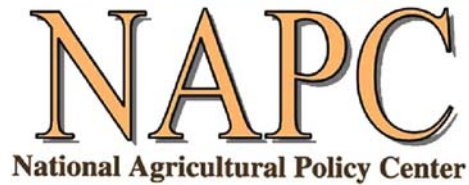


Ministry of Agriculture and Agrarian Reform



OUTLOOK NO 4

Agricultural Commodity Outlooks

Barley

Samir Grad

Mouzad Karkout

NAPC Researcher

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Project GCP/SYR/006/ITA



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Syrian Barley Outlook¹

Abstract

Barley is the most important fodder crop in Syria. The attention that the Government devotes to this crop has the objectives of both to help improve the livestock sector and to attain an adequate integration between plant and animal production.

This outlook aims to provide useful information to inform the policy making process by reviewing the following aspects the:

- Recent evolution and the current status of barley production in Syria.
- Environmental conditions and their impact on barley production.
- Policies governing the barley sector in Syria, including current prices and their evolution, the credit situation and stock related aspects.
- Economic outlook including production costs, prices and returns.
- Evolution of import, export and balance of trade focusing on the production measures (area, yield, and production), processing, marketing, distribution, main technical aspects of barley production and future prospects based on the Syrian Agricultural Strategy.

1. Background and objectives

One of the objectives of the current Syrian Agricultural Development Strategy (SADS) and of the latest five-year plan is the integration between plant and animal production. To this aim, the policies regarding barley are very relevant given that it is the most important feed crop in Syria, accounting for 95 % of the cropped area under fodder crops². It is also overall a rather important crop, accounting for 27.2% of the actual cultivated area, 9.6% of the value of cereals production and 2.2% of the value of plant production in 2005³. Also, barley is one of the crop-products for which Syria has an active international trade and has a considerable degree of attention because of the instability that characterizes the barley market. The study of the barley sector is therefore important also to understand to what extent the agricultural sector in Syria is ready to embark in more open trade for strategic products.

The objective of this report is to provide a complete preliminary picture of the economic and social aspects of the barley sector, which will then form the basis for an extended analysis of the future prospects of this crop in Syria. To this aim, the paper will touch on the following points:

- A description of the principal policies involving the barley sector, which include research, pricing, marketing and trade policies.

¹ This report relies on an unpublished paper of Ahmad Sadiddin-NAPC 2006

² Elaborated from Ministry of Agriculture and Agrarian Reform (MAAR) – The Annual Agricultural Statistical Abstract (AASA) 2005

³ Elaborated from MAAR – AASA 2005

- A brief description of the main technical aspects of barley production, focusing on the use of natural resources, such as land and water, the impact of climatic conditions and the consequent uncertainty that characterize this production.
- The exploration of the recent trends in the major components of barley's production costs, with a focus on the variability of the corresponding time series.
- An analysis of the recent evolution of barley price, both at farm-gate and at the retail level, with an eye to the possible impact on the competitiveness of the Syrian livestock production.
- An overview of the credit situation of barley.
- The analysis of the evolution of the determinants of the barley balance of trade.
- Finally, an assessment of the current status of barley stocks in Syria.

2. Policies governing the barley sector

Barley is an important strategic crop. The Syrian Government is involved at various levels in its production and marketing. The main activities directly carried over by Governmental entities are the following:

2.1. Varietal improvement and distribution of seeds

- The General Commission for Agricultural Research (GCAR) continues to create improved barley varieties which are adapted to the climatic conditions in the various regions. The objective of this policy is to try and increase the average yield of the crop while reducing its variability over the years (see below).
- The General Establishment for Seed Multiplication (GESM) sells the improved seeds to the farmers at a fixed price⁴. For barley, however, its activities are very limited. The delivered quantities of improved barley seeds from 1997 through 2004 declined from about 12 thousand tonnes (average 1997-2000) to about 2 thousand tonnes (average 2001-2004) with an average annual decrease of about 39%⁵ due to the use of farmers' own seeds (less costs).

2.2. Output control

- The production of barley follows a licensing system according to the indicative Annual Agricultural Production Plan (AAPP) of the MAAR.

2.3. Price regulation, marketing and trade control

- Barley can be delivered to the General Establishment of Grain Trade and Processing (GEGTP) for an officially set price, which has been fixed, since 1996, at 7.50 SP/kg (9.5 SP/kg in 2006). However, farmers are not obliged to deliver their product to GECPT, and therefore this price has effectively acted as a minimum guaranteed price, as for example in 2002 and 2003 (Table 1).

⁴ This price was 12.1 SP/kg in 2003

⁵ NAPC 2006 - The Mid Term Review of Agricultural Strategy

Table 1. Barley price in Syria over the period 1999-2005 (SP/Kg)

Item	1999	2000	2001	2002	2003	2004
Black barley	9.5	9.2	8.3	7.5	7.5	8.4
White barley	9.5	9.3	8.4	7.7	7.7	7.9

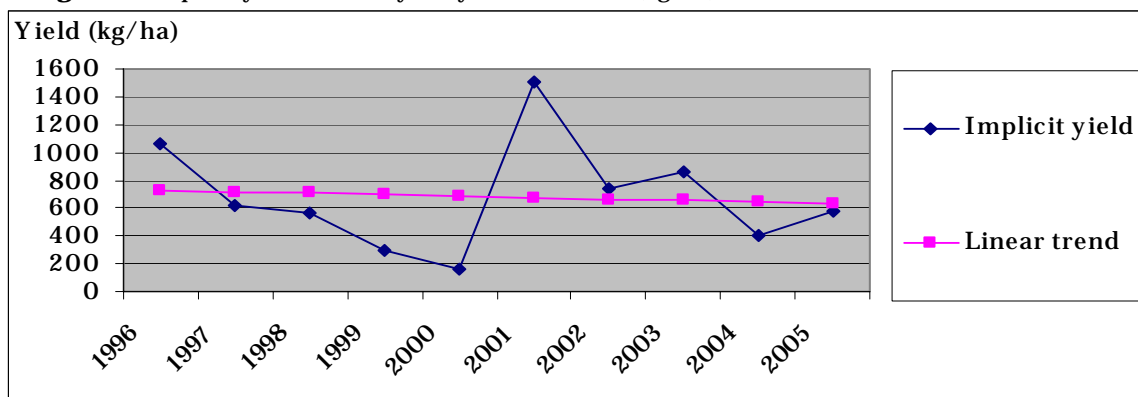
Source: Elaboration from the MAAR Database

- The General Establishment for Fodder (GEF) purchases the barley from the GEGTP and from the market to sell it to the breeders as fodder concentrate (feed). Since 2005 the GEF has been responsible for the purchase of barley from farmers. Also, the GEF imports its needs from abroad.
- Barley import is banned from May 1st until September 1st, to ensure placement of domestic barley when the domestic production and marketing occurs.

3. Production and climatic conditions

Barley is planted mainly rain-fed in Syria, with an average annual production (over the last 10 years) of about 1 million tonnes over an average area of about 1.4 million hectares (about 27% of total Syrian cropped land), which imply a yield of about 0.68 tons per hectares, with a slightly decreasing trend (See Figure 1 below). Total production in 2005 has been of only 767 thousand tonnes, due to an average yield of only 0.578 tonnes per hectare.

Figure 1. Implicit yields of barley in Syria 1985-2004 (kg/ha)



Source: Elaborated from MAAR Database Data

Land is allocated to it mainly in the Climatic Zones 2, 3 and 4, with most of the harvested production concentrated in Zone 2 (59.2% of the total in 2005) and Zone 3 (23.6%), given the very low yield that can be obtained in Zone 4 (Table 2).

