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Final Report
on

Strategic Crops' Sub-Sector

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- Opinions and judgments expressed are the authors' only. FAO proposes the text as basis for starting the discussion among scholars and policy makers on the issues related to the subject of the study.

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ACRONYMS

CMO	Cotton Marketing Organisation
DAE	Directorate of Agricultural Economics, MAAR
DPS	Directorate of Planning and Statistics, MAAR
GCB	General Company for Bakeries
GCM	General Company for Mills
GESILOS	General Company for Silos, Feed Mills and Seed Plants
GEC	General Establishment for Consumption
GECPT	General Establishment for Cereals Processing and Trade
GEF	General Establishment for Feed
GESM	General Establishment for Seed Multiplication
GOS	General Organisation for Sugar
GFTOCF	General Foreign Trade Organisation for Chemicals and Foodstuffs
MAAR	Ministry of Agriculture and Agrarian Reform
MSIT	Ministry of Supply and Internal Trade
NAPC	National Agricultural Policy Centre
SAC	Supreme Agricultural Council
SP	Syrian Pound

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Mike Westlake.

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EXECUTIVE SUMMARY

1. INTRODUCTION

This study focuses on the seven crops for which the Government continues to set producer prices, namely wheat, barley, lentils, chickpeas, cotton, sugar and tobacco. Wheat and cotton are by far the most important of these crops in terms of farm-gate value, employment creation and the use of irrigation water.

The study was undertaken by a team comprising an international consultant, three national consultants and five trainees at the National Agricultural Policy Centre. Work on the study commenced in June 2000 and fieldwork was completed in October 2000. This report was drafted in November and December 2000, and revised in April 2001 to take account of the comments of the Syrian Government and FAO.

2. PRODUCTION PLANNING AND STATE INTERVENTION IN PRICING

Since the early 1960s, the Government's planning of the domestic economy has employed five-year plans supplemented by annual executive plans. For agriculture, the basic aim of the annual plans is to steer farmers towards the pattern of land use that the Government perceives as best able to meet national objectives.

Plans are developed through an iterative participatory process that culminates in the Ministry of Agriculture and Agrarian Reform (MAAR) submitting a consolidated production plan for the agricultural sector to the Supreme Agricultural Council (SAC). This plan is then used as the basis for issuing farmers with licences to plant specific areas of rainfed and irrigated land to specific crops. Farmers are legally bound to comply with the planting programme specified on their licence. They, in turn, use their licence to obtain government-supplied credit, inputs and services.

In practice, the area and yield targets in each annual plan differ markedly from the annual targets contained in the five-year plans. There are also major differences between the areas and yields contained in the annual plans and those actually achieved. These differences embody two important biases. Compared with the amounts planned, larger areas of irrigated land tend to be planted and yields per hectare tend to be lower. The end result of these differences and biases is that (a) the annual production of each strategic crop frequently differs from that planned and (b) more cotton, sugar and tobacco has been produced than planned over the past decade but less wheat, barley, lentils and chickpeas.

The SAC sets producer prices annually for each of the seven crops on the basis of recommendations by a Cost Calculation Committee that draws on analysis by the MAAR Directorate of Agricultural Economics. This analysis uses models of farm costs to arrive at a projected average national unit cost of production for each crop.

To come to a well-informed judgement on an appropriate level of price, it is necessary also to employ information on variability in unit cost between farms and over time. Given this and also the fact that agricultural prices affect a large number of important economic variables, the setting of producer prices is necessarily highly problematic and contentious. There is need for the Government to develop a set of decision rules that are compatible with Syrian conditions and national economic objectives and also with progressive market liberalisation. The profile of a technical assistance project to support such an effort is appended to this report (Project Profile 1).

2. THE STRUCTURE OF THE COMMODITY CHAINS FOR STRATEGIC CROPS

Syria is a net exporter of cotton, lentils, chickpeas and tobacco, and a net importer of sugar. Syria became self-sufficient in wheat in the mid-1990s and has subsequently produced an export

surplus, other than in the last two years when production was severely affected by drought. Syria generated export surpluses of barley from 1993 to 1997, but has recently been forced to import to supplement drought-affected national crops.

Government establishments are involved in the marketing of all seven crops. In the case of cotton, sugar and tobacco, farmers *must* deliver their marketable production to a government establishment. In the case of wheat, about 70% of production is still sold to the General Establishment for Cereal Processing and Trade (GECPT). Following partial liberalisation of the domestic market, the majority of national barley, lentil and chickpea production is currently consumed on farm or sold to private buyers.

Key features of the domestic marketing chains of each of the seven crops are as follows:

Wheat: The GECPT operates 140 collection centres for the purchase of wheat from farmers; all but a small proportion of grain storage is owned by public sector establishments; two state-owned companies, the General Company for Mill (GCM) and the General Company for Baking (GCB), undertake, respectively, the majority of wheat milling and about one third of all bread production; there are both small and large-scale private wheat mills and a large number of private bakeries.

Only two main types of flour are produced in Syria, standard and high-quality. The output of the GCM is almost entirely standard flour, which it produces mainly in its own mills but also in contracted private mills. The latter are not permitted to produce high quality flour. Other than for the milling of standard flour on contract, the activities of private mills are restricted to the milling of high quality flour from wheat acquired directly from farmers and private traders.

There is substantial over-capacity in Syria's milling industry, due principally to the establishment by GCM of five new mills in 1997/98 able to produce over one quarter of the national requirement of wheat flour. It will be important that the present under-utilised private mills be employed to cater for increases in the domestic demand for wheat flour, and that new mills only be constructed once the public and private milling sectors are operating at close to full capacity.

The Government sets prices throughout the marketing chain for wheat flour and bread. The bread price has been subsidised for many years, principally through the GCM selling standard flour at a heavily subsidised price that is insufficient to cover even its wheat acquisition costs. GCM losses are made good by Government transfers from its Price Stabilisation Fund.

Barley is used principally for animal feed. Producers can retain it for their own livestock, sell it to neighbouring farmers, traders and private feed millers, or sell it to the GECPT, which continues to act as a buyer of last resort. All barley acquired by the GECPT is sold to the General Establishment for Feed (GEF).

Both the GEF purchase price from the GECPT and the GEF ex-store selling price are set by the Government. With the aim of improving the viability of livestock farming, the GEF's selling price was set at below its buying price in 1994. The resulting losses incurred by GEF are made good through a combination of transfers from Government and cross subsidisation from its profitable activities, including feed processing and maize drying.

In addition to the three feed mills owned by the GEF, Syria has almost 50 private feed mills. These mostly work below capacity since they cannot compete with GEF-subsidised sales of barley to farmers and because the GCM sells all its byproducts exclusively to the GEF.

The importation of barley in 1999 and 2000 has been undertaken entirely by the private sector. The private trading of barley in the domestic market is well developed and competitive. Despite this, transactions are subject to government price control.

Imports that fail to meet minimum quality standards set by government must be re-exported to their point of origin. This is extremely costly for exporters and disrupts the supply of feed to the domestic livestock industry.

Lentils and Chickpeas: The GECPT and GCM own a total of seven lentil processing and splitting plants. There are some 20 private factories that specialise in processing lentils and chickpeas for a fee. The domestic market is highly competitive, with around one hundred reasonably large domestic traders of lentils and chickpeas as well as a number of smaller traders.

The relative throughput of the public and private sectors varies markedly from year-to-year, with the GECPT buying most of the crop when its buying price is above export parity, but buying very little when world prices are strong and private traders bid up the domestic buying price. This means that at any point in time either the public or private plants are under-utilised. This increases the mean cost of processing and is inefficient.

The retail prices of lentils and chickpeas are set by the Government. This is unnecessary given the competitive nature of domestic markets and it could lead to shortages at times of high world prices since traders would opt to export the entire national crop.

Cotton: Farmers must deliver their seed cotton to the Cotton Marketing Organisation (CMO), which has 15 saw ginneries. The CMO purchases from farmers immediately after harvest and then processes its resulting stock of seed cotton over a period of some ten months. This long processing period results in very high stock financing costs for the CMO. These exceed all its other costs and amount to some 0.2% of GDP.

The CMO currently sells about 30% of its output of cotton fibre to domestic spinners and exports the remaining 70%, pricing its sales to domestic spinners on a cost-plus basis and to export buyers at international prices. This pricing policy prevents Syrian yarn and cloth from being exportable at a profit, since the CMO currently pays seed cotton producer prices that are above export parity. It also reduces the profitability of exports of garments and other textile goods. The end result is that Syria is failing to exploit the growth potential of its textile industry.

Recognising this, the government recently decided that cotton should be sold to the domestic market at international prices. It will be important that this results in domestic prices that are set at export parity, and not at some 'international' level, such as the price at which foreign spinners can import Syrian cotton.

Within the domestic market there would seem little point in continuing with retail price control of textile goods since this is not only costly to administer but also inhibits competition.

Sugar: Farmers must sell their entire crop to the General Organisation for Sugar (GOS), which has seven sugar factories, six of which process beet. Beet is moved up to ten times the distance normally considered to be the feasible maximum, resulting in high transport costs and losses in sucrose content.

The present formula for setting the producer prices of beet of different qualities encourages farmers to produce beet of low sucrose content. This is highly inefficient, leading to the wasteful over use of nitrogen fertilisers and to inflated beet transport and sugar processing costs.

Domestic beet production is sufficient to meet about one sixth of the national sugar requirement. The balance is met through the importation of refined sugar or through the importation of raw sugar that is refined at the GOS factories at Homs and Al Ghab.

The GOS sells all its sugar output to the General Establishment for Consumption (GEC) at cost-plus prices. The GEC, in turn, distributes sugar to consumers under a rationing programme at a heavily subsidised price. The Government has reportedly taken the decision to eliminate this programme.

All sugar is imported privately, other than that sold under the rationing programme. Elimination of the present price control on this sugar, coupled with the selling of Syrian-produced sugar ex-factory by tender, would eliminate the need for public outlets to sell sugar and would allow the diversion of the public resources involved in price control into more productive activities.

Tobacco: Farmers must sell all their tobacco output to the General Organisation for Tobacco, which has processing and cigarette manufacturing plants in Latakia, Hama, Aleppo and Damascus. Domestic sales are made through distributors and licensed retailers.

4. PRICE AND COST ANALYSIS

The study included the preparation of detailed estimates of parity prices. These indicated that government intervention had had the following main characteristics in recent years:

- The GOS has been paying farmers prices for sugar beet that are almost three times higher than those that they would receive in the absence of government intervention.
- Wheat producers have also been heavily protected, receiving prices from the GECPT that have been more than 60% above parity.
- Cotton has also been protected, although this has arisen largely because world prices have declined since the present producer prices were introduced in 1996.
- The GECPT's barley acquisition prices have been roughly equal to *import* parity, allowing the current national deficit to be met through private sector imports.
- The GECPT's acquisition prices for lentils and chickpeas have been below export parity, but producers have received from private traders prices that approximate export parity.

Despite government price support, the profits of farmers are highly unstable from year-to-year due to sharp variations in yield. Furthermore, the yields employed in the annual review of producer prices have been above national mean levels, leading to official producer prices that are insufficient to meet the declared objective of providing a profit above the mean level of costs.

If farm incomes were not supported by the Government purchasing at official prices, farmers with national mean costs would make losses on all the seven crops in a year of average yield, other than for lentils and chickpeas. In the case of irrigated wheat and sugar, losses would be made even in years when yields were equal to the highest previously achieved.

Most of the cost of Government price intervention in the agricultural sector is borne initially by three Government organisations: the GCM, the CMO and the GEC. In 1999, the total losses of

these organisations attributable to price intervention were an estimated SP36 billion, equivalent to 4.5% of GDP. In addition, the domestic textile industry contributed an estimated SP2.3 billion towards supporting prices to cotton farmers at above export parity.

The total value of the subsidy provided to wheat and to cotton farmers was approximately equal, i.e. SP10.8 billion for wheat and SP9.9 billion for cotton. Sugar farmers received SP1.6 billion. In the case of wheat and sugar, a part of the total cost of intervention represented support to consumers. This amounted to an estimated SP2.0 billion for wheat and SP1.6 billion for sugar.

5. STRATEGIC ISSUES AND STRUCTURAL AND INSTITUTIONAL REFORM

Despite its scarcity and great value, there is currently no means of charging farmers for the volume of irrigation water that they use, since water is not metered. Consequently, water use is controlled indirectly through restricting the crop areas that farmers are permitted to plant. This is inefficient since it restricts farmers' choice of crop mix and also provides no incentive to restrict the wastage of water. The ultimate aim should be to introduce a system of metered water charges. In the interim it should be possible to introduce per-hectare water charges, the rates of which are a function of the estimated water requirements of the crops grown. After a period of adjustment, this should allow water use to be regulated without the physical planning of areas to be planted to each crop.

To be profitable, Syria's two main crops - wheat and cotton - require subsidisation that raises their producer prices above equivalent international levels. This has a high fiscal cost for the Government and requires a mechanism for delivering the support. For wheat, a mechanism is also required to deliver the subsidy on the price of bread to consumers. In addition, for wheat, the Government has the major objective of producing sufficient nationally to fully meet domestic consumption.

Achieving the objectives for wheat would be difficult in the absence of the present system of physical planning. The national production target for wheat, in particular, represents a major impediment to the elimination of this planning system and is inhibiting a move towards national specialisation on the basis of comparative advantage.

Although there would seem little scope for eliminating the physical planning of crop areas in the short-term, there is potential to increase efficiency within the agricultural sector through improvements to the planning system.

A major need is to move the allocation of resources within the agricultural sector progressively towards specialisation on the basis of comparative advantage. This requires the planning system to embody procedures for examining export potential systematically and also for assessing the potential to substitute imports for crops that Syria currently subsidises. It must then use these findings to identify optimal crop combinations on rainfed and on irrigated land in each agro-climatic zone. Efforts to do this need to be based on an explicit recognition that it is water, not land, that is the binding constraint for Syrian agriculture.

Developing and implementing a methodology for this will not be an easy task. In addition to the need to make forecasts of realisable export and import unit values, it must necessarily address the complex empirical issues that are involved in the identification of comparative advantage. The appended Project Profile 2 is for possible technical assistance to support national efforts to introduce systematic economic analysis into the planning mechanism.

Farm families have different endowments, needs and aspirations. Thus, it is important that the planning system embodies as much flexibility as possible within each village for farmers to specialise. Such flexibility could be achieved through inter-farmer exchange of area allocations

that would take place after the initial plan for the village has been established but before farmers are provided with licences.

6. RECOMMENDATIONS

Recommendations stemming from the analysis and findings summarised above will be found in Section 6 of the main report.

1. INTRODUCTION

1.1 THE CONTEXT AND OBJECTIVES OF THE STUDY: PRIVATE PRODUCTION AND STATE PLANNING

The majority of agricultural production in Syria derives from small family-based farms. In total, some 98% of national agricultural production is in private hands. Despite this dominance of the private sector, the Government plans the areas to be planted annually to key crops and implements a crop area licensing system for farms of over 0.5 hectares.

The Government also intervenes intensively in marketing and processing. It owns and operates the majority of the nation's basic agricultural processing facilities, including all cotton ginneries, sugar factories and tobacco plants, and a set of wheat mills, oil mills and feed factories. The Government sets producer prices for all the main crops other than fruits and vegetables. For cotton, sugar beet and tobacco, farmers must sell to government organisations at these prices. For the other main crops, farmers now have the option to sell to the Government at the official price or to private buyers at a negotiated price. For all the main crops, other than cotton, lentils and chickpeas destined for export, the Government controls domestic prices through to the point of final sale to consumers.

The Government has been progressively reducing the intensity of its agricultural planning, price control and intervention in processing and marketing. However, government involvement in these activities remains sufficiently intense to continue both to constrain the ability of farmers to react to price signals and to affect the role and commercial decision-making of private entrepreneurs engaged in agricultural trading and processing.

The ongoing progressive transition in Syria from a mixed system to a system that places greater reliance on market forces leads to major management problems, since new situations are continually being created for which there is no past experience. Consequently, policy makers in Syria face major challenges. Both the transition and the day-to-day operation of the agricultural economy will need to be managed with great skill if the result is to be an efficient agricultural sector able to meet the set of diverse growth, equity and food-security objectives that are currently being pursued.

This study describes government planning and intervention, reviews its effects and, focussing on the strategic crops, identifies possible changes that would allow more efficient agricultural production, processing and marketing, while still meeting other key government objectives relating to the agricultural sector.

1.2 DEFINITION OF STRATEGIC CROPS

'Strategic' crops are defined as crops for which the Government sets prices at which government establishments will purchase from farmers or their cooperatives. This definition leads to the following seven crops being classified as strategic:

- wheat
- barley
- lentils
- chickpeas
- cotton
- sugar
- tobacco

It should be noted that the crops are not strategic in the sense that they, unlike other crops, are part of some overall strategy or are all particularly important in meeting a particular strategic goal, such as poverty alleviation or increased rural employment.

The study covers all the seven crops in detail, other than for tobacco. It was agreed that tobacco would be covered only superficially, to allow the resources available to the study to be focussed on the other, more important crops.[1]

1.3 THE IMPORTANCE OF THE STRATEGIC CROPS

Syria has a total of approximately 6.0 million hectares of potentially cultivable land of which about 5.5 million hectares have been cultivated in recent years.[2] In 1998/99, some 4.6 million ha of this land were actually under cultivation with 960,000 ha left fallow. Some 28% of this cultivated land was irrigated.

Table 1.1 contains an analysis of the importance of the strategic crops in terms of their utilisation of land. It will be seen that the seven strategic crops occupy about three-quarters of the 4.6 million hectares under cultivation, with the majority of the remainder being occupied by tree crops.

Wheat occupies 70% of the irrigated land that is devoted to strategic crops and cotton a further 25%. Barley, which is grown almost exclusively on rainfed land, accounts for some 55% the total of rainfed land planted to the strategic crops; wheat accounts for a further 37%. Together, wheat and cotton account for 96% of the irrigated land planted to strategic crops, for 79% of the irrigated land planted to all annual crops and for 71% of all irrigated land under crops. Barley and wheat together occupy similar percentages of rainfed land.

The per-hectare value of wheat, and especially barley, is relatively low compared to the main tree and horticultural crops. Thus, while the strategic crops still account for over half the total value of all crop production, they are less dominant as a contributor to value than as users of land. Within the strategic crops group, the farm-gate value of wheat is of the same order of magnitude as that of cotton, about five times that of lentils and of chickpeas and about 10 times that of sugar beet.

Cotton production is the largest employer of labour within the agricultural sector, providing more than twice as many person-days of work than wheat. Sugar beet and tobacco production are also labour intensive, together providing one third the combined employment of wheat and barley on less than 2% of the area. Lentils and chickpeas are the most labour intensive rainfed crops, providing more employment on rainfed land than wheat and barley combined, despite occupying less than one tenth of the area.

[1] Tobacco accounts for only 0.4% of the rainfed land and 0.6% of the irrigated land planted to the strategic crops.
[2] The data in this sub-section refer to areas cultivated in 1998/99.

TABLE 1.1: CULTIVATED LAND USE IN SYRIA, 1998/99

				Percentage of strategic crops			Percentage of annual crops			Percentage of all crops		
				Strategic Crops			All Annual Crops			All Crops		
	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total	Rainfed	Irrigated	Total
	(Hectares)			(%)			(%)			(%)		
Wheat	933,083	669,937	1,603,020	36.6	70.1	45.7	34.8	57.7	41.7	27.9	52.2	34.6
Barley	1,408,961	5,266	1,414,227	55.2	0.6	40.3	52.5	0.5	36.8	42.1	0.4	30.5
Lentils	147,427	214	147,641	5.8	0.0	4.2	5.5	0.0	3.8	4.4	0.0	3.2
Chickpeas	50,426	218	50,644	2.0	0.0	1.4	1.9	0.0	1.3	1.5	0.0	1.1
Cotton	0	243,835	243,835	0.0	25.5	7.0	0.0	21.0	6.3	0.0	19.0	5.3
Sugar Beet	0	29,953	29,953	0.0	3.1	0.9	0.0	2.6	0.8	0.0	2.3	0.6
Tobacco	10,310	5,853	16,163	0.4	0.6	0.5	0.4	0.5	0.4	0.3	0.5	0.3
Total Strategic Crops	2,550,207	955,276	3,505,483	100.0	100.0	100.0	95.1	82.3	91.2	76.1	74.4	75.7
Other field crops excluding vegatables	103,673	119,192	222,865				3.9	10.3	5.8	3.1	9.3	4.8
Total All Crops excluding vegetables	2,653,880	1,074,468	3,728,348				99.0	92.5	97.0	79.2	83.7	80.5
Vegetables	28,010	86,794	114,804				1.0	7.5	3.0	0.8	6.8	2.5
Total All Annual Crops	2,681,890	1,161,262	3,843,152				100.0	100.0	100.0	80.1	90.5	83.0
Fruit Trees	667,676	121,948	789,624							19.9	9.5	17.0
Total All Crops	3,349,566	1,283,210	4,632,776							100.0	100.0	100.0
Fallow			961,702									

Source: Ministry of Agriculture and Agrarian Reform, *Annual Agricultural Statistical Abstract*, 1999.

1.4 CHARACTERISTICS OF THE STRATEGIC CROPS

Other than for lentils and chickpeas, the strategic crops differ markedly in terms of the season in which they are grown, suitability to particular agro-economic conditions, geographical location of production, use of irrigation, labour intensity, farm-gate value, and the degree to which Syria is self-sufficient. These differences are summarised in Table 1.2.

TABLE 1.2: KEY CHARACTERISTICS OF THE STRATEGIC CROPS

	Wheat	Barley	Lentils	Chickpeas	Cotton	Sugar	Tobacco
Season	Winter	Winter	Winter	Winter	Summer	Various*	Summer
Main agro-climatic zones	1,2	2,3,4	1,2,3	1,2,3	1,2	1,2	1,2
Main Producing Governorates+							
1st	Al Hassake	Aleppo	Al Hassake	Dara	Al Hassake	Ghab	Latakkia
2nd	Al Raqqa	Hama	Aleppo	Aleppo	Al Raqqa	Hama	Ghab
3rd	Aleppo	Al Hassake	Idleb	Idleb	Aleppo	Aleppo	Aleppo
Percentage of area irrigated	30	0	0	0	100	100	33
Percentage of production from irrigated land	60	1	0	0	100	100	53
Labour intensity	Low++	Very low	Medium	Medium	High	High	High
Approximate farm-gate Value (SP millions)	29,063	3,188	6,960	5,144	26,138	2,108	-
Extent of national Self-sufficiency	Self-sufficient** (last imports 1993)	Swing from surplus to deficit (imports since 1999)	Export surplus	Export surplus	Export surplus	Import Deficit	Net Exports

Note: Information on areas planted and the main producing governorates is based on 1998 data.
* Crop planted in the Autumn, Winter and Spring, with main growth and irrigation requirement during the Summer.
** Recent small drought-induced deficits have been covered from domestic stocks.
\+ For lentils and chickpeas the main producing governorates tend to change from year-to-year.
++ Much lower for rainfed than irrigated.

1.5 STUDY TIMING AND FIELDWORK

This study is one of a set of agricultural sector studies being carried out by the National Agricultural Policy Centre (NAPC). The establishment and initial work of this Centre is being supported by the FAO Assistance in Institutional Strengthening and Agricultural Policy Project (GCP/SYR/006/ITA).

The study commenced in June 2000 with a three-week fact finding mission by the International Consultant, at the end of which he prepared research programmes for each of five NAPC trainees. Following two months of part time research by the trainees, the International Consultant returned to Syria in September 2000 for a further five weeks. During this period he worked closely with the trainees and also undertook further fieldwork in Damascus, Aleppo and Homs. He was also assisted during the study by three national consultants, Mr. Hassan Katana, Director of Agricultural Affairs, Mr. Ghatfan Al Azm, Director of Marketing, General Establishment for Cereals Processing and Trade (GECPT), and Mr. Jossef Hussein Kasim, Marketing Department, GECPT.

On 26th October 2000, a workshop was held in Damascus, at which the International Consultant presented preliminary study findings. He drafted this report in November and December 2000, and revised it in April 2001 to take account of the comments of the Syria Government and FAO.

Annual base time-series data employed in the study cover a standard period from 1989 to 1999. To the extent possible, description and analysis focus on the 1999/2000 production year and on the processing and marketing situation in 2000.

