	14,229	13,214	15,730	22,135	17,235
Green borad beans	28,475	27,801	20,498	36,451	44,691	37,787
Haricot beans	31,879	30,796	22,881	26,838	35,855	19,823
Green kidney	2,414	1,762	1,496	4,452	3,062	3,135
Snake cucumber	106,632	86,762	82,886	93,787	124,460	112,069
Eggplant	155,759	114,594	123,670	110,931	133,402	137,722
Pumpkins	6,579	3,319	6,846	3,093	5,514	4,519
Lettuce	55,068	44,759	41,312	39,069	49,370	52,023
Green onion	34,406	32,286	41,447	41,545	68,846	34,429
Leaf beet	13,799	12,042	9,407	11,875	17,097	10,732
Cauliflower	57,314	50,206	29,638	33,820	34,729	30,819
Cabbages	70,830	56,467	42,225	42,559	50,565	38,391
Potato	486,384	492,759	479,474	449,663	508,334	482,023
Tomato	312,185	302,828	449,679	382,765	538,932	517,815
Dry onion	99,160	85,754	66,651	80,231	93,671	88,113
Green pepper	38,376	33,379	42,999	45,261	40,496	48,948
Okra	7,980	7,496	8,224	5,316	6,951	12,961
Squash	96,084	82,221	64,221	60,265	93,060	72,110
Dry garlic	16,191	16,161	17,597	26,767	24,367	39,204
Water melon	210,792	207,451	136,890	150,835	333,451	385,486
Musk melon	36,527	23,870	27,837	33,187	77,867	57,693
Others	96,872	64,957	60,481	60,842	91,429	104,972
<b>Fruit trees</b>						
Olive	52,818	40,653	65,386	62,899	92,979	106,424
Grapes	119,892	145,901	144,917	143,592	151,108	131,235
Apple	173,635	155,506	154,304	153,069	113,623	163,604
Pistachio	2,897	3,241	3,699	5,898	9,886	9,359
Citrus	739,323	719,561	799,870	832,825	745,451	652,065
Lemons	67,373	82,794	83,353	79,293	84,727	71,286
Oranges	438,958	356,549	407,062	464,890	427,062	398,683
Other citrus	232,992	280,218	309,455	288,642	233,662	182,096
Pomegranate	71,961	68,622	56,563	61,311	48,939	52,666
Apricots	62,574	58,443	72,408	61,212	94,807	96,983
Cherries	12,840	14,828	13,407	13,365	10,798	13,246
Almonds	2,327	2,229	2,441	3,781	7,641	7,993
Green plums	12,283	14,181	12,576	12,439	13,373	9,736
Plums	16,965	17,881	18,157	14,504	14,449	12,602
Pears	18,448	18,945	21,859	19,710	14,963	14,078
Peaches	39,499	38,532	38,694	34,333	32,554	32,539
Quince	4,910	6,235	6,375	5,245	3,279	2,878
Nuts	14,315	13,629	12,293	9,993	9,979	8,478
Figs	6,517	6,258	6,814	6,395	5,953	3,731
Loquats	657	722	710	846	837	991
Palm	2,130	2,630	2,680	3,550	3,014	4,001
Others	0	0	0	0	0	0

Source: MAAR, Statistical Abstract

**Table 4.9 - Area, yield and production of irrigated wheat by governorate, 2000-2003****Table 4.9.a - Area of irrigated wheat by governorate, 2000-2003**

Governorate	2000		2001		2002		2003	
	Area	%	Area	%	Area	%	Area	%
<b>Sweida</b>	41	0.01	18	0.00	251	0.03	369	0.05
<b>Dar'a</b>	13,694	1.97	13,260	1.94	12,983	1.73	12,923	1.59
<b>Quneitra</b>	1,544	0.22	1,900	0.28	1,953	0.26	1,412	0.17
<b>Rural Damascus</b>	13,720	1.98	12,824	1.88	10,012	1.33	12,117	1.49
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	26,340	3.79	22,211	3.25	23,865	3.17	23,043	2.83
<b>Hama</b>	36,262	5.22	34,810	5.10	34,260	4.55	33,969	4.17
<b>Ghab</b>	46,249	6.65	44,464	6.51	41,255	5.48	49,736	6.11
<b>Idleb</b>	21,211	3.05	23,538	3.45	30,933	4.11	26,567	3.26
<b>Tartous</b>	10,326	1.49	8,367	1.23	8,163	1.08	7,440	0.91
<b>Lattakia</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Aleppo</b>	85,188	12.27	93,973	13.76	102,374	13.60	109,546	13.45
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	82,813	11.93	80,171	11.74	102,202	13.58	115,077	14.13
<b>GADEB</b>	4,109	0.59	4,314	0.63	0	0.00	0	0.00
<b>Deir-Ezzor</b>	63,061	9.08	60,752	8.90	56,288	7.48	75,058	9.21
<b>Al-Hassake</b>	289,911	41.75	282,184	41.33	327,985	43.58	347,276	42.63
<b>Total</b>	<b>694,469</b>	<b>100</b>	<b>682,786</b>	<b>100</b>	<b>752,524</b>	<b>100</b>	<b>814,533</b>	<b>100</b>

Source: MAAR, Statistical Abstract



**Table 4.9.b - Yield of irrigated wheat by governorate, 2000-2003 (ton/hectare)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>		1.67	5.27	4.56
<b>Dar'a</b>	3.13	3.72	4.17	3.51
<b>Quneitra</b>	2.69	2.44	3.31	3.15
<b>Rural Damascus</b>	3.24	3.41	4.35	4.96
<b>Damascus city</b>	0	0	0	0
<b>Homs</b>	2.38	2.28	2.71	3.48
<b>Hama</b>	4.17	4.19	4.28	4.53
<b>Ghab</b>	4.15	4.4	4.07	5.08
<b>Idleb</b>	4.08	4.23	5.6	4.37
<b>Tartous</b>	2.95	3.31	3.39	3.18
<b>Lattakia</b>	0	0	0	0
<b>Aleppo</b>	3.74	3.8	4.38	4.17
<b>Assad Establi.ment</b>	0	0	0	0
<b>Al-Raqqa</b>	4.221	3.97	5.28	4.54
<b>GADEB</b>	4.41	3.71	0	0
<b>Deir-Ezzor</b>	3.02	3.91	4.37	4.14
<b>Al-Hassake</b>	3.12	4.25	4.13	4.02

Source: MAAR, Statistical Abstract

**Table 4.9.c - Production of irrigated wheat by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	0	0.00	30	0.00	1,323	0.0	1,681	0.05
<b>Dar'a</b>	42,819	1.79	49,269	1.80	54,164	1.7	45,406	1.33
<b>Quneitra</b>	4,151	0.17	4,642	0.17	6,456	0.2	4,449	0.13
<b>Rural Damascus</b>	44,402	1.85	43,691	1.59	43,565	1.3	60,064	1.76
<b>Damascus city</b>	0	0.00	0	0.00	0	0.0	0	0.00
<b>Homs</b>	62,617	2.61	50,657	1.85	64,729	2.0	80,240	2.35
<b>Hama</b>	151,305	6.31	145,921	5.32	146,736	4.5	153,882	4.50
<b>Ghab</b>	191,959	8.01	195,000	7.11	167,866	5.1	252,857	7.39
<b>Idleb</b>	86,469	3.61	99,522	3.63	173,322	5.3	116,007	3.39
<b>Tartous</b>	30,436	1.27	27,706	1.01	27,635	0.8	23,647	0.69
<b>Lattakia</b>	0	0.00	0	0.00	0	0.0	0	0.00
<b>Aleppo</b>	318,630	13.30	357,533	13.03	448,413	13.7	456,468	13.34
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.0	0	0.00
<b>Al-Raqqa</b>	349,550	14.59	318,245	11.60	539,517	16.5	522,892	15.28
<b>GADEB</b>	18,100	0.76	16,001	0.58	0	0.0	0	0.00
<b>Deir-Ezzor</b>	190,425	7.95	237,478	8.65	245,934	7.5	310,998	9.09
<b>Al-Hassake</b>	905,709	37.79	1,198,508	43.67	1,355,562	41.4	1,392,838	40.71
<b>Total</b>	<b>2,396,572</b>	<b>100</b>	<b>2,744,203</b>	<b>100</b>	<b>3,275,222</b>	<b>100</b>	<b>3,421,429</b>	<b>100</b>

Source: MAAR, Statistical Abstract

**Table 4.10 - Area under rainfed crops, 1998-2003 (ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Wheat</b>	<b>1,031,544</b>	<b>933,083</b>	<b>984,328</b>	<b>1,000,998</b>	<b>926,826</b>	<b>981,482</b>
Soft	418,420	439,064	438,537	506,836	496,344	544,497
Durum wheat	613,124	494,019	545,791	494,162	430,482	436,985
<b>Legumes</b>	<b>253,000</b>	<b>200,277</b>	<b>225,155</b>	<b>231,046</b>	<b>226,496</b>	<b>240,942</b>
Lentil	142,555	147,427	122,374	138,278	120,544	138,589
Chickpeas	107,858	50,426	100,946	86,659	101,110	98,483
Dry broad beans	2,419	2,411	1,787	5,130	3,513	2,904
Dry haricot beans	0	0	0	0	8	25
Dry peas	168	13	48	979	1,321	941
Dry kidney beans	0	0	0	0	0	0
<b>Fodder</b>	<b>1,617,903</b>	<b>1,481,981</b>	<b>1,390,139</b>	<b>1,327,323</b>	<b>1,241,291</b>	<b>1,256,123</b>
<b>Dry fodder</b>	<b>1,593,636</b>	<b>1,442,549</b>	<b>1,347,906</b>	<b>1,314,080</b>	<b>1,231,300</b>	<b>1,253,593</b>
Barley	1,538,716	1,408,961	1,308,351	1,266,343	1,185,239	1,212,627
Maize	12	6	6	31	42	149
Sorghum	4,638	3,807	3,420	3,567	3,267	4,989
Bitter vetch	14,228	7,012	9,638	9,544	12,410	9,894
Flowering	18,049	10,206	12,556	16,513	13,220	6,444
Rambling vetch	17,798	12,393	13,768	17,978	17,116	19,489
Oats	195	164	167	104	6	1
<b>Green fodder</b>	<b>24,267</b>	<b>39,432</b>	<b>42,233</b>	<b>13,243</b>	<b>9,991</b>	<b>2,530</b>
Grazing barley	18,704	32,666	35,224	3,494	4,167	650
Grazing flowering	3,217	5,106	5,608	7,253	3,476	844
Grazing maize	2,346	1,742	1,401	2,496	1,626	769
Grazing alfa-alfa	0	0	0	0	0	0
Grazing clover	0	0	0	0	0	0
Other fodder	0	0	0	0	722	267
<b>Industrial crops</b>	<b>45,554</b>	<b>38,560</b>	<b>45,044</b>	<b>58,399</b>	<b>156,345</b>	<b>99,485</b>
Sugar beet	0	0	0	0	0	0
Cotton	0	0	0	0	0	0
Soybeans	0	0	0	0	0	0
Oily sunflower	0	0	0	0	4	0
Indian millet	1,371	223	376	1,307	201	282
Sunflower	1,141	1,480	1,582	1,638	880	869
Tobacco	10,130	10,310	10,931	10,747	10,915	10,372
Peanut	0	0	0	0	0	0
Sesame	16,116	3,829	3,250	3,322	9,998	9,217
Aniseed	25	283	64	22	3	41
Cumin	14,980	20,991	25,533	39,476	130,133	76,156
Lupines	84	51	59	49	63	71
Black cumin	54	228	2,045	1,436	3,757	2,150
Other crops	1,653	1,165	1,205	402	391	327

Source: MAAR, Statistical Abstract

**Table 4.10 (continued) - Area under rainfed crops, 1998-2003 (ha)**

<b>Crop</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Vegetables</b>	<b>52,280</b>	<b>28,010</b>	<b>31,322</b>	<b>34,895</b>	<b>31,040</b>	<b>38,025</b>
Green peas	444	229	341	311	290	304
Green borad beans	1,775	1,496	1,703	1,503	1,271	1,146
Haricot beans	9	4	9	9	44	38
Green kidney	1,278	729	746	1,023	1,237	1,142
Snake cucumber	4,426	1,747	2,108	1,945	3,250	4,429
Eggplant	0	0	0	0	0	0
Pumpkins	3,067	1,906	2,533	3,203	2,598	2,719
Lettuce	293	391	415	299	339	332
Green onion	941	942	982	1,019	742	907
Leaf beet	177	267	259	202	283	350
Cauliflower	0	15	17	16	14	13
Cabbages	41	44	43	42	44	64
Potato	507	528	484	352	410	349
Tomato	6,962	3,845	4,318	5,854	4,221	3,407
Dry onion	940	942	982	1,019	741	907
Green pepper	0	0	0	0	0	0
Okra	5,269	2,262	2,244	3,370	2,483	3,554
Squash	248	697	101	157	232	138
Dry garlic	554	601	566	519	565	512
Water melon	19,644	6,801	9,006	8,589	6,825	11,845
Musk melon	5,376	3,872	3,316	4,204	2,872	4,581
Others	329	692	1,149	1,259	2,579	1,288
<b>Fruit trees</b>	<b>655,163</b>	<b>667,676</b>	<b>677,743</b>	<b>683,924</b>	<b>681,368</b>	<b>687,740</b>
Olive	432,828	441,273	448,999	456,703	460,533	470,150
Grapes	59,155	59,169	58,947	58,318	44,689	43,569
Apple	31,679	31,926	32,447	32,414	30,055	28,262
Pistachio	56,822	56,529	56,100	53,163	51,946	51,083
Citrus	94	94	80	85	87	86
Pomegranate	820	852	854	865	665	507
Apricots	2,997	3,142	3,288	3,423	3,157	2,746
Cherries	17,490	19,196	19,655	20,678	20,708	20,979
Almonds	37,333	39,119	40,911	41,044	54,378	55,627
Green plums	132	78	78	67	68	152
Plums	675	685	729	755	642	707
Pears	2,573	2,750	2,877	2,892	2,606	1,981
Peaches	905	936	992	1028	996	673
Quince	235	239	233	229	176	143
Nuts	905	1036	1142	1690	1062	1063
Figs	9,758	9,855	9,834	9,938	9,073	9,480
Loquats	38	37	39	45	23	16
Palm	214	214	215	215	8	7
Others	510	545	323	372	496	509
<b>Area under rainfed fruits and vegetables</b>	<b>707,443</b>	<b>695,686</b>	<b>709,065</b>	<b>718,819</b>	<b>712,408</b>	<b>725,765</b>
<b>Total area under rainfed crops</b>	<b>3,655,444</b>	<b>3,349,587</b>	<b>3,353,732</b>	<b>3,336,585</b>	<b>3,263,367</b>	<b>3,303,797</b>