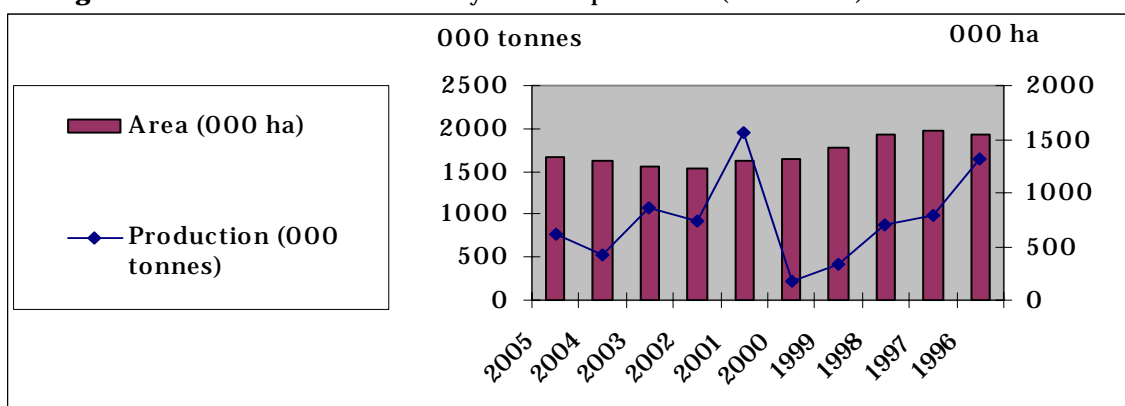
Table 2. Area and production of barley in Syria by Agro-Climatic Zones (2005)

Item	Total Planted Area (000 ha)		Production (000 tonnes)		Yield (ton/ha)	
AC Zone 1	29	2.2%	46	6.0%	1.62	280%
AC Zone 2	395	29.8%	454	59.2%	1.15	199%
AC Zone 3	381	28.7%	181	23.6%	0.48	82%
AC Zone 4	489	37.5%	58	7.5%	0.12	20%
AC Zone 5	24	1.8%	28	3.7%	1.17	203%
Syria	1328	100.0%	527	100.00%	0.58	

Source: Elaborated on MAAR Database data

Barley yields are strongly affected by the climatic conditions⁶, as demonstrated by the difference in yields across agro climatic zones (See for example Table 1, for 2005) and by the year-to-year fluctuation in the yield and production (Figures 1 and 2).

Figure 2. The evolution of total barley area and production (1996- 2005)



Source: Elaborated from MAAR Database data

In 2004/2005 the climatic conditions⁷ in terms of both rainfall and temperature have been very negative, strongly affecting the production, which is estimated to have been reduced by about 2.6 thousand tonnes, causing 602 farmers to be negatively impacted⁸.

4. Economic outlook

4.1. Production costs

Production costs consist of the costs of agricultural operations, costs of production requirements and others⁹. The agricultural operations can be mechanised or manual. These operations include tillages, flating, planting (sowing), fertilization, irrigation, hoeing and weeding, controlling, harvesting, sorting and packaging and crop transportation. The costs of production requirements comprise chemical fertilizer, package, seeds, water and chemical control. The other costs are land rent, interest and incidental expenses. These costs are imputed both per hectare and per one kilogram.

⁶ See The Central Bureau of Statistics (CBS) – The Annual Statistical Abstract (ASA) – Various issues

⁷ See The CBS – The ASA 2005

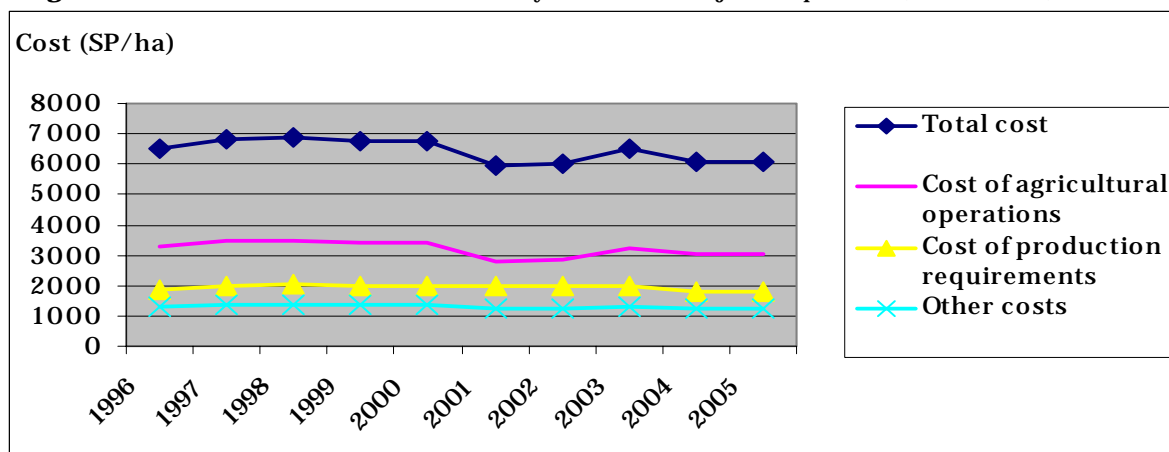
⁸ MAAR – Directorate for Agricultural Affair

⁹ MAAR – The AASA 2005

Figure 3 traces the evolution of total rain-fed barley cost and its major components from 1996 through 2005. The figure indicates a decreasing trend for all types of barley costs.

Table 3 shows the evolution of the various shares of rain-fed barley costs from 2000 through 2005. Accordingly, in absolute term all types of costs are decreasing pointing out to improved performance regarding costs. In relative term (share in total cost), however, the share of agricultural operations is decreasing, the share of production requirements is increasing and the share of the other costs is relatively stable from 2000 through 2005.

Figure 3. Evolution of the total rain-fed barley cost and its major components (1996 – 2005)



Source: Elaborated from MAAR Database

Table 3. Evolution of the various shares of rain-fed barley costs (2000 – 2005)

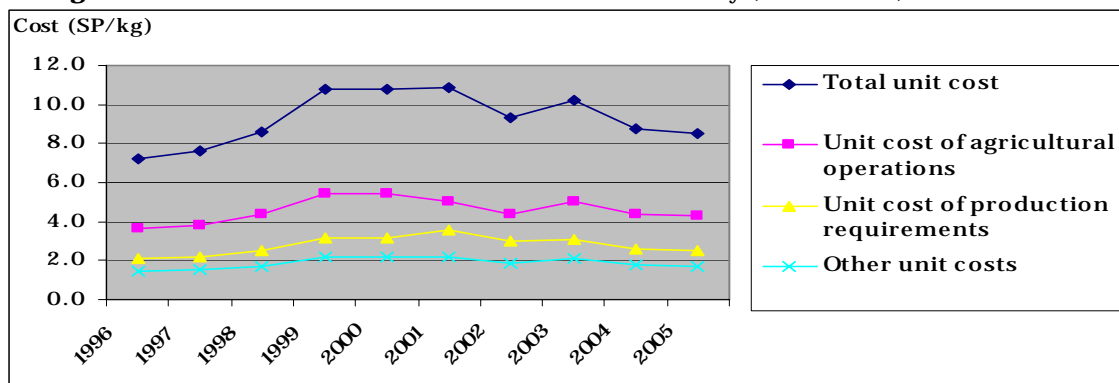
Item	Total Cost SP/ha	Cost Of AP SP/ha	Cost Of PR SP/ha	Other Costs SP/ha	Cost Of AP %	Cost Of PR %	Other Costs %
2000	6,750	3,406	1,979	1,365	50.5	29.3	20.2
2001	5,959	2,784	1,960	1,215	46.7	32.9	20.4
2002	6,040	2,839	1,968	1,233	47.0	32.6	20.4
2003	6,530	3,233	1,972	1,325	49.5	30.2	20.3
2004	6,104	3,051	1,811	1,242	50.0	29.7	20.3
2005	6,094	3,054	1,806	1,234	50.1	29.6	20.2
AGR %	-2.00	-2.20	-1.80	-2.00	-0.14	0.22	0.03

Source: Elaborated from MAAR Database

AP: Agricultural operations, PR: Production requirements, AGR: Annual growth rate

Figure 4 depicts the evolution of the various unit costs of rain-fed barley from 1996 through 2005. It shows an increasing trend until 2001, and a decreasing trend thereafter indicating a good performance concerning costs.