1. PRODUCTION PLANNING AND STATE INTERVENTION IN PRICING

Since the early 1960s, the Syrian Government's planning of the domestic economy has employed five-year plans supplemented by annual executive plans. The 6th, 7th and 8th Five-Year Plans covering the 15-year period from 1986-2000 have been indicative only, and have not been officially released. A 9th five-year plan is expected to be prepared. The switch to indicative planning reflects the move to a more open economy and the consequent need for greater year-to-year flexibility.

This section focuses principally on describing the existing agricultural planning system. Its rationale and possible modifications and improvements are discussed in Section 5.

2.1. CURRENT FIVE-YEAR PLANNING FOR AGRICULTURE

2.1.1 The Setting of Broad Objectives

The five-year plans for agriculture have the overall objective of meeting a government growth target for the sector.[3] For the current 8th Five-Year Plan, the target growth rate for domestic agriculture is 6%.

Within this overall growth objective, the plans aim to achieve a set of general objectives. For the crop sector, the current 8th Five-Year Plan seeks to meet the following objectives[4]:

- giving priority to strategic crops with the objective of achieving food security;
- protecting soil from deterioration and desertification and improving its productivity;
- improving the productivity of production factors and producing production inputs according to standard specifications;
- adopting developed production technologies with a view to improving yield and livestock productivity;
- securing the requirements of the agro-food industries;
- developing, adapting and utilising environmentally adapted varieties;
- promoting exports; and
- expanding fruit tree cultivation activities and selecting environmentally suitable varieties.

Such sets of objectives provide a useful background for planning. However, some are conflicting and they all make demands on a finite set of available resources. Consequently, plan development involves a series of compromises and trade-offs, and requires an iterative approach that ultimately results in a set of relatively small planned changes to the *status quo*.

The five year plans that are eventually produced contain annual national implementation targets and specify policies that will be adopted to help meet these targets and other plan objectives. For example, the 8th (1996-2000) plan contains the following set of policies that relate to pricing and marketing[5]:

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[3] The State Planning Commission sets initial national and sectoral growth targets for the five-year plan. Its subsequent involvement in planning by sector relates principally to the investment implications of sectoral plans.

[4] *The Sectoral Plan for Agriculture, Forests and Fisheries in the 8th Five-Year Plan*, undated.

[5] In the event, the set of three policies relating to administered pricing has not been fully implemented. There has been no change in the producer prices of any of the strategic crops since 1996, since when the prices to be paid have been announced immediately prior to the harvest rather than at the beginning of the cultivation season. The maintenance of the restriction of the marketing of strategic crops to the public sector has continued other than for barley, lentils, chickpeas and a small proportion of the wheat crop.

- COP-based pricing will continue, but with COP being calculated using 'proper criteria'.
- Profit margins given to the main crops will be modified 'according to the requirements of the national economy' (i.e. it will be used to support the successful implementation of production planning).
- Prices set be the SAC will be announced before the beginning of the cultivation season.
- Maintenance of the restriction of the marketing of some strategic crops to the public sector, particularly the crops processed by public sector plants (cotton, sugar beet and tobacco).

2.1.2 The Setting of Detailed Commodity Specific Targets

Plan implementation targets include targeted annual growth rates for the area, yield and production of twelve major crops and production and yield targets for livestock products. In the 8th Plan, the area and the yield of all the twelve major crops are targeted to increase, other than for the areas of sugar beet and tobacco. The resultant targeted annual production increases range from 2% for rainfed wheat, barley, lentils, chickpeas, sugar beet and tobacco to 16% for olives and 16.5% for pistachios. The targeted compound annual growth rates for area, yield and production are shown for each of the strategic crops in the first column of Table 2.1. In addition, the plan documents also show the growth that is planned in irrigated land and in various types of non-irrigated land, and also contain projections of the implications of the planned production for national self sufficiency.

The five-year plans for agriculture now employ notional rather than actual data for the base-year, in recognition of the fact that variations in annual weather conditions make data for a single year unsuitable. The base year data to be employed are determined by a committee comprising representatives from MAAR, the State Planning Commission and the Central Bureau of Statistics. For the 8th Plan, the base-year crop yields employed were based on mean national yields for the past three and ten years for, respectively, irrigated and rainfed land. The committee eliminated years that it considered to be extreme before calculating these averages. In the case of rainfed land, recent years received a higher weighting in the calculation of the average. For crop areas, an average of the prior three years was used for irrigated land and the prior five years for rainfed land. The basic aim of these procedures is to arrive at base year data considered to reflect the areas that would be likely to be planted and the yields that would be likely to be achieved with current technology and capacity in a year of adequate but not exceptionally good weather conditions.

The five-year plan for agriculture is developed taking account of the Ministry of Irrigation plans related to irrigated area. This is essential because the agricultural plan is necessarily dependent on planned investment in irrigation and, in particular, on the new land that is to be brought under irrigation during the course of the plan. In addition to data from the irrigation plan, the other main input into the development of targets for the agricultural sector relates to projects and programmes that will lead to an expansion of rainfed land and/or to yield increases on both irrigated and rainfed land. For example, rapid rates of growth in the area of olives and pistachios is targeted in the 8th Plan, to reflect a major on-going project to reclaim hilly areas. In general, the rapid expansion in irrigated area has meant that past plans have included substantially higher area growth rates for irrigated crops than for rainfed crops.

TABLE 2.1
AREA, YIELD AND PRODUCTION: 5-YEAR PLAN INCREASES IN ANNUAL VALUES AND SUMMARY OF DIFFERENCE BETWEEN 5-YEAR PLANNED VALUES AND ANNUAL PLANNED VALUES

	Planned Annual Compound Increase (%) (1995-2000)	Ratio of 5-year to Annual Planned Figure		
		Highest	Lowest	Mean
Wheat: irrigated				
- Area	4.0	1.07	1.01	1.04
- Yield	1.4	0.98	0.95	0.97
- Production	5.5	1.03	0.98	1.00
Wheat: rainfed				
- Area	1.0	1.48	1.08	1.18
- Yield	1.0	0.88	0.75	0.80
- Production	2.0	1.11	0.87	0.94
Wheat: total				
- Area	2.2	1.25	1.06	1.12
- Yield	2.0	0.92	0.82	0.88
- Production	4.2	1.03	0.94	0.98
Barley				
- Area	1.0	1.44	1.18	1.32
- Yield	1.0	0.61	0.59	0.60
- Production	2.0	0.86	0.72	0.78
Lentils				
- Area	1.0	0.89	0.68	0.76
- Yield	1.0	0.92	0.82	0.86
- Production	2.0	0.73	0.57	0.65
Chickpeas				
- Area	1.0	0.95	0.72	0.82
- Yield	1.0	0.74	0.59	0.64
- Production	2.0	0.70	0.45	0.53
Cotton				
- Area	4.0	1.09	0.94	0.99
- Yield	2.0	0.98	0.92	0.95
- Production	6.1	1.01	0.88	0.94
Sugar				
- Area	0.0	1.13	0.98	1.04
- Yield	2.0	1.06	0.96	1.01
- Production	2.0	1.08	1.01	1.06
Tobacco				
- Area	0.0	0.99	0.70	0.86
- Yield	2.0	1.37	1.23	1.32
- Production	2.0	1.28	0.94	1.13

Source: Annex 1

The potential for radical changes in the relative areas to be planted to each crop are restricted by a number of factors:

- Most irrigated areas face severe water constraints. Since summer crops tend to use substantially more water than winter crops, these constraints mean that a limit must be placed on the percentage of the land that is planted to summer crops. Since wheat (winter) and cotton (summer) have recently occupied some some 97 % of the total irrigated land available for field crops, this in effect sets a limit to the expansion of cotton area.
- It is necessary to rotate crops to foster soil fertility and to prevent the accumulation of pests and diseases. This in practice means that cotton can never occupy more than 50% of irrigated land on any farm.
- The government aims to produce enough wheat to achieve national self-sufficiency, even in years of low rainfall. This requires a specific total minimum amount of irrigated land to be devoted to wheat (although there is some flexibility to substitute irrigated for rainfed and *vice versa*).
- The government has specific targets for the output of crops for which it has processing facilities.

2.2 ANNUAL PLANNING

The annual plan is the core operational vehicle of the national planning system. The basic aim is to steer farmers towards a particular pattern of land use that the Government perceives as best able to meet national objectives. The plan also serves the important secondary objective of providing a framework at the start of the crop year for the provision of credit, inputs and other services to individual farmers. In addition, it also assists in the planning of support services.

2.2.1 The Annual Planning Cycle

The annual planning process normally commences in April. Licences are issued to farmers in September prior to formal commencement of the official Agricultural Year on 26th September. The annual planning cycle is as follows:

THE ANNUAL PLANNING AND IMPLEMENTATION TIMETABLE

il: Indicative planning figures are sent by MAAR to its governorate-level office.
June: Each such office returns its tentative plans to MAAR in May.
: MAAR consolidates and modifies these plans in consultation with the governorates.
August: MAAR submits a national plan to the SAC for approval.
September: Licences are issued to farmers.
September (26th): The agricultural year commences.
October to December: Winter field crops are planted.
Mid-March to June: Summer field crops and intensive crops are planted.

2.2.2 Key Preparatory Activities

The main activities during each of the planning stages are as follows:

April: The annual planning cycle commences with the MAAR preparing an indicative plan that shows the national target area to be planted on rainfed and irrigated land to each of 8 annual crops and 7 tree crops, together with targets for yield and production.[6] The plan also sets out the main

[6] Wheat, barley, lentils, chickpeas, cotton, sugar beet, maize, potatoes, olives, citrus, apples, grapes, pistachios, figs, cherries.

principles for livestock planning. The technical work for this is undertaken principally by the MAAR Directorate of Planning and Statistics (DPS), working in close cooperation with the Directorate of Irrigation. Throughout, MAAR takes particular account of the views of the Peasants Federation to ensure that its targets are likely to be broadly acceptable to the majority of farmers. Finally decisions are made by an inter-ministerial committee that includes a representative of the Peasants Federation.

Although some account is taken of economic factors, the national MAAR targets are based principally on technical considerations, such as water availability and the need for particular crop rotations that will preserve soil fertility.

The annual area targets take account of the five-year plan targets and, in the case of wheat and cotton, attempts are made to make good any under-performance in prior years of the plan. For all crops, significant modifications to the five-year plan targets may be made to reflect changed circumstances, especially the prevailing situation relating to irrigation water and changes in international market conditions for crops that are exported or imported. For example, in the plan for 2000, the low rainfall in the prior years has led to the ratio of summer to winter crops on irrigated land being cut from approximately 50:50 to 40:60. This irrigation constraint, together with the expectation that world cotton prices will continue to be depressed, has led to a reduction in the planned area to be planted to cotton. Further reductions will be necessary in 2001.[7]

The switch to indicative planning means that the annual plans are now less dependent on the annual targets implicit in the five-year plans. This partly reflects the need for greater adjustment to changes in economic conditions in the more open economy but principally to a more realistic approach to the need for increased fallow land during periods of drought. Deviations between the *annual* targets contained in the current 1996-2000 five year plan and the targets in each of the annual plans from 1996-2000 are summarised in the last three columns of Table 2.1 for each of the strategic crops. It will be seen that there are major differences in the five-year and annually planned areas, especially rainfed areas. In particular, a much larger area of land was ultimately planned to be planted to lentils and chickpeas and a much smaller area to wheat and barley. In the case of yields, those contained in the annual plans have been consistently above those in the five-year plan, for all the strategic crops other than sugar beet and tobacco. For lentils and chickpeas, these area and yield differences have been in the same direction, with the result that the targeted production contained in the annual plans has averaged over 50% above that in the five-year plan.

In addition to the national area targets, MAAR also provides the governorates with target figures for per-hectare yield and production for each major crop and with the proportions of land to be planted and to be left fallow in each agro-ecological zone. For 2000, 90% of land in zone 1 is to be cultivated compared with 100% in prior years. This is in response to current, drought-induced low soil-moisture levels. Cultivation intensities in the remaining zones are to be as follows: zone 1: 90%; zone 2: 85%; zone 3: 65%; zone 4: 50%; zone 5: 0%.

[7] See sub-section 3.4.

April-June:

Within each governorate, a Governorate Committee translates the MAAR's indicative figures into indicative plans for each sub-governorate. This committee is chaired by the governorate's agricultural department director and comprises the president of the Peasants Union, the governorate heads of statistics, planning, agricultural affairs, irrigation and animal production, and the representatives of water basin organisations and public companies.

Within each sub-governorate, a Sub-Governorate Committee then distributes these indicative plans between villages in the form of indicative village models that, *inter alia*, indicate an area for each major crop. This sub-governorate committee comprises representatives from each of the organisations that comprise the governorate committee.

Planning then follows an bottom-up approach, involving a Village Committee comprising representatives of the Peasants Union and front-line MAAR staff. The starting point is for farmers within each village, with advice from MAAR staff, to decide on the proportion of irrigated and rainfed land that is to be planted to each crop, taking account of the models received from the Sub-governorate committee. This exercise is restricted to farmers with over 0.5 hectares of arable land, since farmers with less than 0.5 hectares are not included in the planning process and no restriction is placed on their choice of crops.[8] Once agreed, each village plan is passed to the Sub-Governorate Committee where it is reviewed. Changes may be made to individual village plans at this stage after consultation with the village concerned.

The agreed village plans are aggregated and passed by the Sub-Governorate Committee to the Governorate Committee, which consolidates them into a draft governorate plan. Further changes may be made at this level following review by the Committee, but these are normally minor, since the component items have been prepared in the light of the original indicative plan. The draft governorate plan is then forwarded to the Directorate of Planning and Statistics at MAAR Headquarters. This process, from the village through to MAAR HQ, is well-established and employs standard reporting formats at each level.

July: MAAR consolidates the governorate plans into national totals. Invariably each governorate's percentage allocation of land to crops differs from the national target level set by the MAAR due to the differing resource endowments of the individual governorate's. However, the main concern at MAAR HQ is that the total of the governorate plans provides percentage allocations of land between crops that approximate the national targets. Where there are differences, the governorates are asked to make modifications. These are then agreed back down to the level of the village and a final governorate plan is then re-presented to MAAR HQ.

August: The MAAR submits its consolidated production plan to the Supreme Agricultural Council (SAC)[9] in the form of a detailed production plan document. This contains disaggregated background information on increases in irrigated areas analysed by basin and water source, reasons for changes in rainfed areas, including land reclamation schemes, land transferred for irrigation and land lost to building, road construction, etc., and changes in land intensity. Detailed tables and descriptive information is then provided on targeted national crop areas, yield and production for both irrigated and rainfed land, fruit tree capacity and production, livestock numbers, and inputs required, such as seeds and bags. Most variables are shown for the plan year and also for the prior year to demonstrate the extent of change.

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[8] Note that the cut-off level for this was raised from 0.5 to 1.0 ha in 1995.

[9] The Supreme Agricultural Council is chaired by the Prime Minister, and comprises the two Deputy Prime Ministers, the Minister of Agriculture and Agrarian Reform, Minister of Irrigation, the Minister of Supply and Internal Trade, the Minister of Economics, the Minister of Industry, the Party leadership, the Head of the Peasants Federation and the Head of the Central Commission for Control and Supervision.

The plan document is limited to production and does not seek to compare the planned production of each commodity with projected demand or to show projected national supply and utilisation. Explanations focus on physical rather than economic factors, reflecting the technical approach of the MAAR to development of the plan. The SAC normally approves the MAAR plan unchanged or makes only minor modifications. It has reportedly made no change in any of the past four years. Once approved, the plan is transmitted by the MAAR through its hierarchy of offices down to each village.

2.2.3 Impementation and Monitoring

September: Licences are issued to farmers prior to the start of the agricultural year after the approval of the plan by the SAC. These permit farmers to plant specific areas of rainfed and irrigated land to specific crops, and must be obtained by all farmers with over 0.5 hectares of land. Within each village, all farmers must allocate the same percentages of their *irrigated* land to specific crops. For example, if a village is to plant 80% of its irrigated land to wheat and 20% to cotton, all farmers are required to use their irrigated land to grow these crops in this ratio.

In the case of *rainfed* land, the village is divided into sectors, each of which is allocated to a particular crop group or to fallow. The proportions of land allocated to each sector differ according to agro-climatic zone. For example, in 2000/01 villages in zone 1 must allocate 50% to wheat and barley, 40% to other crops and 10% to fallow, whereas villages in zones 2, 3 and 4 must allocate respectively 15%, 35% and 50% to fallow. Farmers must grow the crops specified for the zones into which their rainfed plots fall. In practice, farmers are permitted to arrange to cultivate each other's land so that they can diversify their output and also not find themselves in a position where they have entirely land which must be left fallow.[10] The main reason for this treatment of rainfed land is that, in the absence of fencing of individual plots, it allows livestock to graze grain stubble without destroying crops that have yet to be harvested.

Each licence shows the irrigated and rainfed area that the farmer will plant to each crop. Farmers must also declare and have recorded on their licence each minor crop that is not included in the planning process but that they intend to grow.

October onwards: Farmers are legally bound to comply with the planting programme specified on their licence. They, in turn, use their licence to obtain government-supplied credit, inputs and services. Farmers with less than 0.5 hectares may also apply for a licence so that they can also have access to state-provided support. The right to government support is withdrawn if farmers deviate from their licensed areas by significant amounts without good reason. The law also provides for more severe penalties should these be deemed necessary, including the destruction of illegal plantings through ploughing. In practice such measures are rarely if ever taken.

The plan is monitored in two separate ways. First, the plantings of farmers relative to those on their licence are monitored by Plan Monitoring Committees that operate at the level of individual extension units. The findings of these committees serve both as a basis for enforcement and for MAAR to obtain first-hand information on areas planted. Second, MAAR undertakes comprehensive random sample surveys of planted area and of yield in collaboration with the Central Bureau of Statistics. These cover wheat, barley, lentils, chickpeas and cotton. Less formal assessments are made for minor field crops. Planted area is surveyed immediately after completion of the planting season. Yields are assessed through crop cutting immediately prior to harvest. The wheat sample covers 10% of villages, 10% of the area within each sampled village,

[10] In practice it is relatively rare for a farmer's land to be entirely within one zone since plots are usually dispersed within the village.

and three locations selected from each sampled area. The cotton yield estimate is based on samples drawn from 8% of the total planted area.[11]

2.2.4 Impact

In practice, there are substantial differences between the areas planned and the areas that are ultimately planted. Differences at the national level from 1989 to 1999 are summarised for the strategic crops in Table 2.2. The detailed underlying annual data are presented in Annex 2. It will be seen that, for all the strategic crops other than tobacco, the areas that are estimated to have been planted under irrigation are on average above those planned. The land planted to barley, the most widely grown rainfed crop, has on average also exceeded that planned. Rainfed wheat area has been roughly equal to that planned, while both lentil and chickpea areas have averaged substantially less.

In the case of lentils and chickpeas, the deviations in the area planted from the area planned have been particularly marked. Annual lentil area has ranged from 48% below that planned to 23% above, chickpeas from 56% below to 6% above. Such erratic behaviour is the result of the extent of planting being a function of rainfall. Many farmers simply do not plant if rainfall is inadequate, whereas they exceed their licensed area when rainfall is particularly good.

The deviations between planned and estimated crop areas on irrigated land are harder to explain. The general apparent over-planting could possibly be simply a result of an upward bias in the measurement of planted areas. Alternatively it could be due to farmers 'stretching' their irrigated area to make maximum use of publicly supplied water. Government irrigation system maintenance and operation fees are paid for on the basis of *licensed* area and the *use* of such water is in effect free.

Yields per hectare have tended to be substantially over-estimated in annual plans in the period from 1989 to 1999 for all the strategic crops other than cotton and tobacco. Average cotton yields have been similar to those planned, while tobacco yields have averaged 16% above planned levels. The phenomenon of yield over-estimation is frequently encountered in national planning. Planners work in terms of 'normal' years, which are years of adequate weather conditions. In arid countries such as Syria, conditions are frequently substantially worse than normal and yields are frequently below those planned. Occasionally conditions are better than normal but the impact on yields is relatively small compared with the bad years. Other than for cotton and tobacco, the relative planned and actual yield data are consistent with this phenomenon. Yields have indeed been higher than those planned in some years, but in such years they have exceeded the planned levels by only relatively small percentages. Yields in poor growing years, on the other hand, have been well below those planned.

[11] These samples subsequently serve as the basis of official MAAR data on area, yield and production.

TABLE 2.2
AREA, YIELD AND PRODUCTION: PLANNED INCREASES IN ANNUAL VALUES AND DIVERGENCE OF ACTUAL VALUES FROM PLANNED ANNUAL VALUES

	Ratio of Planned (1998+1999 to 1989+1990)*	Ratio of Actual to Planned (1989 to 1999)		
		Highest	Lowest	Mean
Wheat: irrigated				
- Area	2.76	1.31	0.94	1.10
- Yield	1.13	1.03	0.68	0.88
- Production	3.12	1.36	0.67	0.97
Wheat: rainfed				
- Area	0.65	1.31	0.77	0.98
- Yield	1.27	1.09	0.29	0.78
- Production	0.83	1.14	0.24	0.75
Wheat: total				
- Area	1.01	1.12	0.84	1.00
- Yield	1.58	1.14	0.45	0.85
- Production	1.59	1.11	0.38	0.85
Barley				
- Area	0.55	1.18	0.94	1.04
- Yield	1.16	1.06	0.10	0.58
- Production	0.64	1.06	0.11	0.61
Lentils				
- Area	1.22	1.23	0.52	0.77
- Yield	1.16	1.21	0.27	0.81
- Production	1.42	0.93	0.20	0.61
Chickpeas				
- Area	1.37	1.06	0.43	0.79
- Yield	1.15	1.05	0.44	0.70
- Production	1.58	1.08	0.19	0.57
Cotton				
- Area	1.44	1.19	0.90	1.02
- Yield	1.13	1.30	0.84	1.02
- Production	1.63	1.42	0.83	1.05
Sugar				
- Area	1.00	1.81	0.96	1.37
- Yield	1.18	1.16	0.49	0.91
- Production	1.18	1.99	0.52	1.28
Tobacco				
- Area	1.11	1.17	0.82	0.95
- Yield	1.05	1.42	0.81	1.16
- Production	1.16	1.45	0.72	1.11

Source: Annex 2.
* The ratio of the mean of the planned 1998 and 1999 values to the mean of the planned 1989 and 1990 values.

The end result of the combination of area and yield biases is that:

(i) the annual production of each strategic crop frequently differs significantly from that planned; and
(ii) more cotton, sugar beet and tobacco has been produced than planned since 1989 but less wheat, barley, lentils and chickpeas.

To the extent that part of the purpose of planning is to achieve target national outputs, these biases will have served to prevent certain plan objectives from being achieved fully. There is a need to address this problem, and also the more fundamental problem for a centrally planned system that stems from the fact that one of the key variables – production - is influenced strongly by natural factors which cannot be controlled.

Finally, it should be noted that, since the data in Table 2.2 are national averages, they almost certainly mask much larger deviations at the level of the governorate, sub-governorate, village and individual farmers.

2.3 PRODUCER PRICE SETTING

This section covers the procedures for setting administered producer prices for strategic crops. The details of producer price intervention for individual crops, including the pricing of different qualities is discussed in Section 3, as is price intervention at other points in domestic marketing chains.

2.3.1 Coverage and Objectives

For each of the strategic crops, the Government sets prices at which public establishments will buy the crop at their premises or at buying centres. These prices are reviewed annually. They apply for a full crop year for winter-grown crops and for the subsequent summer-grown crops. They are applicable at the same level throughout Syria.

These prices are all set on the basis of unit costs of production. The objective is to ensure that a farmer who employs recommended agricultural practices is able to cover his costs and make a specific level of profit. Price setting explicitly does not take account of unit market value. Indeed, one explicit aim of government intervention in pricing is to isolate farmers from market forces and to provide prices that will encourage farmers to produce certain crops.

For cotton , sugar beet and tobacco, the official government buying prices are the only prices at which farmers can sell, since state establishments are the sole buyers of these crops. For wheat, barley, lentils and chickpeas, farmers can also sell to private buyers. For these crops, the official price is in effect a minimum price. However, farmers reportedly do on occasion sell to traders at less than the official price because the trader is able to offer a purchase package that the farmer finds more attractive than the alternative offered by the Government, due for example, to more attractive payment terms.