Source: NAPC Data Base, Statistical Abstract

**Table 4.11 - Rainfed crops yield, 1998-2003 (kg/ha)**

Crop	1998	1999	2000	2001	2002	2003
<b>Wheat</b>	<b>1583</b>	<b>671</b>	<b>720</b>	<b>1998</b>	<b>1619</b>	<b>1520</b>
Soft	1590	637	602	2188	1773	1375
Durum wheat	1580	701	815	1804	1441	1700
<b>Legumes</b>						
Lentil	1080	293	593	1270	1097	1213
Chickpeas	782	566	634	684	862	867
Dry broad beans	1631	1278	1268	1109	1053	913
Dry haricot beans					1000	960
Dry peas	952	1000	771	1000	1107	1835
Dry kidney beans						
<b>Fodder</b>						
<b>Dry fodder</b>						
Barley	557	294	151	1474	704	848
Maize	750	620	500	710	1180	1920
Sorghum	870	560	610	690	760	830
Bitter vetch	626	238	509	407	424	735
Flowering	801	443	549	715	884	644
Rambling vetch	748	327	530	699	730	843
Oats	1015	805	724	798	833	1000
<b>Green fodder</b>						
Grazing barley	3386	933	1968	3858	1784	5734
Grazing flowering	7727	2528	5495	6770	5596	12514
Grazing maize	13951	11842	32213	8653	14622	6368
Grazing alfa-alfa						
Grazing clover						
Other fodder						
<b>Industrial crops</b>						
Sugar beet						
Cotton						
Soybeans						
Oily sunflower						
Indian millet	800	3830	870	1630	1010	1580
Sunflower	1580	1260	1080	1450	1010	1650
Tobacco	1070	990	1040	1340	1130	1170
Peanut						
Sesame	180	410	300	370	530	490
Aniseed	520	477	422	409	667	778
Cumin	695	315	476	697	715	608
Lupines	1857	961	855	184	825	1489
Black cumin	759	412	645	951	1043	908
Other crops					12000	12000

Source: NAPC, Data Base & Statistical Abstract

**Table 4.11 (continued) - Rainfed crops yield, 1998-2003 (kg/ha)**

Crop	1998	1999	2000	2001	2002	2003
<b>Vegetables (kg/tree)</b>						
Green peas	5,000	3,991	4,516	5,463	4,976	3,546
Green borad beans	5,192	5,557	5,926	5,997	6,417	6,166
Haricot beans	7,222	8,750	6,333	5,778	5,372	5,368
Green kidney	3,301	1,213	1,429	1,526	1,488	1,411
Snake	4,541	4,039	3,992	4,227	5,075	9,021
Eggplant						
Pumpkins	5,607	4,329	3,606	4,223	4,140	5,162
Lettuce	13,870	12,642	11,983	12,334	12,723	16,247
Green onion	10,339	9,196	10,095	9,412	9,406	10,626
Leaf beet	10,802	10,210	10,224	9,074	10,403	12,440
Cauliflower		9,867	9,765	9,813	10,143	9,538
Cabbages	15,195	14,932	15,140	15,095	14,795	14,859
Potato	11,598	12,205	10,959	10,716	11,754	13,129
Tomato	6,615	6,898	5,626	7,166	5,361	6,286
Dry onion	8,679	8,058	8,164	7,316	8,190	13,451
Green pepper						
Okra	1,729	1,851	1,455	2,229	2,133	2,029
Squash	7,226	8,977	3,140	2,949	4,138	9,375
Dry garlic	3,650	3,155	3,520	3,482	4,165	4,553
Water melon	9,759	7,509	7,178	8,978	21,484	24,374
Musk melon	5,749	5,381	6,132	9,605	7,736	12,760
<b>Fruit trees</b>						
Olive	21	10	21	11	18	9
Grapes	12	6	7	7	8	8
Apple	36	23	22	19	18	25
Pistachio	9	7	8	7	9	7
Citrus	19	1	4	27	26	13
Lemons	19	1	16	16	17	10
Oranges	10	10	20	10	17	13
Other citrus	0	0	1	30	30	15
Pomegranate	28	21	26	28	17	20
Apricots	4	11	16	11	15	17
Cherries	17	14	15	13	9	12
Almonds	8	7	7	5	12	12
Green plums	6	25	17	19	20	22
Plums	18	27	26	27	29	27
Pears	19	16	18	15	11	14
Peaches	16	15	15	15	11	15
Quince	28	28	27	28	25	27
Nuts	20	21	22	18	20	23
Figs	19	17	17	15	18	18
Loquats	19	16	17	23	23	22
Palm	38	38	35	35	100	62

Source: MAAR, Statistical Abstract

**Table 4.12 - Rainfed crops production, 1998-2003 (ton)**

Crop	1998	1999	2000	2001	2002	2003
<b>Wheat</b>	<b>1,633,185</b>	<b>626,021</b>	<b>708,916</b>	<b>2,000,420</b>	<b>1,500,220</b>	<b>1,491,564</b>
Soft	664,752	279,720	263,939	1,109,063	879,941	748,770
Durum wheat	968,433	346,301	444,977	891,357	620,279	742,794
<b>Legumes</b>						
Lentil	154,018	43,256	72,552	175,620	132,276	168,073
Chickpeas	84,316	28,539	64,022	59,250	87,166	85,364
Dry broad beans	3,946	3,081	2,266	5,687	3,698	2,653
Dry haricot beans	0	0	0	0	8	24
Dry peas	160	13	37	979	1,463	1,727
Dry kidney beans	0	0	0	0	0	0
<b>Fodder</b>						
<b>Dry fodder</b>						
Barley	857,143	414,018	197,682	1,866,794	834,282	1,027,806
Maize	9	4	3	22	49	286
Sorghum	4,030	2,123	2,087	2,462	2,496	4,150
Bitter vetch	8,905	1,671	4,910	3,888	5,268	7,276
Flowering	14,458	4,523	6,890	11,801	11,690	4,152
Rambling vetch	13,313	4,053	7,294	12,558	12,490	16,433
Oats	198	132	121	83	5	1
<b>Green fodder</b>	<b>120,909</b>	<b>64,019</b>	<b>145,251</b>	<b>84,182</b>	<b>51,423</b>	<b>20,479</b>
Grazing barley	63,324	30,483	69,307	13,480	7,436	3,724
Grazing flowering	24,857	12,907	30,814	49,105	19,452	10,562
Grazing maize	32,728	20,629	45,130	21,597	23,779	4,897
Grazing alfa-alfa	0	0	0	0	0	0
Grazing clover	0	0	0	0	0	0
Other fodder	0	0	0	0	756	1,296
<b>Industrial crops</b>						
Sugar beet	0	0	0	0	0	0
Cotton	0	0	0	0	0	0
Soybeans	0	0	0	0	0	0
Oily sunflower	0	0	0	0	3	0
Indian millet	1,102	855	326	2,136	203	446
Sunflower	1,803	1,863	1,711	2,372	886	1,437
Tobacco	10,848	10,175	11,348	14,438	12,346	12,145
Peanut	0	0	0	0	0	0
Sesame	2,952	1,561	963	1,239	5,250	4,554
Aniseed	13	135	27	9	2	7
Cumin	10,418	6,618	12,154	27,499	93,090	46,306
Lupines	156	49	50	9	52	105
Black cumin	41	94	1,319	1,366	3,918	1,952
Other crops	60	37	31	87	22	

Source: MAAR, Statistical Abstract

**Table 4.12 (continued) - Rainfed crops production, 1998-2003 (ton)**

Crop	1998	1999	2000	2001	2002	2003
<b>Vegetables</b>	<b>294,301</b>	<b>124,049</b>	<b>127,049</b>	<b>179,356</b>	<b>213,377</b>	<b>394,490</b>
Green peas	2,220	914	1,540	1,699	1,443	1,079
Green borad beans	9,216	8,314	10,094	9,014	8,156	7,066
Haricot beans	65	35	57	52	238	204
Green kidney	4,219	884	1,066	1,561	1,841	1,611
Snake	20,099	7,052	8,416	8,218	16,493	39,956
Eggplant	0	0	0	0	0	0
Pumpkins	17,197	8,252	9,134	13,527	10,755	14,032
Lettuce	4,064	4,943	4,973	3,688	4,313	5,394
Green onion	9,729	8,663	9,913	9,591	6,979	9,641
Leaf beet	1,912	2,726	2,648	1,833	2,944	4,359
Cauliflower	0	148	166	157	142	124
Cabbages	623	657	651	634	651	951
Potato	5,880	6,444	5,304	3,772	4,819	4,582
Tomato	46,053	26,523	24,294	41,949	22,630	21,413
Dry onion	5,615	5,246	5,266	4,258	3,209	6,618
Green pepper	0	0	0	0	0	0
Okra	9,109	4,188	3,266	7,511	5,295	7,211
Squash	1,792	6,248	314	463	960	1,299
Dry garlic	2,022	1,896	1,994	1,807	2,353	2,329
Water melon	191,693	51,072	64,640	77,104	146,636	288,707
Musk melon	30,913	20,836	20,335	40,380	22,217	58,453
Others	1,224	1,596	1,636	2,112	5,258	3,878
<b>Fruit trees</b>	<b>1,612,259</b>	<b>925,243</b>	<b>1,418,904</b>	<b>982,244</b>	<b>1,417,451</b>	<b>1,054,829</b>
Olive	732,181	359,855	800,666	434,053	847,962	445,853
Grapes	470,108	241,085	264,533	245,391	190,778	176,108
Apple	188,366	128,207	132,469	109,894	102,139	143,111
Pistachio	32,787	26,892	36,224	31,536	42,967	38,188
Citrus	339	28	71	555	610	355
Lemons	338	27	59	67	81	67
Oranges	1	1	2	2	43	44
Other citrus	0	0	10	486	486	244
Pomegranate	12,965	9,869	12,601	13,532	7,019	9,016
Apricots	4,616	4,469	6,465	4,811	6,095	7,932
Cherries	43,163	39,284	42,878	37,430	28,909	41,548
Almonds	64,822	55,468	59,848	45,706	131,387	132,256
Green plums	462	757	502	575	654	729
Plums	5,261	8,200	8,011	8,337	8,293	7,905
Pears	8,211	7,658	8,759	7,881	5,179	6,305
Peaches	3,588	3,063	3,340	3,302	2,766	2,498
Quince	1,809	1,884	1,870	1,751	1,453	1,442
Nuts	2,063	2,424	2,712	2,550	2,787	3,422
Figs	40,532	35,460	37,257	33,623	37,447	37,358
Loquats	277	242	256	391	346	416
Palm	370	370	371	371	50	32
Others	0	0	0	0	0	0

Source: MAAR, Statistical Abstract



**Table 4.13 - Area, yield, and production of rainfed wheat by governorate, 2000-2003****Table 4.13.a - Area of rainfed wheat by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	ha	%	ha	%	ha	%	ha	%
<b>Sweida</b>	31,941	3.24	29,944	2.99	30,008	3.24	31,859	3.25
<b>Dar'a</b>	54,496	5.54	40,768	4.07	43,100	4.65	47,242	4.81
<b>Quneitra</b>	10,970	1.11	7,675	0.77	8,280	0.89	6,818	0.69
<b>Rural Damascus</b>	4,127	0.42	3,880	0.39	4,963	0.54	5,353	0.55
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	38,955	3.96	36,109	3.61	28,573	3.08	33,136	3.38
<b>Hama</b>	32,197	3.27	33,979	3.39	27,036	2.92	33,286	3.39
<b>Ghab</b>	5,347	0.54	4,460	0.45	3,701	0.40	3,229	0.33
<b>Idleb</b>	61,279	6.23	60,614	6.06	54,107	5.84	68,841	7.01
<b>Tartous</b>	18,596	1.89	14,691	1.47	13,824	1.49	11,869	1.21
<b>Lattakia</b>	12,640	1.28	11,713	1.17	7,493	0.81	7,194	0.73
<b>Aleppo</b>	242,199	24.61	211,658	21.14	191,937	20.71	211,880	21.59
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	26,104	2.65	55,684	5.56	57,229	6.17	57,085	5.82
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	1,600	0.16	8,000	0.86	3,200	0.33
<b>Al-Hassake</b>	445,477	45.26	488,223	48.77	448,575	48.40	460,490	46.92
<b>Total</b>	984,328	100	1,000,998	100	926,826	100	981,482	100

Source: MAAR, Statistical abstract

**Table 4.13.b - Yield of rainfed wheat by governorate, 2000-2003 (kg/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	140	130	900	814
<b>Dar'a</b>	1,060		1,770	1,809
<b>Quneitra</b>	2,070	1,140	1,150	1,399
<b>Rural Damascus</b>	40	370	980	1,274
<b>Damascus city</b>				0
<b>Homs</b>	1,120	1,130	1,410	1,415
<b>Hama</b>	680	2,620	2,050	2,230
<b>Ghab</b>	2,550	3,600	3,200	3,324
<b>Idleb</b>	2,230	3,230	2,350	2,737
<b>Tartous</b>	2,090	1,490	1,450	1,404
<b>Lattakia</b>	2,490	2,100	2,540	1,879
<b>Aleppo</b>	880	1,650	2,230	1,746
<b>Assad Establi.ment</b>				
<b>Al-Raqqa</b>		1,570	1,030	706
<b>GADEB</b>				
<b>Deir-Ezzor</b>		1,350		
<b>Al-Hassake</b>	280	2,380	1,380	1,309