Figure 4. Evolution of the various unit costs of rain-fed barley (1996 – 2005)



Source: Elaborated from MAAR Database

In 2005, the national average of the rain-fed barley cost was estimated to be 8.5 SP/kg opposed to 8.8 SP/kg in 2004 and 10.8 SP/kg in 2000. The high unit cost of 2000 is due to the low yield because of the drought and the high costs of agricultural operations.

Table 4 describes the major statistics of the various time series of barley to analyze the fluctuations of the aforementioned costs. The variations are highest in unit cost due the oscillation in yield. The table shows a decreasing trend for total cost and an increasing trend for the unit cost from 1996 through 2005.

Table 4. Summary statistics of the various costs of rain-fed barley over the period 1996-2005 (Total cost: SP/ha, unit cost: SP/kg)

Item	Sample mean	Minimum	Maximum	CV %	AGR %
Total cost	6,443	5,959	6,890	6	-0.7
Total cost of AP	3,202	2,784	3,501	8	-0.8
Total cost of PR	1,936	1,806	2,019	4	-0.5
Total cost of others	1,306	1,215	1,392	5	-0.7
Total unit cost	9.3	7.2	10.8	14	1.9
Unit cost of AP	4.6	3.6	5.4	14	1.8
Unit cost of PR	2.8	2.1	3.6	17	2.1
Unit cost of others	1.9	1.5	2.2	15	1.8

Source: Elaborated from MAAR Database data
CV: Coefficient of variation

4.2. Prices

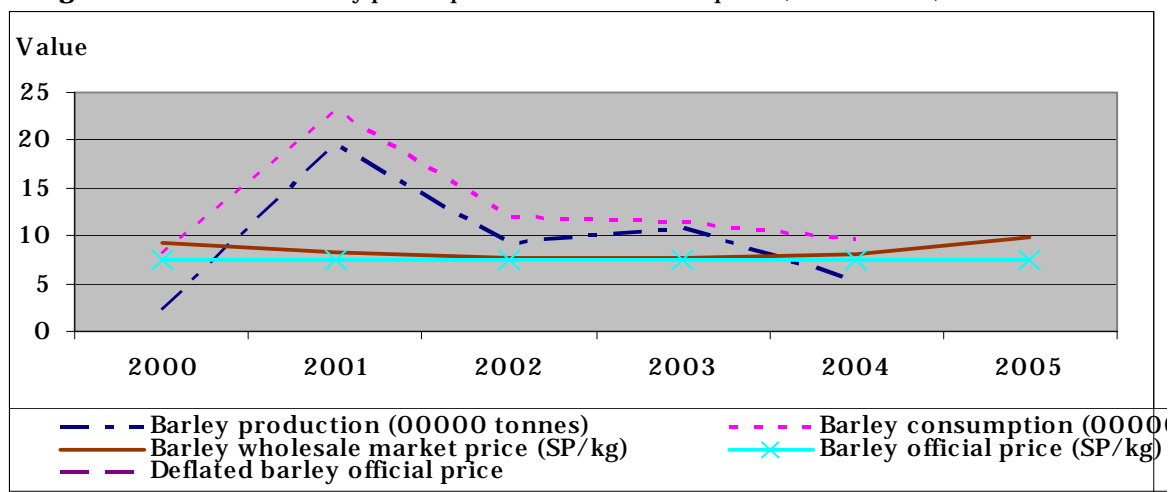
Barley has a producer floor price set up by the Government, meaning that barley producer price is fixed for the quantities delivered by farmers to the GECPT. Up to 2005, this price was equal to SP 7.5 per kilogram (equivalent to about 1,470US\$/ton). Before 2004, the GECTP used to buy barley and other feed crops from farmers at supported price (more than world price), and store them on behalf of the GEF, which sells them to the livestock keepers through the Agricultural Cooperative Bank (ACB). In 1999, the trade of barley was partly liberalized with the removal of imports

restrictions and the barley tax levy, although the GECTP continued buying barley at supported price. In 2000, the GEF sold barley to farmers at a price 17% below the procurement price.

In the last two years, the domestic market prices of barley have been significantly above the old fixed price which encouraged farmers to sell most of their production on the free market. This has caused a reduction in the total share of barley production purchased by the GECPT, which had a share of 50% of the total production in 2004. Figure 5 depicts the evolution of the various barley prices, production and consumption of barley from 2000 through 2005. The figure indicates an increasing trend of the wholesale market price, production and consumption, and a decreasing trend of the official deflated price because of the increase in the General Price Index. From 2000 through 2004, the General price index increased by 14%.

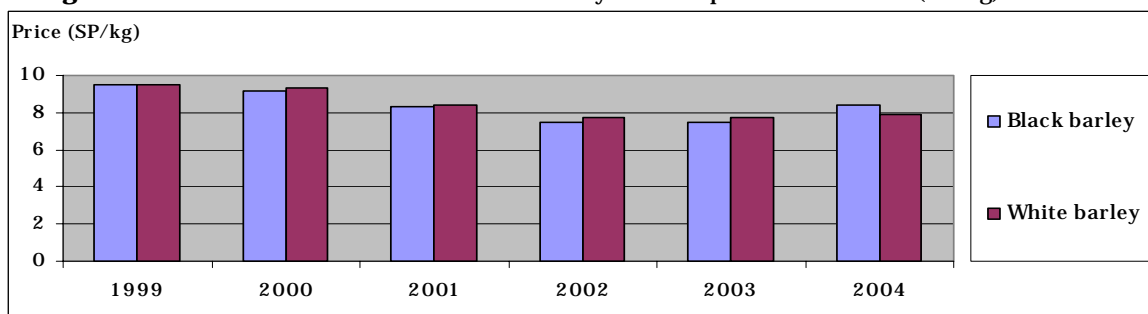
There are small to moderate variations in barley prices including black and white barley and in the monthly prices of barley by Governorates. Some Governorates show relatively high oscillations. Figure 6 presents the price evolution of black and white barley from 1999 through 2004. The figure indicates a price fall until 2002 then a price increase for both types of barley.

Figure 5. Evolution of barley prices, production and consumption (2000 – 2005)



Source: Elaborated from MAAR Database

Figure 6. Price evolution of black and white barley over the period 1999-2004 (SP/kg)



Source: Elaborated from MAAR Database

Table 5 presents the descriptive statistics of the monthly prices of barley in 2005 including wholesale, retail and average prices diversified by Governorates. The Table indicates that the highest variations are in Hama and Dair-Ezzor for both wholesale and retail prices.

5. Credit

As for all farmers of Syria, the ACB is the only permanent formal source of credit for barley producers. The ACB offers in-kind and in-cash loans through the cooperatives of the villages for the farmers who are cooperative members with an interest rate of 4%. Individual farmers get the same loans directly from the ACB with higher interest rate (5.5%).

Table 5. Summary statistics of the monthly prices of barley by Governorates in 2005 (SP/kg)

Item	Wholesale price				Retail price			
	Mean	Minimum	Maximum	CV %*	Mean	Minimum	Maximum	CV %*
Al-Sweida	10	7	12	18.6	11.4	10	12	8.5
Dar'a	5	5	5	0	8	8	8	0
Damascus	11	11	11	0				
Homs	10.9	10	12	4.7	11.5	10	15	12.5
Hama	11.6	10	17	17.4	13.5	11	19	15.6
Lattakia	9.6	8	10	8.4	12.2	9	13	13.1
Tartous	9.3	9	10	5	10.5	10	12	8.8
Idleb	10.5	9	12	8.6	12.5	11	14	7.2
Al-Raqqa	11.3	9	13	11.1	12.1	10	14	9.9
Dair-Ezzor	13.7	11	17	22.4	14.7	11	20	32.2
Average	9.8	8.9	10.6	4.8	11.5	9.4	13.9	9

Source: Elaborated from MAAR Database, * CV: Coefficient of variation

The in-kind loans are given in form of seeds, nitrogen fertiliser, and phosphor fertiliser. Rain-fed barley planted in Climatic Zone 2 is granted per hectare 4.5 and 3.5 units of the two fertilisers respectively, while rain-fed barley in Climatic Zone 3 is granted 3.2 and 3.1 units respectively per hectare. The in-cash loans amount to SP 75 per dunum¹⁰ for barley in both Climatic Zones 2 and 3, while barley producers in Zones 1, 4, and 5 cannot acquire any credit from the ACB. However, the only important input for barley production is seeds. Most farmers attain seeds from their own production of the previous year, purchase them from the market, or obtain them from the ACB, which gives 15 kg/dunum of barley seeds in Zone 2 and 10 kg/dunum in Zone 3.