The government does not intervene in the pricing of other crops. These sell at market prices which are influenced by supply and demand. These other crops include fruits and vegetables, which, taken as a group, are more valuable than any of the strategic crops, including wheat.

2.3.2 Procedures

Technical work on costs of production is centred on the MAAR Directorate of Agricultural Economics. Each year the Directorate prepares an estimate for each strategic crop of the national production cost per hectare. It submits these costs to a twelve-person Cost Calculation Committee that is chaired by the Deputy Minister for Agriculture and comprises representatives from the Directorate of Agricultural Economics (Director and Deputy Director), the MSIT, the Ministries of Planning, Finance, Industry and Economics, the Agricultural Cooperative Bank, the Peasants Federation, the Regional Peasants Office, and the Agricultural Engineers Syndicate. This committee reviews the Directorate's cost of production estimates and decides for each crop upon a figure of national yield per hectare. For each crop, this is used to convert the per hectare cost to a single figure of national cost of production per unit of output. The yield figure for each crop is reportedly in effect negotiated between the different interest groups represented on the committee. The committee then submits its unit cost estimate to the SAC together with its recommendation for the official buying price.

To explain the methodology for estimating the cost of production, the Director of Agricultural Economics as well as the MAAR Minister and Deputy Minister attend the SAC meeting at which the new prices are determined. Since the 1995/1996 crop year, the SAC has simply decreed that the producer prices of each of the strategic crops should remain unchanged.

Until 1995/96, the SAC announced the producer prices at the end of the summer, in advance of the start of the new planting season. However, prices have subsequently been announced immediately prior to the harvest. Given the lack of price change for five years, farmers now reportedly assume that prices will again remain unchanged unless they hear to the contrary prior to planting.

2.3.3 Data and Analysis

The Directorate of Agricultural Economics aims to provide the Cost Calculation Committee with a weighted per-hectare cost that takes account of the various natural conditions and production techniques encountered in producing areas throughout Syria. Thus, for example, its estimates of irrigation costs embody an averaging of the costs of the different irrigation methods and intensities found in Syria's varying agro-climatic zones. Since accurate up-to-date regionally-based survey data are not available systematically for this exercise, it relies principally on averaging the per-hectare costs generated by a detailed set of models first developed by MAAR in 1994 with technical assistance from FAO/UNESCWA.[12] These models refer to agro-ecological zones and embody a detailed analysis of costs into quantities and prices. Over time, the Directorate has adapted these models as required to reflect changes in production methods, such as the adoption of a new planting technique, and to take account of changes in input costs. To arrive at mean national costs for each crop, the Directorate combines models for agro-ecological zones, for rainfed and irrigated land, and for particular types of irrigation, by weighting unit costs on the basis of the planted area estimated to be characterised by each model.

The Directorate summarises the mean per-hectare cost data into ten agricultural operations categories and six production requirement categories and then sums these to give a basic per-hectare cost. To obtain a figure of total per-hectare costs, interest is added, calculated on costs at a rate of 4.5% per annum, and 5% is added for incidental expenses. Finally, an amount is added for land rent that makes rent equal to 15% of total cost inclusive of rent.

[12] These models are available in the form of a handbook: *National Farm Data Handbook of Syrian Agriculture*, E/ESCWA/AGR/1994/8, United nations, New York, 1995.

2.3.4 Assessment

Next to the exchange rate of the Syrian Pound and the base interest rate, the producer prices for major agricultural commodities are probably the most important variables in the Syrian economy. They affect a wide range of other key variables, including:

- the incomes of farm families and therefore their welfare and their access to basic needs;
- relative household incomes in rural and urban areas and therefore the rate of rural-urban migration;
- the distribution of *per caput* incomes within Syria;
- the profitability of farming and agricultural investment;
- the relative profitability of producing crops and therefore the pattern of land use; and
- the extent to which planned crop area and production targets are met.

The average national unit cost of production gives little indication of how a particular price influences these variables in any particular year. This is because unit costs of production vary enormously between governorates, between regions within governorates, between villages and between farmers within a particular village. Moreover, for each farmer, unit costs vary from year to year, especially on rainfed land, principally as a result of weather-induced variation in yield per hectare.

Efforts to use pricing to meet objectives relating to welfare, income distribution and, agricultural investment must take account of how costs vary between farm families and how they change from year to year. Efforts to use pricing to meet objectives relating to resource use must take account of how the relative unit costs of producing different commodities vary between farms and between years.

Thus, to come to a well-informed judgement on an appropriate level of price, it is necessary to employ information on variability in unit cost both over space and over time. Thus, the present system of seeking to arrive at and base decisions on a single average unit cost of production is inadequate.

There is no single ideal model that can be employed for price setting. Given the large number of functions that prices play, any attempt to set prices is necessarily highly problematic and contentious. There is need for the Government to develop an appropriate, practical data set and decision rules that are suitable for Syria and that are able to adjust to progressive market liberalisation. The profile of a technical assistance project to support such an effort is appended to this paper (Project Profile 1).

3. THE STRUCTURE OF THE COMMODITY CHAINS FOR STRATEGIC CROPS

Each strategic crop has its own peculiar marketing and processing system. These systems reflect, *inter alia*:

- the crop's physical characteristics at each stage of processing (such as bulkiness and storability);
- its processing characteristics (particularly the extent of economies of scale);
- whether it is principally a food or non-food commodity;
- the importance of the commodity to the economy and to the welfare of the population; and
- the extent to which Syria is self-sufficient.

This section describes and reviews the commodity chains for each of the strategic crops. It focuses principally on processing and marketing, and highlights areas of government intervention and control. The coverage excludes input supply, since this is being covered by a separate policy paper currently under preparation.

3.1 WHEAT

3.1.1 Trends in Production

Syria produces hard durum wheat and soft wheat on irrigated and rainfed land during the winter season. Most rainfed wheat comprises hard varieties. Hard durum wheat reportedly comprises roughly 60% of total production and soft wheat 40%. Most irrigated production employs flood irrigation. Wheat is the dominant irrigated crop in Syria, accounting currently for roughly 52% of all irrigated land, 58% of the irrigated land planted to annual crops, and 70% of the irrigated land planted to the strategic crops (see Table 1.1). The national area of irrigated wheat increased in every year from 1987/88 to 1997/98, rising over this period from 229,000 ha to 690,000 ha. The increase in irrigated area has principally been the result of expansion in the area of land supplied with water from dams. By far the largest increase in area has been in Al Hassake Governorate. Over the past two years there has been a small decrease in the irrigated wheat area due to water shortages caused by drought.

Unlike irrigated wheat, there has been no obvious trend in the area of rainfed wheat over the past 15 years. This has in most years been marginally above or below one million ha, depending on rainfall conditions.

Rainfed wheat yields tend to be highly unstable, with the national average ranging from less than 0.5 tons per ha in a drought year to over 1.7 tons per ha in a year of good rainfall. By comparison, irrigated yields are relatively stable, with the national average ranging from some 3.0 tons to 4.0 tons per ha. Trends in rainfed per-hectare yields are difficult to identify due to the instability in annual production. The 1990s have seen a small general improvement in irrigated wheat yields over the levels recorded in the 1980s, although annual yields since 1996 have fallen short of the 3.9-4.0 ton per ha levels recorded in 1992, 1993 and 1995.
In recent years, total national wheat production has ranged from a record of 4.18 million tons in 1994/95 to 2.68 million tons in the drought-affected 1999/2000 crop year.

In addition to increasing production capacity, the expansion in irrigated wheat area has had the following effects:

- it has increased mean national per-hectare wheat yields;
- it has increased the relative importance of wheat production in the North and East of the country; Al Hassake is now by far the most important wheat producing governorate, accounting for over 40% of national output;
- it has reduced the susceptibility of national wheat production to drought;
- it has changed the structure of national production costs and the mean national cost of production; and
- it has probably increased the proportion of Syria's total wheat land that is planted to soft wheat, reducing the need to import soft wheat for blending.

In 1999/2000, the drought conditions and the resulting low output from rainfed land resulted in about 80 percent of total national production deriving from irrigated land.

3.1.2 Production, Consumption and External Trade

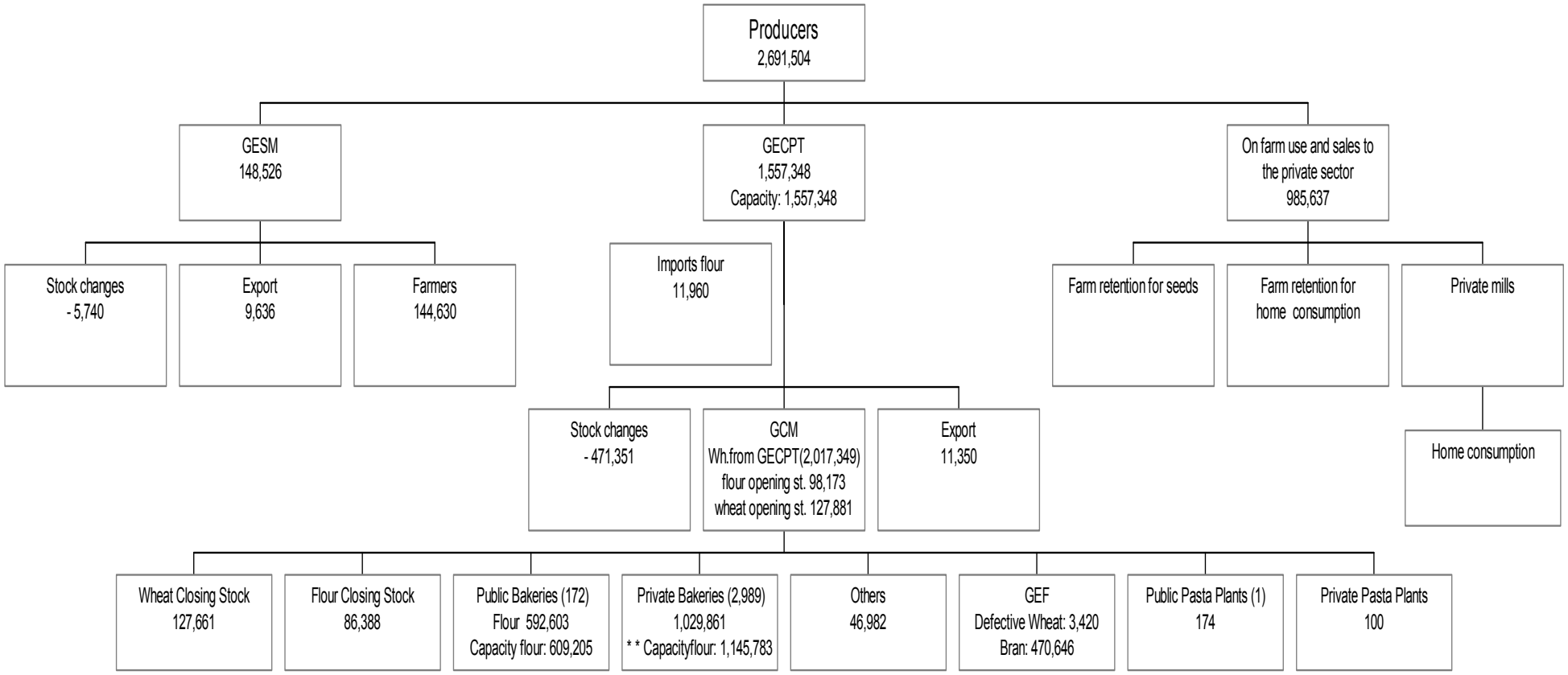
Wheat is Syria's major staple food commodity, consumed mostly in the form of bread. Due to the national security situation, a major objective of the Government is to ensure that Syria is self sufficient in wheat. Since 1994, the last year of major wheat imports, this has been achieved by a combination of (a) the accumulation of national strategic stocks and (b) the planting of sufficient land to wheat to ensure that national production is approximately sufficient to meet domestic needs, even in a drought year.

National annual production, domestic utilisation and trade in wheat and wheat flour are shown for each year from 1989 to 1999 in Table 3.1, which contains basic data for the wheat sub-sector. Syria imported wheat and wheat flour in large quantities until 1994, after which the growth in irrigated production and a run of good growing years resulted in the country becoming a net wheat exporter. Severe drought in 1999, eliminated this surplus and led to a small deficit of around 330,000 tons that was met from national reserves. Production in 2000 was also drought-affected. Production was lower than in any year since 1991 and again fell short of the national requirement. The 2.68 million tons produced was some 590,000 tons short of the 3.27 million tons estimated as necessary to meet human demand (3.02 million tons) and the demand for seed (250,000 tons). This shortfall will again be made good through the draw-down of domestic stocks.

3.1.3 Marketing and Processing Chains

The structure of wheat marketing and processing will be seen from the flow chart, overleaf. The main marketing organisation is the General Establishment for the Cereal Processing and Trade (GECPT), which is responsible for the public marketing of wheat and also of barley, lentils and chickpeas. The GECPT is an establishment of the Ministry of Supply and Internal trade (MSIT) and is financed through the MSIT's budget. Two state-owned companies under the GECPT are responsible for milling and for baking: the General Company for Mills (GCM) and the General Company for Baking

Wheat Flow Chart 1999
(Tons)



GECPT : General Establishment for Cereals Processing and Trade
GCM : General Company for Mills
GESM : General Establishment for Seed Multiplication
GEF : General Establishment for Feed

(GCB). These companies are financially independent in terms of accounting, but their annual budgets must be approved by the GECPT, and ultimately by the MSIT. Transfers to cover the companies' losses are made directly to them by the State Treasury.

Public wheat storage is undertaken by the General Company for Silos, Feed Mills and Seed Plants (GESILOS), an establishment of the MSIT.

(a) The assembly market

The movement of wheat and barley in Syria was progressively liberalised during the 1990s. In the case of wheat, farmers were required to sell to the GECPT until the mid-1990s. Control was strictly enforced, with even the private movement of grain between adjacent villages being prevented. It still remains technically illegal for farmers to sell wheat to private traders or millers. However, with the establishment of private mills under Investment Law No 10 of 1991, the legal restrictions ceased to be enforced from some four years ago for sales within governorates. To prevent farmers from avoiding credit repayment by selling their grain outside their governorate, the law is still enforced for sales of wheat and wheat flour between governorates.[13] This, in effect, means that wheat milled within the private-sector must be milled and consumed in the governorate in which it is produced.

Thus, while farmers have the option of selling to either the GECPT or to private buyers, about 70% of all production is currently sold to the GECPT with the remainder being sold to private mills or used for on-farm consumption or the local production of crushed wheat. The technically illegal nature of private trade in wheat means that the Government does not collect data on the breakdown between these uses. **It is recommended** that policy decisions to reduce the degree of public control be reinforced as rapidly as possible by legislation. This will not only serve to make the newly sanctioned activities more transparent but will also eliminate the uncertainty and additional costs that accompany technically illegal activities.

The GECPT operates 140 collection centres for the purchase of wheat and barley from farmers. Farmers who are members of a cooperative can either deliver to their cooperative which then delivers to the GECEPT or they can deliver directly to their local GECPT rural collection centre. Membership of a cooperative means that farmers can (a) obtain credit through the cooperative without making a separate, time consuming application through the agricultural bank (b) receive reimbursement from the GECEPT for the cost of transport from the farm to the GECEPT buying centre, and (c) receive a small delivery premium. The latter is reportedly payable even if the farmer delivers directly to a buying centre. Half of this premium goes to the farmer, half to the Peasants Federation. Because of these benefits, some 60 percent of wheat delivered is paid for as if it had derived from a cooperative. However, in practice all but very small-scale farmers normally deliver directly to a buying centre.

(b) Grades and Standards

The GECPT has a basic laboratory at each buying centre at which it tests for foreign matter and specific gravity. Since the weather immediately before and during the harvest season is hot and dry, there is normally no need for the GECPT to test for moisture content. Grain normally contains only from 7 to 10% moisture on delivery. The GECPT screens all grain as it enters its silos and stores it separately on the basis of variety, grade and year of production.

The GECPT classifies deliveries according to the following grades and standards:

[13] In practice unknown amounts of wheat and wheat flour are reportedly moved privately across governorate borders.

GECPT WHEAT CLASSIFICATION

HARD WHEAT

Category	Foreign matter (%)	Defects (%)	Total (%)	Specific weight KG./H.L
First	1	3	4	78
Second	2	5	7	75
Third	3	7	10	73
Fourth	15	20	20	66

SOFT WHEAT

Category	Foreign matter (%)	Defects (%)	Total (%)	Specific weight KG./H.L
First	1	3	4	76
Second	2	5	7	74
Third	3	7	10	72
Fourth	15	20	20	65

Similar characteristics are reportedly used for trade within the private sector, although most quality assessment is by eye only.

(iii) Storage

In Syria's dry climate, wheat and barley can be stored for 3-5 years without marked deterioration. National grain storage capacity is suitable for both wheat and barley, but is used mainly for wheat. Total capacity in the public sector is as follows:

Silos	1,700,000 tons
Metal bins	650,000 tons
Warehouses	1,000,000 tons

The principal public storage organisation for grains is the GESILOS. This has silos on 14 separate sites located principally in the north and north east of Syria but also in major consuming areas and at the port of Tartous. These silos range up to a maximum capacity of 140,000 tons. The silo at Tartous is 90,000 tons. The GESILOS also prepares seed for the General Establishment for Seed Multiplication (GESM) at eleven of its complexes and undertakes feed milling on commission for the General Establishment for Feed (GEF) at two feed mills located at Hama and Aleppo adjacent to its silos (see Section 3.2 on barley, below).

In addition, the GECPT itself and the GCM also own grain stores. There is also a silo of 25,000 tons at Latakia owned by the port authority. The port silos normally hold grain in transit for short periods only. The GCM has small stores at all its mills and 50,000-ton silos at its five recently established mills. The GECPT's capacity includes both warehouses and small metal silos (Cyprus bins). The GESILOS recently contracted an Iranian company to construct a further 10 silos each with a capacity of 100,000 tons.

In addition to this covered storage, large amounts of grain are also stored in the open in bags. Open air storage without any form of protection from the weather is feasible in the months immediately after the harvest because rainfall at this time is extremely rare. Storage capacity in the private sector is thought to be limited to the small stores of private mills. No consolidated information is available on private-sector storage.

Grain is cleaned prior to storage to reduce the foreign matter content to 10% for domestic sale and to 4% for export. Storage losses are low due to the low moisture content of harvested grain. Indeed, stored grain may take on moisture during the winter months. Total losses in storage are estimated at 0.5%, of which 0.2% is lost during loading and offloading. The extent of losses is currently the subject of a joint study by the GECPT and the GCM.

(d) Transport

Farmers deliver some 70% of their wheat to the GECPT in bulk in a range of vehicles, including pickups and tractors and trailers. The GECPT then delivers by truck in bulk to the GESILOS.

All deliveries from the GESILOS to the mills were in bulk until the mid 1990s, when the rapid expansion in output meant that there was insufficient bulk storage capacity. It is planned to revert entirely to bulk once the new GECPT silos are commissioned. Where there is a mill adjacent to a silo, grain is transferred by conveyor. Most of the remaining transport to mills is by truck, but the GECPT is planning to increase the proportion that goes by rail.

(e) Flour Milling

The GCM has 32 mills with individual capacities of 100-500 tons of wheat per day. Together, these mills have a capacity of 6,000 tons per day, equivalent to approximately 1.8 million tons per year. Most of these mills date from the 1960s, but five new mills were established in 1997/98, each with a capacity of 500 tons per day.

There are no readily available data on the number of private mills or their total capacity. They are located mainly in the major urban centres, principally Aleppo, Homs, Hama and Idleb. All have been constructed and fitted with new machinery since 1991 under the provision of Investment law No. 10 of 1991. They are owned by individuals or partnerships. There are no large private milling groups.

Mill efficiency varies with age. The most recently established GCM mills have computerised German machinery that is technically more efficient than the mostly Turkish and Czech machinery installed in the private mills.

Only three types of flour are produced in Syria, 'standard' and 'high-quality' flour mainly used for bread-making, and flour for pasta. The production of flour for pasta is very small. The quality of standard flour is specified by the Government. Both standard and high-quality flour normally comprises some 60% hard and 40% soft wheat. These proportions reflect availability from domestic production and are not ideal for bread flour, which should have approximately 60% soft wheat. A committee is currently considering changing the proportions to 50-50. GCM milling extraction rates for these flour types are as follows:

Flour type	Flour	Bran	Losses
Standard flour	78%	20%	2%
High-quality flour	72%	26%	2%
Pasta flour	55-65%	33-43%	2%

The GCM's mills produce only standard flour, other than for very small amounts of high quality flour produced to meet special contracts. GCM's mills have insufficient capacity to mill enough standard flour to meet the national demand of some 2.1 million tons. GCM therefore contracts private mills to process additional amounts on its behalf. Mills that are so contracted are not permitted to also mill on their own account. This is to prevent the switching of low-quality wheat acquired privately with wheat supplied by the GCM. Until 1999, a government committee set the processing fee, selected the private mills that would participate and decided upon the quantity that each would process. In 2000, the GCM switched to a system of tendering, under which it selects

the lowest bid and then negotiates a price with the other tender-winning mills that is equal to that of the lowest tender. This has led to a reduction in the per-ton fee from SP540 per ton to a rate in 2000 of SP500 per ton. In the year 2000, the GCM expects to mill some 1.72 million tons of wheat in its own mills and a further 385,000 in 13 contracted mills located in Aleppo, Homs and Hama. The GCM reports that the unit cost of processing in its modern mills is below that of the private mills but that costs in some of its older mills are higher. All GCM flour, including that milled on contract, is used for the production of standard bread. All GCM bran is sold to the General Establishment for Feed (GEF), other than that milled on contract, which is sold to private feed millers or directly to farmers.

Other than for milling for the GCM on contract, the activities of the private mills are in effect restricted to the technically illegal milling of wheat acquired directly from farmers or from private traders.[14] The private mills produce high quality flour only, since they would lose money if they attempted to compete in the heavily subsidised market for standard flour. This high-quality flour is used for speciality bread, pastries and pasta. The technically illegal nature of the activities of private mills means that the Government does not attempt to regulate the prices at which they buy wheat and sell flour and bran. For the same reason, it does not systematically collected data on them. Although greatly disadvantaged by having to operate in a very small market, the private mills have the advantage that virtually all the wheat that they use has invariably been harvested in the past year. This contrasts with the GCM which, because of the need to recycle public stocks on a first-in, first-out basis, is forced to use stored wheat which can be as much as three years old. Such wheat may need re-cleaning or drying, especially if it has been stored incorrectly.

Discussions with GCM and private mill staff indicate that there is currently a high level of unutilised capacity within the private milling sector, with even the smaller mills mostly operating at below 50 percent of capacity. The larger privately owned mills are heavily dependent on milling on contract for the GCM. Since the market for high-quality flour is small, those that fail to win contracts are reportedly able to operate at best at only a fraction of rated capacity and must either operate at a loss or close. As a result, competition to obtain GCM contracts is reportedly fierce.

The five new mills that GCM established in 1997/98 increased its annual capacity by over 600,000 tons and was a major contributor to the present national over capacity and to the plight of the private milling sector. It is important that, as the national demand for wheat flour expands, the additional wheat required be processed in the currently under-employed private mills rather than in further costly additions to public milling capacity. This will both save national resources being wasted on the duplication of capacity and will contribute to the development of a flourishing private milling sector in readiness for the eventual privatisation of all wheat milling. **It is recommended** that the MSIT undertake a survey of the private milling sector aimed at (a) determining its structure and capacity, (b) estimating the level of currently unutilised capacity and (c) projecting the number of years before additional wheat milling capacity will be required in Syria.

Since the start of 2000, private millers have been permitted to import wheat for milling and re-export. To ensure that all imports are re-exported, the procedure is monitored by committees in each governorate that comprise representatives of the GECPT, the GCM, the MSIT and representatives of the milling firm.

[14] Private mills are permitted to buy wheat from the GECPT but do not do so because they can acquire grain more cheaply in the informal market. This is principally because of the very high GECPT margin, some 70% of which comprises interest charges (see the price analysis in Section 4).

(f) Bakeries

Bakeries making standard bread obtain their wheat flour at subsidised prices exclusively from the GCM, which delivers its flour by truck direct to bakeries. Bakeries making high-quality bread buy from the only available source: private mills.