Source: MAAR, Statistical abstract

**Table 4.13.c - Production of rainfed wheat by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	4,579	0.65	3,874	0.19	26,956	1.80	25,945	1.74
<b>Dar'a</b>	57,610	8.13	0	0.00	76,176	5.08	85,482	5.73
<b>Quneitra</b>	22,706	3.20	8,750	0.44	9,540	0.64	9,537	0.64
<b>Rural Damascus</b>	165	0.02	1,440	0.07	4,845	0.32	6,820	0.46
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	43,816	6.18	40,707	2.03	40,302	2.69	46,894	3.14
<b>Hama</b>	21,822	3.08	88,882	4.44	55,362	3.69	74,217	4.98
<b>Ghab</b>	13,627	1.92	16,041	0.80	11,859	0.79	10,733	0.72
<b>Idleb</b>	136,914	19.31	195,798	9.79	127,394	8.49	188,446	12.63
<b>Tartous</b>	38,949	5.49	21,931	1.10	20,036	1.34	16,667	1.12
<b>Lattakia</b>	31,486	4.44	24,543	1.23	19,068	1.27	13,515	0.91
<b>Aleppo</b>	212,627	29.99	348,316	17.41	428,357	28.55	370,006	24.81
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	0	0.00	87,359	4.37	59,203	3.95	40,301	2.70
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	2,160	0.11	0	0.00	0	0.00
<b>Al-Hassake</b>	124,615	17.58	1,160,619	58.02	621,122	41.40	603,001	40.43
<b>Total</b>	708,916	100	2,000,420	100	1,500,220	100	1,491,564	100

Source: MAAR, Statistical abstract

**Table 4.14 - Area, yield, and production of rainfed barley by governorate, 2000-2003**

**Table 4.14.a - Area of rainfed barley by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	ha	%	ha	%	ha	%	ha	%
<b>Sweida</b>	30,133	2.30	26,540	2.10	22,318	1.88	23,315	1.92
<b>Dar'a</b>	26,495	2.03	21,781	1.72	17,965	1.52	23,925	1.97
<b>Quneitra</b>	925	0.07	450	0.04	380	0.03	980	0.08
<b>Rural Damascus</b>	7,743	0.59	8,862	0.70	6,502	0.55	9,399	0.78
<b>Damascus city</b>	0	0.00		5.35	0	0.00	0	0.00
<b>Homs</b>	76,319	5.83	67,786	7.21	60,166	5.08	62,605	5.16
<b>Hama</b>	105,467	8.06	91,276	0.02	105,796	8.93	121,708	10.04
<b>Ghab</b>	233	0.02	305	2.67	170	0.01	185	0.02
<b>Idleb</b>	44,461	3.40	33,841	0.08	33,347	2.81	31,958	2.64
<b>Tartous</b>	1,157	0.09	981	0.10	904	0.08	911	0.08
<b>Lattakia</b>	1,340	0.10	1,225	24.02	1,088	0.09	721	0.06
<b>Aleppo</b>	441,111	33.72	304,230	0.00	301,907	25.47	312,836	25.80
<b>Assad Establi.ment</b>	0	0.00	0		0	0.00	0	0.00
<b>Al-Raqqa</b>	294,741	22.53	333,537	26.34	285,400	24.08	276,515	22.80
<b>GADEB</b>	610	0.05	50	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	25,000	1.91	37,880	2.99	27,540	2.32	35,200	2.90
<b>Al-Hassake</b>	252,616	19.31	337,599	26.66	321,756	27.15	312,369	25.76
<b>Total</b>	1,308,351	100	1,266,343	100	1,185,239	100	1,212,627	100

Source: MAAR, Statistical Abstract

**Table 4.14.b - Yield of rainfed barley by governorate, 2000-2003 (kg/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	100	126	860	816
<b>Dar'a</b>	150	0	950	1,347
<b>Quneitra</b>	1,810	1,431	1,340	1,197
<b>Rural Damascus</b>	30	75	240	711
<b>Damascus city</b>	0	0	0	0
<b>Homs</b>	200	413	530	749
<b>Hama</b>	140	2,219	510	1,103
<b>Ghab</b>	2,020	2,479	2,520	2,016
<b>Idleb</b>	1,280	2,625	2,700	2,098
<b>Tartous</b>	1,300	1,406	1,100	1,144
<b>Lattakia</b>	1,500	2,143	1,410	1,609
<b>Aleppo</b>	200	1,733	1,360	1,233
<b>Assad Establi.ment</b>	0	0	0	0
<b>Al-Raqqa</b>	40	1,126	480	397
<b>GADEB</b>	16	0	0	0
<b>Deir-Ezzor</b>	0	1,229	0	0
<b>Al-Hassake</b>	0	1,683	220	712

Source: MAAR, Statistical Abstract

**Table 4.14.c - Production of rainfed barley by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	2,990	1.51	3,342	0.02	19,238	2.31	19,030	1.85
<b>Dar'a</b>	3,889	1.97	0	0.00	17,135	2.05	32,236	3.14
<b>Quneitra</b>	1,672	0.85	644	0.00	509	0.06	1,173	0.11
<b>Rural Damascus</b>	262	0.13	669	0.00	1,534	0.18	6,678	0.65
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	15,219	7.70	48,331	0.26	31,598	3.79	46,881	4.56
<b>Hama</b>	14,983	7.58	202,539	1.08	54,320	6.51	134,272	13.06
<b>Ghab</b>	470	0.24	756	0.00	429	0.05	373	0.04
<b>Idleb</b>	56,848	28.76	88,847	0.48	90,027	10.79	67,040	6.52
<b>Tartous</b>	1,503	0.76	1,379	0.01	991	0.12	1,042	0.10
<b>Lattakia</b>	2,010	1.02	2,625	0.01	1,538	0.18	1,160	0.11
<b>Aleppo</b>	87,060	44.04	527,374	2.83	410,048	49.15	385,807	37.54
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	10,766	5.45	375,594	2.01	135,409	16.23	109,645	10.67
<b>GADEB</b>	10	0.01	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	46,564	0.25	0	0.00	0	0.00
<b>Al-Hassake</b>	0	0.00	568,130	3.04	71,506	8.57	222,469	21.65
<b>Total</b>	197,682	100	1,866,794	10	834,282	100	1,027,806	100

Source: MAAR, Statistical Abstract

**Table 4.15 - Area, yield, and production of rainfed lentil by governorate, 2000-2003**

**Table 4.15.a - Area of rainfed lentil by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	ha	%	ha	%	ha	%	ha	%
<b>Sweida</b>	2,904	2.37	2,732	1.98	1,748	1.45	1,519	1.10
<b>Dar'a</b>	6,520	5.33	5,530	4.00	5,517	4.58	6,361	4.59
<b>Quneitra</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Rural Damascus</b>	636	0.52	367	0.27	446	0.37	326	0.24
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	4,108	3.36	5,753	4.16	3,196	2.65	2,069	1.49
<b>Hama</b>	13,493	11.03	12,538	9.07	5,686	4.72	5,103	3.68
<b>Ghab</b>	101	0.08	49	0.04	25	0.02	30	0.02
<b>Idleb</b>	19,142	15.64	19,104	13.82	20,713	17.18	20,125	14.52
<b>Tartous</b>	389	0.32	674	0.49	681	0.56	454	0.33
<b>Lattakia</b>	406	0.33	347	0.25	246	0.20	87	0.06
<b>Aleppo</b>	42,894	35.05	56,802	41.08	50,526	41.91	47,618	34.36
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	210	0.17	21	0.02	147	0.12	72	0.05
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	31,571	25.80	34,361	24.85	31,614	26.23	54,825	39.56
<b>Total</b>	122,374	100.0	138,278	100.0	120,545	100.0	138,589	100

Source: MAAR, Statistical Abstract

**Table 4.15.b - Yield of rainfed lentil by governorate, 2000-2003 (kg/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	90	20	390	410
<b>Dar'a</b>	420	0	670	960
<b>Quneitra</b>	0	0	0	0
<b>Rural Damascus</b>	260	230	500	390
<b>Damascus city</b>	0	0	0	0
<b>Homs</b>	310	640	520	600
<b>Hama</b>	400	1,180	950	1,150
<b>Ghab</b>	1,080	1,140	1,520	1,400
<b>Idleb</b>	970	1,270	1,200	940
<b>Tartous</b>	630	680	680	430
<b>Lattakia</b>	1,030	1,420	630	240
<b>Aleppo</b>	870	1,070	1,290	1,270
<b>Assad Establi.ment</b>	0	0	0	0
<b>Al-Raqqa</b>	0	1,240	790	490
<b>GADEB</b>	0	0	0	0
<b>Deir-Ezzor</b>	0	0	0	0
<b>Al-Hassake</b>	190	2,070	940	1,360

Source: MAAR, Statistical Abstract



**Table 4.15.c - Production of rainfed lentil by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	258	0.36	41	0.02	681	0.51	620	0.37
<b>Dar'a</b>	2,724	3.75	0	0.00	3,678	2.78	6,133	3.65
<b>Quneitra</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Rural Damascus</b>	167	0.23	84	0.05	224	0.17	127	0.08
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	1,289	1.78	3,661	2.08	1,674	1.27	1,225	0.73
<b>Hama</b>	5,455	7.52	14,775	8.41	5,396	4.08	5,850	3.48
<b>Ghab</b>	109	0.15	56	0.03	38	0.03	42	0.02
<b>Idleb</b>	18,494	25.49	24,339	13.86	24,817	18.76	18,883	11.23
<b>Tartous</b>	246	0.34	456	0.26	464	0.35	196	0.12
<b>Lattakia</b>	417	0.57	492	0.28	156	0.12	21	0.01
<b>Aleppo</b>	37,313	51.43	60,626	34.52	65,294	49.36	60,561	36.03
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	0	0.00	26	0.01	116	0.09	35	0.02
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	6,080	8.38	71,064	40.46	29,738	22.48	74,380	44.25
<b>Total</b>	72,552	100	175,620	100	132,276	100	168,073	100

Source: MAAR, Statistical Abstract

**Table 4.16 - Area, yield, and production of rainfed chickpeas by governorate, 2000-2003****Table 4.16.a - Area of rainfed chickpeas by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	ha	%	ha	%	ha	%	ha	%
<b>Sweida</b>	24,220	23.99	18,745	25.49	28,334	28.02	31,756	32.25
<b>Dar'a</b>	32,016	31.72	12,410	16.87	26,087	25.80	32,748	33.25
<b>Quneitra</b>	1,579	1.56	1,662	2.26	2,026	2.00	2,332	2.37
<b>Rural Damascus</b>	2,221	2.20	1,934	2.63	2,376	2.35	3,059	3.11
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	1,449	1.44	1,809	2.46	1,794	1.77	998	1.01
<b>Hama</b>	2,825	2.80	3,586	4.88	2,822	2.79	1,988	2.02
<b>Ghab</b>	435	0.43	353	0.48	327	0.32	124	0.13
<b>Idleb</b>	10,912	10.81	13	0.02	7,904	7.82	5,766	5.85
<b>Tartous</b>	554	0.55	1,542	2.10	1,471	1.45	1,024	1.04
<b>Lattakia</b>	239	0.24	244	0.33	280	0.28	257	0.26
<b>Aleppo</b>	21,772	21.57	27,701	37.67	24,258	23.99	15,661	15.90
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	12	0.01	12	0.02	5	0.00	36	0.04
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	2,711	2.69	3,532	4.80	3,431	3.39	2,734	2.78
<b>Total</b>	100,945	100	73,543	100	101,115	100	98,483	100

Source: MAAR, Statistical Abstract

**Table 4.16.b - Yield of rainfed chickpeas by governorate, 2000-2003 (kg/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	270	260	500	500
<b>Dar'a</b>	520	80	840	1,070
<b>Quneitra</b>	800	1,000	1,200	1,150
<b>Rural Damascus</b>	420	280	700	520
<b>Damascus city</b>	0	0	0	0
<b>Homs</b>	560	650	890	820
<b>Hama</b>	540	790	1,160	940
<b>Ghab</b>	1,260	1,360	1,190	1,590
<b>Idleb</b>	1,178	749	797	1,071
<b>Tartous</b>	860	760	810	780
<b>Lattakia</b>	1,000	1,000	710	700
<b>Aleppo</b>	960	1,100	1,260	980
<b>Assad Establi.ment</b>	0	0	0	0
<b>Al-Raqqa</b>	0	1,200	0	140
<b>GADEB</b>	0	0	0	0
<b>Deir-Ezzor</b>	0	0	0	0
<b>Al-Hassake</b>	530	1,370	1,050	1,800

Source: MAAR, Statistical Abstract

**Table 4.16.c - Production of rainfed chickpeas by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	6,515	12.73	4,861	9.84	14,235	17.60	15,785	18.49
<b>Dar'a</b>	16,528	32.29	1,008	2.04	21,788	26.94	34,931	40.92
<b>Quneitra</b>	1,263	2.47	1,662	3.36	2,431	3.01	2,682	3.14
<b>Rural Damascus</b>	928	1.81	547	1.11	1,663	2.06	1,584	1.86
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	813	1.59	1,175	2.38	1,604	1.98	823	0.96
<b>Hama</b>	1,517	2.96	2,844	5.75	3,272	4.05	1,870	2.19
<b>Ghab</b>	550	1.07	479	0.97	390	0.48	197	0.23
<b>Idleb</b>	12,849	0.03	13	0.03	6	0.01	6,173	7.23
<b>Tartous</b>	474	0.93	1,177	2.38	1,198	1.48	795	0.93
<b>Lattakia</b>	239	0.47	244	0.49	198	0.24	180	0.21
<b>Aleppo</b>	20,896	40.82	30,581	61.88	30,475	37.68	15,420	18.06
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	0	0.00	6	0.01	0	0.00	5	0.01
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	1,450	2.83	4,825	9.76	3,610	4.46	4,924	5.77
<b>Total</b>	<b>64,022</b>	<b>100</b>	<b>49,422</b>	<b>100</b>	<b>80,870</b>	<b>100</b>	<b>85,369</b>	<b>100</b>