In addition, there is a big and significant informal market for credit. The main source relevant to barley production is the traders. A trader gives the money to the farmer when needed according to agreed arrangements between them, usually half of the money at the beginning of the winter season and the rest as instalments, (Farming System Study (FSS), Sadiddin, 2005).

6. Import, export and balance of trade

The balance sheet of barley includes domestic production, import, export and total supply or domestic consumption.

In 2004, domestic production was 527 thousand tonnes; imports were 625 thousand tonnes; exports were 194 thousand tonnes; and total supply was 958 thousand tonnes, opposed to 211.9 thousand tonnes for domestic production, 588.4 thousand tonnes for imports, no exports, and 800.3 thousand tonnes for total supply, in 2000. Thus, the percentage increases between 2004 and 2000 were 25.6% for production, 1.5% for imports and 4.6% for total supply.

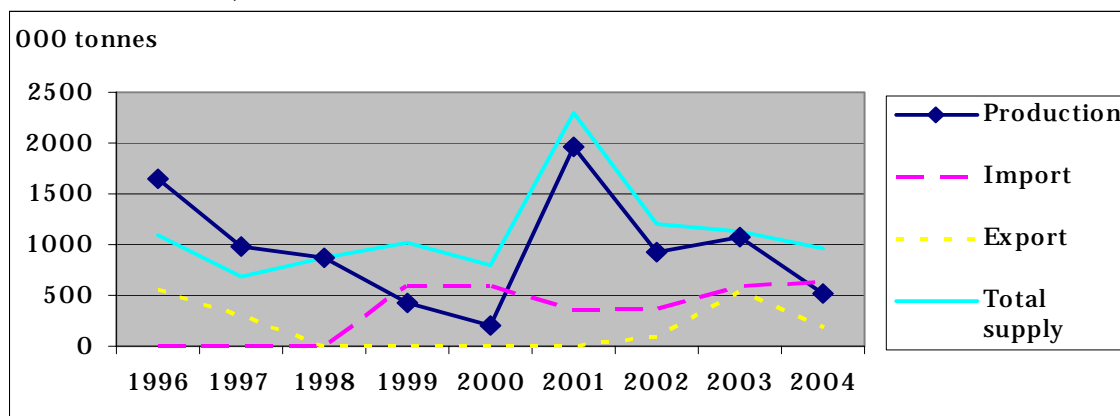
The main destination countries of barley export from 2003 through 2004 were Jordan, Cyprus, Algeria, and Iraq. Looking at the time series from 1996 through 2004 indicates that barley was historically a leading exported commodity, but in 2000-2001 exports were zero due to the sharp reduction of barley domestic production caused by the drought.

¹⁰ One dunum = 1000 m²

Barley's imports are an important source of input for livestock and beer industry. To protect domestic production, an additional tax on imports was levied until 1999, when it was reduced almost to zero to enhance imports and compensate for the fall of domestic production caused by the drought.

Figure 7 traces the evolution of the components of the barley balance sheet over the period 1996-2004. The annual rates of decline during this period are 13.3% for production, 12.3% for export and 1.7% for total supply. The summary statistics for the total supply over the same period are 1117 thousand tonnes for the mean, 686 thousand tonnes for the minimum, 2301 thousand tonnes for the maximum and 42.4% for the coefficient of variation, indicating high variability in total supply.

Figure 7. Evolution of the components of barley balance sheet over the period 1996-2004 (thousand tonnes)



Source: Elaborated from MAAR Database

The projected production and demand for barley until 2010 are 1317 and 1908 thousand tonnes respectively indicating a deficit of 591 thousand tonnes¹¹.

6.1. Production measures

Both Black and white barley are produced in Syria. These types of barley are cultivated in irrigated and rain-fed areas. Irrigated barley plays a minor role because of its small share. The performance of the barley sector can be traced through several indicators such as area, yield and quantity of production.

Area

In 2005, the total area, irrigated area and rain-fed area of barley¹² amounted to 1327, 20, and 1307 thousand hectares respectively accounting for respectively about 27% of the actual cultivated land, 1.4% of the irrigated area under crops and 48% of the rain-fed cropped area. During the period 2000-2005 the cropped area of barley witnessed a slight increase from 1317 thousand hectares in 2000 to 1327 thousand hectares in 2005 with an annual growth rate of 0.16%. There was also a notable increase in the area from 2004 to 2005 (+2.8%). In 2005, the execution rate compared to the planned area was 106%, which indicates eagerness by farmers to expand this crop. The expected barley area to be cultivated in 2006¹³ is about 1295 thousand hectares. Figure 8 traces the evolution of the cropped area of barley from 1985 through 2005. It indicates a peak in 1989 and a gradual decline thereafter. For the same period, figure 9 traces the evolution of the annual changes in the cropped area of barley. It indicates a sharp jump either

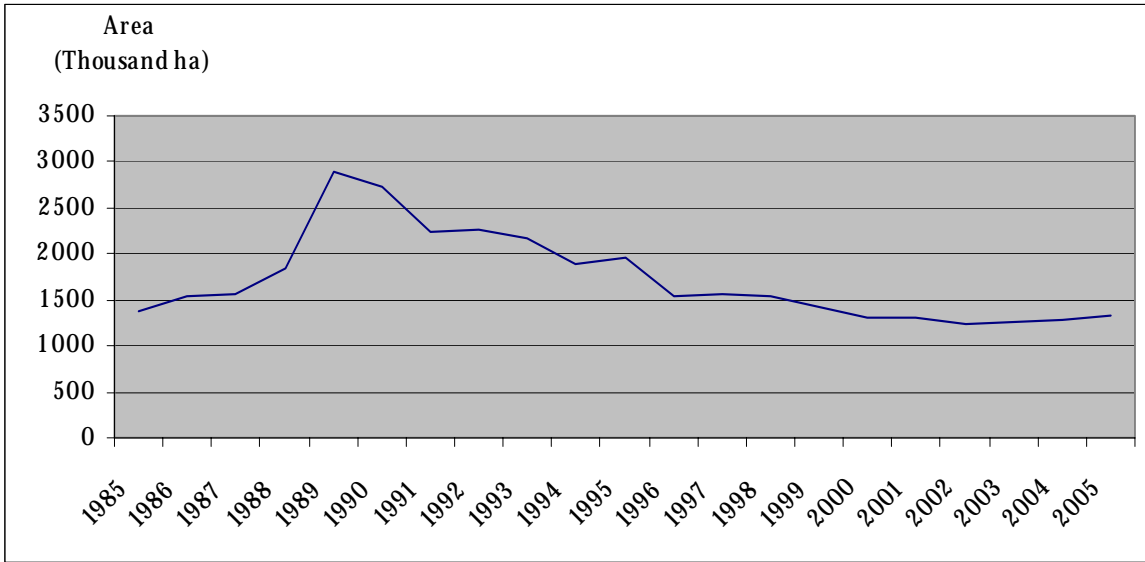
¹¹ MAAR projection

¹² It is meant dry barley when the word grazing barley is not mentioned.