Private bakeries account for approximately two-thirds of bread production in Syria. The remainder is accounted for by public bakeries operated by the General Company for Bakeries (GCB), a state company under the GECPT. Syria's bakeries produce 114-119kg of standard bread from 100kg of standard flour, with the lower production weight characterising the public bakeries and the higher weight the private bakeries. In 1999, Syria's bakeries utilised some 1.6 million tons of standard flour and produced approximately 1.85 million tons of standard bread.

By law, bread may be produced from standard flour or high-quality flour but not from a mixture of the two. The public bakeries only produce standard bread. Private bakeries are permitted to produce either standard bread or high quality bread, but not both. This restriction is to prevent standard subsidised flour from being used in high-quality bread. Due to the restrictions on the private inter-governorate movement of flour, private bakeries that produce high-quality bread depend principally on wheat flour produced within their governorate. Both the private and public bakeries acquire their standard wheat flour from the GCM at the price of SP7,200 per ton. This price was set in 1994, when it was raised from SP4,000 per ton.

The GCB has 175 bakeries with a total of 257 lines. Some 61 of these bakeries are privately managed, all single line. There are some 3,000 private bakeries, mostly small-scale. The public bakeries normally operate two shifts per day and the private bakeries either one or two shifts.

At current prices, private bakeries are able to make profits, but the GCB has been losing money since 1995:

GCB ANNUAL LOSSES (SP million)

1995	1996	1997	1998	1999
29	11	29	39	36

Source: GCB.

The main reason for this difference is gross over-staffing within GCB bakeries. These employ almost four times as much labour per unit of output as do the private bakeries. As with other state companies, the annual losses of the GCB are covered by government transfers.

(g) Retail Sale of Bread and Flour

The GCB sells directly to consumers from its bakeries, through GCB outlets, and through private food shops. The latter represent its most important outlet due to their proximity to consumers.

Both the private and public bakeries sell standard bread ex-bakery at the fixed official price of SP8 per kg. These prices were last changed in 1994, when they were raised from SP5 per kg.

The GCM has its own equipment for packing flour for retail sale, but this is not used because it was found that packed flour deteriorated too quickly. Instead millers supply to retail outlets in 50kg bags and shopkeepers then repack into smaller bags for retail sale. Reportedly, the only flour that is now for sale through retail outlets is high quality flour supplied by private mills. However, it is often possible for consumers to obtain small amounts of standard flour or dough directly from bakeries.

(h) Pricing and Subsidisation

The Government sets prices throughout the marketing chain for wheat, flour and bread. In addition to prices for transactions between public organisations and the private sector, the Government also sets prices for transactions between government organisations (e.g. the sale of wheat from the GECPT to the GCM) and for transactions within the private sector (e.g. the sale of bread from private bakeries to retailers).

The setting of producer prices is the responsibility of the SAC. All other prices are set by the MSIT, other than the prices at which bread is sold through retail outlets. These are set by each local authority at premiums above the official prices at which the bakers sell from their bakeries or own outlets. Currently, the controlled retail price for bread is some SP0.5 per kg more than the ex-bakery price of SP8.00 per kg. Within the main price chain from the farmer through to the ex-bakery sale of standard bread, all prices are pan-territorial. This practice tends to be less distorting to resource allocation in Syria than in countries with less developed transport systems. The distortions are likely to be very small compared with those embodied in the pan-territorial levels themselves (see Section 4).

In addition to standard bread, the retail prices of high quality flour and bread are also controlled. Since the into and ex-mill prices of the private mills that produce high quality flour are not controlled, these retail prices are set periodically by local authorities, taking account of estimated costs of production and, especially, the local market price of high quality flour.

The prices of standard bread and flour have been subsidised for many years.[15] The prices for standard bread and flour were last raised in, respectively, 1994 and 1997. The subsidy is born principally by the GCM which sells standard flour to the GCB at a heavily subsidised official price that is insufficient to cover even its wheat acquisition costs. GCM losses are made good by regular transfers from the government's Price Stabilisation Fund (PSF) which finances consumer subsidies on wheat, sugar and rice. The PFS has two sources of revenue: (a) surcharges earmarked specifically for it on a number of goods, such as TV sets, carpets and refrigerators; and (b) direct budgetary transfers. Typically these revenue sources are insufficient to cover the full losses on wheat, sugar and rice and the PSF is forced to borrow from the state-run Commercial Bank of Syria. These loans are, in turn, refinanced by the Central Bank.

There are also other subsidies and cross subsidies in the processing and marketing chain. The GESILOS margin for storage and the milling margin of the GCM are insufficient to cover their full costs, requiring annual transfers from the Treasury. In the case of the GESILOS, its storage fees have not been increased since 1994 and now reportedly cover only about 40% of the cost of all its operations (including seed preparation and feed milling). The GESILOS has made a submission to the SAC that shows the extent of its losses and which requests that the full cost of its operations be covered, with its deficits on wheat, seed and feed being covered by explicit subsidies. [16]

The prices of high-quality flour and bread are not explicitly subsidised, with the result that they are over twice the price of standard flour and bread. High quality flour is currently selling at SP15,000-18,000 per ton into-bakery, compared with the into-bakery price of standard flour of SP7,200.

[15] Note that the net subsidisation of bread is relatively small compared with the open-market price of bread that would exist if it were made from untaxed imported wheat. The present large subsidy in the price structure serves principally to offset the very high price paid to farmers. This is discussed in detail in the Section 5.

[16] The extent to which GESILOS's grain storage operations are not covered by its fees are reportedly identified in its submission, which, because it was still under review, was not available for use in this study.

3.2 BARLEY

3.2.1 Trends in Production

Over 99% of all barley is produced on rainfed land. Barley, which requires less rainfall than wheat, is planted mainly in agro-climatic zones 3 and 4. The government banned the planting of barley in zone 5 in 1995. National per-hectare barley yields are roughly half those of rainfed wheat, planted in zones 1 and 2.

Both black and white barley are produced in Syria, with the production of black (concentrated in the north of Syria) exceeding that of white (concentrated in the coastal areas and the south). Black is preferred by livestock farmers, other than in the south.

The area planted to barley fell progressively during the first half of the 1990s, from 2.89 million hectares in 1988/89 to 1.96 million hectares in 1994/95 (See table 3.2). There was a further sharp fall to 1.55 million hectares in 1996, after the banning of the planting of barley in zone 5 in 1996. After 1996 the national barley areas stabilised at approximately 1.5 million ha, before falling further to 1.33 million in the drought-affected 1999/2000 crop year. This was despite a planned growth in national barley area contained in the 8th, 1996-2000 plan of 1% per annum (from the 1994/95 base), that would have resulted in the planned area rising to 2.06 million hectares in 1999/2000 (see Annex 1). Despite the reductions in barley hectarage, it should be noted that the rainfed area planted to barley still exceeds the approximately 1.0 million hectares that are currently planted to wheat.

The reliance of barley production on rainfall results in annual yields and production varying sharply from year-to-year. Barley output has been hit particularly hard by the recent drought. Yields have fallen in each year since the record yield of 1.07 tons per hectare was reached in 1996. By 1999 the yield was only 301kg per ha. In 2000 it fell further to only 98kg per ha.

3.2.2 Domestic Consumption and Usage

(a) The supply-demand balance

Barley is used in Syria principally for animal feed. Until 1993, depending on the level and distribution of rainfall, Syria was either self-sufficient in barley or was forced to import to meet domestic demand. Official Syrian trade statistics show that a total of 290,000 tons were imported during 1991 and 1992. A series of good harvests from 1993 to 1996, culminating in a record mean national yield of 1.07 tons per hectare in 1996, led to an export surplus over and above the domestic demand for feed and seed. Syria exported a total of almost 2 million tons of barley between 1993 and

1997, with annual exports peaking at 594,000 tons in 1995. The vast majority of these exports went to Jordan.

The impact of the recent severe drought on barley yields has forced Syria to revert to importation. In 1999, 723,800 tons of barley were imported, all of it by private traders. The main sources of this barley (in order of importance) were: France, Ukraine, Austria, Turkey, the United Kingdom, Germany and Spain. The remaining difference between the domestic demand for barley and its availability was met by a draw-down of national stocks. With continued drought and low production in 1999/2000, the Government has continued to rely solely on the private importation of barley to meet the deficit. The intention is to continue this practice in the 2000/01 marketing year. Private imports in the year to 30th September 2000 were 436,000 tons and total imports for the full year to 31st December 2000 are expected to amount to between 800,000 and one million tons.

(b) Disposal by farmers

The structure of the domestic barley market in 1999 is demonstrated diagrammatically in the flow chart, overleaf. The domestic market for barley was partially liberalised in the mid-1990s with the onset of the export surplus. Farmers now have a range of options for the disposal of their barley. They can retain it on farm for their own livestock, they can sell to neighbouring farmers, traders or private feed millers, or they can sell to the GECPT, which continues to act as a buyer of last resort at an official pan-territorial into-store price set by the SAC. This price was last changed in 1996, when it was set at SP7,500 per ton. The means of acquisition by the GECPT is identical to that described above for wheat. The GECPT uses the following grades and standards:

GECPT BARLEY CLASSIFICATION

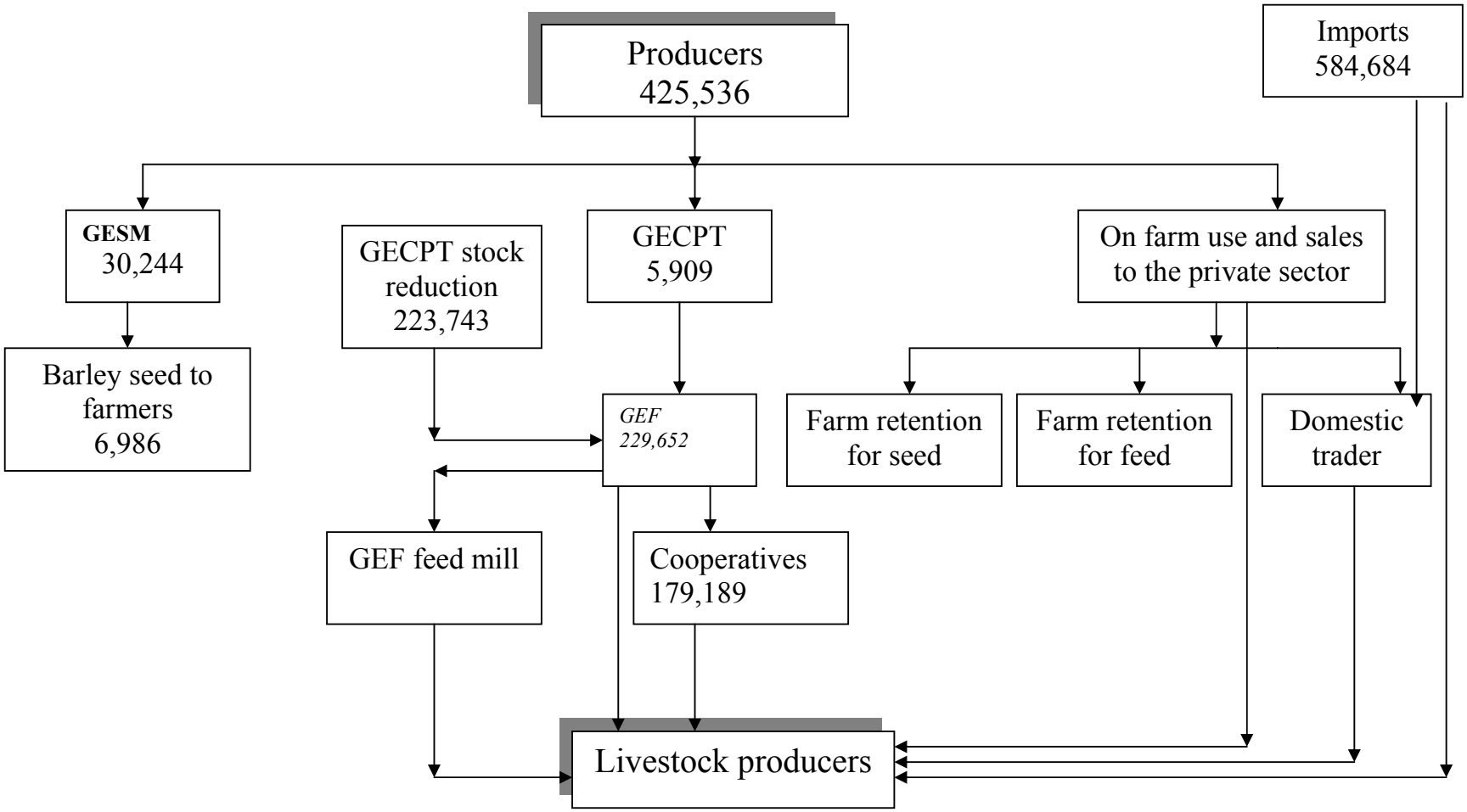
Category	Max. defects (%)	Max. foreign matter + defects (%)	Specific weight (kg/hl)
First	2	6	61
Second	3	8	59
Third	4	10	57
Fourth	15	20	55

In drought years, much of the barley produced is retained on farm, with the majority of the remainder being sold to private-sector buyers. In 1999, the GECPT purchased only 5,909 tons of the drought-reduced 426,000 ton national crop. In 2000, it purchased only 340 tons of the very small 212,000 ton crop. There are no hard data on farmers' usage of their barley production, but it is thought that, in the current year, the majority has been retained on the farm for stock feed, with all but a small proportion of the remainder being sold to private traders and feed millers.

(c) The General Establishment for Feed

The GECPT reportedly keeps a strategic stock of barley for use at times of shortage. All barley held by the GECPT is sold to the General Establishment for Feed (GEF). The GEF, in turn, only acquires barley from the GECPT. The strategic reserve is in effect used to stabilise the national availability of barley, with the quantity acquired and sold annually by the GEF being inversely related annual barley production. In most years the majority of the barley acquired by the GEF is sold directly to livestock producers, some 90% through cooperatives and 10% directly to farmers. In past years, when world prices, and therefore the demand for subsidised (see below) domestic barley, were high, the GEF gave priority to registered farmers, who qualified for supplies pro rata to their farm area and other indicators of livestock capacity. In recent years, the GEF has not regulated the quantities of barley

Barley flow chart 1999 (Tons)



GESM : General Establishment for Seed Multiplication
GECPT: General Establishment for Cereals Processing and Trade
GEF : General Establishment for Feed
Note No hard data available for on farm use and sales to the private sector .

that can be bought by producers, although it continues to regulate other feeds. Sales are not made to traders on the grounds that traders may sell to farmers at exploitative prices.

GENERAL ESTABLISHMENT FOR FEED: PURCHASES AND SALES OF BARLEY

	1996	1997	1998	1999	2000 (planned)
Bought from the GECPT (tons)	65,000	104,000	53,000	232,000	186,000
Direct sale to livestock producers (tons)	9,000	53,000	60,000	199,000	182,000
Delivered to own feed mills (tons)	33,000	48,000	37,000	56,000	11,000*
Proportion of barley in GEF-mill feed		18%	12%	17.5%	7.5%

Source: GEF. *To 30th September 2000.

Both the GEF purchase price from the GECPT and the GEF ex-store selling price are set by the MSIT. These prices are shown in Table 3.2, above. They refer to bagged barley ex-GEF warehouses in consuming areas. With the aim of improving the viability of livestock farming, the GEF's selling price was set at below its buying price in 1994. GEF's losses on sales resulting from this pricing policy are made good through a combination of transfers from Government and cross subsidisation from its profitable activities, including feed processing and maize drying.

The GEF has three feed mills. These are old and are in the process of rehabilitation. It is planning to construct a further two large mills. It supplies barley to its mills at the cost of acquisition from the GECPT rather than at the subsidised price at which it sells to farmers. It varies the quantity of barley included in its feed mixes depending on the unit cost of barley relative to that of substitutes, such as defective flour (see the final row of the table, above). The GEF also mills feed using the two large mills of the GESILOS. In the past, the GEF also supplemented its feed milling output by contracting private feed millers for a fee. It ceased doing this in 1999, and is now instead operating its own three mills at full capacity.

There are 48 licensed private feed mills, of which 20 produce premixes for dairy cattle. Typically, despite the fact that they tend to be more cost-efficient than the mills of the GEF, they mostly work at well below capacity since they cannot easily compete with the GEF. This is for two main reasons. The first is the current GEF policy of subsidising its sales of barley and other feed commodities. This results in farmers preferring to buy barley and mix their own feed rather than use premixed feed. The second reason is that the private mills are in effect denied access to all but a small proportion of the byproducts of public wheat milling, since the GCM supplies it byproducts exclusively to the GEF. This limits the access of the private feed mills to the relatively small output of the private wheat milling sector and of mills working on contract for the GCM. In addition, to these reasons for low capacity operation, GEF staff report that farmers prefer feed manufactured by the GEF due to its more consistent and reliable quality.

It is important that farmers are served by an efficient and competitive feed industry that is able to operate efficiently at full capacity. However, the discrimination against private feed mills means that farmers are in effect encouraged to use their own crude feed concoctions at the expense of specialised and efficient feed mixes. Therefore **it is recommended** that (a) private feed mills be allowed to tender for GCM bran and that (b) the Government remove the price discrimination that favours the direct use by farmers of barley and other feed commodities rather than properly formulated feed prepared in feed mills.

The prices of feed mill products are subject to price control by the MSIT, with prices being based on estimated costs of production plus a percentage profit margin.

3.2.3 Exportation and Importation

Until the emergence of surplus barley production in the first half of the 1990s, the GECPT retained a complete monopoly of the marketing of domestic barley. From 1993, as a strong export surplus emerged, private traders were for the first time permitted to acquire grain from farmers and to export. Over 500,000 tons were exported in 1995 and 1996 and nearly 300,000 tons in 1997. All these exports were reportedly undertaken by the GECPT, since the official producer price was too high to allow traders to buy from farmers and to export at a profit.

Barley has not been imported publicly since the GEF last imported in 1983-85.[17] With the onset of drought conditions in the 1998/99-production year, the Government took the decision to allow and indeed encourage private traders to again import barley.[18] In 1999, the import tax on barley was cut from SP3,500 per ton to a nominal SP5 per ton. Barley imports now bear only a set of minor government levies that amount to about 1% of CIF value. Private traders responded to the cut in taxation by importing 723,800 tons of barley in 1999 and are expected to import from 800,000 to one million tons in 2000. A total of about ten firms undertook this importation, with the bulk of the imports being accounted for by five firms.

Importers normally acquire their barley through one of the main international trading houses, that are usually able to offer a choice of qualities and origins. Imports are almost entirely of grade 2 white barley since it is difficult to obtain supplies that meet the stringent 12% moisture maximum specified for Grade 1.

Shipping costs from Western Europe amount to some US$21-23 per ton and from Black Sea ports to US$18-19 per ton. Shipping time from these two origins is, respectively, 12 and 5 days. CIF import prices in 1999 averaged about US$102 per ton, compared with current (October 2000) prices of US$115 to US$117 per ton.

The quantities of licensed and actual imports are monitored closely by the GEF, which is concerned to ensure that the total domestic supply of barley is adequate. Importers must acquire an import permit from the Ministry of Economics and Foreign Trade. This is subject to the importer obtaining clearance from the MAAR, which verifies the suitability of the consignment for domestic feed use. The quality standards used for this are as follows:

GRADES AND STANDARDS FOR BARLEY IMPORTS

	First Grade	Second Grade
Max. moisture content	12%	15%
Test weight	63kg/hl	58kg/hl
Foreign matter plus damaged grain	5%	8%
Other grains	10%	10%
Live insects	Zero	zero

In common with imports of maize and other types of grain, if a consignment of barley is rejected, the importer must re-export it.[19] This is extremely expensive. The requirement to re-ship increases the risk faced by importers, the profit margin that they will consequently seek on each

[17] The imports that took place in 1991 and 1992 were reportedly by the private sector.
[18] Note that the gap between domestic requirements and production widens during periods of drought not only because production falls but also because the quality of grazing land deteriorates and stock require greater quantities of feed.
[19] Until the present year, the consignment not only had to be re-exported, but exported back to the country of origin. This latter requirement has now been dropped. Importers may re-export the rejected grain to any destination other than Lebanon. Lebanon is excluded because of the fear that the grain could be smuggled back across the Syrian border.

shipment and, ultimately, the market price of barley to the domestic livestock industry. Re-shipment also disrupts the flow of imports and the supply of barley to the domestic market, leading to price instability and to domestic prices that rise in the short term to above import parity. This was the situation in October 2000, when domestic prices were above levels justifiable on the basis of international purchase costs following the rejection of seven separate cargoes, reportedly for having too high a percentage of foreign matter and damaged grain. **It is recommended** that the present requirement to re-ship rejected grain be dropped and that importers be allowed to correct deficiencies through fumigation, drying or cleaning, and be permitted to then re-submit the grain to the Government for re-testing.

Importers currently must insure each consignment through the Government. They report that this, together with slow customs clearance, is time-consuming and leads to delays and to heavy port demurrage charges.

(d) Domestic marketing of imports

Since the GEF does not purchase imported barley and private feed mills utilise little barley, most imported barley is consequently sold 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. Typically they sell to traders at the port of Latakia 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, although a second trader may occasionally become involved. Most barley is trans-shipped through Aleppo, with Al Hassake being the most important consuming governorate. Farmers consider imported white barley to be inferior to Syrian produced barley. It consequently sells in the domestic market at a discount of US$5-8 per ton below the price of Syrian barley.

The market tends to be segmented, with the GEF selling principally to licensed farmers on the basis of their registered capacity, 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.

Although imported barley is traded entirely within the private sector, transactions are subject to price control. As with other such commodities, prices are set by a special committee in the MSIT on the basis of estimated cost plus a profit margin. In the case of barley, this margin is set at 5%. Enforcement is attempted on a sample basis. The aim is to prevent monopoly and excessive profit making.

3.3 LENTILS AND CHICKPEAS

3.3.1 Institutions

Lentils and chickpeas are marketed under two quite distinct public and private systems, the relative importance of which varies from year-to-year depending on the relationship between the official producer price and the export parity producer price (see below).

The public system is institutionally must less complex than the systems for wheat and barley because the GECPT undertakes both processing and storage at its own facilities. Indeed, this establishment undertakes all activities, from the point of purchase from the farmer through to the point at which it exports or sells the processed commodities to the GEC. The GEC then simply sells to consumers through its own outlets. The private system normally involves one or more traders between the farmer and the final consumer or export buyer, and also a number of private firms that process for a fee. The public and private systems tend to be separate throughout, with no private operators being involved in the public system and no public operators being involved in the private system, either as principals or agents.

3.3.2 Production

Lentils and chickpeas are winter crops that compete principally with wheat. All but a small proportion of the two crops are currently grown on rainfed land. In 1998/99, lentils and chickpeas accounted for, respectively, 5.5 and 1.9 percent of the total rainfed land that was planted to annual crops (see Table 1.1). The majority of production is in agro-climatic zones 1 and 2, but there is also some planting in zone 3.

After a period of rapid expansion, Al Hassake Governorate accounted in 1998/99 for about 40 percent of the national area planted to lentils. Aleppo Governorate accounted for a further 30 percent; Idleb and Hama were the other main producing governorates. In 1998/99, Aleppo and Idleb Governorates accounted for two thirds of the total area planted to chickpeas. This is in sharp contrast to 1997/98 (when rainfall conditions were better), when some 56 percent of the national chickpea area was in Dar'a and Sweida Governorates.

As with the other strategic crops, most production of lentils and chickpeas is by small-scale farmers on their own land. Unlike wheat - the main crop grown in zones 1 and 2 - harvesting is not mechanised and is relatively labour intensive. The MAAR is investigating the possibility of mechanical harvesting, which it is thought would make production more attractive to farmers.

The annual national area, yield and production of lentils and of chickpeas is presented in Table 3.3. It will be seen that, over the past decade, there has been no clear-cut trend for either lentils or chickpeas in the area planted nationally, principally because the amount of land planted to lentils and chickpeas (and its location) is affected markedly from year to year by rainfall conditions. In the period from 1989 to 1999, the area planted to lentils ranged from a low of 83,000 ha in 1991 to 188,000 ha in 1989. The area planted to chickpeas was at a low of 34,000 ha in 1988/89 and peaked at 108,000 ha in 1997/98. It then fell back to only 51,000 tons in 1998/99, due a large drought-induced fall in Dar'a and Sweida. In recent years, Al Hassake has moved from being the main producing governorate to accounting for only about 3 percent of planted area due to problems with insect infestation.