Source: MAAR, Statistical Abstract

**Table 4.17 - Area, yield, and production of grazing barley by governorate, 2001-2003 (ha, ton/ha, ton and %)**

Governorate	Area						Yield			Production					
	2001		2002		2003		2001	2002	2003	2001		2002		2003	
	000 ha	%	000 ha	%	000 ha	%	ton/ha	ton/ha	ton/ha	ton	%	ton	%	ton	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Quneitra</b>	0.00	0.00	0.08	0.22	0.09	0.23	0.00	20.37	0.48	0	0.00	1,650	0.40	41	0.01
<b>Damascus</b>	1.43	5.97	2.28	6.24	4.18	11.08	22.46	23.20	24.03	22,671	7.22	44,494	10.82	95,136	19.84
<b>Homs</b>	0.00	0.00	0.00	0.00	1.56	4.14	0.00	0.00	25.00	0	0.00	0	0.00	39,000	8.13
<b>Hama</b>	3.17	13.23	0.42	1.16	0.25	0.66	3.08	3.00	5.00	9,748	3.10	1,268	0.31	1,238	0.26
<b>Ghab</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Idleb</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Tartous</b>	1.79	7.47	2.64	7.23	1.73	4.59	19.81	23.30	24.46	35,398	11.27	61,601	14.98	42,318	8.83
<b>Lattakia</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Aleppo</b>	0.24	0.98	0.00	0.00	0.89	2.37	3.00	0.00	18.86	705	0.22	0	0.00	16,840	3.51
<b>Assad Establi.ment</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	2.86	11.95	10.05	27.47	6.24	16.57	12.44	14.87	11.77	35,540	11.31	149,490	36.35	73,457	15.32
<b>GADEB</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	11.13	46.55	14.95	40.86	21.26	56.43	15.90	9.13	9.28	177,039	56.35	136,402	33.16	197,011	41.09
<b>Al-Hassake</b>	3.31	13.84	6.15	16.82	1.48	3.93	10.00	2.67	9.75	33,100	10.53	16,399	3.99	14,450	3.01
<b>Total</b>	<b>23.92</b>	<b>100</b>	<b>36.58</b>	<b>100</b>	<b>37.68</b>	<b>100</b>				<b>314,201</b>	<b>100</b>	<b>411,304</b>	<b>100</b>	<b>479,491</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.18 - Area, yield, and production of grazing alfa-alfa by governorate, 2001-2003 (ha, ton/ha, ton and %)**

Governorate	Area						Yield			Production					
	2001		2002		2003		2001	2002	2003	2001		2002		2003	
	000 ha	%	000 ha	%	000 ha	%	ton/ha	ton/ha	ton/ha	ton	%	ton	%	ton	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00
<b>Dar'a</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Quneitra</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Damascus</b>	2.56	74.77	2.13	50.33	2.90	73.93	24.64	28.37	25.07	63,077	81.02	60,351	78.44	72,633	79.76
<b>Homs</b>	0.13	3.91	0.13	3.17	0.13	3.42	30.00	30.00	30.00	4,020	5.16	4,020	5.22	4,020	4.41
<b>Hama</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Ghab</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Idleb</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Tartous</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Lattakia</b>	0.00	0.00	0.00	0.00	0.01	0.26	0.00	0.00	5.00	0	0.00	0	0.00	50	0.05
<b>Aleppo</b>	0.04	1.17	0.04	0.95	0.20	4.98	5.00	5.00	5.00	195	0.25	195	0.25	195	0.21
<b>Assad Establi.ment</b>	0.00	0.00	1.27	29.98	0.00	0.00	0.00	0.50	0.00	0	0.00	627	0.81	0	0.00
<b>Al-Raqqa</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>GADEB</b>	0.00	0.00	0.07	1.66	0.00	0.00	0.00	16.96	0.00	0	0.00	1,187	1.54	0	0.00
<b>Deir-Ezzor</b>	0.69	20.15	0.59	13.91	0.68	17.43	15.40	17.96	20.74	10,558	13.56	10,560	13.72	14,163	15.55
<b>Al-Hassake</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>3.42</b>	<b>100</b>	<b>4.23</b>	<b>100</b>	<b>3.92</b>	<b>100</b>				<b>77,850</b>	<b>100</b>	<b>76,940</b>	<b>100</b>	<b>91,061</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.19 - Area, yield, and production of cotton by governorate, 2001-2003 (ha, ton/ha, ton and %)**

Governorate	Area						Yield			Production					
	2001		2002		2003		2001	2002	2003	2001		2002		2003	
	000 ha	%	000 ha	%	000 ha	%	ton/ha	ton/ha	ton/ha	ton	%	ton	%	ton	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Quneitra</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Damascus</b>	0.50	0.19	0.00	0.00	0.00	0.00	3.81	0.00	0.00	1,908	0.19	0	0.00	0	0.00
<b>Homs</b>	0.69	0.27	0.38	0.19	0.92	0.45	2.46	2.53	3.54	1,697	0.17	957	0.12	3,266	0.40
<b>Hama</b>	4.78	1.86	2.80	1.40	5.74	2.79	4.12	4.36	3.97	19,719	1.95	12,220	1.52	22,782	2.81
<b>Ghab</b>	15.60	6.07	11.90	5.96	18.38	8.95	5.28	4.15	3.63	82,307	8.15	49,350	6.15	66,760	8.23
<b>Idleb</b>	6.42	2.50	3.28	1.64	6.77	3.30	5.99	5.17	4.26	38,421	3.80	16,936	2.11	28,836	3.56
<b>Tartous</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Lattakia</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Aleppo</b>	37.27	14.50	36.72	18.38	35.36	17.22	4.70	3.90	3.76	175,268	17.36	143,248	17.86	133,100	16.41
<b>Assad Establi.ment</b>	1.09	0.42	0.00	0.00	0.00	0.00	2.39	0.00	0.00	2,600	0.26	0	0.00	0	0.00
<b>Al-Raqqa</b>	60.68	23.60	48.55	24.30	48.40	23.57	3.25	3.43	3.66	196,948	19.50	166,428	20.75	177,023	21.83
<b>GADEB</b>	3.15	1.23	0.00	0.00	0.00	0.00	1.32	0.00	0.00	4,172	0.41	0	0.00	0	0.00
<b>Deir-Ezzor</b>	22.05	8.58	22.59	11.31	24.59	11.98	3.39	3.36	3.45	74,822	7.41	75,801	9.45	84,947	10.47
<b>Al-Hassake</b>	104.85	40.79	73.56	36.82	65.20	31.75	3.93	4.58	4.52	411,964	40.80	337,238	42.04	294,312	36.29
<b>Total</b>	<b>257.1</b>	<b>100</b>	<b>199.8</b>	<b>100</b>	<b>205.4</b>	<b>100</b>				<b>1,009,826</b>	<b>100</b>	<b>802,178</b>	<b>100</b>	<b>811,026</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.20 - Area, yield, and production of sugar beet by governorate, 2001-2003 (ha, ton/ha, ton and %)**

Governorate	Area						Yield			Production					
	2001		2002		2003		2001	2002	2003	2001		2002		2003	
	000 ha	%	000 ha	%	000 ha	%	ton/ha	ton/ha	ton/ha	ton	%	ton	%	ton	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Quneitra</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Damascus</b>	0.00	0.00	0.01	0.03	0.00	0.00	0.00	10.00	0.00	0	0.00	75	0.00	0	0.00
<b>Homs</b>	1.23	4.62	1.45	4.90	2.11	7.48	32.82	43.55	29.69	40,370	3.32	63,142	4.15	62,652	5.20
<b>Hama</b>	2.61	9.83	2.39	8.09	2.58	9.14	58.47	64.53	53.25	152,847	12.58	154,432	10.14	137,365	11.40
<b>Ghab</b>	7.83	29.43	9.67	32.69	6.71	23.78	54.28	55.36	38.13	424,973	34.96	535,593	35.17	255,800	21.23
<b>Idleb</b>	2.16	8.14	2.20	7.43	2.42	8.57	48.47	63.26	52.31	104,881	8.63	139,174	9.14	126,534	10.50
<b>Tartous</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Lattakia</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Aleppo</b>	4.65	17.48	4.69	15.84	4.60	16.30	35.61	52.06	50.48	165,617	13.63	244,100	16.03	232,200	19.27
<b>Assad Establi.ment</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	3.17	11.92	5.18	17.51	5.74	20.35	47.76	44.23	41.91	151,391	12.46	229,229	15.05	240,608	19.96
<b>GADEB</b>	1.41	5.31	0.00	0.00	0.00	0.00	37.78	0.00	0.00	53,349	4.39	0	0.00	0	0.00
<b>Deir-Ezzor</b>	3.53	13.27	4.00	13.52	4.06	14.37	34.58	39.24	36.99	122,049	10.04	156,957	10.31	150,000	12.45
<b>Al-Hassake</b>	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>26.6</b>	<b>100</b>	<b>29.6</b>	<b>100</b>	<b>28.2</b>	<b>100</b>				<b>1,215,477</b>	<b>100</b>	<b>1,522,702</b>	<b>100</b>	<b>1,205,159</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.



**Table 4.21 - Area, yield, and production of tobacco by governorate, 2001-2003 (ha, ton/ha, ton and %)**

Governorate	Area						Yield			Production					
	2001		2002		2003		2001	2002	2003	2001		2002		2003	
	000 ha	%	000 ha	%	000 ha	%	ton/ha	ton/ha	ton/ha	ton	%	ton	%	ton	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	1.05	6.40	1.65	10.42	1.65	10.67	3.00	3.00	3.00	3,133	10.88	4,947	19.30	4,956	18.91
<b>Quneitra</b>	0.03	0.16	0.03	0.20	0.06	0.37	2.00	2.48	2.00	52	0.18	77	0.30	116	0.44
<b>Damascus</b>	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	75	0.29	0	0.00
<b>Homs</b>	0.12	0.76	0.11	0.66	0.14	0.87	2.05	1.62	2.07	254	0.88	170	0.66	280	1.07
<b>Hama</b>	0.41	2.48	0.26	1.62	0.24	1.58	2.51	2.51	2.34	1,016	3.53	643	2.51	572	2.18
<b>Ghab</b>	0.65	3.99	0.80	5.08	0.64	4.14	3.50	3.24	3.66	2,280	7.92	2,604	10.16	2,349	8.96
<b>Idleb</b>	2.79	17.08	3.20	20.24	2.77	17.87	1.51	1.40	1.34	4,205	14.60	4,480	17.48	3,719	14.19
<b>Tartous</b>	3.93	24.07	4.05	25.59	4.83	31.17	1.14	1.00	1.35	4,471	15.52	4,065	15.86	6,503	24.81
<b>Lattakia</b>	7.07	43.28	5.49	34.72	4.82	31.12	1.82	1.50	1.45	12,892	44.76	8,215	32.04	7,006	26.73
<b>Aleppo</b>	0.29	1.79	0.22	1.42	0.34	2.21	1.71	1.61	2.07	499	1.73	360	1.40	708	2.70
<b>Assad Establi.ment</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>GADEB</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>16.3</b>	<b>100</b>	<b>15.8</b>	<b>100</b>	<b>15.5</b>	<b>100</b>				<b>28,802</b>	<b>100</b>	<b>25,636</b>	<b>100</b>	<b>26,209</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.22 - Area, yield, and production of tomato by governorate, 2000-2003**

**Table 4.22.a - Area of tomato by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	1.00	5.63	0.64	4.01	1.50	9.05	0.78	5.46
<b>Dar'a</b>	2.92	16.55	2.31	14.62	2.87	17.27	2.19	15.27
<b>Quneitra</b>	0.73	4.13	1.07	6.75	1.02	6.16	1.10	7.68
<b>Rural Damascus</b>	0.79	4.49	0.51	3.25	0.38	2.26	0.46	3.21
<b>Damascus city</b>	0.01	0.07	0.01	0.08	0.01	0.05	0.01	0.09
<b>Homs</b>	0.73	4.12	0.98	6.22	0.85	5.14	1.03	7.22
<b>Hama</b>	0.75	4.22	0.84	5.33	0.92	5.52	1.02	7.15
<b>Ghab</b>	0.20	1.13	0.25	1.58	0.53	3.19	0.36	2.50
<b>Idleb</b>	1.59	9.03	1.52	9.60	2.16	13.00	0.90	6.31
<b>Tartous</b>	0.68	3.87	1.07	6.79	0.68	4.10	0.64	4.46
<b>Lattakia</b>	2.96	16.74	4.14	26.20	1.43	8.63	0.62	4.31
<b>Aleppo</b>	2.47	13.97	1.04	6.57	1.80	10.84	1.97	13.75
<b>Al-Raqqa</b>	0.52	2.94	0.44	2.79	0.63	3.82	0.72	5.00
<b>Deir-Ezzor</b>	0.42	2.39	0.36	2.28	0.58	3.49	1.20	8.37
<b>Al-Hassake</b>	1.89	10.71	0.66	4.17	1.24	7.47	1.33	9.25
<b>Total</b>	<b>17.7</b>	<b>100</b>	<b>15.82</b>	<b>100</b>	<b>16.6</b>	<b>100</b>	<b>14</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.22.b - Yield of tomato by governorate, 2000-2003 (ton/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	26	73	65	32
<b>Dar'a</b>	50	63	52	96
<b>Quneitra</b>	27	33	90	80
<b>Rural Damascus</b>	40	27	30	34
<b>Damascus city</b>	18	18	18	18
<b>Homs</b>	13	8	13	15
<b>Hama</b>	7	10	11	10
<b>Ghab</b>	19	18	15	31
<b>Idleb</b>	7	10	8	12
<b>Tartous</b>	17	17	19	18
<b>Lattakia</b>	21	19	22	18
<b>Aleppo</b>	18	15	22	21
<b>Al-Raqqa</b>	28	30	27	26
<b>Deir-Ezzor</b>	24	20	20	24
<b>Al-Hassake</b>	40	25	40	30

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.22.c - Production of tomato by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	25,633	5.40	46,639	10.98	97,052	17.28	25115	4.66
<b>Dar'a</b>	146,375	30.85	144,993	34.14	150,455	26.79	211050	39.14
<b>Quneitra</b>	19,853	4.18	34,710	8.17	92,230	16.42	88000	16.32
<b>Rural Damascus</b>	31,815	6.70	14,060	3.31	11,580	2.06	15857	2.94
<b>Damascus city</b>	216	0.05	216	0.05	144	0.03	230	0.04
<b>Homs</b>	9,530	2.01	7,629	1.80	11,446	2.04	15608	2.89
<b>Hama</b>	5,390	1.14	8,391	1.98	9,760	1.74	10559	1.96
<b>Ghab</b>	3,870	0.82	4,457	1.05	8,165	1.45	11117	2.06
<b>Idleb</b>	11,853	2.50	15,314	3.61	18,608	3.31	10958	2.03
<b>Tartous</b>	11,768	2.48	18,116	4.27	13,195	2.35	11567	2.15
<b>Lattakia</b>	62,763	13.23	77,503	18.25	31,333	5.58	11088	2.06
<b>Aleppo</b>	44,391	9.35	15,829	3.73	38,959	6.94	41143	7.63
<b>Al-Raqqa</b>	14,744	3.11	13,266	3.12	17,336	3.09	18728	3.47
<b>Deir-Ezzor</b>	10,072	2.12	7,208	1.70	11,699	2.08	28426	5.27
<b>Al-Hassake</b>	76,275	16.07	16,383	3.86	49,600	8.83	39782	7.38
<b>Total</b>	474,548	100	424,714	100	561,562	100	539228	100