¹³ MAAR – The Annual Agricultural Production Plan

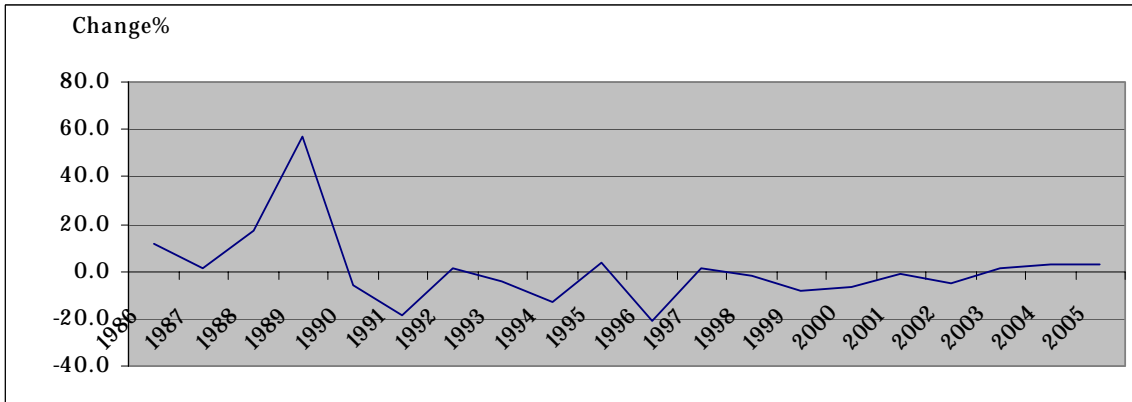
positive or negative until 1991. Thereafter the change was steady switching between positive and negative from 1992 through 2002. After 2003 the changes were positive.

Figure 8. Evolution of the cropped area of barley (1985-2005)



Source: Elaborated from the NAPC Database

Figure 9. The annual changes of the barley cropped area from 1986 through 2005 (%)



Source: Elaborated from MAAR Database

The increase in the area devoted to barley in the eighties was mainly due to the encouragement of barley plantation in the Syrian steppe (Al-Badia) by the Government. Therefore, the first sharp fall in 1996 was due to the banning of barley plantation in Climatic Zone 5. But in 2000, the national barley areas fell due to the drought-effect in 1999/2000 crop year.

Table 6 indicates the descriptive statistics of the time series related to the area of barley from 1985 through 2005. The statistics show high variations in the cropped area of barley during the considered period and a decreasing trend.

Table 6. Summary statistics of the time series related to the barley area 1985-2005 (thousand ha)

Item	Value
Sample mean	1728.5
Maximum	2891.7
Minimum	1234.0
Coefficient of variation %	28.1
Annual growth rate %	-0.22

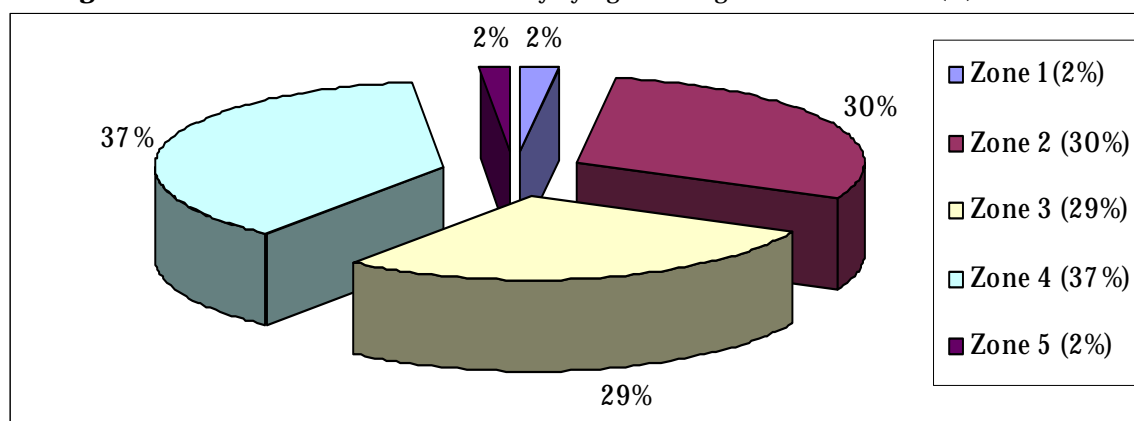
Source: elaborated from MAAR Database

Barley is cultivated also for grazing. The area of grazing barley was about 33 thousand hectares in 2005 out of which 32 thousand hectares are irrigated and one thousand hectares are rain-fed. The cropped area of this product decreased from 59 thousand hectares in 2000 to 33 thousand hectares in 2005 with an annual growth rate of 11%.

Concerning the share of barley in crop rotation, in plan 2006 the shares of irrigated and rain-fed barley were 2.9% (against 2% in plan 2005) and 36.4%, respectively. In 2005, the shares of irrigated, rain-fed and grazing barley in cultivable land were 0.4%, 22% and 0.6% respectively against 0.1%, 22.1% and 1% respectively in 2000. This indicates an increasing rate of irrigated barley and decreasing rates of rain-fed and grazing barley.

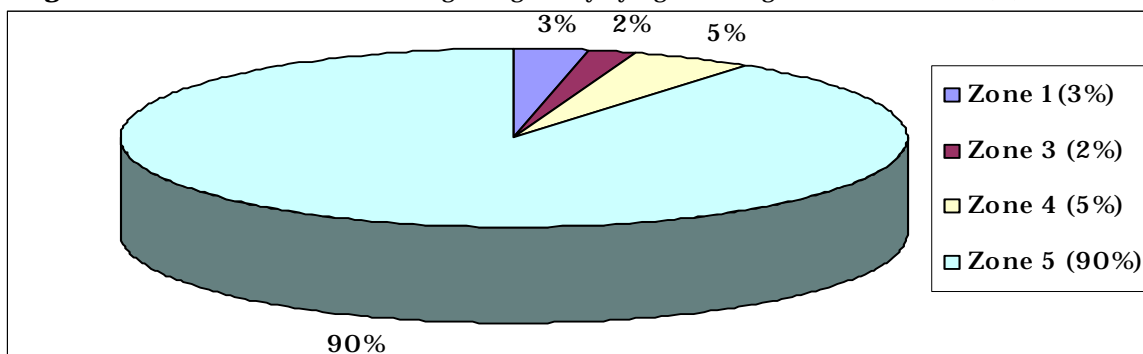
The area of both barley and grazing barley is distributed by Climatic Zones and Governorates. Figures 10 and 11 show the distribution of barley and grazing barley respectively by Agro Ecological Zones. They indicate that Barley is mainly located in Zones 2, 3 and 4 with the dominance to Zone 4, whereas grazing barley is mainly cultivated in Zone 5 (90%).

Figure 10. Distribution of the area of barley by Agro-Ecological Zones in 2005 (%)



Source: Elaborated from the MAAR Database

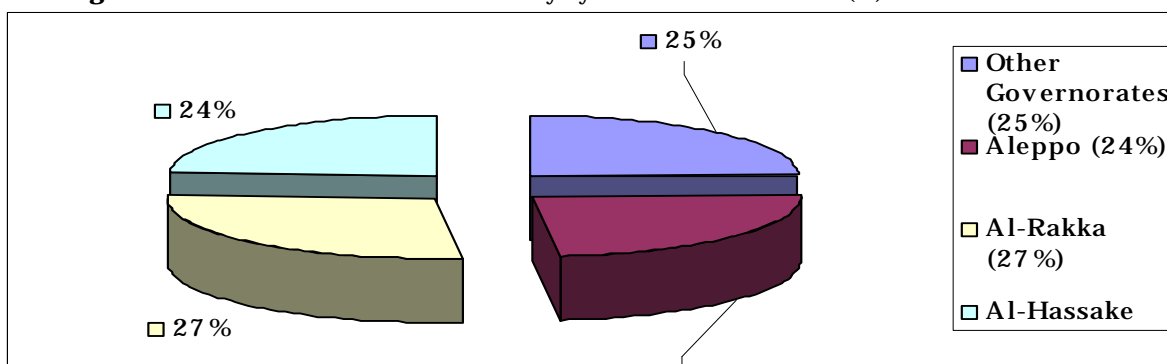
Figure 11. Distribution of the area of grazing barley by Agro-Ecological Zones in 2005 (%)