The predominance of rainfed production means that national yields per hectare are unstable from year-to-year. Lentil yields are particularly susceptible to drought. Mean national yields in drought-

Insert Table 3.3.

affected 1998/99 were only one quarter those achieved in 1997/98, whereas chickpea yields were reduced by 27%. There was a partial recovery in both lentil and chickpea yields in 1999/2000.20

Unstable national per-hectare yields lead to unstable national production. Lentil and chickpea production in 1999 were both less than 35 percent of production in the prior year.

3.3.3 Production, Domestic Consumption and Exports

Syria produces three main types of lentils: red, white flat and white round. Red are the most important. Al Hassake is normally the main domestic surplus area for red lentils and northern Aleppo for white lentils and chickpeas.

Syria normally produces an annual export surplus of both lentils and chickpeas. Annual production and annual exports since 1989 are shown in Table 3.3. Over the 11 years from 1989 to 1999, exports were equivalent to 61 percent of lentil production and to 32 percent of chickpea production.[21]

3.3.4 Grades and Standards and Processing

Lentils

The GECPT classifies lentils supplied to it by farmers into four grades on the basis of grain size and amount of foreign matter:

GCEPT'S GRADING SCHEME FOR ITS PURCHASES OF LENTILS

Grade	Diameter	Maximum foreign matter
1	At least 80% 3.5mm	5%
2	At least 80% 3.5mm	10%
3	At least 80% 3.5mm	15%
4	At least 100% 3mm	20%

Processed lentils are normally classified on the basis of the amount of foreign matter and unhulled grains that they contain. The lowest grade normally traded is 2% foreign matter plus 2% unhulled grains ('2+2'). The domestic market is normally supplied with 2+2 or 1+1. Export buyers may request anything from 0+0 to 2+2, with 2+2 reportedly being the most common. The domestic market tends to be less concerned with quality. The GECPT sells to the GEC at a single price regardless of grade.

[20] Note that this contrasts with barley, which is planted in generally drier areas, the yield of which declined further in 1999/2000.

[21] Since both lentils and chickpeas lose weight during cleaning and processing (lentils) and cleaning (chickpeas), higher percentages of the total crop were exported than indicated by these percentages.

Chickpeas

The GECPT grades its chickpea purchases on the basis of diameter, the percentage of shrunken, discoloured peas, and the percentage of foreign matter. It employs the following grades:

GCEPT'S GRADING SCHEME FOR ITS PURCHASES OF CHICKPEAS

Grade	Diameter	Shrunken discoloured peas less than:	Foreign matter less than:
1	At least 80% 9mm	3%	5%
2	At least 80% 8mm	4%	10%
3	At least 80% 8mm	6%	15%
4	At least 100% 6mm	12%	20%

Chickpeas are sold to export markets after cleaning on the basis of size only, with the larger peas obtaining price premiums. In most years, some 80% of chickpeas fall into the 8mm group. Some 5-6% are over 10mm and fetch substantial price premiums. In the case of the domestic market, there is less concern with size, and the GECPT sells all its chickpeas ungraded at a single price only.

It should be noted that the base producer prices set by the SAC refer to 1st grade for both lentils and chickpeas.

3.3.5 Processing

Some small-scale farmers clean, screen and process on farm using sieves and hand-operated machinery, but the majority of marketed lentils are purchased unprocessed and are cleaned, hulled, split and graded by size in factories using specialised machinery. Lentils may also be waxed. All sales are in bags of 60kg.

The GECPT is able to clean lentils and chickpeas in its grain facilities, but has six specialised lentil processing and splitting plants, two in Al Hassake and one in Aleppo, Idleb, Homs and Damascus. The GCM owns a further such plant in Aleppo. These plants are currently lying idle following a government decision that they should not be rented to the private sector because of the possibility of public and private stocks becoming mixed.

There are some 20 separate privately operated factories in Aleppo that specialise in processing lentils and chickpeas.

There are substantial losses during the processing of lentils. From 5-10 percent of foreign matter is normally removed during initial screening. During processing, husk and powder amounting to some 13 percent is produced, but the proportion can rise to as high as 22 percent for the production of the top 0+0 quality. This byproduct is sold as animal feed. Offsetting the loss in weight is a 3-4 percent weight gain that stems from an increase in moisture content that results from the need to soak lentils for from 6 to 24 hours prior to splitting. This raises moisture from about 8% to 11-12%, leading to a weight gain.

Chickpeas are normally only cleaned and graded. Losses during these procedures normally do not total more than 10%.

3.3.6 Determinants of Public and Private Participation in Marketing

Unlike the other strategic crops, there has always been a significant amount of private trade in lentils and chickpeas, with the GECPT in effect acting as a buyer of last resort. Both the GECPT and private buyers are permitted to export. The proportion of the crop purchased by each of the two sectors varies markedly over time. This is because they have different objectives and accordingly different methods of setting the price at which they purchase from farmers.

The buying price paid by the GECPT is set by the SAC on the basis of an estimated mean cost of production.[22] One explicit objective of this is to isolate farmers from unstable world prices. Private traders, on the other hand, seek to make profits from either domestic or export sales. This leads them to offer farmers prices based on net export realisations. When the GECPT price is below export parity, farmers prefer to sell to traders who compete the producer price up to export parity. In this situation, private traders buy virtually all of production, which they both export and sell to domestic consumers. When the GECPT price is above export parity, neither private traders nor the GECPT can export profitably. However, both can normally still sell profitably into the domestic market, since the MSIT sets domestic trading prices on a cost-plus basis. Thus, the GECPT is left to store surpluses or export them at a loss, while the domestic market is supplied by both the public and private sectors. During 1999 and 2000, the former situation has applied, with the GECPT making only negligible purchases and all exports[23] being undertaken by private traders.

3.3.7 Marketing and Processing Chains

The structure of processing and marketing of lentils and chickpeas is shown in the flow chart, overleaf.

(a) The private sector chains

Private trade in lentils and chickpeas is focused on Aleppo, which is the main centre for assembly, storage and processing. Trading families and firms are highly experienced, many having been in the business since the 1970s or earlier. Each main domestic trader assembles lentils and chickpeas in the rural areas, buying directly from farmers using his own staff or commission agents located in each of the main producing areas. Deals are often made with farmers prior to delivery. The trader then collects in a lorry from the farm gate or the farmer delivers to Aleppo. Traders usually negotiate prices with farmers on the basis of inspection by eye only of cleanliness and size. Traders may arrange for stocks to be transported straight from the farm to a processing factory. However, they often accumulate sizeable stocks of the unprocessed commodity at their premises, which they then have processed to meet the specific quality requirements of firm orders. These stocks allow orders to be met rapidly but are often also held speculatively in anticipation of a market price increase. Processing is normally undertaken by a specialist processing factory for fee. It is rare for a processor to trade on his own account.

The large-scale traders sell to semi-wholesalers and retailers throughout Syria, preferring if possible to sell on an ex-factory basis. There is also a certain amount of selling between traders. In addition to being sold for retail sale or export, chickpeas are also supplied to one of a number of processing and canning factories. Split rather than whole lentils are preferred by domestic consumers. Payment throughout this trading system is invariably in cash.
Traders have a sophisticated networks of informal contacts (principally other traders with whom they deal) who provide them with details on production and market conditions both within Syria and in other important exporting and importing countries. They keep a particularly close watch on production conditions in the two major competing countries, Turkey and Iran.

[22] Public price setting is discussed in detail in Sections 2 and 4.
[23] The GECPT made its last export in 1999. All exports in 2000 have been by private traders.

There are thought to be around one hundred reasonably large domestic traders of lentils and chickpeas as well as a large number of smaller traders. This, coupled with the effective informal market information system, leads as described above to a high level of competition and to prices reflecting export parity, other than during the periods when the GECPT buying price is artificially supporting domestic prices at above export parity.

(b) The public sector chains

For both lentils and chickpeas, the GECPT retains ownership of the crop from the point of purchase of the unprocessed commodity in rural areas through to the point of delivery to GEC stores. It undertakes all processing at its own cleaning and lentil processing plants, other than for utilising the one splitting plant of the GCM. The GEC retails through its own outlets.

(c) The utilisation of processing capacity

We noted above that, for lentils and chickpeas, neither the public or private sector utilises the processing facilities of the other. This, coupled with major changes from year-to-year in the relative percentages of lentils and chickpeas that the two sectors market, means that there is always unutilised processing capacity within Syria. Currently, the public processing plants are lying idle. This is costly and both increases prices to domestic consumers and reduces Syria's competitiveness on the world market. There is a need for a single set of processing facilities that is used by both the public and private sector and operates in every year at high level of capacity. Given the Government's liberalisation objectives and the fact that the private sector tends to operate such facilities more cost-efficiently than the public sector, and given that processing is carried out within the private sector for a fee rather than directly by traders, **it is recommended** that the Government sells its lentil processing facilities to private buyers and rents processing services in the fuure as and when it requires them.

3.3.8 Domestic Price Control

Current official lentil and chickpea selling prices are as follows:

	Split Lentils	Whole Lentils	Chickpeas
		(SP per kg)	
GECPT to GEC	24.50	22.00	26.00
Retail	32.00	35.00	38.00

The retail prices are in theory applicable to private sector sales as well as to sales by the GEC, but in practice they are not systematically enforced. In the case of lentils and chickpeas, when the controlled prices are below export parity, systematic enforcement would serve only to create domestic shortages, since private traders would simply sell the full crop into the more remunerative export market. When the controlled prices are above export parity, private traders must match the controlled producer prices in order to acquire supplies and maintain a foothold in the domestic market. In this situation, they would then only be able to sell successfully in the domestic market if they were to offer prices that were sufficiently low to compete with the GECPT and with the large number of other traders and retailers in the private sector. Thus, retail prices would not rise above the GECPT retail price and could fall to below it. Price control of private retail sales would consequently be unnecessary.

Since price control of the domestic lentil and chickpea market is administratively costly, is unnecessary and could lead to domestic shortages, **it is recommended** that it be abolished.

3.3.9 Exports

For the past two years, virtually all lentil and chickpea exports have been undertaken by the private sector. Lentils are exported both by domestic lentil and chickpea traders and by specialist large-scale commodity exporters, who also trade internationally in other agricultural commodities. Exports are principally through port of Latakia, although nearby exports are normally made overland by truck. Exporters may be able to buy already processed lentils and chickpeas to meet export orders but frequently buy unprocessed and then process to a achieve the quality specified by the buyer. Lentil exports are reportedly mostly 2+2 grade. Lentils bear an export duty of SP2.70 per kg, chickpeas SP2.00 per kg,.

Exporters of lentils and chickpeas, in common with exporters of other agricultural products, such as citrus, are permitted to sell their foreign exchange domestically.[24]

Major importers are the Gulf states, Cyprus, Jordan, India, Sri Lanka and Singapore.

3.4 COTTON

3.4.1 Institutions and Government Control

By law, the state Cotton Marketing Organisation is the sole permitted buyer and ginner of seed cotton. It is also the only exporter of cotton fibre.[25] The MAAR's Cotton Bureau is responsible for cotton research, for the control of cotton fibre quality, the provision of technical assistance to solve field problems, the sharing and supervising of plant protection and extension activities with MAAR directorates, and participating in plan preparation. Ginned cotton fibre and cotton seed is used by both publicly and privately owned mills. The public textile mills and public oil mills are the responsibility of the Ministry of Industry. The SAC set seed cotton prices. Cotton fibre and cotton seed prices and also cotton seed oil and cake prices by the MSIT. The organisation of the industry is shown diagramatically overleaf.

3.4.2 Production

Some 98% of Syria's cotton is produced on private farms, with the remainder grown on some 5,000 hectares of generally low-yielding state farms. The vast majority of production derives from small farms that each typically have about two hectares of cotton and rely principally on family labour. The

[24] In October 2000 the rate for such sales was fluctuating around SP49.5 to SP50 per US$, compared with the official rate of SP46.

[25] In line with the most common usage in Syria, we refer to the cotton that is picked by the farmer as 'seed cotton', the main product of the cotton ginneries as 'cotton fibre', the main byproduct of cotton ginning as 'cotton seed' and the additional cotton fibre removed from the cotton seed in oil factories as 'lint'. Note that 'raw cotton' and 'lint' are sometimes used in other countries to refer to cotton fibre.

majority of this production takes place on land owned by the farmer, with the remainder being produced on rented or share-cropped land. In total the cotton industry employs some 2.5 million people.

Cotton is a summer crop that requires irrigation. It is planted in April and harvested from September until the end of the year. The majority of farms use flood irrigation, but the Government is encouraging farmers to invest in more efficient drip irrigation through the provision of extension advice and loans that amount to approximately SP 75,000 per hectare.

Roughly 20 percent of Syria's irrigated land is used for cotton. Together, wheat and cotton occupy all but a small proportion of the irrigated land available to field crops.[26] Farmers are encouraged to adopt standard wheat/cotton rotations that result in cotton typically being planted once in every three years on suitable irrigated land. If there were sufficient water, the maximum that cotton could be planted without encountering serious disease and soil fertility problems would be once every two years. This would give a maximum ceiling of about 450,000 hectares to possible cotton production in Syria, were there no water constraints on the presently irrigated land.

Key data on the cotton sector are presented in Table 3.4 for the period from 1989 to 2000. The area planted to cotton has expanded substantially over the past decade from 156,000 ha in 1990 to a peak of 275,000ha in 1998. This has principally been the result of a progressive increase in the total area of irrigated land in Syria resulting from increased use of water from the Euphrates Dam (commissioned in 1974) and from dams commissioned in the early 1990s in Al Hassake. Government policy has been to allocate increased areas of irrigated land to cotton and to support its physical planning with official producer prices that provide an attractive premium over the projected mean unit cost of production and that isolate growers from world cotton price instability.

However, the recent drought, and the associated shortage of irrigation water, has forced reductions in the area planted to cotton. This area fell to 244,000 hectares in 1999 and 236,000 hectares in 2000. It is envisaged that there will need to be a further reduction in 2001, possibly to as little as 190,000 hectares.[27]

Yields per hectare have increased substantially over the past two decades, rising from 1,625kg/ha in 1970 to a record of 4,180kg/ha in 1997. During the 1990s, yields have increased as result of the following factors:

- the development and adoption of new, environmentally adapted varieties to replace *Aleppo 1*. These have both higher yields and are also less susceptible to fungal attack in cold weather, allowing earlier planting;
- a producer price structure that further encourages early planting and harvest, involving the payment of price premiums for early seed cotton delivery (this also leads to improved quality since the crop is less likely to be damaged by rainfall or pests and diseases prior to harvest);
- adoption of row planting (that gives a 20% higher yield than broadcasting) and improved irrigation techniques;
- improved agricultural extension.

Hotter than normal weather, coupled with a shortage of irrigation water, is likely to reduce yields in 2000 to a projected 3,500kg/ha. Yield and quality in Aleppo and Al Hassake governorates are

[26] There are roughly 1.3 million hectares of irrigated land in Syria, of which about 140,000 hectares are occupied by tree crops.
[27] Source: CMO.

expected to improve in 2001, when the newly developed *Aleppo 90* variety is due to replace *Aleppo 40*.

There are very large differences in yield between and within governorates. For example, the mean 1998 yield in Hama Governorate was 4,068 kg per hectare, 22% above the mean of 3,332 kg per hectare achieved in Al Hassake Governorate and 33% above the 3,067 kg per hectare in Al Raqqa Governorate. *Within* Hama Governorate, the yields of sub-governorates ranged from 3,320 to 4,684 kg per hectare. These sub-governorate figures, in turn, mask further significant yield differences between farms. Although there has reportedly been no systematic analysis of yield variability between farms, reliable sources indicate that individual farm yields typically range from 2,500 to 6,000 kg per hectare. These yield differences reflect differences in the physical and chemical properties of the soil, the amount of fertiliser applied, the type of irrigation employed (furrow irrigation typically leads to yields 20% higher than flood irrigation), the method of planting, and the timing of planting. Early planting in April leads to significantly higher yields than planting in May (e.g 4,200kg/ha vs. 2,500kg/ha).

3.4.3 Seed Cotton Harvesting, Delivery, Grading and Pricing

Syria's entire cotton crop is harvested by hand. Farmers normally pick over their cotton three times. The second and third pickings normally yield only small additional quantities. Farmers pack their seed cotton into jute bags that have a capacity of 160kg.[28]

Although farmers are legally obliged to deliver all their seed cotton to the CMO, it is thought that about 35,000 tons per year does not reach the Organisation. A proportion of this represents harvesting and post harvest losses, but the majority is used for making items such as mattresses and pillows or is sold to illegal small-scale roller ginneries. The latter are destroyed by the Government once they are identified, principally to avoid farmers using cotton seed from them to plant without a licence.

Farmers must deliver their cotton either to a CMO buying centre or to a CMO ginnery. The CMO has a central buying centre in Aleppo and further centres in Al Hassake (2), Dair Ezzor (2) and Damascus (1). Annually, the SAC announces a base producer price for Grade 1 cotton that is applicable nationwide. As with the other strategic crops, this base price was last changed for the 1996 crop, when it was set at SP30.75 per kg. Farmers are paid on the basis of either this price or of one of two lower base prices depending upon the time of delivery:

Grade 1	End September to 15th November	SP30.75/kg
Grade 2	15th November to 30th November	SP26.25/kg
Grade 3	1st December to the end of the season	SP19.25/kg

The specification of the base price is as follows:

Moisture:	8%
Cotton fibre extraction rate:	36-39%
Fibre length:	1 3/32
Class:	0 to 0 minus ¼

Syrian cotton is of medium staple length. This is the most common staple length produced worldwide. Fibre length and class are determined through inspection by experienced classers. The moisture content is metered and the extraction rate is established through ginning 1.0 kg of seed cotton in a small cylinder gin and then weighing the products Throughout the delivery period, a representative of the Peasants Federation is present to monitor the classification process.

[28] These bags currently cost SP85 each and are included in MARR cost of production figures.

Disputes are resolved through a Disputes Settlement Committee that comprises representatives of the Peasants Federation, the CMO and the Cotton Bureau.

For each of these three grades, farmers receive price premiums or discounts from the base price that reflect moisture content, extraction rate, fibre length and class. This is done by means of a matrix of sixty prices for combinations of fibre length and class, to which adjustments are made for moisture content and ginning outturn. This results in a producer price range of SP24.60 to SP30.75 per kg for grade 1. Mean payments to farmers were SP29.20 and SP29.29 per kg in, respectively, 1998 and 1999.

The official producer prices refer to cotton delivered by the farmer to the CMO buying centre or ginnery within 200km of their farm. Since there is insufficient ginning capacity in some growing areas, especially El Hassake, farmers may be required to transport their seed cotton over 200km. In this event, they are paid a transport subsidy. Subsidies from Al Hassake are currently SP152/ton to Aleppo, SP209/ton to Hama, SP178/ton to Homs and SP179/ton to Idleb..

The CMO normally pays farmers after a delay of 15-20 days from delivery, during which the quality of their cotton and their outstanding credit with the Cooperative Bank are determined.

3.4.4 Ginning and the Sale of Cotton Fibre

The CMO has 15 saw ginneries, located in Aleppo (7), Homs (4), Dair Ezzor (1), Al Hassake (1), Hama (1) and Idleb (1). Some were constructed by private operators and subsequently nationalised in the 1960s. Others (including that at Al Hassake) were constructed some 6-7 years ago to deal with the production increases of the 1990s.

Ginning commences in late September and is completed by July or August, depending on the size of the national crop. The capacity of the existing ginneries has been increased over the past 3 years, and a new ginnery is currently being established at Al Raqqa. The CMO is also planning to increase the number of buying centres.

Typical ginning out-turns are as follows:

Cotton fibre:	33%
Seed:	63%
Losses:	4%

Cotton fibre is compressed into 200kg bales.

The average time between the CMO paying farmers for their seed cotton deliveries and receiving payment for sales of cotton fibre and seed is about six months. During this period, the CMO finances its working stocks and other costs through loans borrowed at an interest rate of 7.5% per annum. In 1998/99, financing this resulted in a total interest charge of SP1.722 billion. This was substantially greater than all the other costs of the CMO, and is equivalent to 0.2% of GDP. This very high financing could be reduced by shortening the ginning period through the construction of additional ginneries. However, this would increase the unit ginning cost itself since the capital and other fixed costs associated with the operation of the ginnery would be spread over a smaller crop. Whether total ginning costs would indeed be reduced through an increase in ginning capacity is an empirical question that can only be resolved through the simulation of future ginning and financing costs with and without additional ginneries. **It is recommended** that the CMO undertakes a detailed study of means by which its interest costs can be reduced, including a possible ginnery construction programme aimed at reducing the length of the ginning period.

The Cotton Bureau prepares standard cotton fibre boxes for five classes of fibre. These boxes are used as a basis for monitoring quality and are also sent abroad to the CMO's selling agents. The

CMO is required to send a sample to the Cotton Bureau's headquarters in Aleppo of each lot sold to domestic buyers and of each export consignment. After comparison with its standard boxes, the Bureau may promote or demote the class. If the class is disputed between the CMO and the Bureau, the dispute is settled by an independent standards committee. Normally some 90% of national cotton fibre output falls into the top 2 1/2 grades and 96% into the first three grades.

The CMO currently sells about 30 percent of its cotton fibre output to domestic spinners and exports the remaining 70 percent. Both public and private spinning mills are reportedly given the opportunity to select the qualities they need from the CMO's available stocks.

After oil, cotton fibre is Syria's most important export commodity. Syria accounts for about 1.8% of world cotton production. Syria's production is about half that of neighbouring Turkey and slightly greater than that of Egypt.

Exports are sold at competitive world market prices through agents based in importing countries. Syrian cotton exports fetch a CIF price that is typically some US$0.07-0.08 below the COTLOOK 'A' index. Domestic buyers are required to pay cost-plus prices set by the MSIT that include a 2% element of profit. The current base selling price of SP85.90 per kg ex-ginnery has remained unchanged since July 1996, when it was set on the basis of an estimated CMO per-kg cost of production of SP84.22. The CMO sells 40 separate grades of cotton fibre and seed cotton at ex-ginnery prices that reflect premiums or discounts from the base price.

In the most recent 1999/2000 marketing year, the mean ex-ginnery price of cotton fibre to the domestic market was SP85.56 per kg. This compares with a mean FOB price for 1999/2000 exports of cotton fibre of only SP56.18 per kg, equivalent to an ex-ginnery price of some SP55.43 per kg. Thus, domestic spinners were required to pay roughly 52 percent above the effective ex-ginnery price realised by exports.

The CMO similarly sells cotton seed at cost-plus prices set by the MSIT. The current ex-ginnery price is SP7.45 per kg.[29]

Cotton seed to be used for planting is grown and ginned separately from commercial cotton. The CMO sells seed for planting to the General Establishment for Seed Multiplication (GESM) at the same price that it sells seed to oil mills.

3.4.5 The Domestic Textile Industry

Syrian cotton fibre production covers the full spectrum of qualities required by the domestic textile industry, obviating the need to import natural cotton. There is no production of synthetic fibre in Syria. Imports of such fibre bear an import duty of only 1.0% and are used by a number of domestic spinning mills. Imports of synthetic yarn are subject to a 15% import duty. Five public textile mills import such yarn for combining with cotton yarn in the manufacture of cloth.

Prior to Investment Law No. 10 of 1991, all spinning mills in Syria were publicly owned. There are now three private spinning mills that account for about 10% of all cotton spun domestically. Two of these mills spin cotton only and one a mix of cotton and synthetics. There are also now some large private weaving mills, in addition to the small-scale private workshops that existed prior to 1991. These use yarn purchased from both private and state-owned spinning mills. Public-sector companies still account for most domestic spinning and weaving. Some of these companies specialise in spinning, but there are also a number of fully integrated mills that spin, weave, dye and print.

[29] Since cotton fibre and seed cotton are joint products, the use of cost-plus pricing requires an arbitrary allocation of CMO costs between the two products.

The manufacture of garments and other finished textile goods is principally in the hands of a large number of private companies, the larger of which produce finished goods from their own-manufactured textiles.

3.4.6 Domestic and International Markets

The agricultural production tax on seed cotton (9% of the into-ginnery value of seed cotton) and the export tax (12.5% of fob value) on cotton fibre, textiles, cotton seed and cotton byproducts (including cottonseed cake) were exempted by law No. 7 of 1st July 1999.