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.23 - Area, yield, and production of potato by governorate, 2000-2003**

**Table 4.23.a - Area of potato by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>		0.00		0.00		0.00	0.00	0.00
<b>Dar'a</b>	0.66	2.90	0.62	2.91	0.63	2.63	0.69	2.77
<b>Quneitra</b>	0.00	0.01	0.05	0.22	0.02	0.08	0.01	0.03
<b>Rural Damascus</b>	0.58	2.54	0.52	2.45	0.53	2.21	0.57	2.30
<b>Damascus city</b>		0.00		0.00		0.00	0.00	0.00
<b>Homs</b>	2.68	11.77	1.70	8.01	2.06	8.56	1.68	6.76
<b>Hama</b>	2.83	12.43	3.52	16.58	4.15	17.20	4.72	19.04
<b>Ghab</b>	2.66	11.67	2.86	13.45	3.34	13.87	2.95	11.88
<b>Idleb</b>	6.49	28.49	4.76	22.39	5.50	22.81	5.71	23.01
<b>Tartous</b>	1.34	5.89	0.95	4.45	1.00	4.15	0.89	3.60
<b>Lattakia</b>	0.48	2.12	0.25	1.18	0.20	0.81	0.12	0.49
<b>Aleppo</b>	4.70	20.61	5.80	27.30	6.12	25.41	6.62	26.72
<b>Al-Raqqa</b>	0.02	0.07	0.01	0.07	0.08	0.31	0.02	0.06
<b>Deir-Ezzor</b>	0.23	1.03	0.06	0.28	0.10	0.41	0.80	3.23
<b>Al-Hassake</b>	0.11	0.49	0.15	0.71	0.38	1.57	0.02	0.09
<b>Total</b>	<b>22.8</b>	<b>100</b>	<b>21.24</b>	<b>100.0</b>	<b>24.1</b>	<b>100.0</b>	<b>25</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.23.b - Yield of potato by governorate, 2000-2003 (ton/ha)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	5	0	0	0
<b>Dar'a</b>	16	30	25	25
<b>Quneitra</b>	25	26	25	22
<b>Rural Damascus</b>	20	24	24	22
<b>Damascus city</b>	0	0	0	0
<b>Homs</b>	14	16	17	16
<b>Hama</b>	22	18	23	20
<b>Ghab</b>	20	24	19	15
<b>Idleb</b>	22	22	19	20
<b>Tartous</b>	25	26	25	24
<b>Lattakia</b>	17	17	17	16
<b>Aleppo</b>	25	21	23	21
<b>Al-Raqqa</b>	20	19	22	31
<b>Deir-Ezzor</b>	20	23	13	21
<b>Al-Hassake</b>	18	21	48	2

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.23.c - Production of potato by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	10,760	2.22	18,540	4.09	15,825	3.08	17175	3.53
<b>Quneitra</b>	36	0.01	920	0.20	475	0.09	176	0.04
<b>Rural Damascus</b>	11,461	2.36	12,589	2.78	12,996	2.53	12831	2.64
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	38,812	8.01	27,776	6.13	34,012	6.63	26447	5.44
<b>Hama</b>	61,905	12.77	65,102	14.36	94,667	18.45	93939	19.30
<b>Ghab</b>	52,403	10.81	68,354	15.07	64,403	12.55	45343	9.32
<b>Idleb</b>	144,985	29.91	104,395	23.02	102,911	20.05	111712	22.96
<b>Tartous</b>	33,776	6.97	24,215	5.34	25,071	4.89	21684	4.46
<b>Lattakia</b>	8,129	1.68	4,200	0.93	3,230	0.63	1944	0.40
<b>Aleppo</b>	115,442	23.81	122,603	27.04	138,479	26.99	138062	28.37
<b>Al-Raqqa</b>	306	0.06	260	0.06	1,670	0.33	496	0.10
<b>Deir-Ezzor</b>	4,762	0.98	1,389	0.31	1,296	0.25	16750	3.44
<b>Al-Hassake</b>	2,000	0.41	3,092	0.68	18,118	3.53	46	0.01
<b>Total</b>	<b>484,778</b>	<b>100</b>	<b>453,435</b>	<b>100</b>	<b>513,153</b>	<b>100</b>	<b>486605</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.24 - Area, yield, and production of irrigated olives by governorate, 2000-2003**

**Table 4.24.a - Area of irrigated olives by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	0.27	0.94	0.31	0.95	1.00	2.45	1.01	2.16
<b>Dar'a</b>	5.07	17.49	5.15	15.97	5.51	13.46	5.52	11.79
<b>Quneitra</b>	0.40	1.36	0.40	1.22	0.36	0.88	0.40	0.84
<b>Rural Damascus</b>	6.18	21.31	6.18	19.17	7.56	18.47	10.90	23.30
<b>Damascus city</b>	0.36	1.22	0.36	1.10	0.36	0.87	0.58	1.24
<b>Homs</b>	3.67	12.67	4.01	12.43	7.05	17.22	7.63	16.29
<b>Hama</b>	2.74	9.44	4.10	12.71	5.01	12.23	5.43	11.60
<b>Ghab</b>	0.12	0.42	0.16	0.49	0.12	0.29	0.12	0.25
<b>Idleb</b>	2.67	9.21	2.68	8.31	4.01	9.79	4.13	8.81
<b>Tartous</b>	0.07	0.24	0.09	0.27	0.07	0.17	0.06	0.12
<b>Lattakia</b>	0.10	0.35	0.10	0.32	0.45	1.10	0.20	0.42
<b>Aleppo</b>	1.91	6.60	2.26	7.00	1.85	4.51	1.93	4.12
<b>Assad Establi.ment</b>	0.08	0.26	0.08	0.24	0.00	0.00	0.00	0.00
<b>Al-Raqqa</b>	4.95	17.07	5.95	18.45	6.51	15.91	7.91	16.89
<b>GADEB</b>	0.28	0.97	0.26	0.82	0.27	0.65	0.00	0.00
<b>Deir-Ezzor</b>	0.06	0.22	0.08	0.25	0.70	1.71	0.77	1.63
<b>Al-Hassake</b>	0.07	0.22	0.10	0.31	0.12	0.28	0.25	0.53
<b>Total</b>	<b>29</b>	<b>100</b>	<b>32</b>	<b>100</b>	<b>41</b>	<b>100</b>	<b>47</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues



**Table 4.24.b - Yield of irrigated olives by governorate, 2000-2003 (kg/tree)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	25	24	28	35
<b>Dar'a</b>	33	30	34	36
<b>Quneitra</b>	19	12	12	15
<b>Rural Damascus</b>	23	19	20	24
<b>Damascus city</b>	20	20	20	20
<b>Homs</b>	23	18	22	19
<b>Hama</b>	21	17	18	18
<b>Ghab</b>	28	23	39	36
<b>Idleb</b>	24	28	27	17
<b>Tartous</b>	34	5	13	3
<b>Lattakia</b>	45	15	35	31
<b>Aleppo</b>	21	17	27	18
<b>Assad Establi.ment</b>	5	8	0	0
<b>Al-Raqqa</b>	4	7	11	10
<b>GADEB</b>	6	6	3	18
<b>Deir-Ezzor</b>	14	50	2	10
<b>Al-Hassake</b>	11	22	18	22

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.24.c - Production of irrigated olives by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	442	0.68	828	1.39	2,736	2.94	4,456	4.19
<b>Dar'a</b>	18,730	28.65	17,769	29.81	21,438	23.06	22,529	21.17
<b>Quneitra</b>	883	1.35	561	0.94	600	0.65	855	0.80
<b>Rural Damascus</b>	16,783	25.67	14,416	24.19	16,459	17.70	32,745	30.77
<b>Damascus city</b>	673	1.03	700	1.17	688	0.74	997	0.94
<b>Homs</b>	9,763	14.93	8,126	13.63	15,237	16.39	13,477	12.66
<b>Hama</b>	6,501	9.94	6,606	11.08	9,208	9.90	10,188	9.57
<b>Ghab</b>	412	0.63	374	0.63	1,623	1.75	1,654	1.55
<b>Idleb</b>	5,325	8.14	6,380	10.70	8,354	8.98	6,000	5.64
<b>Tartous</b>	189	0.29	39	0.07	191	0.21	20	0.02
<b>Lattakia</b>	822	1.26	314	0.53	3,325	3.58	1,050	0.99
<b>Aleppo</b>	3,889	5.95	3,979	6.68	5,833	6.27	4,321	4.06
<b>Assad Establi.ment</b>	38	0.06	60	0.10	0	0.00	0	0.00
<b>Al-Raqqa</b>	694	1.06	1,561	2.62	6,511	7.00	6,738	6.33
<b>GADEB</b>	60	0.09	99	0.17	50	0.05	0	0.00
<b>Deir-Ezzor</b>	107	0.16	598	1.00	105	0.11	1,392	1.31
<b>Al-Hassake</b>	75	0.11	489	0.82	621	0.67	2	0.00
<b>Total</b>	<b>65,386</b>	<b>100</b>	<b>62,899</b>	<b>106</b>	<b>92,979</b>	<b>100</b>	<b>106,424</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.25 - Area, yield, and production of rainfed olives by governorate, 2000-2003****Table 4.25.a - Total area of rainfed olives by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	8.25	1.84	8.27	1.81	7.03	1.53	6.97	1.48
<b>Dar'a</b>	21.02	4.68	21.09	4.62	21.18	4.60	21.19	4.51
<b>Quneitra</b>	2.70	0.60	2.72	0.59	2.87	0.62	2.77	0.59
<b>Rural Damascus</b>	6.32	1.41	6.55	1.43	6.56	1.42	5.11	1.09
<b>Damascus city</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Homs</b>	29.71	6.62	33.78	7.40	33.25	7.22	40.00	8.51
<b>Hama</b>	21.37	4.76	22.51	4.93	24.11	5.24	25.44	5.41
<b>Ghab</b>	1.47	0.33	1.54	0.34	1.60	0.35	1.60	0.34
<b>Idleb</b>	107.26	23.89	107.62	23.56	107.26	23.29	107.60	22.89
<b>Tartous</b>	61.14	13.62	63.16	13.83	65.10	14.13	65.65	13.96
<b>Lattakia</b>	34.72	7.73	33.16	7.26	33.88	7.36	37.15	7.90
<b>Aleppo</b>	154.97	34.52	156.24	34.21	157.61	34.22	156.57	33.30
<b>Assad Establi.ment</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Al-Raqqa</b>	0.00	0.00	0.07	0.01	0.10	0.02	0.10	0.02
<b>GADEB</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Deir-Ezzor</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Al-Hassake</b>	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>449</b>	<b>100</b>	<b>457</b>	<b>100</b>	<b>461</b>	<b>100</b>	<b>470</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.25.b - Yield of rainfed olives by governorate, 2000-2003 (kg/tree)**

<b>Governorate</b>	<b>2000</b>		<b>2001</b>		<b>2002</b>		<b>2003</b>	
<b>Sweida</b>	5		3		8		14	
<b>Dar'a</b>	15		12		16		16	
<b>Quneitra</b>	12		9		9		10	
<b>Rural Damascus</b>	13		11		13		10	
<b>Damascus city</b>	0		0		0		0	
<b>Homs</b>	21		2		15		5	
<b>Hama</b>	11		8		7		6	
<b>Ghab</b>	18		18		22		18	
<b>Idleb</b>	17		19		18		11	
<b>Tartous</b>	30		3		26		3	
<b>Lattakia</b>	35		6		26		5	
<b>Aleppo</b>	18		11		14		13	
<b>Assad Establi.ment</b>	0		0		0		0	
<b>Al-Raqqa</b>	3		5		5		5	
<b>GADEB</b>	0		0		0		0	
<b>Deir-Ezzor</b>	0		0		0		0	
<b>Al-Hassake</b>	5		0		0		0	

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.25.c - Production of rainfed olives by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	2,131	0.27	1,455	0.34	5,747	0.68	10,763	2.41
<b>Dar'a</b>	22,000	2.75	20,984	4.87	28,048	3.31	31,065	6.97
<b>Quneitra</b>	1,434	0.18	1,522	0.35	1,575	0.19	2,100	0.47
<b>Rural Damascus</b>	2,559	0.32	2,420	0.56	3,308	0.39	4,101	0.92
<b>Damascus city</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Homs</b>	24,556	3.07	2,928	0.68	35,891	4.23	12,425	2.79
<b>Hama</b>	14,025	1.75	13,091	3.04	15,617	1.84	15,654	3.51
<b>Ghab</b>	2,777	0.35	3,207	0.74	4,899	0.58	4,326	0.97
<b>Idleb</b>	144,675	18.07	173,620	40.29	182,244	21.49	113,500	25.46
<b>Tartous</b>	206,964	25.85	24,961	5.79	195,497	23.05	23,505	5.27
<b>Lattakia</b>	150,646	18.82	25,259	5.86	146,675	17.30	33,950	7.61
<b>Aleppo</b>	228,890	28.59	164,584	38.20	228,429	26.94	194,434	43.61
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	4	0.00	22	0.01	32	0.00	30	0.01
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Hassake</b>	5	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>800,666</b>	<b>100</b>	<b>434,053</b>	<b>101</b>	<b>847,962</b>	<b>100</b>	<b>445,853</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.26. - Area, yield, and production of irrigated citrus by governorate, 2000-2003**