Source: Elaborated from the MAAR Database

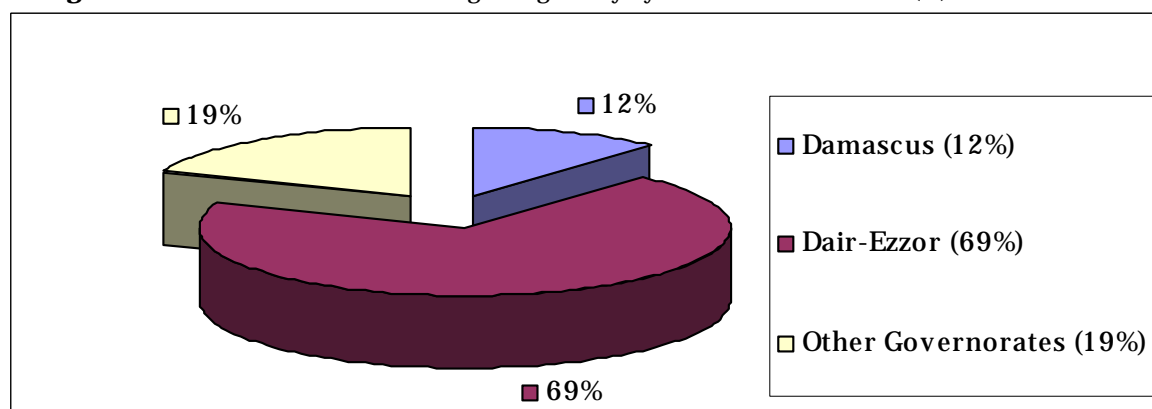
Figures 12 and 13 depict the area of barley and grazing barley respectively by governorates in 2005. It shows that 75% of barley farming is located in three governorates namely: Al-Rakka, Al-Hassake and Aleppo, whereas grazing barley is cultivated mainly in Dair-Ezzor.

Figure 12. Distribution of the area of barley by Governorates in 2005 (%)



Source: Elaborated from MAAR Database

Figure 13. Distribution of the area of grazing barley by Governorates in 2005 (%)



Source: Elaborated from MAAR Database

Yield

Yield is considered the main component of vertical expansion. According to the Syrian Agricultural Strategy and the Tenth Five year Plan, the vertical expansion can be mainly achieved by conducting the following activities:

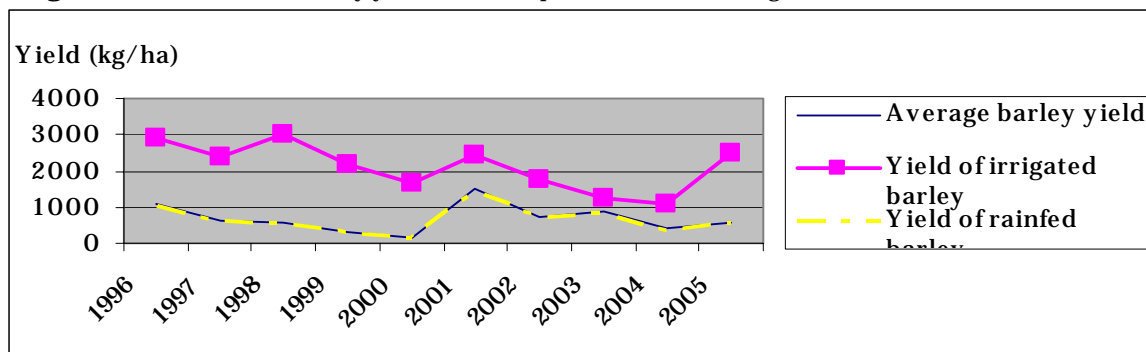
- Giving more attention to the comparative advantage products, given the climate adopted varieties and more than one variety for each Governorate.
- Adjusting the cropping structure and increasing the legumes in the crop rotation to improve the land fertility and productivity per unit of area.
- Improving the agricultural services and inputs' use as well as adopting the adequate crop rotation.

The yield of barley incorporating average yield, yield of irrigated barley, rain-fed barley and grazing barley witnessed an increase over the period 2000-2005. These yield increases are due to adequate agricultural services and favourable weather conditions. This trend is relevant by comparing 2005 with 2004 except for grazing barley, which has a decreasing trend due to inadequate weather conditions in Dair-Ezzor (substantial precipitation and hail).

The average barley yield increased from 161 kg/ha in 2000 to 578 kg/ha in 2005 indicating an annual growth rate of 29.1%; the irrigated barley yield grew from 1665 kg/ha in 2000 to 2494 kg/ha in 2005 realizing an improvement of 8.4% annually; the rain-fed barley yield improved from 151 kg/ha in 2000 to 548 kg/ha in 2005 achieving an increase of 29.4% annually; and the yield of grazing barley amounted to 7856 kg/ha in 2000 and 14449 kg/ha in 2005 indicating an annual increase of 13% annually. The expected dry barley yield in 2006 is 1446 kg/ha.

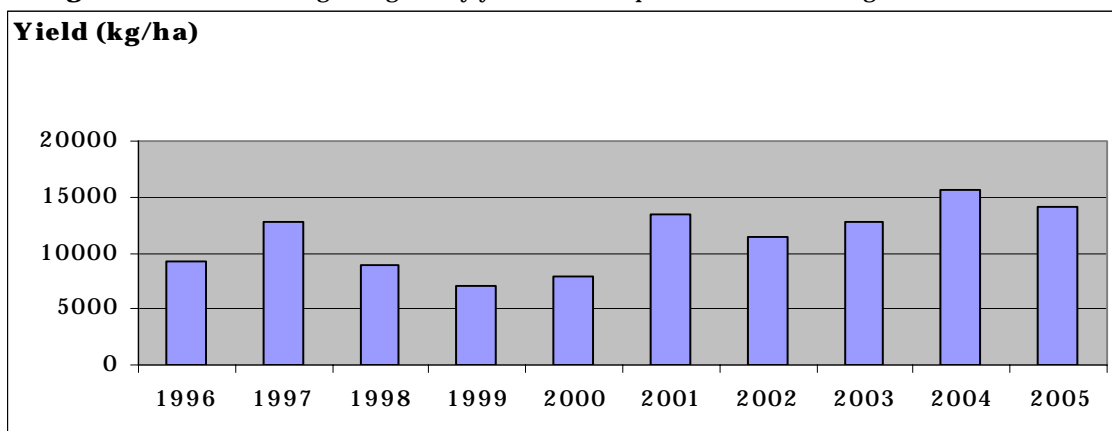
Figures 14 and 15 trace respectively the evolution of the various yields of barley and grazing barley over the period 1996-2005. These figures show that there are enormous fluctuations in barley yields because the yield is heavily relying on the amount of precipitation and the drought effect, the yield of irrigated barley complies with the average yield because irrigated barley plays a very limited role, the trend of the yield of grazing barley is increasing because grazing barley is almost irrigated.

Figure 14. Evolution of barley yields over the period 1996-2005 (kg/ha)



Source: Elaborated from MAAR Database

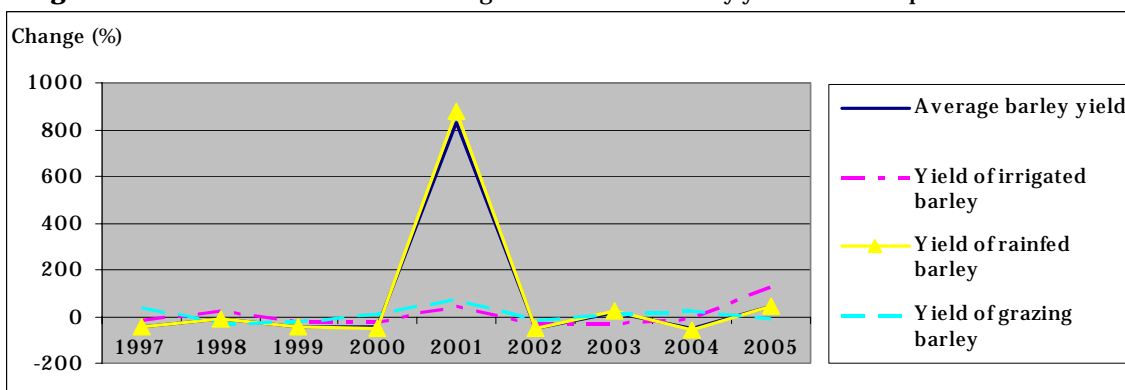
Figure 15. Evolution of grazing barley yield over the period 1996-2005 (kg/ha)



Source: Elaborated from MAAR Database

Figure 16 shows the evolution of the annual change of the various barley yields. It indicates sharp changes between 2000 and 2002 after the drought year.