Syria is able to export raw cotton because the CMO sells at international prices. Yarn and cloth manufactured in Syria from Syria cotton cannot be exported profitably at present because of the policy of selling cotton fibre to the domestic textile industry at cost-plus prices.[30] Although cloth cannot be produced competitively, the high labour intensity of garment manufacture and the low wage rates in Syria mean that clothing can be exported at a profit, even when made from cloth produced from Syrian cotton.[31] However, such exports are less profitable than if Syrian cotton were priced to the domestic industry at export parity.

The low wages in Syria coupled with the high cost of Syrian cotton to the domestic garments industry has led to private textile companies making garments on contract for overseas firms using imports of cloth that these firms supply.[32] This clearly involves substantial additional trading costs that would not be incurred if Syrian cotton were employed, and means that the net profits made by the Syrian garments industry are accordingly reduced. It also means that a greater proportion of Syrian cotton must be exported as fibre with no additional value added.

In summary, the end result of the current pricing policy for cotton fibre is that the manufacture of garments and textile goods in Syria is less profitable than it could be. This is hampering the growth of the domestic textile industry and reducing the proportion of Syrian cotton fibre to which value is added prior to export.

Textile and garment manufacture are highly suited to countries, such as Syria, that are in the early stages of industrialisation and have surplus labour and accordingly low wage rates. It has been the springboard for rapid economic development in a large number of countries. It was the cornerstone of the industrial revolution in Western Europe and more recently underpinned the rapid growth of the countries of South-East Asia. By not pricing its cotton at export parity, Syria is artificially discouraging the rapid growth of textile and garment manufacture in Syria and losing a major opportunity for rapid development. Rather than seeking to keep the majority of the population working in rural areas on the production of crops in which Syria does not have a comparative advantage, it may be preferable to give greater emphasis to policies that encourage employment creation in labour intensive manufacturing.

After intensive lobbying by the domestic textile industry, the Government has decided that cotton should be sold to the domestic textile industry at international prices. A committee has been established charged with developing proposals for establishing a means of systematically setting domestic prices at international levels. It will be important that this committee recommends a system that leads to prices that are at export parity, rather than at some other 'international' level, such as the price at which foreign spinners can import Syrian cotton.

The domestic market is protected by import duties on cotton fibre (30%), yarn (15%), cloth (15-59%) and garments (75%) and other made-up goods, such as blankets and table-cloths (30-50%).

[30] The industry is forced to use this domestically produced fibre because imports of cotton fibre bear a 30% protective duty.
[31] The export tax on clothes made from cotton was eliminated at the end of 1999.
[32] This cloth is not subject to import duty provided the garments for which it is used are re-exported.

The prices of all textile goods sold within the domestic market are controlled by the MSIT. Whenever, a company develops a new product, such as a shirt with a new design, a MSIT committee sets the retail selling price based on the ex-factory unit cost of production plus a 17% margin. This latter margin is designed to cover all costs between ex-factory and retail sale including an element of profit for the manufacturing company.

While we accept that some form of price control is necessary in situations where companies have monopoly power, it is important to recognise that price control tends to inhibit competition within a free market. This is for a number of reasons. First, it is very difficult to allocate overhead and financing costs between product lines, especially when there are many such lines as is the case with the larger garment companies. This makes it very difficult for the MSIT to set prices rationally. Second, it is important for efficient market development that firms price at a level which the market will bear and that in some circumstances they temporarily make high profits. This encourages firms to enter under-supplied markets and eliminates shortages. Third, official prices tend to act as benchmarks for implicit price collusion between companies that might otherwise engage in strong price competition. In addition to these drawbacks, price control carries high public costs in terms of the resources that must be devoted to the setting of prices and to their enforcement. Thus, **it is recommended** that the MSIT monitor systematically the state of competition within markets for garments and textile goods and that price control be eliminated for sub-sectors where there are sufficient suppliers to ensure competitive price formation.

3.4.7 Oil Milling

Special machinery is required for cleaning, crushing and removing lint from cotton seed. The equipment required for subsequent oil extraction and refining can be used for any type of edible oil. Syria has five large-scale publicly-owned oil mills, three of which specialise in extracting oil from cotton seed. The public mills that specialise in cotton seed receive supplies regularly from the CMO and normally work for over 300 days per year. There are five large-scale and many small-scale privately-owned oil mills, some of which specialise in refining only. In 1999/2000 (to July 2000), the CMO sold 278,000 tons of seed to public mills, 238,000 tons to private mills, and 27,900 tons to the GESM.

The sales of the public companies are organised centrally. All cake is sold at publicly administered prices to the GEF and all refined oil to the GEC. The proportion of raw oil that the public mills refine fully is determined by the needs of the GEC. The remainder is exported in raw or semi-refined form to nearby countries, principally Turkey. Cotton lint is exported, principally to Saudi Arabia and Japan.

3.5 SUGAR

3.5.1 Institutions

The Ministry of Industry's General Organisation for Sugar (GOS) is the sole buyer and processor of sugar beet.[33] The GOS was originally established as the Sugar and Agricultural Processing Company. Despite its new, sugar-specific name it continues to also operates an oil and soap plant, and has three yeast factories. It reportedly seeks to break even on its sugar production and make profits from its other operations. All sugar produced by the GOS is sold to the GEC for distribution under a subsidised sugar rationing programme. The sugar imports needed to fulfill demand under the system of rationing are undertaken by the state General Foreign Trade Organisation for Chemicals and Foodstuffs (GFTOCF), formerly known as 'TAFKO'. The sugar required for industrial use, speciality sugars (such as cube sugar), and other sugar for retail sale is

[33] Unlike for cotton and tobacco, it is not a legal requirement for farmers to sell to the GOS. However, farmers have no option, other than for using beet as animal feed.

imported and sold by the private sector. The into-factory producer prices for sugar beet are set by the SAC. Sugar prices within the domestic market, including all prices at which sugar is bought and sold within the private sector, are set by the MSIT. The organisation of the sugar industry is shown schematically overleaf.

3.5.2 Production

Sugar beet is produced on some 2.3 percent of Syria's irrigated land. Production is focused in the area from Homs northward to Idleb and Aleppo. There are a few large sugar beet-producing farms, but most production derives from small-scale farms. The sugar industry provides employment for about 25,000 workers.

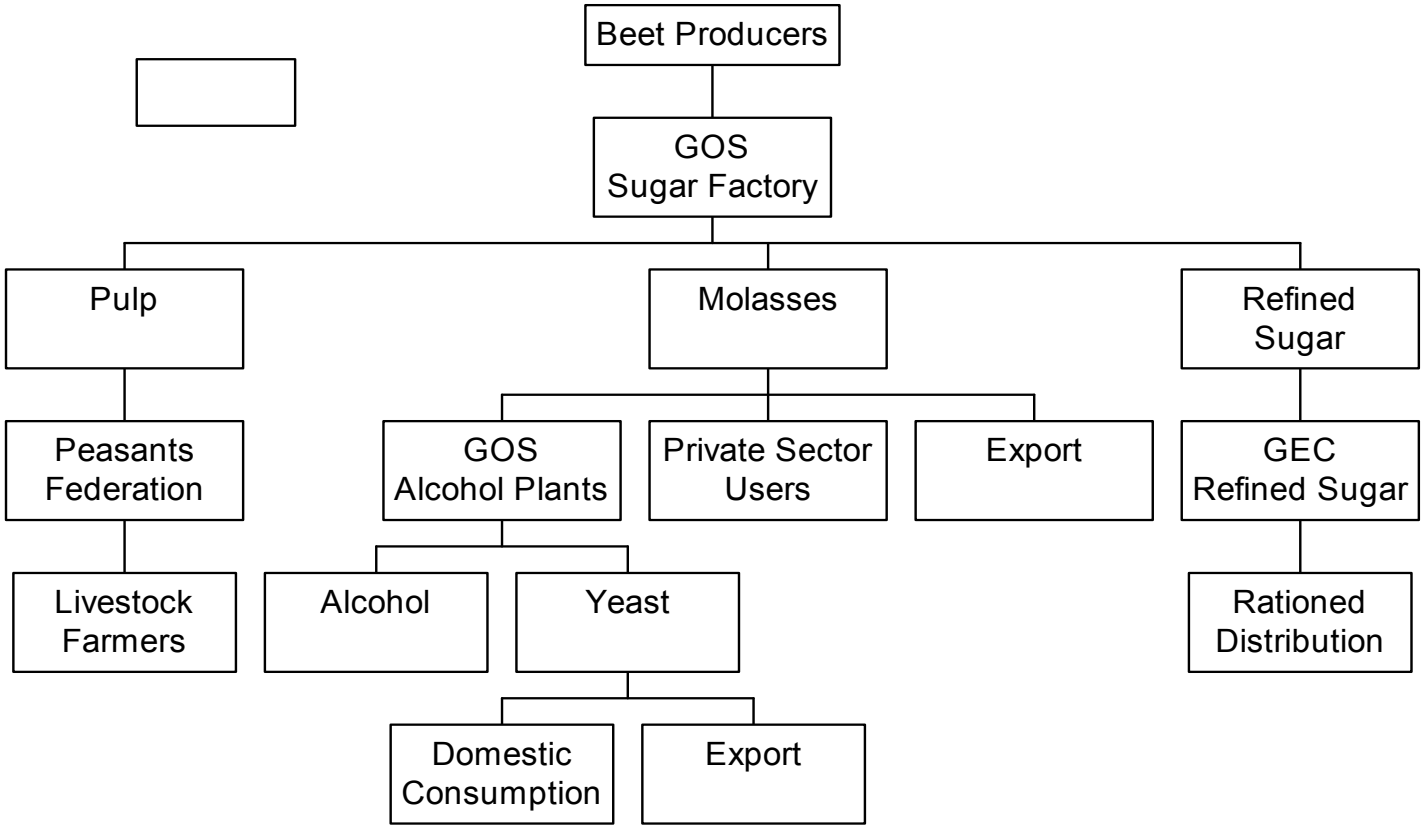
Ghab Governorate accounts for over one-third of national production and Hama, Aleppo and Idleb Governorates for a further third. Planting is spread over three seasons with the aim of maximising the amount of beet that can be processed by factories in the vicinity of farmers by extending the harvest season for as long as possible. Farmers prefer to plant in the autumn because this avoids the plants being tender and susceptible to damage during the January-February frost period. Compared with the early 1990s, there has been a significant shift away from spring planting, with the result that this now accounts for only some 15% of the land planted annually to sugar beet.

THE SUGAR BEET PRODUCTION CYCLE

CROP	Planting Period	Harvesting Period	1999 Planted Area (% of total area)
Autumn	15/10 to 15/11	Mid June-end July	52
Winter	15/01 to 15/02	End July-early August	34
Spring	15/02 to 15/03	End August-1st half September	15

Table 3.5 contains key data on the sugar industry. It will be seen that the area planted to beet increased in the first half of the 1990s, peaking at 34,000 ha in 1994, and then declined to an average of about 27,000 ha in the years from 1996 to 2000. There is no obvious trend in yield per hectare

Domestic Sugar Flow Chart



GOS: General Organisation for Sugar

since 1992.34 Yields in 2000 were reduced substantially by the impact of the drought on the water availability.

Yields in traditional producing areas range from 50 to 130 tons per hectare and those in the new areas from 20 to 80 tons per hectare. There are significant differences in the yields obtain by individual farms within each governorate. The differences in yield between traditional and new areas is attributed to the greater use of nitrogen fertilisers in the traditional areas (see below).

3.5.3 Beet Delivery and Beet Quality

There is a GOS sugar factory in each of the main sugar beet-producing governorates. The farmer is responsible for delivering his beet to the factory within his governorate. This transport is normally by 10-ton tractor-drawn trailer. Delivery distances range from 1-50km in Homs Governorate to 1-100km in Aleppo Governorate. In some governorates more beet is produced than can be processed in the governorate's factory. This is transported by the GESUG at its own cost to one of its other factories. In 2000, about 270,000 tons of the national total of 933,000 tons of beet was so transported to plants in Dair Ezzor, Alleppo (Maskana) and Al Raqqa Governorates. This requires transportation over very long distances. For example, it is 375km from the Homs to the Dair Ezzor factory. This means that beet is sometimes transported a total of over 400km, compared with a maximum of 45km in most producing countries.

The allocation of beet between factories is determined by an eleven-person Sugar Committee, chaired by the Director General of the GOS. This committee includes representatives of MARR, the Ministry of Industry, the Peasants Federation, and transporters. It meets at least once per week during the harvest season. The GOS uses its own 32-ton lorries for transport between factories. It projects that it will spend some SP380 million on such transport in 2000, should deliveries by farmers equal those planned. This is equivalent to SP1,400 per ton transported, raising the effective mean unit into-factory cost to the GOS of the national beet crop by some 17%. In addition to this direct cost, there is a significant loss of up to 2 percentage points of sucrose during the transportation process, since beet loses about a half a percentage point of sugar per day.

On delivery to the factory, a sample of each load is checked for sucrose content. Farmers are paid on the basis of an official into-factory price specified for beet with a 16% sucrose content. This price has been SP2,250 per ton for the past six years. The actual price paid depends on the sucrose content of the beet. The current price formula provides for a discount from this base price of SP25 per ton for each percentage point below 16% and a premium of SP100 per ton for each percentage point that it is above 16%. Although this represents an improvement in the formula in operation in the period prior to 1999 (that embodied a discount of only SP8 per percentage point), the present formula does not reflect the full proportionate differences in value that result from differences in sucrose content. As a consequence, it is in the interest of farmers to maximise the weight of beet that they produce per hectare rather than the per-hectare effective sucrose output. This has resulted in farmers over-applying nitrogen fertiliser, causing a drop in the percentage sucrose content to 12% from the 15.5% achieved in the 1980s.

Since beet pulp is worth much less than sugar per ton, the present pricing formula encourages farmers to produce a low value product. By far the most effective way of encouraging farmers to increase the weight of the sucrose contained in their beet rather than simply the weight of the beet itself, is to increase the size of the price premiums and discounts in the pricing formula.

If the full sucrose content could be extracted during processing, the present per-ton producer price of SP 2,250 of beet of 16% sucrose content would be equal to approximately SP141 per one

[34] Our discussions with GOS staff about the causes of the apparently low yields in 1989 and 1990 revealed yields for these years may be under stated in the official figures.

percent of sucrose. In this event, the price formula would need to have premiums and discounts of roughly SP141 per ton per percent of sucrose to encourage an efficient use of inputs. In practice, the optimal price premiums and discounts must be calculated taking also into account both the value of byproducts and the following two facts:

- it is not possible (or efficient to try) to extract all sucrose contained in the beet;
- the processing cost per unit of sucrose extracted increases as the sucrose content of the beet falls.

The Government has reportedly established a committee to examine and make recommendations on the beet pricing formula. **It is recommended** that sucrose discounts and premiums be set at levels that accurately reflect the full gain and loss to the GOS of deviations in sucrose content from the base percentage. If this is done, and is supported by an effective extension campaign, farmers will seek to adopt optimal levels of fertiliser application without the need for additional administrative controls.

3.5.4 Processing

The GOS operates a total of 6 factories, each run by a separate company. These were established between 1948 and 1975, and are located as shown in column 1 of Table 3.5. Of these, the factory at Homs only refines imported sugar. That at Al Ghab produces sugar from beet and also refines imports. The remaining five factories do not have separate refining lines and only process refined sugar from beet. This means that they are able to operate for only about three months per year, within the period from mid June to mid September. The factories all produce only one quality of refined white sugar for public distribution

The GOS plans to increase the capacity of its Al Ghab factory from 1,300 to 4,000 tons of beet per day. It also intends to replace the existing unservicable beet processing plant at its Homs factory to allow it to commence accepting beet.

The six factories that currently process beet have a combined daily capacity of about 15,400 tons of beet, giving a total capacity during the harvest season to process some 1.34 million tons of beet. The average sucrose content of the beet that enters the GOS factories is 12%. Some two-thirds of this is extracted and refined, giving them a capacity to produce annually approximately 107,000 tons of refined sugar.

The conversion rate from imported raw to refined sugar depends on the polarisation of the raw sugar. For 97^{o} raw, the typical extraction rate is 90%. The only byproduct produced in this conversion is molasses. For the past five years, the decision on whether to import raw or refined has been based on the difference in raw and refined prices on the London market and whether this difference exceeds the domestic refining costs of approximately SP2,000 per ton or US$41 per ton. For the past three years the price difference has been below US$41 per ton and consequently only refined sugar has been imported.

In early 2000, the GOS started refining privately imported raw sugar for a fee for sale to the domestic market and for re-export. Such refining is attractive for private traders because raw sugar imports bear only an import duty of approximately 7% compared with the duty of approximately 15% that is levied on refined sugar.

While it is rational to seek to utilise under-employed public refining capacity, it may be preferable to do this with the minimum of price distortion, by equalising the duties on raw and refined sugar imports and charging importers the marginal cost of refining their sugar. One would not then have the present situation where the Government has decided that it is not efficient to process publicly imported sugar domestically yet its policies are encouraging the private sector to do so.

It is recommended therefore that the Government equalise the duties on raw and refined sugar imports and simultaneously switch to a policy of charging importers of raw sugar only the marginal cost of processing.

3.5.5 Importation and the Domestic Sugar Market

Domestic beet production is sufficient to meet about one sixth of the national requirement and about one-third of that distributed publicly under the rationing programme. The balance is met through the importation of refined sugar or through the importation of raw sugar that is refined at Homs and Al Ghab.

Imports of refined sugar bear a duty of 7% of CIF value, a further charge of 6% for other government fees, and a specific duty of SP 150 per ton. Together, at present CIF prices, these amount to a total tax on imports of approximately 15%.

The GOS imports raw sugar using the GFTOCF to arrange importation. All domestically produced sugar, both that produced from beet and from imported raw is sold by the GOS to the GEC at cost-plus prices. The GFTOCF imports all refined sugar for sale by the GEC. GFTOCF packs bulk raw and refined sugar into bags at the ports of Latakia or Tartous, since there is no domestic movement of sugar in bulk.

All domestically produced sugar and a proportion of GFTOCF imports are provided to consumers at subsidised prices under a rationing programme that was first introduced in 1963.[35] For the past five years, the GEC has only supplied sugar under this programme, selling by means of ration cards through its own outlets. All members of the population, including infants and children, have been entitled to one kilogramme per month at a price of SP7. This compares with a current open market price for imported sugar of SP18-20 per kg and an into-factory price to farmers for their beet which in 2000 was equivalent to SP 28 per kg of sugar extracted.[36]

The initial burden of the programme has fallen on the GEC which has sold sugar at a subsidised price that is only a fraction of its unit acquisition cost. The resulting losses have been made good through systematic government transfers from the state treasury.

The Syrian Government has reportedly taken the decision to eliminate its sugar subsidisation programme by the end of 2000. A ration of half of one kilogramme will be given in October and November in a single one kilogramme allocation. There will be no subsequent allocation.

All sugar other than that sold under the ration programme is imported privately and sold to industrial users or for retail sale. Sugar is a relatively homogeneous product that is sold through a vast number of retail outlets and, as such, represents an ideal candidate for early complete market liberalisation. **It is recommended** that the Government examines the possibility of eliminating price control completely and selling Syrian-produced sugar ex-factory by tender. This would have the advantage of eliminating the need for public outlets to sell publicly owned sugar, and would allow the diversion of public resources currently engaged in price control into more productive activities. It would have the further advantage of giving domestic industrial users access to Syrian sugar which tends to be of lower quality than imported sugar.

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[35] Rice is distributed at subsidised prices under a similar rationing programme. The subsidisation of vegetable oil, tea and coffee was eliminated in 1991. The subsidisation of rice is being eliminated concurrently with that of sugar.

[36] Into mill beet price per kg (SP2.150)* x ratio of beet to refined (13.2) = SP28.38 per kg. Note that the mean price paid for beet is approximately SP0.1 per kg less than the base price of SP2.250 per kg due to a mean discount of SP100 per ton that results from a mean sucrose content that averages 12% rather than the base price level of 16%.

3.5.6 The Sale of Byproducts

The processing of beet produces three main products: sugar (8%), molasses (5.8%), and pulp (29%). Pulp used to be sold by the GOS by tender, but since the mid 1990s it has been sold in its entirety to the Peasants Federation for use as animal feed at prices of SP750-850 per ton. To ensure that pulp goes to the most efficient users, **it is recommended** that the GOS in future sell it by tender.

The GOS operates alcohol and yeast plants in addition to its sugar factories. These plants normally absorb about 40,000 tons of molasses. This compares with a total national molasses output that has averaged about 57,000 tons in the three years 1998-2000. The balance is either exported or sold domestically for feed and to industrial alcohol plants at an administered ex-factory price of SP3,500 (US$70) per ton that was set some four years ago on the basis of the estimated cost of production. Exports would currently fetch US$35 (SP1,610) per ton fob Latakia for sales to western Europe (recently Denmark), yielding US$20 (SP920) per ton at the factory gate. Overland exports to Jordan and Saudi Arabia yield US$35 per ton ex-factory. Thus the selling price to domestic users is currently roughly double export parity, artificially inflating the price paid by domestic livestock farmers and industrial users. **It is recommended** that the GOS, in liaison with the MSIT, set its molasses selling price to the domestic market at export parity.

3.6 TOBACCO

Syria produces a range of tobacco types on both rainfed and irrigated land. The irrigated area comprises less than one third of the total. However, irrigated yields are about three times those achieved on rainfed land, with the result that irrigated production exceeds that on rainfed land.

Over the past decade the total area planted to tobacco ranged from 11,820 to 17,810 hectares, stabilising in the period from 1997 to 1999 to within the 15,000-16,200 ha range. There has been a marked increase in yield over the past decade. Mean yields per hectare from 1995 to 1999 were some 35% higher than from 1989 to 1994.

Farmers must sell all their output to the General Organisation for Tobacco, which has processing and cigarette manufacturing plants in Latakia, Hama, Aleppo and Damascus. The majority of production is consumed in the domestic market, with a proportion exported, principally in the form of leaf. Domestic sales are made through distributors that receive a commission of 1.5% to 3% and licensed retailers who earn a further commission of 6%. The organisational structure of the industry and the tobacco flows in 1999 are shown in the chart overleaf.

4. PRICE AND COST ANALYSIS

4.1 CONCEPTUAL AND EMPIRICAL ISSUES

The Syrian Government influences the prices of raw and processed agricultural commodities in a range of ways:

(i) through direct intervention in the market by state establishments, which buy and sell commodities at prices set by the Government;
(ii) through the setting of prices at which private sector firms and individuals are required to trade;
(iii) through the imposition of indirect taxes and levies on trade in agricultural commodities;
(iv) through other policies that affect domestic supply and demand.

Virtually all government policies affect the domestic supply and demand for agricultural commodities in one way or another. This applies to policies relating to non-agricultural sectors, such as the industrial, health and education sectors, and also to fiscal and monetary policies not targeted directly at the agricultural sector.

To keep our analysis to manageable proportions, we focus in this paper on interventions (a) to (c), that impact directly on the commodity chains for the strategic commodities. In particular, we examine the extent to which government commodity-specific intervention has caused prices to differ from those that would have been observed had there been no such intervention.

The standard approach to such analysis is to simulate for each commodity the domestic 'parity' price structure that would have existed in an intervention-free environment. In practice, it is normally not empirically feasible to simulate an environment that is completely free of all government intervention, since this would involve simulating the behaviour of a substantially changed national economy. Moreover, simulation of a completely free market may be of less interest than simulation of a situation in which only some elements of government intervention have been removed. This is particularly the case if one is examining, for example, administered price setting within a system in which there is a high level of state participation.

In such focused analysis, a set of decisions need to be made on the coverage of the analysis and the nature of the variables to be included. In particular, one must decide on:

- the interventions to be excluded (this involves considering the objectives of the analysis) and
- the price structure that is to be modelled from the vast, ever-changing array that would exist following the withdrawal of Government intervention.

Ultimately the analysis must embody a set of simplifications and compromises. Our aim here is to adopt, commodity-by-commodity, an analysis that yields results that are of maximum possible interest for future policy formulation.

4.2 KEY ELEMENTS OF THE PRICE MODELS

The parity price models are presented in Annex 3. These are for soft wheat, hard wheat, barley, lentils, chickpeas, cotton and sugar.