**Table 4.26.a - Area of irrigated citrus by governorate, 2000-2003 (ha and %)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Dar'a</b>	0.15	0.54	0.17	0.60	0.19	0.66	0.19	0.63
<b>Quneitra</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Rural Damascus</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Damascus city</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
<b>Homs</b>	0.53	1.94	0.53	1.89	0.51	1.80	0.51	1.73
<b>Hama</b>	0.06	0.21	0.06	0.21	0.05	0.19	0.05	0.18
<b>Ghab</b>	0.03	0.11	0.03	0.11	0.02	0.05	0.02	0.05
<b>Idleb</b>	0.10	0.38	0.10	0.37	0.10	0.37	0.11	0.38
<b>Tartous</b>	6.00	21.96	6.14	21.82	6.10	21.71	6.32	21.66
<b>Lattakia</b>	20.40	74.63	21.03	74.78	21.03	74.87	21.90	75.00
<b>Aleppo</b>	0.01	0.02	0.01	0.02	0.05	0.16	0.05	0.15
<b>Assad Establi.ment</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Al-Raqqa</b>	0.01	0.05	0.02	0.06	0.02	0.07	0.02	0.08
<b>GADEB</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Deir-Ezzor</b>	0.04	0.15	0.04	0.16	0.04	0.12	0.03	0.11
<b>Al-Hassake</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>27</b>	<b>100</b>	<b>28</b>	<b>100</b>	<b>28</b>	<b>100</b>	<b>29</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.26.b - Yield of irrigated citrus by governorate, 2000-2003 (kg/tree)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	0	0	0	0
<b>Dar'a</b>	1	34	35	30
<b>Quneitra</b>	0	0	0	0
<b>Rural Damascus</b>	0	0	0	3
<b>Damascus city</b>	15	15	20	0
<b>Homs</b>	0	35	55	25
<b>Hama</b>	24	19	18	0
<b>Ghab</b>	21	26	27	0
<b>Idleb</b>	41	59	68	63
<b>Tartous</b>	88	82	84	61
<b>Lattakia</b>	105	109	90	75
<b>Aleppo</b>	30	30	34	0
<b>Assad Establi.ment</b>	0	0	0	0
<b>Al-Raqqa</b>	21	50	28	22
<b>GADEB</b>	0	0	0	0
<b>Deir-Ezzor</b>	19	19	22	6
<b>Al-Hassake</b>	0	0	0	0

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.26.c - Production of irrigated citrus by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Dar'a</b>	989	0.12	2,092	0.25	2,562	0.34	2,252	0.35
<b>Quneitra</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Rural Damascus</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Damascus city</b>	3	0.00	3	0.00	4	0.00	29	0.00
<b>Homs</b>	8,065	1.01	6,438	0.77	8,448	1.13	4,583	0.70
<b>Hama</b>	680	0.09	650	0.08	506	0.07	367	0.06
<b>Ghab</b>	213	0.03	263	0.03	981	0.13	1,047	0.16
<b>Idleb</b>	927	0.12	1,401	0.17	1,700	0.23	1,727	0.26
<b>Tartous</b>	164,533	20.57	163,580	19.64	170,736	22.90	103,159	15.82
<b>Lattakia</b>	623,969	78.00	657,881	78.99	560,137	75.13	538,492	82.57
<b>Aleppo</b>	15	0.00	15	0.00	17	0.00	84	0.01
<b>Assad Establi.ment</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Al-Raqqa</b>	30	0.00	70	0.01	59	0.01	80	0.01
<b>GADEB</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	505	0.06	501	0.06	425	0.06	355	0.05
<b>Al-Hassake</b>	0	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	799,929	100	832,894	100	745,575	100	652,176	100

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.



**Table 4.27 - Area, yield, and production of apples by governorate, 2000-2003**

**Table 4.27.a - Area of apples by governorate, 2000-2003 (ha)**

Governorate	2000		2001		2002		2003	
	000ha	%	000ha	%	000ha	%	000ha	%
<b>Sweida</b>	10.83	21.93	10.97	22.17	10.86	23.29	10.84	24.98
<b>Dar'a</b>	0.08	0.16	0.07	0.14	0.03	0.07	0.00	0.00
<b>Quneitra</b>	0.73	1.48	0.73	1.48	0.69	1.48	0.63	1.46
<b>Rural Damascus</b>	16.37	33.15	16.43	33.20	15.79	33.87	13.12	30.22
<b>Damascus city</b>	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00
<b>Homs</b>	6.30	12.76	6.30	12.74	6.67	14.30	6.87	15.82
<b>Hama</b>	1.70	3.43	1.75	3.53	1.77	3.79	1.83	4.22
<b>Ghab</b>	0.04	0.08	0.04	0.08	0.01	0.02	0.01	0.03
<b>Idleb</b>	1.81	3.66	1.82	3.67	1.81	3.88	1.77	4.08
<b>Tartous</b>	5.38	10.90	5.39	10.89	3.91	8.38	3.75	8.63
<b>Lattakia</b>	5.03	10.18	4.90	9.90	4.24	9.09	3.82	8.80
<b>Aleppo</b>	0.72	1.46	0.72	1.45	0.63	1.36	0.56	1.30
<b>Al-Raqqa</b>	0.04	0.07	0.02	0.04	0.01	0.03	0.01	0.03
<b>Deir-Ezzor</b>	0.22	0.45	0.23	0.46	0.10	0.22	0.10	0.24
<b>Al-Hassake</b>	0.14	0.28	0.12	0.24	0.10	0.21	0.09	0.20
<b>Total</b>	49	100	49	100	47	100	43	100

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.27 b. Yield of apples by governorate, 2000-2003 (kg/tree)**

<b>Governorate</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Sweida</b>	21	25	21	28
<b>Dar'a</b>	12	26	25	23
<b>Quneitra</b>	6	17	17	23
<b>Rural Damascus</b>	30	25	18	27
<b>Damascus city</b>	38	38	38	38
<b>Homs</b>	38	36	31	38
<b>Hama</b>	19	21	16	29
<b>Ghab</b>	11	9	24	22
<b>Idleb</b>	33	31	17	26
<b>Tartous</b>	22	18	23	33
<b>Lattakia</b>	21	21	16	25
<b>Aleppo</b>	29	24	29	26
<b>Al-Raqqa</b>	14	21	24	23
<b>Deir-Ezzor</b>	17	20	25	20
<b>Al-Hassake</b>	29	24	18	20

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.27 c. Production of apples by governorate, 2000-2003 (ton and %)**

Governorate	2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
<b>Sweida</b>	27,072	9.44	26,384	10.03	26,878	12.46	51,402	16.76
<b>Dar'a</b>	249	0.09	473	0.18	231	0.11	0	0.00
<b>Quneitra</b>	680	0.24	1,979	0.75	1,893	0.88	2,655	0.87
<b>Rural Damascus</b>	98,689	34.41	84,430	32.11	60,071	27.84	110,011	35.87
<b>Damascus city</b>	34	0.01	34	0.01	34	0.02	18	0.01
<b>Homs</b>	56,461	19.69	55,559	21.13	56,220	26.06	62,295	20.31
<b>Hama</b>	8,428	2.94	9,904	3.77	7,912	3.67	7,217	2.35
<b>Ghab</b>	91	0.03	74	0.03	112	0.05	120	0.04
<b>Idleb</b>	21,441	7.48	20,263	7.71	11,080	5.14	14,516	4.73
<b>Tartous</b>	30,280	10.56	23,240	8.84	22,609	10.48	16,846	5.49
<b>Lattakia</b>	35,281	12.30	33,961	12.91	22,723	10.53	37,911	12.36
<b>Aleppo</b>	5,028	1.75	4,332	1.65	4,609	2.14	2,850	0.93
<b>Assad Establi.ment</b>	22	0.01	22	0.01	42	0.02	0	0.00
<b>Al-Raqqa</b>	72	0.03	67	0.03	80	0.04	80	0.03
<b>GADEB</b>	1	0.00	0	0.00	0	0.00	0	0.00
<b>Deir-Ezzor</b>	1,494	0.52	1,803	0.69	848	0.39	791	0.26
<b>Al-Hassake</b>	1,450	0.51	438	0.17	420	0.19	3	0.00
<b>Total</b>	<b>286,773</b>	<b>100</b>	<b>262,963</b>	<b>100</b>	<b>215,762</b>	<b>100</b>	<b>306,715</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

**Table 4.28 - Livestock population, 1998-2003 (unit)**

Type	1998	1999	2000	2001	2002	2003
<b>Sheep</b>	15,424,717	13,998,459	13,505,235	12,361,824	13,497,481	15,292,722
<b>Goats</b>	1,100,983	1,045,576	1,049,539	979,325	931,886	1,017,336
<b>Cattle</b>	931,982	977,944	984,393	836,868	866,671	937,098
<b>Buffalo</b>	1,280	2,803	2,824	2,477	2,794	3,446
<b>Poultry (thousand )</b>	20,422	21,009	21,629	21,122	28,634	25,058
<b>Other poultries</b>	2,099,791	2,118,126	2,084,789	1,819,682	1,834,889	1,939,220
<b>Other farm animals</b>	278,591	272,939	269,785	207,452	166,237	164,646
<b>Bee-Hives (boxes)</b>	384,803	360,367	345,091	364,352	383,829	410,243
<b>Silk worms (boxes)</b>	1,216	1,011	901	545	390	398

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.29.a - Animal production, 1998-2003 (ton)**

	1998	1999	2000	2001	2002	2003
<b>Cows</b>						
<b>Milk</b>	1,118,775	1,143,423	1,156,393	1,156,393	1,173,527	1,207,116
<b>Meat</b>	43,396	46,742	47,079	42,396	47,046	47,025
<b>Sheep</b>						
<b>Milk</b>	581,939	445,913	445,558	482,809	535,873	596,036
<b>Meat</b>	154,234	176,744	184,137	168,548	120,900	152,767
<b>Goats</b>						
<b>Milk</b>	78,704	65,853	70,322	61,714	55,992	71,198
<b>Meat</b>	5,888	5,304	4,633	4,922	4,977	6,784
<b>Fish</b>	14,328	14,171	13,369	14,171	15,166	16,128
<b>Poultry</b>						
<b>Eggs (thousand)</b>	2,228,429	2,479,164	2,545,897	2,671,273	3,320,780	3,179,656
<b>Meat</b>	97,243	104,380	106,602	115,576	124,620	160,455
<b>Total red meat</b>	<b>203,518</b>	<b>228,790</b>	<b>235,849</b>	<b>215,866</b>	<b>172,923</b>	<b>206,576</b>
<b>Total milk</b>	<b>1,779,418</b>	<b>1,655,189</b>	<b>1,672,273</b>	<b>1,700,916</b>	<b>1,765,392</b>	<b>1,874,350</b>

Source:MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.29.b - Animal production, 1998-2003 (Million SP)**

Item	1998	1999	2000	2001	2002	2003
<b>Dairy</b>	47,587	43,868	42,408	42,941	45,882	45,902
<b>Animal growth (Meat)</b>	48,924	54,676	67,329	68,319	64,544	65,000
<b>Eggs</b>	6,528	7,263	6,365	6,687	8,302	8,303
<b>Wool</b>	1,250	2,134	2,795	2,451	2,603	2,795
<b>Hair</b>	52	29	25	18	19	21
<b>Skin</b>	561	533	474	474	527	610
<b>Silk worms</b>	12	11	13	12	6	6
<b>Honey</b>	809	816	961	1,019	1,220	1,057
<b>Wax</b>	108	83	83	116	102	115
<b>Total</b>	105,831	109,413	120,453	122,037	123,205	123,809

Source: MAAR, The Current Situation of Agricultural Sector, 1992-2003

**Table 4.30 - Productivity by animal, 1998-2003 (unit/head/year)**

<b>Animal</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Average milk productivity by cows (kg)</b>	<b>2,497</b>	<b>2,460</b>	<b>2,520</b>	<b>2,783</b>	<b>2,595</b>	<b>2,632</b>
Local cows (kg)	773	746	946	766	896	754
Shami cows (kg)	2,000	2,015	2,014	1,989	1,708	2,230
Foreign cows (kg)	3,801	3,730	3,806	3,848	4,316	4,249
Improved cows (kg)	2,475	2,407	2,468	2,626	2,597	2,675
<b>Average milk productivity by sheep (kg)</b>	<b>58</b>	<b>50</b>	<b>52</b>	<b>60</b>	<b>59</b>	<b>59</b>
<b>Average milk productivity by goats (kg)</b>	<b>102</b>	<b>90</b>	<b>96</b>	<b>93</b>	<b>89</b>	<b>102</b>
Shami goats (kg)	334	208	301	228	327	413
Mountain goats (kg)	94	85	87	89	82	92
<b>Average eggs productivity (eggs)</b>	<b>169</b>	<b>182</b>	<b>180</b>	<b>192</b>	<b>188</b>	<b>183</b>
Domestic hens (eggs)	101	99	100	105	99	96
Farms hens (eggs)	194	213	201	211	196	210

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

**Table 4.31 - Cow milk production by governorate, 1998-2003 (ton and %)**

Governorate	1998		1999		2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Sweida	16,639	1.50	20,446	1.80	22,087	1.91	20,223	1.96	21,214	1.81	27,675	2.29
Dar'a	58,166	5.20	62,574	5.50	50,555	4.37	38,001	3.68	34,348	2.93	46,500	3.85
Quneitra	16,116	1.40	19,136	1.70	22,189	1.92	16,332	1.58	16,408	1.40	20,448	1.69
Damascus	285,688	25.50	292,962	25.60	307,149	26.56	244,576	23.69	300,657	25.62	256,896	21.28
Dam. CITY	43,330	3.90	34,228	3.00	34,053	2.94	35,918	3.48	28,214	2.40	32,326	2.68
Homs	168,221	15.00	151,862	13.30	146,212	12.64	97,693	9.46	150,393	12.82	152,167	12.61
Hama	70,617	6.30	74,778	6.50	70,621	6.11	64,276	6.23	70,559	6.01	83,198	6.89
Ghab	50,138	4.50	61,640	5.40	55,641	4.81	45,054	4.36	42,879	3.65	53,640	4.44
Idleb	29,454	2.60	38,234	3.30	44,847	3.88	35,351	3.42	43,239	3.68	56,769	4.70
Tartous	65,708	5.90	61,835	5.40	64,389	5.57	48,525	4.70	50,272	4.28	66,468	5.51
Lattakia	60,402	5.40	63,200	5.50	51,291	4.44	44,833	4.34	55,889	4.76	63,417	5.25
Aleppo	92,858	8.30	99,565	8.70	97,162	8.40	107,960	10.46	121,694	10.37	129,786	10.75
Al-Raqqa	5,331	0.50	8,482	0.80	8,320	0.72	13,452	1.30	15,055	1.28	16,714	1.38
Deir-Ezzor	117,845	10.50	116,904	10.20	145,241	12.56	158,324	15.34	160,524	13.68	163,268	13.53
Al-Hassake	38,262	3.40	37,577	3.30	36,636	3.17	61,804	5.99	62,182	5.30	37,844	3.14
<b>Total</b>	<b>1,118,775</b>	<b>100</b>	<b>1,143,423</b>	<b>100</b>	<b>1,156,393</b>	<b>100</b>	<b>1,032,322</b>	<b>100</b>	<b>1,173,527</b>	<b>100</b>	<b>1,207,116</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