Figure 16. Evolution of the annual change of the various barley yields over the period 1997-2005



Source: Elaborated from MAAR Database

Following the aforementioned fluctuations, Table 7 describes the time series of the various yields of barley from 1996 through 2005. The Table shows high variations in the yields of both rain-fed and irrigated barley relying on the values of maximum, minimum and coefficient of variation, but the variations are smoother for grazing barley. The table indicates also a declining trend for average, irrigated, and rain-fed yields, but an increasing one for the yield of grazing barley.

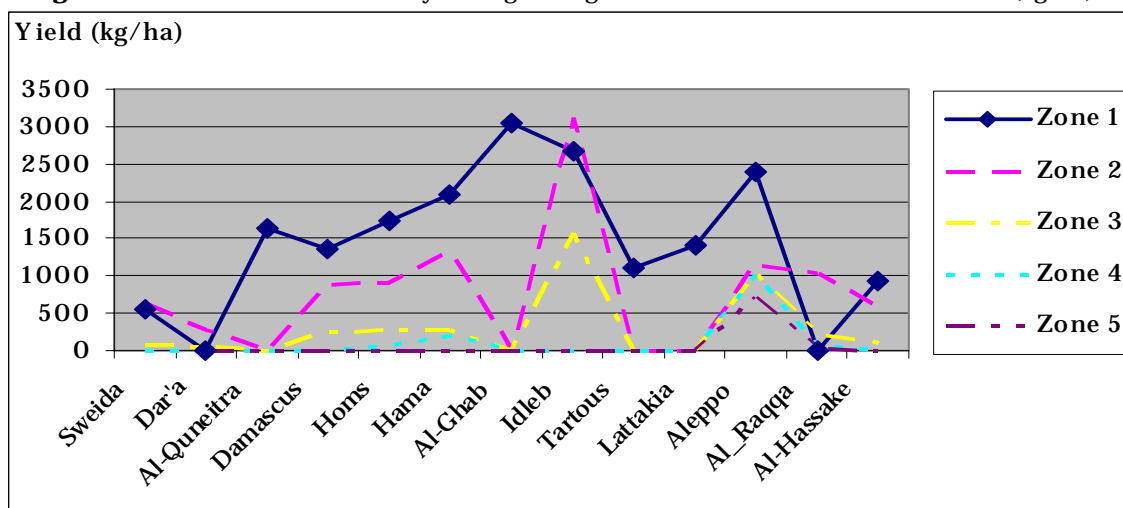
There are substantial yield differences among Agro-Ecological Zones and Governorates. Figure 17 shows these variations for rain-fed barley. Such oscillations are present also for irrigated barley and grazing barley.

Table 7. Summary statistics of the time series of barley yields 1996-2005 (kg/ha)

Item	Average yield	Irrigated yield	Rain-fed yield	Grazing yield
Sample mean	681.0	2115.2	664.1	11312
Maximum	1501.0	2999.0	1474.0	15660
Minimum	161.0	1108.0	151.0	7000
CV % (mean)	57.4	30.7	58.4	25.7
CV % (trend)	57.2	24.3	58.1	16.6
Simple growth rate %	-6.6	-1.6	-7.1	4.9
Trend related growth rate %	-1.6	-6.2	-2.0	5.8

Source: Elaborated from MAAR Database

Figure 17. Yield variations of barley among Ecological Zones and Governorates in 2005 (kg/ha)



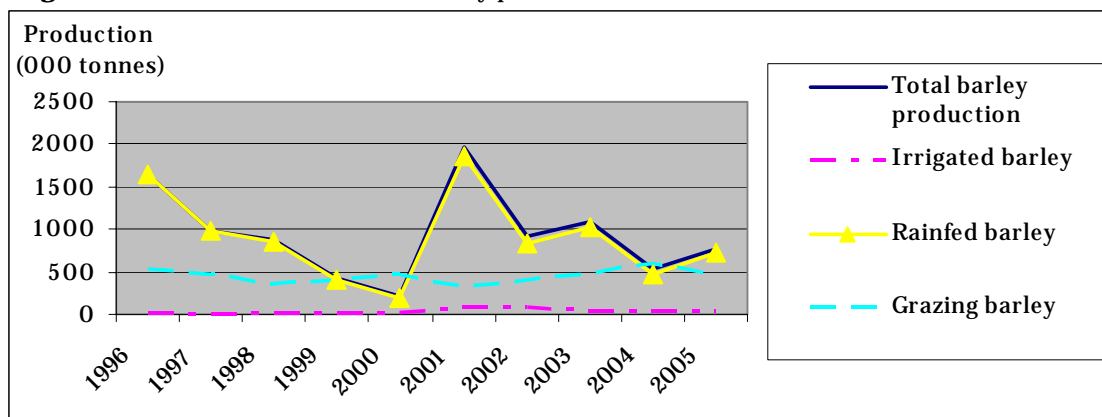
Source: Elaborated from MAAR Database

Production

The main determinants of production are area and yield. Therefore, any changes in the area and yield will lead to production variations. Following the changes in area and yield from 2000 through 2005, the production of barley increased from 212 thousand tonnes to 767 thousand tonnes with an annual growth rate of 29%, irrigated barley from 14 thousand tonnes to 51 thousand tonnes with an annual growth rate of 29%, rain-fed barley from 198 thousand tonnes to 716 thousand tonnes with an annual growth rate of 29% and grazing barley from 466 thousand tonnes to 470 thousand tonnes with an annual growth rate of 0.2%. This increasing trend is also prevails for irrigated, rain-fed and total barley production, when comparing 2005 with 2004. The production improvement is due to the area expansion and the improvement in yield after the drought period. For grazing barley, however, the trend is declining between 2004 and 2005 because of water rationing practices in the Fifth Ecological Zone. Accordingly, the expected production in 2006 will be 112 thousand tonnes for irrigated barley and 1371 thousand tonnes for rain-fed barley.

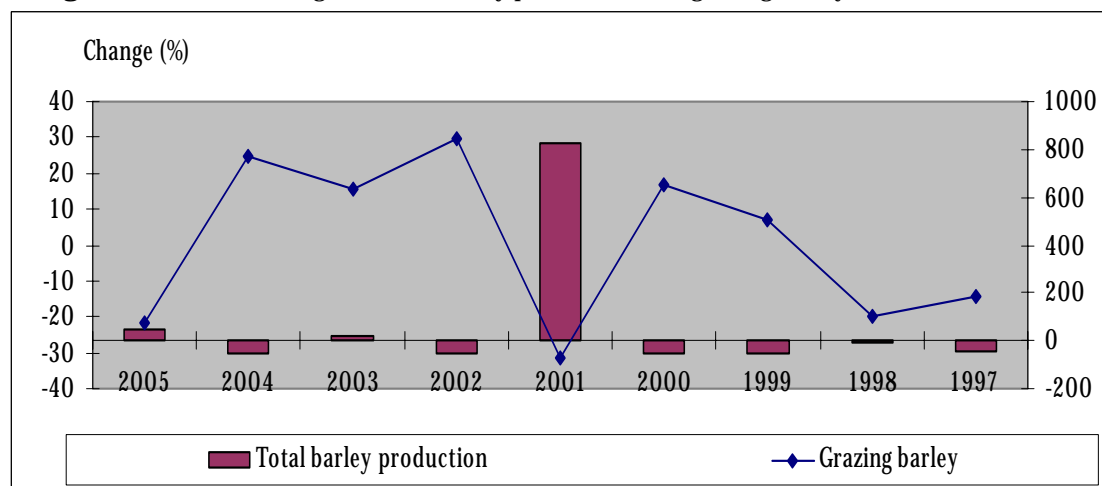
Figure 18 describes the evolution of the various barley productions over the period 1996-2005. The figure shows sharp fluctuations for total barley production and rain-fed barley. These variations are smooth and steady for irrigated barley and grazing barley. Figure 19 presents these variations annually for total barley production and grazing barley over the period 1996-2005.