4.2.1 Import and Export Situations

If there were no border controls or government price intervention, the domestic prices for all the strategic crops would ultimately be determined by competition with crops produced outside the nation's borders. For crops that Syria exports, this competition would take place in external markets. For crops that Syria imports, the competition would be within Syria.[37]

Lentils, chickpeas and cotton are all exported. Thus, for these commodities, we develop export parity models, where prices are determined by competition in export markets (see Annex Tables 3.6, 3.7 and 3.8.). Barley and sugar are being imported. Import parity price models for these commodities are presented in Annex Tables 3.5 and 3.9.

Syria switched from being a net importer of wheat to being a net exporter in the mid 1990s. In the past two years, due to drought, it has produced insufficient wheat to meet domestic demand, but has not needed to import due to the presence of state-held strategic stocks. Since Syria produces a higher ratio of hard to soft wheat than is ideal for bread-making and since hard wheat is worth more per ton than soft wheat on international markets, the nation would export hard wheat at times of surplus and import soft wheat at times of deficit. We have therefore estimated export parity prices for hard wheat and import parity prices for soft wheat. For hard wheat we have also estimated import parity prices, since, when combined with import parity prices for soft wheat, they can be employed to provide estimates of the retail price of bread in a situation where all wheat were imported. Within our soft wheat model, we have made separate estimates of standard flour and bread prices for (a) where soft wheat is combined with hard wheat priced at import parity and (b) where soft wheat is combined with hard wheat priced at export parity. Thus, Annex 3 provides the following four separate parity price models for wheat:

(i) Table 3.1: Soft wheat priced at *import* parity, combined for the production of standard flour and bread with hard wheat priced at *import* parity;

(ii) Table 3.2: Soft wheat priced at *import* parity, combined for the production of standard flour and bread with hard wheat priced at *export* parity;

(iii) Table 3.3: Hard wheat priced at *import* parity, combined for the production of standard flour and bread with soft wheat priced at *import* parity;

(iv) Table 3.4: Hard wheat priced at *exp ort* parity, combined for the production of standard flour and bread with soft wheat priced at *import* parity;

4.2.2 International Prices

The prices of commodities exported from Syria are formed through competition at points within international markets. For imported commodities, the prices of domestic commodities are formed within Syria's borders through competition with commodities whose unit costs are dependant on prices in international markets. Notwithstanding this, where trade to or from Syria has recently been taking place, it is possible to employ observed border prices as the starting point of the analysis rather than prices in international markets. We have done this for all the strategic crops other than wheat. The use of observed border prices has the advantage that it does not require assumptions to be made on (a) the destinations for Syrian exports or the sources of imports, (b) on international transport costs, or, (c) in the case of exports, on the quality of Syrian commodities compared with commodities from other sources. In the case of imports, assumptions must still be made on the price premiums or discounts that would be observed at the points where Syrian

[37] It should be noted that the prices of virtually all the foreign goods with which Syrian goods compete are influenced by a wide range of factors, including taxes levied and subsidies provided in foreign countries. It is essential that Syrian policy be based on the actual border prices faced since these are the only prices available and represent the unit value of exports and the unit cost of imports. The cause of these prices is irrelevant, given that Syria has little or no power to change fiscal and other economic policies in the countries with which it trades.

commodities compete with imported commodities in the domestic market. In the case of barley, based on discussions with GEF staff and traders, we have assumed that Syrian barley would fetch a price premium of 5% over imported barley in the domestic market. In the case of sugar, we have assumed that Syrian sugar would sell at a price discount of 10% below imported sugar.

For wheat, the absence of recent trade means that there are no suitable border prices to employ. Consequently we have derived border prices from international price indicators. For this purpose we have used FOB US Gulf prices for hard wheat and FOB W. Europe prices for soft wheat. For imports, these have been adjusted by the cost of transporting from these sources to CIF at Syria's main ports of Latakia and Tartous. We have assumed that Syria soft and hard wheat would sell in the domestic market at the same prices as this imported wheat.

If Syrian hard wheat were to be exported, it would probably go mainly to nearby markets, although it could possibly go further afield for specialist use for pasta. Such sales would be likely to receive a higher CIF price but would also bear higher transport costs than sales to nearby markets. For our model, we have assumed that Syrian hard wheat is exported to Jordan, and that it competes with imported US hard wheat at the Jordanian border, fetching a price premium of US$10 per ton over this US wheat due to its higher quality.

4.2.3 Time Period

Current domestic costs have been used in the price structure since these can be obtained more easily and reliably than past costs. However, current or recent international prices present only a snapshot of one point in time in unstable international markets. Consequently, such prices are not the most suitable for use in the price models. For analysis of past policies, the prices at the time that the policies were in force are the most relevant. For policy formulation, projections of future prices are necessary. Given the need to employ more than simply current prices, given the difficulty of projecting prices, and given the need to use past prices in the analysis of past policies, we have employed (for all the strategic commodities other than lentils and chickpeas) mean monthly international price indicators for the period January 1997 to June 2000. The indicators used are shown in Table 4.1.

For wheat, the prices have been used directly. For barley, cotton and sugar, they have been used to adjust recent observed border prices with the aim of obtaining estimates of the mean border prices for the January 1997 to June 2000 period. For lentils and chickpeas, there are no reliable international price indicators. Consequently, we have used data typical of the past two trading years, during which the private sector has been actively involved in exporting both commodities. These data were obtained through interviews with private traders.

4.2.4 Exchange Rates

The rate of exchange between the Syrian Pound (SP) and other currencies has a critical impact on the domestic prices of tradable commodities. Currently, government exports and imports take place at an administered rate of SP46 per US$, while private exports and imports take place at market rates at which traders, respectively, sell the foreign currency earned from exports and buy the foreign currency needed to acquire imports. Rates vary daily depending on supply and demand. In October 2000, the rates were fluctuating within a small range either side of SP50 per US$.

TABLE 4.1: INTERNATIONAL COMMODITY PRICES (US$/ton), 1989-2000

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Soft Wheat	160.42	129.36	126.17	145.1	135.93	139.18	167.7	187.38	143.63	111.12	97.2
Hard Wheat	169.05	136.77	129.05	151.01	142.46	151.04	178.68	209.4	161.58	128.78	113.98
Barley	124	94	99	101	72	101	171	142	111	77	102
Cotton			1,693	1,277	1,277	1,689	2,146	1,774	1,748	1,458	1,189
Raw Sugar			231.55	232.83	260.54	300.18	333.57	295.55	276.3	217.77	160.74
Refined Sugar	378.23	381.62	295.59	273.14	282.04	345.23	396.65	366.79	315.80	255.40	200.57

2000	January	February	March	April	May	June	July	August	Septum.	October
Soft Wheat	97.53	99.02	97.58	96.01	102.16	98.86	91.00	89.80		
Hard Wheat	110.75	112.20	112.25	112.00	115.60	118.75	115.00	114.80		
Barley	104.00	105.00	103.00	107.00	108.00	108.00	-	-	-	102.00
Cotton	1,049	1,186	1,265	1,294	1,334	1,313	1,287	1,342	1,359	1,346
Raw Sugar	147.97	139.64	136.21	154.92	174.30	207.33	221.56			
Refined Sugar	169.68	169.06	172.58	190.68	200.39	234.44	242.26			

US Soft Wheat: U.S. No. 2 Soft Red Winter Ord. Prot., FOB Gulf Ports; year January-December. Source: US Department of Agriculture.
US Hard Wheat: U.S. No. 2 Hard Winter Ord. Prot., FOB Gulf Ports, US$/ton; year January-December. Source: US Department of Agriculture.
Barley: EC (French) FOB Rouen, net of export refund. July/June commencing in the year shown. Source: International Grains Council.
Cotton: COTLOOK Index "A" M1-3/32", CIF Liverpool; year January-December. Source: Cotton Outlook.
Raw Sugar: London no.7, raw, CIF, UK in bulk; year January-December.
Refined Sugar: London no.7, white, FOB, Europe; year January-December.

The present market rates are influenced by a wide range of government interventions within the Syrian economy, including interventions that affect prices in the agricultural sector. If agricultural prices were not supported (see below), agricultural production would be less attractive than at present, agricultural output and exports would fall, and agricultural imports would increase. This would cause the market value of the SP to devalue.[38] It would seem likely that a substantial devaluation would be required to maintain the aggregate values of agricultural exports and imports at their present levels if government support were withdrawn.

Rather than use an estimated exchange rate in our analysis (which could well be erroneous and misleading), we instead use the approximate current market rate of SP50 per US Dollar and then discuss how far the rate would need to change to offset the withdrawal of Government price intervention.

4.2.5 Selection of the Model Marketing Chains

In the absence of government price setting and control, prices at each level of marketing vary spatially, giving a very large number of different price structures between the farm gate and the point of final sale and export. We have modelled structures that approximate the most common likely structure, namely those where the commodity moves from the main producing area (in most cases Al Hassake Governorate) to the main deficit urban area, Damascus. Other than for hard wheat exports, we have assumed that foreign trade is through the main Mediterranean ports of Latakia and Tartous. It should be noted that, for an export crop, producer prices would be higher the closer the location of the producing farm to the main consumption centres and/or the point of export. For an import-substituting crop producer prices would be higher, the closer the producing farm to the main consumption centres and, in particular, if the farm is close to a main consumption centre that is distant from the point of import.

For all commodities other than sugar, we have assumed that the stages of marketing chains would remain the same as at present. For sugar, we have assumed that a wholesaling sector would emerge if the Government were to withdraw from sugar distribution (as recommended in section 3.5).

4.2.6 The Extent of Government Intervention

We have assumed for all commodities that:

- all government price setting is eliminated and that prices are determined by market forces;
- all indirect taxation, including export and import taxes are eliminated.

For lentils, chickpeas and barley, we have further assumed that all marketing continues to be undertaken by the private sector.

For wheat, we have employed private costs to the extent that these are available, namely for milling and baking. We have been forced to use public-sector storage costs and losses, since there is no significant private storage of wheat. However, we have only taken account of short-term operational and seasonal storage costs and have eliminated costs associated with the long-term holding of strategic reserves.

For cotton and sugar, we have taken public costs, since all primary processing and marketing of domestic production is undertaken by state establishments, with the result that no private cost data

[38] Note that not only agricultural sector trade would be affected by a devaluation, but all exports and imports for which the quantity traded internationally by Syria is affected by the SP price.

are available. It is likely that unit costs would be significantly different if processing and marketing were undertaken by the private sector.

4.3 FINDINGS

4.3.1 The Deviation of Official from Parity Producer Prices

Table 4.2 compares the parity producer prices estimated in Annex 5 with the official producer prices that have been in place since 1996. It should be recalled that, other than for lentils and chickpeas, the parity price estimates are based on mean international prices for the 42-month period from January 1997 to June 2000.

TABLE 4.2: COMPARISON OF OFFICIAL AND PARITY PRICES TO PRODUCERS

	Soft Wheat (Import)	Hard Wheat (Import)	Hard Wheat (Export)	Barley (Import)	Lentils (Export)	Chickpeas (Export)	Cotton (Export)	Sugar (Import)
Official Producer Price	10,800	11,800	11,800	7,500	16,000	17,800	29,290*	2,150*
Parity Producer Price	6,497	7,199	7,062	7,316	18,799	28,852	22,291	746
Ratio Official to Parity	1.66	1.64	1.67	1.03	0.85	0.62	1.31	2.88

* Actual mean producer prices after the adjustment of the official base price to take account of quality premiums and discounts paid to farmers.

It will be seen that the producer price for sugar beet has been almost three times *import* parity, making beet much more protected than any other crop. Soft wheat producer prices have been 66% higher than *import* parity, and hard wheat prices over 60% more than both *import* and *export* parity.[39&40] Moreover, during 2000, both hard and soft wheat international prices have been well below the 42-month mean on which these estimates are based. However, it should be noted that international (US$) wheat prices were roughly 60% above their present level when the current official producer prices were first introduced in 1996.

Cotton producer prices have been above *export* parity by an estimated 31%, following a monotonic decline in annual international prices for cotton fibre from 1995 and 1999. International prices have made a modest recovery in 2000 (see Table 4.1), but October prices were still below the 42-month mean used in our analysis.

For barley, prices have been roughly equal to *import* parity. This is compatible with the private importation of barley that has taken place over the past two years. However, current official producer price levels are almost certainly substantially above *export* parity.[41] Thus, if international barley prices do not recover, and should national production recover to a level above the domestic requirement, the GECPT would buy the greater part of the crop and would be forced either to export at a loss or to accumulate stocks.

[39] Normally export parity prices are substantially below import parity prices due to trading costs. The small difference between export and import parity prices for hard wheat is due to our assumption that Syrian hard wheat will not fetch a price premium over imported US hard wheat in the domestic market, but will sell at a 10% premium over US hard in export markets.

[40] It should be noted that protection during 2000 has been higher than this due to the existence of exceptionally low international prices.

[41] Differential trading costs alone are sufficient to account for this. It is also possible that Syrian barley would not on world markets fetch the price premium that we have assumed for the Syrian market.

In the case of lentils and chickpeas, official prices have been below *export* parity for the past two years. This finding is compatible with the current dominance of the private sector in both the export and domestic markets for these crops (see section 3.3).

In summary, the official producer prices for wheat, cotton and sugar beet have been above parity in recent years, those for barley have been equal to parity, while those for lentils and chickpeas have been below parity. In the case of lentils and chickpeas, farmers have received approximate export parity prices from private traders. In the case of barley, farmers have been paid import parity prices by private traders that have been approximately equal to the official prices. To the extent that farmers can switch between crops in response to relative profitability, government price intervention has artificially encouraged wheat, cotton and sugar beet production at the expense of barley, lentil and chickpea production.

4.3.2 Prices, Costs and the Profitability of Production

The cost data employed in the setting of official producer prices for the strategic crops is reviewed in Section 2.3. This is the only readily available up-to-date information that is available on costs of production.[42] It has severe limitations for analysis since it provides no information on cost variability within Syria and no direct information on the variability of costs and profitability from one year to another.

Since yield variation is the main determinant of inter-year variability in unit cost, some insight into the variability of average national costs between years can be obtained by simulating current unit costs at different yields. This analysis is contained in Annex 4 and summarised in Table 4.3. Our approach is to take the official MAAR cost data used in the annual review of strategic crop prices (described in Section 2.3) and to simulate how costs and profitability vary with variations in yield and at the ruling official and parity prices. We have adjusted the official cost data to exclude land rental and to take account of the fact that financing costs for annual crops do not span a full year. The exclusion of land rental means that the cost and profit data in effect refer to a typical farmer working his own land. This is the most common form of arrangement.

We employ two sets of per-hectare yields, giving six separate scenarios:

- the 1997, 1998 and 1999 official yields; and
- the highest, lowest and mean annual national yields from 1989 to 1999.

Combined with the official and with recent parity prices, these give the twelve estimates of profitability for each crop shown in Table 4.3. The data in the table show the following:

First, the official yields used in each of the past three annual producer price reviews have been above the estimated mean national yield from 1989-1999. This is despite the fact that the official yields were cut in 1999 in the knowledge that actual yields had been reduced sharply by the prevailing drought conditions. The only exception was for lentils in 1999, for which the official yield was reduced to below the mean 1989-1999 national yield. In the case of irrigated soft wheat, the reduced

[42] There proved to be insufficient resources within the present study either to collect further primary cost data or to assemble and analyse the data collected by MAAR within individual governorates.

TABLE 4.3: ESTIMATES OF THE PROFITABILITY OF PRODUCTION IN 1999 USING OFFICIAL COSTS AND OFFICIAL AND ESTIMATED PER HECTARE YIELDS

	Irrigated soft wheat	Rainfed hard wheat	Irrigated hard wheat	Barley	Lentils	Chickpeas	Cotton	Summer Sugar
Official producer price (SP per kg)	10.80	11.80	11.80	7.50	16.00	17.80	30.75	2.25
Parity producer price	6.50	7.20	7.20	7.32	18.80	28.85	22.29	0.75
1989-1999 mean annual national yield (kg/ha)								
Highest	2,960	1,589	4,380	1,067	1,167	898	4,179	45,623
Lowest	1,109	295	1,250	94	294	396	2,725	19,081
Mean	2,245	905	2,597	569	806	637	3,292	37,883
Official yield (kg/ha)								
1997	4,000	-	3,760	900	900	850	3,200	45,000
1998	4,000	1,150	3,760	800	900	850	3,400	45,000
1999	3,560	770	3,346	625	621	650	3,400	45,000
Official 1999 cost of production (SP/ha)								
Total	40,871	11,681	41,028	6,734	16,604	16,118	97,754	107,731
Total less land rental and interest adjustment	34,675	9,911	34,808	5,709	14,289	13,627	82,605	91,316
Profit/loss* (SP per ha)								
At official prices								

1999 official yield of 3,560kg/ha was 20% above the record national yield of 2,960kg/ha. It should be noted that for cotton, the official yields are only marginally above the 1989-99 mean and are probably close to the trend in yields, given the strong growth in cotton yields. However, for all the other crops, for which there have been no strong growth trends, the official yields are above those mean national levels that could be expected in a year of average yield.

Second, until the reductions in official yield in 1999, the official estimates of profitability were positive for all the strategic crops. The reduced 1999 official yields for rainfed crops were reportedly based on the projected yield of those farms that had not experienced complete crop failure. At these reduced yields, farmers' income at the official prices would not have been sufficient to cover production costs. Despite this, the SAC decided not to increase the official prices.[43]

Third, the data show the major variability in yield, unit cost, and profitability to which Syrian farmers are subject as yields vary from year to year. As one would expect, this is especially marked on rainfed land. Thus, the setting of administered prices does not ensure reliable stable net incomes for farmers. Indeed, the net incomes of farmers, even those farming irrigated land, are potentially highly unstable.

Fourth, if farm incomes were not supported by government purchasing at official prices, 'average'[44] farmers would make losses on all the strategic crops in a year of average yield, other than for lentils and chickpeas. In the case of irrigated wheat and sugar beet, losses would be made even in years when yields were equal to the highest previously achieved.

The above findings must be qualified in two ways. First, it must be emphasised that the data employed refer to estimated annual national mean yields and mean costs. The actual profits made by individual farmers will depend on how their costs and yields compare with the average. Farmers in the more productive agro-climatic zones using low cost techniques may be able to make profits in circumstances where other farmers are suffering severe losses. Second, the impact of yield instability will vary between crops and types of farms depending on the amount of family labour that they employ. This is because family labour is costed in the official figures at a notional wage rate. In practice, small-scale farmers growing labour-intensive crops will bear the impact of low yields principally through a reduction in their effective earnings per unit of family labour, rather than in the form of a cash loss.

Table 4.4 contains estimates for major field crops of the proportion of total variable costs that comprise labour. From this it will be seen that the profits of large-scale farmers using hired labour to grow wheat and barley will be most affected by any given proportionate change in yield. Small-scale farmers growing labour-intensive crops, such as cotton, sugar beet, tobacco, pulses and vegetables, will bear a reduction in yield principally through a fall in the return to family labour.

4.4 THE COSTS OF PRICE SUPPORT AND SUBSIDISATION

Annex 5 contains estimates of the unit and total value of the support to farmers and consumers that the Government provides by setting prices that differ from parity prices. The analysis is for the three crops for which Government price intervention currently has a major impact: wheat, cotton, and sugar beet. The estimates refer to 1999 in the case of wheat and sugar beet and, in the case of cotton, to the crop harvested in 1998 and processed and sold in 1998/99. The annex also contains estimates

[43] Since the data provided to the SAC also includes land as a cost and higher interest costs, the submission to the SAC would have shown even higher projected losses.

[44] 'Average' as defined by the DAE.

TABLE 4.4: LABOUR AND WATER USE ON MAJOR FIELD CROPS								
	Labour Use (days/ha)*			Water		Labour	Total	Labour cost/
	Machinery	Other	Total	Requirement	Labour days/	cost per	variable cost	total variable
	Operation			(cu.m./ha)	000 cu m water	hectare (SP)	per ha. (SP)	cost
IRRIGATED								
Wheat	2.8	12.4	15.1	4,018	3.76	2627	21454	0.12
Cotton	2.8	111.4	114.2	10,897	10.48	22508	39178	0.57
Sugarbeet	2.8	108.8	111.5	6,779	16.45	19228	50582	0.38
Tobacco	1.6	167.0	168.6	8,130	20.74	29360	64815	0.45
Broad Beans	1.3	50.0	51.3	4,444	11.53	8540	20070	0.43
Cucumbers	1.6	95.8	97.4	15,600	6.24	17665	47039	0.38
Onions	1.8	99.5	101.3	9,745	10.40	17540	64426	0.27
Potatoes	4.1	111.5	115.6	9,311	12.42	18010	91440	0.20
Tomatoes	1.9	198.5	200.4	9,311	21.52	33750	69665	0.48
RAINFED								
Wheat								
- AEZ 1	0.8	0.3	1.1			50	8763	0.01
- AEZ 2	0.7	0.3	1.0			50	9170	0.01
- AEZ 3	0.7	0.3	0.9			50	6022	0.01
Barley								
- AEZ 1	0.8	0.3	0.9			50	8790	0.01
- AEZ 2	0.6	0.3	0.9			50	7188	0.36
- AEZ 3	0.6	0.3	0.9			50	4296	0.01
- AEZ 4	0.6	0.1	0.7			25	2670	0.01
Lentils								
- AEZ 1	0.8	17.9	18.6			3575	10010	0.36
- AEZ 2	0.1	17.0	17.1			3400	7898	0.43
- AEZ 3	0.1	14.1	14.3			2825	5628	0.50
Chickpeas								
AEZ 1	0.8	15.4	16.2			3105	9974	0.31
AEZ 2	0.8	11.8	12.6			2350	8441	0.28

Source: National Farm Data Handbook, 1994.
* Days of 8 hours.

of the cost to the Government of price intervention. This focuses on the organisation that explicitly bears the cost of subsidisation. For wheat, this is the GCM, for cotton the CMO, and for sugar the GEC. It should be noted that, in the case of wheat, further, relatively small losses are made by other organisations involved in the storage, transporting and baking of wheat (see Section 3.1)

TABLE 4.5: GOVERNMENT PRICE INTERVENTION: COSTS AND BENFICIARIES

	Billion SP	Percentage of GDP
WHEAT (1999)		
- GCM loss	26.29	3.24
- Subsidy to farmers	10.80	1.33
- Subsidy on standard flour	1.98	0.24
COTTON (1998/99)		
- CMO loss	6.42	0.79
- Subsidy to farmers	9.88	1.22
- Tax on domestic spinners	2.30	0.28
SUGAR (1999)		
- GEC loss	3.72	0.46
- Subsidy to farmers	1.55	0.19
- Subsidy to consumers	1.63	0.20
TOTAL		
- Losses	36.43	4.49
- Subsidy to farmers	22.23	2.74
- Subsidy to consumers	3.61	0.44
- Tax on industry	2.30	0.28

The Annex 5 estimates are summarised in Table 4.5, above. It will be seen that wheat and cotton farmers received approximately equal total price support through Government acquisition at prices that were substantially above, respectively, import and export parity. However, the total losses of the GCM were some four times those of the CMO. This was for two main reasons. First, the GECPT includes in its selling price to the GCM not only its costs of acquisition, transport and intra-seasonal storage, but also the cost of financing the national strategic reserve and other interest costs that result from late reimbursement of losses by the Treasury. Second, the CMO recovers a part of the cost of subsidising seed cotton producers by selling cotton fibre to the domestic textile industry at prices that are above export parity. The GCM, conversely, sells standard flour at below import parity with the aim of reducing the retail price of bread.

Since official producer prices have not been changed since 1996, the relative size of the subsidy received by producers and by consumers of wheat and sugar will have tended to change from year to year with changes in relative world prices. In 1999, farmers and consumers shared the subsidisation of sugar roughly equally. In the case of wheat, some 85% of the total price subsidisation went to farmers.

Price subsidies to wheat, cotton and sugar beet farmers totaled SP 22.23 billion, equivalent to 2.74% of GDP. Total consumer subsidies by contrast amounted to less than 0.5% of GDP.

GCM losses amounted to a massive SP26.29 billion, equivalent to 3.24% of GDP; and total public losses for the three commodities to 4.49% of GDP. A further subsidy of 0.28% of GDP was in effect paid by the domestic textile industry to seed cotton producers.