Note: Aleppo contains Assad Establ.ments and AL-Raqqa contains GADEB

**Table 4.32. Cattle meat production by governorate, 1998-2003 (ton and %)**

Governorate	1998		1999		2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Sweida	345	0.80	562	1.20	475	1.01	427	1.01	413	0.88	497	1.06
Dar'a	3,239	7.46	3142	6.72	2459	5.22	2,334	5.51	1,459	3.10	1,816	3.86
Quneitra	769	1.77	1120	2.40	793	1.68	651	1.54	653	1.39	696	1.48
Damascus	11,736	27.04	12469	26.68	11087	23.55	8,787	20.73	12,675	26.94	9,646	20.51
Dam CITY	4,888	11.26	4819	10.31	3799	8.07	2,629	6.20	2,162	4.60	2,428	5.16
Homs	3,013	6.94	4288	9.17	7889	16.76	4,086	9.64	4,186	8.90	4,579	9.74
Hama	1,677	3.86	1818	3.89	1373	2.92	1,213	2.86	1,275	2.71	1,296	2.76
Ghab	1,871	4.31	2098	4.49	1905	4.05	866	2.04	1,194	2.54	1,289	2.74
Idleb	1,278	2.94	1732	3.71	2425	5.15	1,998	4.71	1,602	3.41	1,466	3.12
Tartous	2,792	6.43	2874	6.15	2546	5.41	2,122	5.01	2,049	4.36	2,671	5.68
Lattakia	922	2.12	879	1.88	914	1.94	1,161	2.74	2,201	4.68	3,326	7.07
Aleppo	2,673	6.16	3014	6.45	2847	6.05	5,680	13.40	6,697	14.24	5,104	10.85
Al-Raqqa	231	0.53	221	0.47	231	0.49	390	0.92	443	0.94	1,180	2.51
Deir-Ezzor	5,538	12.76	5423	11.60	6167	13.10	7,816	18.44	7,845	16.68	8,077	17.18
Al-Hassake	2,424	5.59	2283	4.88	2169	4.61	2,236	5.27	2,192	4.66	2,954	6.28
<b>Total</b>	<b>43,396</b>	<b>100</b>	<b>46,742</b>	<b>100</b>	<b>47,079</b>	<b>100</b>	<b>42,396</b>	<b>100</b>	<b>47,046</b>	<b>100</b>	<b>47,025</b>	<b>100</b>

Source:MAAR, The Agricultural Statistical Annual Abstract, various issues

Note: Aleppo contains Assad Establ.ment and AL-Raqqa contains GADEB

**Table 4.33 - Sheep milk production by governorate, 1998-2003 (ton and %)**

Governorate	1998		1999		2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Sweida	9,560	1.64	9,247	2.07	10,501	2.36	6,093	1.26	6,618	1.23	13,250	2.22
Dar'a	16,863	2.90	16,881	3.79	19,219	4.31	12,268	2.54	13,275	2.48	12,815	2.15
Quneitra	4,207	0.72	3,697	0.83	3,213	0.72	2,594	0.54	3,118	0.58	4,279	0.72
Damascus	38,928	6.69	40,558	9.10	42,012	9.43	35,850	7.43	45,711	8.53	47,738	8.01
Dam CITY	221	0.04	179	0.04	171	0.04	142	0.03	134	0.03	160	0.03
Homs	90,675	15.58	69,253	15.53	67,261	15.10	73,548	15.23	85,933	16.04	90,964	15.26
Hama	82,246	14.13	59,275	13.29	56,298	12.64	48,503	10.05	66,340	12.38	82,398	13.82
Ghab	2,462	0.42	2,490	0.56	2,703	0.61	2,559	0.53	3,339	0.62	3,349	0.56
Idleb	23,032	3.96	23,010	5.16	20,722	4.65	18,364	3.80	19,664	3.67	24,495	4.11
Tartous	712	0.12	779	0.17	916	0.21	681	0.14	766	0.14	806	0.14
Lattakia	418	0.07	514	0.12	500	0.11	379	0.08	350	0.07	364	0.06
Aleppo	86,256	14.82	90,126	20.21	89,719	20.14	88,223	18.27	86,678	16.18	103,744	17.41
Al-Raqqa	61,306	10.53	50,760	11.38	43,815	9.83	67,501	13.98	58,426	10.90	65,530	10.99
Deir-Ezzor	96,702	16.62	29,025	6.51	33,113	7.43	79,718	16.51	90,478	16.88	95,118	15.96
Al-Hassake	68,351	11.75	50,119	11.24	55,395	12.43	46,386	9.61	55,043	10.27	51,026	8.56
<b>Total</b>	<b>581,939</b>	<b>100</b>	<b>445,913</b>	<b>100</b>	<b>445,558</b>	<b>100</b>	<b>482,809</b>	<b>100</b>	<b>535,873</b>	<b>100</b>	<b>596,036</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues

Note: Aleppo contains Assad Establishment And AL-Raqqa contains GADEB

**Table 4.34 - Sheep meat production by governorate, 1998-2003 (ton and %)**

Governorate	1998		1999		2000		2001		2002		2003	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Sweida	1,513	0.98	3,316	1.88	3,837	2.08	2,253	1.34	731	0.60	1,245	0.81
Dar'a	5,465	3.54	5,726	3.24	6,179	3.36	3,913	2.32	3,666	3.03	2,867	1.88
Quneitra	1,923	1.25	1,377	0.78	1,192	0.65	907	0.54	584	0.48	869	0.57
Damascus	10,430	6.76	16,136	9.13	17,812	9.67	14,625	8.68	7,638	6.32	8,927	5.84
Dam CITY	57	0.04	59	0.03	62	0.03	50	0.03	27	0.02	32	0.02
Homs	22,852	14.82	26,335	14.90	27,885	15.14	25,713	15.26	26,707	22.09	26,872	17.59
Hama	17,314	11.23	19,603	11.09	18,905	10.27	15,882	9.42	11,032	9.12	13,710	8.97
Ghab	397	0.26	770	0.44	796	0.43	839	0.50	770	0.64	814	0.53
Idleb	6,820	4.42	6,158	3.48	6,409	3.48	5,658	3.36	4,460	3.69	5,606	3.67
Tartous	181	0.12	197	0.11	236	0.13	181	0.11	129	0.11	144	0.09
Lattakia	27	0.02	115	0.07	121	0.07	94	0.06	91	0.08	106	0.07
Aleppo	17,022	11.04	29,255	16.55	31,374	17.04	26,927	15.98	13,523	11.19	15,132	9.91
Al-Raqqa	21,476	13.92	20,255	11.46	19,963	10.84	25,751	15.28	15,726	13.01	39,562	25.90
Deir-Ezzor	26,588	17.24	28,053	15.87	29,049	15.78	29,691	17.62	20,898	17.29	23,067	15.10
Al-Hassake	22,169	14.37	19,389	10.97	20,317	11.03	16,064	9.53	14,918	12.34	13,814	9.04
<b>Total</b>	<b>154,234</b>	<b>100</b>	<b>176,744</b>	<b>100</b>	<b>184,137</b>	<b>100</b>	<b>168,548</b>	<b>100</b>	<b>120,900</b>	<b>100</b>	<b>152,767</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

Note: Aleppo contains Assad Establishment And AL-Raqqa contains GADEB

**Table 4.35 - Poultry meat production by governorate, 1998-2003 (ton and 5)**

Governorate	1998		1999		2000		2001		2002		2003	
	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%
Sweida	765	0.79	917	0.88	718	0.67	853	0.74	1,182	0.95	1,316	0.83
Dar'a	7,574	7.79	4,448	4.26	5,051	4.74	9,319	8.06	7,365	5.91	23,170	14.57
Quneitra	464	0.48	532	0.51	651	0.61	884	0.76	936	0.75	928	0.58
Damascus	12,490	12.84	14,253	13.65	13,486	12.65	11,452	9.91	12,892	10.35	15,480	9.73
Dam CITY	7	0.01	6	0.01	6	0.01	5	0.00	10	0.01	10	0.01
Homs	15,876	16.33	17,231	16.51	20,392	19.13	18,692	16.17	20,876	16.75	20,074	12.62
Hama	12,859	13.22	15,859	15.19	15,493	14.53	19,728	17.07	20,076	16.11	30,332	19.07
Ghab	831	0.85	762	0.73	742	0.70	614	0.53	492	0.39	617	0.39
Idleb	11,456	11.78	14,851	14.23	12,521	11.75	16,060	13.90	17,920	14.38	21,220	13.34
Tartous	7,993	8.22	8,164	7.82	7,644	7.17	10,607	9.18	11,592	9.30	18,049	11.35
Lattakia	2,361	2.43	2,331	2.23	1,910	1.79	1,985	1.72	4,053	3.25	3,808	2.39
Aleppo	20,988	21.58	21,476	20.57	21,946	20.59	20,042	17.34	21,183	17.00	21,318	13.40
Al-Raqqa	842	0.87	574	0.55	467	0.44	632	0.55	414	0.33	271	0.17
Deir-Ezzor	710	0.73	760	0.73	833	0.78	809	0.70	1,281	1.03	590	0.37
Al-Hassake	2,027	2.08	2,216	2.12	4,742	4.45	3,894	3.37	4,348	3.49	1,852	1.16
<b>Total</b>	<b>97243</b>	<b>100</b>	<b>104380</b>	<b>100</b>	<b>106602</b>	<b>100</b>	<b>115576</b>	<b>100</b>	<b>124620</b>	<b>100</b>	<b>159035</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

Note: Aleppo contains Assad Establi.ment And AL-Raqqa contains GADEB

**Table 4.36 - Eggs production by governorate, 1998-2003 (thousand and %)**

Governorate	1998		1999		2000		2001		2002		2003	
	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%	quantity	%
Sweida	69,891	3.14	66,101	2.67	72,370	2.84	73,726	2.76	99,816	3.01	62,902	1.98
Dar'a	111,135	4.99	99,189	4.00	116,277	4.57	124,150	4.65	135,105	4.07	129,495	4.07
Quneitra	15,206	0.68	19,939	0.80	18,953	0.74	12,567	0.47	17,337	0.52	15,916	0.50
Damascus	752,487	33.77	891,356	35.95	882,768	34.67	885,778	33.16	1,062,957	32.01	696,439	21.90
Dam CITY	840	0.04	730	0.03	730	0.03	1,130	0.04	3,465	0.10	3,049	0.10
Homs	316,446	14.20	385,588	15.55	444,045	17.44	560,069	20.97	1,035,446	31.18	1,342,980	42.24
Hama	106,755	4.79	104,096	4.20	99,137	3.89	100,533	3.76	118,876	3.58	93,621	2.94
Ghab	12,821	0.58	15,383	0.62	17,654	0.69	12,709	0.48	22,371	0.67	16,567	0.52
Idleb	133,893	6.01	137,326	5.54	131,379	5.16	134,017	5.02	143,985	4.34	126,435	3.98
Tartous	53,372	2.40	64,417	2.60	66,188	2.60	73,859	2.76	74,035	2.23	101,639	3.20
Lattakia	73,746	3.31	78,226	3.16	70,820	2.78	66,492	2.49	65,469	1.97	75,138	2.36
Aleppo	311,583	13.98	334,880	13.51	331,752	13.03	309,130	11.57	233,148	7.02	231,518	7.28
Al-Raqqa	47,201	2.12	49,344	1.99	46,470	1.83	45,207	1.69	50,111	1.51	52,519	1.65
Deir-Ezzor	32,430	1.46	30,740	1.24	31,185	1.22	32,787	1.23	22,164	0.67	18,000	0.57
Al-Hassake	190,623	8.55	201,849	8.14	216,169	8.49	239,119	8.95	236,495	7.12	213,438	6.71
<b>Total</b>	<b>2,228,429</b>	<b>100</b>	<b>2,479,164</b>	<b>100</b>	<b>2,545,897</b>	<b>100</b>	<b>2,671,273</b>	<b>100</b>	<b>3,320,780</b>	<b>100</b>	<b>3,179,656</b>	<b>100</b>

Source: MAAR, The Agricultural Statistical Annual Abstract, various issues.