Figure 18. Evolution of the various barley productions (1996-2005)



Source: Elaborated from MAAR Database

Figure 19. Annual changes of total barley production and grazing barley (1996-2005)



Source: Elaborated from MAAR Database

Table 8 presents the descriptive measures of the time series related to the various barley productions from 1996 through 2005. The table indicates high variations by total barley, irrigated barley and rain-fed barley. The variations in grazing barley are moderate and acceptable. The growth rate according to table 8 points out to decreasing trends of the various barley productions for the period 1996-2005 except for irrigated barley which has an increasing production trend.

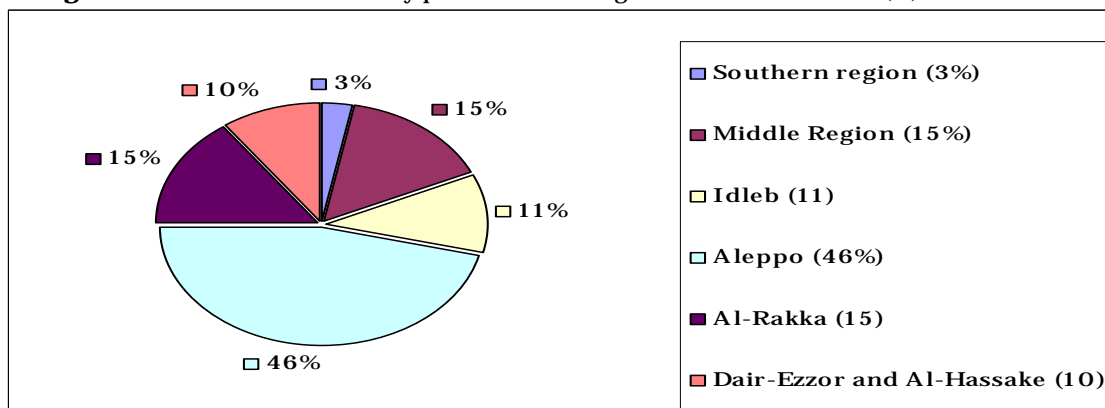
Table 8. Summary statistics of the time series related to the various barley productions 1996-2005 (000 tonnes)

Item	Total barley	Irrigated barley	Rain-fed barley	Grazing barley
Sample mean	939	39	900	453
Maximum	1956	89	1867	600
Minimum	212	9	198	321
CV %	57	79	58	18
Annual growth rate %	-8	13	-9	-2

Source: Elaborated from MAAR Database

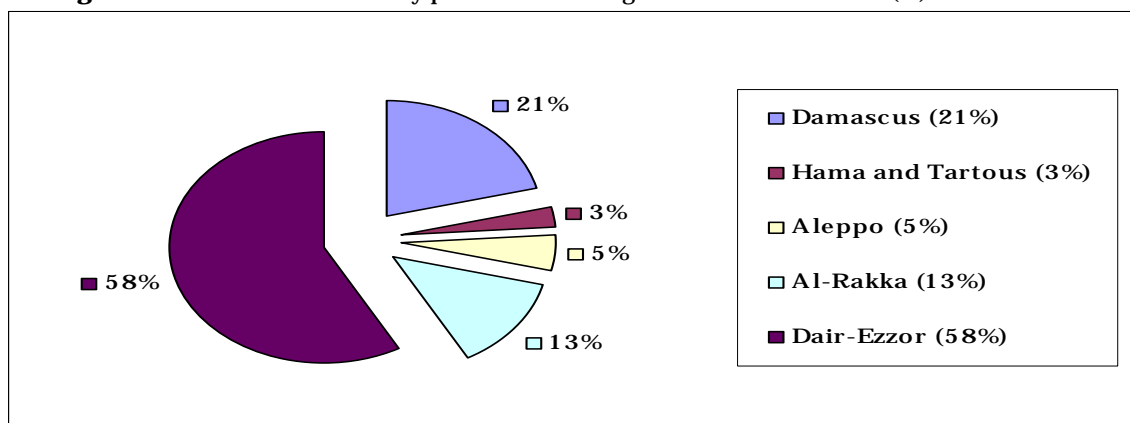
The production of barley and grazing barley are distributed among Governorates at different rates as illustrated in Figures 20 and 21 for 2005. The Southern Region encompasses Sweida, Dar'a, Quneitra and Damascus Governorates. The Middle Region comprises Homs, Hama and Al-Ghab Governorates. The Coastal Region incorporates Tartous and Lattakia Governorates. The figures indicate that the major producer of barley is Aleppo and of grazing barley is Dair-Ezzor.

Figure 20. Distribution of barley production among Governorates in 2005 (%)



Source: Elaborated from MAAR Database

Figure 21. Distribution of barley production among Governorates in 2005 (%)



Source: Elaborated from MAAR Database

In 2004 the value of barley production amounted to 4359 million SP at constant price of 2000 and to 4218 million SP at current price. In 2005 this value increased to 6345 at the same constant price and to 6139 million SP at current price. Thus, the relative increase between 2005 and 2004 was about 46% at both constant and current price. This increase in value was achieved solely through quantity improvement, which offset the decline in the price of barley. Following this, the productivity of barley increased from 3378 SP/ha to 4781 SP/ha at constant price and from 3268 SP/ha to 4626 SP/ha at current price. The percentage change in productivity between 2005 and 2004 was about 42% at both constant and current price. The improvement in productivity between 2005 and 2004 is related to yield and area increases.

6.2. Marketing and distribution

Feed crops pass through many marketing stages: buying, storing, processing, handling etc. Barley distribution processes are mainly in the hands of the sheep keepers' cooperatives. The organisation of the distribution processes is based on head-number basis: the larger the flock the larger the amount of barley a sheep keeper gets. The quantity devoted to each sheep head is a feed mixture of about 20 kg, from which 25-30% is barley. In the critical periods of drought, the

cooperatives provide larger quantities of the subsidised feed, which may reach twice the quantity distributed in normal times (FSS, Al-Sayyed, 2005).

Since the GEF does not purchase imported barley and private feed mills utilise little barley, most imported barley is consequently sold directly to farmers. Private importers specialise in importation and do not get involved in domestic distribution other than when a large farm is prepared to buy at least one standard truck load of 13-15 tons, for example. They typically sell to traders at the port of Lattakia and normally seek to sell a minimum of 50 to 100 tons. Traders normally sell the barley that they acquire from importers directly to farmers. Most barley is transhipped through Aleppo, with Al-Hassakeh being the most important consuming governorate. Farmers consider imported white barley to be inferior to Syrian produced barley. Therefore, it is consequently sold in the domestic market at a discount of US\$5-8 per ton below the price of Syrian barley (Westlake, 2001).

The market tends to be segmented, with the GEF selling principally to licensed farmers on the basis of their registered capacity of livestock, and with little competition between the private and public sectors. However, the private trading of barley is well developed and competitive with an effective informal price information mechanism. Many traders not only engage in distribution but also in a degree of speculative stockholding.

7. Storage

Before 2004, the GECPT used to keep a strategic stock of barley for use at times of shortage. All barley held by the GECPT was sold to the GEF or exported. The GEF, in turn, used only to acquire barley from the GECPT. The strategic stock was, in effect, used to stabilise the national availability of barley, with the quantity acquired and sold annually by the GEF being inversely related to annual barley production. In most years, the majority of the barley acquired by the GEF was sold directly to livestock producers, roughly some 90% through cooperatives and 10% directly to farmers. When world prices, and therefore the demand for subsidised domestic barley, were high, the GEF gave priority to registered farmers, who were qualified for supplies through data about their livestock capacity. In recent years, the GEF has not regulated the quantities of barley that can be bought by producers. Sales are not made to traders on the grounds that traders may sell to farmers at exploitative prices.

In 2004, and due to the increase in barley prices in local market, farmers preferred to sell their barley output in the market. Hence, in June 2004, the Government decided to stop purchasing barley from farmers, exclusively in 2004. Therefore, the GECPT had not procured any barley during 2004, leaving the activity to private sector traders that have sold to the GEF at market prices. The GEF now acts as a “buyer of last resort”, able to buy barley at the stated price, which is usually below the one prevailing at the market.

8. References

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