Note: Aleppo contains Assad Establi.ment And AL-Raqqa contains GADEB



**Table 5.1 - Food, Beverages and Tobacco Industry, 1998-2003 (Million SP and %, current prices and factor cost)**

<b>Industrial Activity</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Total Manufacturing Industries</b>	358748	342268	327303	352952	362170	379046
<b>Total Food, Beverages and Tobacco Industry</b>	93705	89286	78104	85919	93116	99847
<b>Food, Beverage and Tobacco Industry in the Public Sector</b>	37933	39160	38632	43717	50438	54231
<b>Food, Beverages and Tobacco Industry in the Private Sector</b>	55772	50126	39472	42202	42678	45616
<b>Share of Food, Beverages and Tobacco in Total Manufacturing</b>	26.12	26.09	23.86	24.34	25.71	26.34
<b>Share of Public Sector in Food, Beverages and Tobacco Industry</b>	40.48	43.86	49.46	50.88	54.17	54.31
<b>Share of Private Sector in Food, Beverages and Tobacco Industry</b>	59.52	56.14	50.54	49.12	45.83	45.69

Source: Central Bureau of Statistics, Statistical Abstract 1999-2004

**Table 5.2 - Employment in public agro-food industry, 1998-2003 (unit and %)**

<b>Sector</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Total Manufacturing Industries (1)</b>	104399	104605	107237	106064	109471	108818
<b>Public Agro-Food Industry (2)</b>	23237	23146	23559	23710	23594	23733
<b>Share (2)/(1)</b>	22	22	22	22	22	22

Source: Central Bureau of Statistics, Statistical Abstract 1999-2004

**Table 5.3 - Main agro-food production of the public sector, 1995 and 1998-2003**

<b>Product</b>	<b>unit</b>	<b>1995</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Flour (000)</b>	ton	1398	1621	1649	1686	1697	1989	1716
<b>Bread</b>	ton	667	658	661	680	710	730	808
<b>Vegetable Oil</b>	ton	33435	41764	41410	45087	44121	49568	43756
<b>Margarin &amp; Butter</b>	ton	5182	946	941	975	1169	1091	1054
<b>Tomato Paste*</b>	ton				6995	1568	4355	2473
<b>Variant Canned</b>	ton	14370	10973	9582	9328	3871	10295	8017
<b>Pasteurized Milk</b>	ton	13819	12728	11091	11714	15278	14509	14759
<b>Biscuits</b>	ton	5776	2857	2416	2207	2318	1699	1644
<b>Chocolate</b>	ton	389	201	7	14	19	11	0.7
<b>Macaroni &amp; Noodles</b>	ton	2190	916	709	1433	922	1095	1219
<b>Dry Onion</b>	ton	820	431	1293	1443	1047	1129	1032
<b>Mineral Water (000)</b>	bottle	19629	25116	26076	26927	28848	28896	32940
<b>Gaseous Beverages (000)</b>	liter	5668	6013	5074	3614	3014	2787	2642
<b>Beer (000)</b>	liter	10243	9744	12062	9078	9950	10370	10013
<b>Arak (000)</b>	liter	2827	2825	2968	2987	3083	3108	2496
<b>Wine (000)</b>	liter	249	218	201	326	303	296	315
<b>Other Alcoholic (000)</b>	liter	100	33	33	34	37	39	49
<b>Sugar (000)</b>	ton	158	89	158	109	121	214	123

Source: Central Bureau of Statistics, Statistical Abstract, 2000, 2004.

\* Source: The General Organization of Food Industries, Annual Reports.

**Table 5.4 - Capacity utilization for selected ago-food products, 2000-2003**

Product	Unit	Available Capacity	2000	2001	2002	2003
Oil	ton	42765	39465	38435	45091	39534
Tomato Past	ton	13345	6995	1568	4355	2473
Marmalade*	ton	5271	875	297	1298	1592
Canned Peas	ton	3683	645	198	931	904
Pasteurized Milk (000)	liter	15953	11714	10706	10797	10492
Biscuits	ton	7974	2207	2318	1698	1644
Beer (000)	liter	10078	9078	9950	10370	10013
Arak/Wine (000)	liter	23.2**	2987	3083	3108	2496
Macaroni & Noodles	ton	3508	1433	922	1095	1219
Dry Onion	ton	1672	1443	1047	1129	1032
Gaseous Beverages (000)	liter	9389	3614	3013	2788	2642

Source: The general organization of Food Industries, Annual Reports.

\* It contains different types of marmalads

\*\* Thousand tons of fresh grapes

**Table 5.5 - Main agro-industrial products of the private sector, 1998-2002**

Product	unit	1998	1999	2000	2001	2002
Bread (000)	ton	1095	1122	1216	1626	1727
Olive Oil	ton	145000	80000	165354	95384	194599
Vegetable Oil	ton	22625	36825	43699	62385	64890
Variant Canned	ton	7660	7232	11465	7564	12029
Pasteurized Milk	ton	1383	1920	1773	1497	1407
Biscuits	ton	8605	9101	10872	11354	15662
Chocolate	ton	5654	5568	5567	6062	7078
Macaroni & Noodles	ton	5387	6297	6758	7035	7115
Arak (000)	liter	575	540	836	679	762
Other Alcoholic (000)	liter	750	602	1153	1211	1404
Gaseous Beverages (000)	liter	82824	83390	113508	119452	129457
Fruit Juice (000)	liter	9296	9936	11920	12173	8025

Source: Central Bureau of Statistics, Statistical Abstract, 2000, 2004.

**Table 5.6 - Public and private shares of selected agro-food industrial products, 1998-2002**

Product		1998	1999	2000	2001	2002
Bread	Private	62.46	62.93	64.14	69.61	70.29
	Public	37.54	37.07	35.86	30.39	29.71
Vegetable Oil	Private	35.14	47.07	49.22	58.57	56.69
	Public	64.86	52.93	50.78	41.43	43.31
Pasleurized Milk	Private	9.80	14.76	13.15	8.92	8.84
	Public	90.20	85.24	86.85	91.08	91.16
Biscuits	Private	75.07	79.02	83.13	83.05	90.21
	Public	24.93	20.98	16.87	16.95	9.79
Chocolate	Private	96.57	99.87	99.75	99.69	99.84
	Public	3.43	0.13	0.25	0.31	0.16
Macaroni & Noodles	Private	85.47	89.88	82.51	88.41	86.66
	Public	14.53	10.12	17.49	11.59	13.34
Arak	Private	16.91	15.39	21.87	18.05	19.69
	Public	83.09	84.61	78.13	81.95	80.31
Gaseous Beverages	Private	93.23	94.26	96.91	97.54	97.89
	Public	6.77	5.74	3.09	2.46	2.11

Source: Central Bureau of Statistics, Statistical Abstract, 2000, 2004.

**Table 6.1 - Food availability, 1999-2002 (000tons)**

Commodities	1999				2000				2001				2002			
	Production	Import	Export	Availability	Production	Import	Export	Availability	Production	Import	Export	Availability	Production	Import	Export	Availability
Wheat	2,692	0	112	2,580	3,105	17	0	3,123	4,745	24	36	4,733	4,775	74	626	4,223
Barley	426	584	0	1,010	212	588	0	800	1,956	345	0	2,301	920	368	89	1,199
Lentil	43	0	39	4	73	0	17	57	177	0	31	147	133	2	38	97
Chickpeas	29	0	16	13	65	0	8	57	60	7	1	66	89	8	1	96
Maize	181	633	0	814	191	951	0	1,141	216	295	4	507	232	899	0	1,131
Sugar Beet	1,330	0	0	1,330	1,175	0	0	1,175	1,215	0	0	1,215	1,523	0	0	1,523
Peanuts	35	0	0	35	28	0	4	24	30	0	0	30	20	0	0	20
Green Broad Beans	37	0	1	36	31	0	1	29	45	0	3	42	53	0	2	51
Water Melon	259	0	5	254	202	0	12	190	228	2	11	219	480	4	11	473
Musk Melon	45	0	19	26	48	0	17	31	74	0	15	59	100	0	17	83
Potato	497	1	59	438	485	5	23	467	453	11	12	453	513	16	17	512
Tomato	610	0	143	467	753	0	190	564	772	4	168	608	900	14	210	704
Dry Broad Beans	14	0	11	3	13	0	5	8	28	2	7	23	31	0	4	27
Eggplant	115	0	1	113	124	0	2	121	111	7	3	115	133	6	6	133
Olives	401	0	0	400	866	0	0	866	497	0	0	497	941	0	0	941
Grapes	387	0	39	348	409	0	21	388	389	0	31	358	342	0	25	317
Green Figs	42	0	0	42	44	0	0	44	40	0	2	38	43	0	0	43
Almond	58	0	0	58	62	0	0	62	49	0	0	49	139			139
Apricot	63	0	7	56	79	0	11	68	66	0	5	61	101	0	9	92
Apples	284	0	25	259	287	0	15	271	263	0	18	245	216	0	16	200
Pears	27	0	19	8	31	0	8	23	28	0	12	16	20	0	10	10
Pulms & Green Plums	41	0	8	33	39	0	6	33	36	0	6	30	37	0	9	28
Pomegranate	78	0	1	77	69	0	2	67	75	0	2	73	56	0	2	54
Cherries	54	0	13	41	56	0	9	47	51	0	6	44	40	0	13	27
Pistachio	30	0	5	25	40	1	4	38	37	0	10	27	53	0	4	49
Citrus	720	0	38	682	800	0	39	761	833	7	45	795	746	9	29	726
Haricot Beans & Kidney Beans Green	33	0	2	31	26	0	3	23	33	1	4	30	41	0	3	38
Cabbage & Cauliflower	107	0	4	103	73	0	5	68	77	0	9	68	86	0	10	76
Dry Onion	91	0	4	87	72	0	0	72	84	12	4	93	97	14	3	108
Cucumber & Snake Cucumber	194	0	3	191	172	0	6	166	179	1	1	178	235	6	0	241
Meat ( Poultry)	104	0	0	104	107	0	0	107	116	0	0	116	125	0	0	125
Sheep Meat	177	8	1	184	184	4	17	171	169	1	5	164	121	0	53	68
Goats Meat	5	0	0	5	5	0	0	5	5	0	0	5	5	1	5	1
Cattle Meat	47	0	0	47	47	0	0	47	42	0	0	43	47	0	0	47
Eggs	2,479	0	13	2,466	2,546	0	46	2,500	2,671	0	15	2,656	3,321	0	10	3,311
Milk	1,655	0	0	1,655	1,672	0	0	1,672	1,701	9	11	1,699	1,765	0	14	1,751
Fish	14	0	0	14	13	0	0	13	14	2	0	16	15	12	0	27

Source: NAPC, Data Base 2003

**Table 6.2 - Food consumption, 1999-2002 (kal and g per day)**

Country		1999			2000			2001			2002		
		Calories	Protein	Fat	Calories	Protein	Fat	Calories	Protein	Fat	Calories	Protein	Fat
Syria	Total	3038	73.7	104.5	3052	74.8	104.5	3038	74.7	100.4	3038	77.0	105.0
	Vegetable Sources	2620	52.2	71.9	2635	53.4	71.8	2670	55.5	71.2	2625	55.4	72.8
	Animal Sources	418	21.5	32.6	417	21.4	32.7	368	19.2	29.2	413	21.6	32.2
Lebanon	Total	3163	82.3	110.7	3151	82.4	111.5	3184	84.5	112.8	3153	85.4	108.4
	Vegetable Sources	2740	55.3	79.4	2711	53.6	79.7	2721	55.4	78.8	2684	54	74.8
	Animal Sources	423	27	31.3	440	28.8	31.8	463	29.1	34	469	31.4	33.6
Jordan	Total	2707	72.6	76.1	2732	74.3	80.7	2770	73.1	85.8	2674	67.4	81.5
	Vegetable Sources	2386	50.5	53.8	2406	51.3	58.6	2455	50.3	64.9	2428	49.1	64.4
	Animal Sources	321	22.1	22.3	326	23	22.1	315	22.8	20.9	246	18.3	17.1
Morocco	Total	2992	80.8	60.3	2965	79.7	58.5	3046	83.4	59.0	3052	84.8	58.2
	Vegetable Sources	2780	65.5	45.6	2752	64.4	43.7	2838	67.8	44.9	2818	67.9	42.3
	Animal Sources	212	15.3	14.7	213	15.3	14.8	208	15.6	14.1	234	16.9	15.9
Tunisia	Total	3428	92.1	104.7	3309	90.8	99.9	3292	92.5	94.5	3238	86.9	94.9
	Vegetable Sources	3100	69	84.1	2964	66.6	78.1	2945	68.2	72.7	2892	62.6	73.4
	Animal Sources	328	23.1	20.6	345	24.2	21.8	347	24.3	21.8	346	24.3	21.5
Turkey	Total	3355	97.8	86.3	3373	96.2	91.9	3343	95.3	89.1	3357	95.5	91.6
	Vegetable Sources	2975	72.8	61.8	3003	71.6	68	3000	72.4	67.1	3039	74.2	70.8
	Animal Sources	380	25	24.5	370	24.6	23.9	343	22.9	22	318	21.3	20.8
Italy	Total	3652	113.1	155.4	3663	113.3	154.8	3680	112.9	156.5	3670	113.1	158.1
	Vegetable Sources	2706	51.3	84.3	2729	51.6	84.8	2749	51.9	86.5	2718	51.1	86.4
	Animal Sources	946	61.8	71.1	934	61.7	70	931	61	70	952	62	71.7
France	Total	3583	116.3	164.5	3597	117.2	167.4	3629	118.3	168.3	3653	119.2	170.9
	Vegetable Sources	2235	40.1	56.6	2242	40.4	59.1	2277	40.5	60.6	2296	41.1	62.8
	Animal Sources	1348	76.2	107.9	1355	76.8	108.3	1352	77.8	107.7	1357	78.1	108.1
USA	Total	3726	115.1	147.8	3814	114.9	154.3	3765	114.5	152.8	3774	114.0	156.5
	Vegetable Sources	2673	41.7	75.7	2771	41.9	82.8	2736	42	82.5	2727	40.2	84.9
	Animal Sources	1053	73.4	72.1	1043	73	71.5	1029	72.5	70.3	1047	73.8	71.6

Source: FAOSTAT, Food Balance Sheet

**Table 6.3 - Daily requirements of nutrients and others**

Item	Unit	Calories	
		Lower	Upper
Full rest	Calory	1800	1900
Relative rest	Calory	2200	2400
Easy work	Calory	2400	3000
Hard work	Calory	3300	3800
Very hard work	Calory	4100	6500
Average	Calory	2700	
<b>Nutrients</b>			
Carbohydrate	g		360
Fat	g		75
Protein	g		75
Mineral salt	g	25	30
Water	g		2500
<b>Vitamins</b>			
A	mg		1.5
D	mg		0.015
E	mg		15
K	mg		1
C	mg		75
B1	mg		1.5
B2	mg		2
B6	mg		3
B12	micro g		2
P.P.	mg		15
<b>Minerals</b>			
S	Sulfied	g	1.2
P	Phosphor	g	1.2
Cl	Clor	g	6
Mg	Magnisium	g	0.32
Na	Sodium	g	4
K	Botasium	g	3.6
Ca	Calcium	g	0.84
Mn	Manganese	mg	3
Fe	Iron	mg	18
Cu	Copper	mg	2.5
Zn	Zink	mg	20

Source: Mehmalji Rateb, Food Chemistry, Damascus University, 1981-1982