5. STRATEGIC ISSUES AND STRUCTURAL AND INSTITUTIONAL REFORM

5.1 INTRODUCTION

The Government intervenes in the agricultural sector in three main ways:

(i) through physical planning of areas to be planted to particular crops;
(ii) through influencing the prices at which farmers acquire credit and inputs and sell their outputs; and
(iii) through direct public involvement in the supply of credit and inputs and the processing and marketing of outputs.

Interventions (b) and (c) are linked since the Government administers the prices of credit, inputs and outputs through the systems of public input supply and output marketing.

Government intervention has succeeded in achieving:

- a high rate of domestic agricultural growth;
- approximate self sufficiency in wheat;
- rapid growth in the production of the main export crop, cotton; and
- a high level of throughput for public cotton ginneries and textile mills, sugar factories and wheat mills.

However, intervention has (i) required major public expenditure on price support, especially for wheat, it has (ii) been only partially successful in conserving irrigation water reserves and in using these reserves efficiently, and it would seem likely that (iii) it has not led to the most efficient use of domestic resources, in the sense that water, land, labour and capital are unlikely to have been allocated between crops on the basis of comparative advantage.

This latter issue is difficult to resolve conclusively because the empirical measurement of comparative advantage is extremely difficult to achieve with any kind of accuracy. Measurement must be based on estimation of the domestic resource costs of earning a unit of foreign exchange. This, in turn, requires estimation of the social cost of using the domestic resources of water, land, labour and capital. Such estimation is necessarily difficult and contentious even in situations where adequate data are available. Moreover, estimates need to be made of the costs and yields of marginal producers rather than of typical producers, as is the normal practice. Accurate estimation of domestic resource costs is well beyond the scope of this study and, to our knowledge, has yet to be achieved in Syria.[45] Notwithstanding this, it would seem extremely unlikely that the allocation of water and other resources between crops reflects comparative advantage. This is for two reasons. First the Government has used its physical planning system to pursue crop output objectives that explicitly do not take account of the international unit market value of the crops in question. Second, to the extent that farmers have been able to make independent decisions on the crop mix to grow, these have been based on producer prices that embody marked differences between crops in the extent of nominal and effective protection.

[45] An attempt in 1994 by the Economic and Social Commission for West Asia (ESCWA) is reviewed in Annex 6.

5.2 ACHIEVING A MORE EFFICIENT USE OF AGRICULTURAL RESOURCES

Government intervention in the agricultural sector is currently required for three main reasons:

- water is not metered;
- the growing of key crops would not be profitable in the absence of intervention; and
- the Government has national production targets for certain crops.

Each of these reasons for intervention is examined below, with the aim of isolating possible structural, institutional and other changes that would lead to more efficiency within the agricultural sector while still achieving other key national policy objectives.

5.2.1 Efficient Use of Water

The problem

Water is a very scarce commodity in Syria. Some 90% of the total available water is currently used for irrigating crops. Almost all sources of irrigation water are currently being exploited up to their sustainable levels, and in some cases beyond. Given these three facts, it is essential that all available water resources in both irrigated and rainfed areas be used efficiently in each year, and that an optimal balance be struck between current and future water use.

Despite its scarcity and great value, there is currently no means of charging farmers for the volume of irrigation water that they use, since water is not metered. Once farmers have invested in a tube well and its associated equipment or have paid their fixed irrigation fee for water from government schemes, their use of water is in effect free, other than for the cost of pumping water from wells or rivers.

Because farmers are not charged for use, water has to be distributed between them administratively. For water supplied from dams, this is done through a combination of regulating the areas planted to particular crops and through limiting the supply of water to particular time periods. For water drawn by farmers directly from rivers or artesian wells, the only means of controlling use is through regulating areas planted. The need for this indirect system of regulation of water usage is a major justification for the Government's current system of agricultural production planning (described and reviewed in Section 2, above). However, this system does not ensure efficient water use since it only controls each farmer's theoretical potential water requirement. In practice, farmers can utilise more than the amounts that the Government assumes to be optimal without penalty. For this reason, water table levels have been falling throughout Syria, and water from dams is not used as efficiently as it could be.

The need is for a system of allocating the available water between farmers that leads to efficient utilisation and does not require the physical farm-by-farm state control of crop areas.

Solutions

Recognising the need for direct control of water usage, the Government decided in April 2000 that all artesian wells should be metered. Reportedly, no date has yet been set for meeting this target, but it is likely to take at least three years. The possibility of manufacturing meters locally is currently being explored.

Once wells are metered, usage of groundwater will be able to be controlled in one of two ways. First, water could be priced at a fixed charge per unit with no restriction placed on usage. This would have the administrative advantage that it would not require monitoring of the areas that farmers plant to each crop. The alternative would be for farmers to pay a standard charge for usage up to the level deemed optimal for the area of each particular crop that they plant and for

them to pay a penal rate for use in excess of this level.[46] In both instances, farmers would need to know the unit charges in advance of the season in order to allow them to make rational decisions on crop combinations. Both methods would require careful selection by the administering authority of the base rate, since this would determine total water usage. For each irrigation area, the aim should be to set this base rate at the level that would result for that area in water usage up to the sustainable maximum. For areas where the water table has been depleted by over-use in the past, the aim could be to regulate usage to levels that would lead to progressive replenishment. The rate of replenishment would, in turn, need to be based on a trade off between the benefits of current usage and the reduction in pumping costs resulting from a higher water table.

In the first year of introducing a new system, in the absence of prior experience of farmers' reactions, it would be difficult for the Government to set the rate at the optimal level. Therefore, it would be preferable initially to use the penal charge system, since this would involve less risk of making a major error in the initial years that led to gross over or under-usage. The difference between the standard and penal rates could then be reduced progressively until the two were unified. The rate at which they would be unified would need to be the rate that would lead to maximum sustainable usage or, in the case of areas where the water table has been depleted, to the optimal rate of replenishment. Once this were achieved and the Government were able to use price to manage water usage effectively, the Government production planning system would no longer be needed for this purpose.

The metering of water from dams and rivers is currently not possible due to the predominant open channel method of delivery. However, the long-term aims of the Government are reportedly (a) to convert all existing dam and river-based irrigation to pressurised systems that would allow metering, and (b) only to construct new systems that are fully pressurised.

In the interim, it will be possible to take some steps towards the objective of ensuring that farmers take at least some account of the cost of water in their decision-making. One measure that could be implemented immediately would be for farmers to pay for water through a per-hectare charge that varies with the crop grown, with the per-hectare charge being a function of the water necessary for the crop in question. This would allow farmers to take account of the cost of water when deciding on the combination of crops to grow. The rate would need to be set on the same basis as described above for groundwater. After a number of years of operation, it should be possible to set a rate for each area supplied from a particular source that leads to usage equal approximately to the water available from that source. Rates would then need to be varied from year-to-year as water availability varies with annual rainfall intensity. Physical regulation of availability would no longer be necessary but it would still be possible as a last resort should usage rates exceed those projected.

Over the long-term, once all surface irrigation water is metered, it should be possible to employ the same pricing system as proposed above for artesian wells.

Thus, for water regulation, we make the following recommendations:

- on non-metered irrigation systems, introduce per-hectare water charges, the rates of which are a function of the estimated water requirements of the crop grown;
- once an irrigation area is fully metered, initially introduce water charges per cubic metre, the rate of which increases to a penal rate once the farmer uses more than is estimated as optimal for the crops that he is growing; progressively reduce the difference between the standard and penal rates until they are unified at the rate that would lead to maximum

[46] From our discussions with Government staff, it would seem that the present intention is to use metering simply as a means of penalising farmers for water use judged to be excessive. Farmers would not be charged for water on the basis of usage.

sustainable usage or, in the case of areas where the water table has been depleted, to the optimal rate of replenishment.

5.2.2 Allocation of Resources between Crops

The problem

Some 79% of Syria's rainfed land that is devoted to annual crops is planted to wheat and barley. Some 58% of all irrigated land is planted to wheat and a further 21% to cotton.

To prevent the majority of wheat and cotton producers from making losses, the producer prices of both crops is currently being heavily subsidised by the Government. For both hard and soft wheat, the GECPT has recently been paying farmers prices that are over 60% above estimated import parity. For cotton the CMO producer price has been about 30% above export parity. The GECPT producer price for barley is currently approximately equal to import parity. However, subsidisation of barley will be required should world prices fall back from their current relatively high levels and/or should the country return to producing export surpluses once farmers no longer face drought conditions.

Thus, Syria is currently in a position in which two of its three main crops require subsidisation and the third may well need subsidising in the future.[47] This contrasts with other field crops, such as lentils, chickpeas, and a set of horticultural crops that farmers can grow profitably at unsubsidised parity prices.

In the absence of a large-scale devaluation of the SP, this situation is likely to persist for a number of years since, in the short-term, the potential for substituting other crops for wheat, barley and cotton is relatively limited. On rainfed land, other than for the possibility of planting small amounts of sesame and cumin, the scope for substitution is limited largely to lentils in zones 1 to 3 and to chickpeas in zones 1 and 2. There is no alternative to barley in Zone 4 other than for use of the land for extensive grazing. On irrigated land, there is scope for planting lentils and vegetables. However, the scope for substitution in the short term is limited by logistical constraints in processing and, in the case of vegetables, by the limited domestic market and the need to develop international marketing capacity.

Thus, while over the long term there is considerable scope for changing land use, in the short term a large proportion of the land under annual crops will need to continue to be planted to wheat, barley and cotton. This, in turn, means that their profitability must be maintained artificially. If this objective is not met, it will have major adverse consequences for agricultural employment and for the incomes of the nation's farm families, the majority of which rely heavily on producing one or more of these three crops.

The need to support wheat and cotton currently creates two distinct problems:

- it has a high fiscal cost for the Government; and
- it requires a mechanism for delivering the support. The mechanism that has been employed by the Government is direct state acquisition of the crop by public establishments (see section 3).

[47] The dominance of wheat is a consequence of government policy to obtain self sufficiency. Cotton production was also deliberately expanded during the 1990s in response to prices in international markets that allowed Syrian cotton to be exported profitably without subsidisation. International cotton prices have subsequently declined. The area planted to barley has more than halved over the past decade but it remains the dominant crop in the drier arable farming areas where there are few alternatives.

In the case of wheat, the situation is exacerbated by the fact that Government policy is for bread – Syria's main staple foodstuff – to be sold at less than world price equivalents. This adds to the fiscal burden (see section 4.4) and also requires a mechanism for delivery of the subsidy. The present mechanism is the sale of standard flour by a state establishment at a subsidised price (see section 3.1).

The situation is further exacerbated by the large strategic reserve of wheat held by the Government. Since this stock must be turned over regularly, this requires the Government to be a major buyer and seller of wheat.

The need is for some other means of providing price support to wheat, barley and cotton that has a lower fiscal cost and/or does not require direct government intervention.

Solutions

A large devaluation of the SP would increase significantly the domestic prices of basic foodstuffs and is therefore impracticable. Therefore the Government must continue to intervene to support producer prices.[48] It can do this in two ways:

- by direct state involvement in marketing, as at present; or
- through the use of market forces modified by the taxation of imports and the subsidisation of exports. This would, in turn, require the privatisation of government processing facilities.

The feasibility and potential advantages of using the latter method varies from crop to crop. In the remainder of this sub-section we discuss the possibility of eliminating direct state intervention for wheat and cotton and also for the other crops (other than tobacco) for which the Government has retained intervention mechanisms.

Cotton

In the case of cotton, an export subsidy aimed at raising the producer price would also raise the price of cotton fibre to the domestic textile industry. It would thus replicate the deficiencies of the current administered price system (highlighted in section 3.4). Thus, the subsidy would need to be injected at the ginnery level through a subsidy on either seed cotton purchases or fibre sales. Since this would apply to all cotton, the fiscal cost would be similar to the cost under an administered price system that sold cotton fibre to the domestic textile industry at export parity.

A necessary condition for such a system to operate effectively would be a competitive ginning industry in which privately owned ginning firms compete to acquire seed cotton from farmers. However, if the Government were to privatise the CMO's ginneries, this would not lead to such a competitive system due to the large size of each ginnery and the fact that seed cotton is a bulky commodity that is expensive to transport. Thus, while there may be a sufficient number of ginneries in Aleppo for there to be a reasonable degree of competition between them, elsewhere in the country there would be local purchasing monopsonies. A competitive private system would require large numbers of small ginneries in each producing area.[49] However, this would require additional investment and some loss of economies of scale. Unless private management proved to be markedly superior to the present management by the CMO, unit ginning costs would increase. Thus, there would seem little to be gained from radical changes to the present system. The principal need is for current pricing under this system to be modified so that all cotton fibre is sold by the CMO at export parity, including cotton sold to the domestic textile industry (See Section 3.4).

[48] Support could in theory be provided instead through the subsidisation of credit and inputs, but this would be more distorting than subsidising producer prices since it would influence the structure and techniques of production in addition to land use.

[49] Such a system exists in neighbouring Turkey, where each village in the main cotton producing areas has a number of competing privately owned small-scale ginneries.

Sugar

For sugar beet, the producer price could be raised through taxes on imports of raw and refined sugar. This would raise substantial revenue for the Government since the majority of Syria's sugar needs are met from imports. The cost would be borne by domestic consumers who, unlike at present, would pay a price for both imported and domestically produced sugar that reflected the unit cost of producing sugar domestically. The alternative would be to provide sugar factories with a subsidy that covered the difference between the cost of producing sugar domestically and importing. This would have approximately the same cost to the Government as the present administered pricing system.

However, the sugar factories would need to be privatised and this would face similar problems to those that would be experienced following ginnery privatisation. For similar reasons, the firms that owned individual factories would have local monopsony powers and there consequently would not be competitive formation of producer prices. Thus, as with cotton, there is little scope for privatisation and fiscal management of the producer price. The need is to operate the present administrative pricing system more effectively (see Section 3.5).

Barley

For barley, it would be feasible to regulate domestic producer prices using export and import taxes and subsidies. At times of domestic surplus, either an export tax or export subsidy would be required, depending on the level of world barley prices. Similarly, at times of domestic deficit, an import tax or import subsidy would be needed. The levels of these import and export taxes and subsidies could be varied using formulae that linked their level to a world price indicator.[50] This would allow support of a stable, remunerative barley price for the farmer and would be conducive to the further development of the present system of private trade in barley. The GECPT would no longer acquire barley from farmers. The GEF could acquire the barley that it requires for its feed mills by tender from the private sector, pending ultimate privatisation of these mills. A key advantage of such a system would be that it would remove a current impediment to the development of private-sector feed milling and should lead to a more efficient livestock sector (see section 3.2).

Thus, we **recommend** that the GECPT withdraw from the acquisition of barley and that the barley market be regulated in the future through variable taxes and subsidies on exports and imports. This recommendation is reportedly in the process of being implemented.

Wheat

The support of wheat prices through the use of fiscal measures to modify market forces is not feasible at present due to the dominance of the Government in marketing and processing. Futhermore, the Government maintains a large strategic reserve of wheat. This requires it to participate in the domestic wheat market even when it is not accumulating or depleting the reserve, since the existing reserve must be turned over regularly. Discussion of management of the reserve is excluded from this study due to its sensitive nature. This, in turn, precludes meaningful discussion of changes to the wheat marketing system since any such change must be designed to accommodate trading associated with the reserve.

Lentils and Chickpeas

Although the producer prices of these crops are not being supported by the Government at present, it is possible that at times in the future they may not be profitable at ruling export parity prices, since prices in world markets fluctuate from year-to-year. Therefore an issue is whether the Government should remain a buyer of last resort.

[50] The most appropriate indicator would probably be the International Grains Council's published price for French barley FOB Rouen.

There is a strong case for providing producer price support in years of low international prices, since progressive movement of rainfed land under wheat and barley into chickpeas and lentils is likely to result in a more efficient allocation of agricultural resources. This may also be the case for the movement of irrigated land from wheat to lentils. Such movement would be hampered if the growing of lentils and chickpeas became intermittently unprofitable in a situation where the Government was intervening to provide stable producer prices for wheat and barley.

Unlike cotton and sugar beet, the prices of lentils and chickpeas could be supported through an export subsidy rather through purchase by a government establishment. This would not encounter problems relating to the privatisation of processing, since a competitive private sector marketing and processing system already exists. It would have the following advantages:

- it would allow the present lentil processing facilities of the GECPT to be sold to the private sector and would preclude the need for the construction of additional processing capacity by both the private sector and the GECPT as production expands;
- this, in turn, would increase the efficiency of lentil processing, since the processing capacity of the private sector would not be intermittently grossly under-utilised, as under the present system where the GECPT acts as a buyer of last resort;
- for both lentils and chickpeas, it would stabilise the throughput of private traders and processors, thereby reducing their unit costs and the level of per unit profits that they seek.

Thus, we **recommend** that:

- the GECPT withdraw permanently from the acquisition of lentils and chickpeas;
- that it sell its lentil processing facilities to the private sector;
- and that a system of export subsidies for lentils and chickpeas be established to support the profitability of production in years of low world prices.

Such comprehensive action would be preferable to the more limited changes to the existing system recommended in Section 3.

5.2.3 Government Production Targets

The Government has the explicit objective of producing enough wheat annually for domestic consumption. To meet this aim, it has used its agricultural planning system to stabilise the area planted to wheat on rainfed land and to expand massively the area planted on irrigated land (from 237,000 ha in 1989 to 670,000 ha in 1999). Self sufficiency was attaind in the mid 1990s and retained until the very severe drought conditions experienced in 1999 and 2000.

The Government also aims explicitly to produce sufficient quantities of seed cotton and sugar beet to allow public processing facilities to operate at full capacity.

The system of agricultural planning can be used to ensure that minimum areas are planted to wheat, cotton and sugar beet, but it cannot guarantee per-hectare yields. In the case of wheat, this has resulted in the Government (a) seeking to ensure that enough land is planted to guarantee self-sufficiency in all but the most severe drought conditions and (b) to concentrate output on irrigated areas where yields are more stable than under rainfed conditions. This policy, in turn, led to large wheat export surpluses from 1996 to 1998.

Notwithstanding the problem created by yield instability, for all three crops the *area planted* could be managed through manipulation of the administered producer price without the need for the physical planning of planted areas. Thus, the existence of production targets does not, of itself, make it necessary for the Government to operate an agricultural production planning system.

Wheat

The Government's objective of annual self-sufficiency in wheat is based on the prevailing security situation in the Middle East. Annual self-sufficiency is, in turn, seen as necessary for ensuring national food security. While it is not appropriate for us to question the Government's food security objectives, it would seem possible that the necessary levels of national wheat availability could be ensured through a combination of domestic production, regular importation and stockholding that embodies a lower level of domestic wheat production than at present. This would allow some wheat land to be shifted into other, more-productive crops. However, it would seem that there is little potential for large-scale shifts in the short-term due to the lack of viable alternative crops.

Because of the high sensitivity of such an issue on national security grounds, it was considered inappropriate to attempt an in-depth investigation of this issue.

Cotton and Sugar

The objective of operating public processing facilities at high levels of capacity is not of itself rational. Capacity utilisation is just one of a number of factors that affects unit processing costs, and should be treated as such.

The utilisation of cotton ginneries and its impact on processing costs is discussed in Section 3.5. Syrian sugar production is so high cost that it would seem unlikely that the industry could ever be viable without government support. An argument that was frequently advanced to us in discussion with public officials was that sugar production must nevertheless be maintained because to cease production would be very costly in terms of employment.

The production of beet is indeed relatively labour intensive, both in terms of labour use per hectare, per cubic metre of irrigation water and relative to total variable costs (see Table 4.4). Notwithstanding this, the creation of employment through sugar production is extremely costly for the Government per job created. Beet production provides about 0.45 person years of work per hectare, giving total employment on the average of 28,500 ha planted in the past three years of approximately 13,000 person years. Given that the Government loses some SP1.6 billion per year more than it would if all sugar were imported, it is in effect providing an annual subsidy of SP 123,000 per job. The GESUG estimates that the sugar industry as a whole provides 28,000 jobs. Even if this is indeed the case and if all these jobs are in fact associated with domestic beet production and processing, this still gives an annual per-job subsidy of SP 57,000 per job. Such annual public expenditure is unlikely to be an effective way of using public funds to provide employment. Thus, we **recommend** that the Government considers the possibility of developing a programme for the gradual phasing out all sugar beet production. Such a programme should embody (a) research and extension efforts aimed at ensuring that farmers are supported effectively in their transition to alternative activities, and (b) a set of measures that aims to increase the efficiency of sugar beet production and processing during the transition period. These latter measures should be focused on the more efficient of the sugar beet areas and factories, and should include the changes in pricing discussed in sub-section 3.5.

5.3 THE PHASING OUT OF AGRICULTURAL PLANNING

The present system of planning leads to inefficiency because it inhibits farmers from adjusting their output to reflect their resource endowments, including family labour, capital and soil type and quality. This is especially the case for irrigated land, where each farmer within a village receives the same proportionate crop area allocations.

We have argued above that, with one possible exception, Government objectives relating to areas to be planted could be met without the present annual planning exercise. The exception relates to the use of irrigation water, which is partially controlled at present through the allocation to each farmer of specific areas to be planted to selected crops.

For water use to be allocated with maximum efficiency, it needs to be metered so that farmers take account of its opportunity cost when deciding upon usage. However, even without metering, the national *areas planted* to specific crops on irrigated land could in theory be controlled through a combination of differential per-crop water charges and producer prices. However, achieving national area targets in this way would be extremely difficult to implement in practice. This is because the optimal water charge in each area would depend on relative crop producer prices while the relative producer prices necessary to meet national production targets for selected crops would, in turn, depend on the rate of water charge set in each of the irrigation areas in which the crops are grown.

Thus, the existence of production targets represents a major practical impediment to the elimination of the system of agricultural production planning. Production targets therefore hamper efficiency directly by inhibiting crop specialisation on the basis of comparative advantage and indirectly through necessitating an area planning system that leads to an inefficient allocation of crops between farmers within each village.

5.4 SHORT-TERM IMPROVEMENT OF THE PRESENT AREA PLANNING SYSTEM

Improvements in the efficiency of Syrian agriculture, and therefore its international competitiveness, can be achieved in two conceptually distinct ways. First, the efficiency of production of specific crops can be improved through the adoption of new technologies and better farming practices. Second, the efficiency of total agricultural production can be increased through the switching of land between crops to arrive at an optimal combination of crops. The area planning system can only affect the latter, although the optimal crop combination will of course change as new technologies are adopted for particular crops.

5.4.1 Improvements in Area Planning at the Central Level

The options currently available to planners are heavily constrained by production targets (especially the target of wheat self-sufficiency), the relatively small number of crops that can be grown on most of Syria's rainfed land, and the need to rotate land between crops. However, within these constraints there is scope for changing the allocation of land to ensure that efficiency is maximised. This, in turn, requires that account be taken of the international unit values of the crops that Syria produces and the possibilities offered by trade.

Currently, some account is taken of export potential. For example, the 2000/01 plan will reportedly contain an increased area of irrigated lentils because lentils can currently be exported profitably without subsidy. The need is to adopt explicitly a planning system that steers national production systematically towards specialisation on the basis of comparative advantage and which maximises the gains from trade. We **recommend** that the Government adopt such a system. It must embody procedures for examining export potential systematically and also the potential to substitute imports for crops that Syria currently subsidises. It must then use these findings to identify optimal crop combinations on rainfed and on irrigated land in each agro-climatic zone.

Efforts to do this need to be based on an explicit recognition that it is water, not land, that is the binding constraint for Syrian agriculture. Thus, until more effective, market-based systems of allocating water are developed, the aim must be to utilise crop combinations that are most efficient in terms of their use of water. This, in turn, requires the development of farm models that maximise value-added per unit of water rather than per hectare of land.

Developing and implementing a methodology for such 'efficiency-based' planning will not be an easy task. In addition to the need to make forecasts of realisable export and import unit values, it must necessarily address the complex empirical issues relating to the identification of comparative advantage that were noted in sub-section 1, above.

The appended Project Profile 2 is for possible technical assistance to support national efforts to introduce systematic economic analysis into the planning mechanism.

5.4.2 Improvements in Efficiency at the Village Level

The core unit in the production planning system is the village. Within each village, farm families have different endowments of land, family labour and capital. They also have different needs and aspirations, especially regarding the income from their farm and the stability of this income. Consequently, optimal crop combinations will differ between farmers. Thus, it is important that the planning system embodies as much flexibility as possible for farmers within each village to specialise within the constraints set by the area targets for that village. This will become increasingly important as greater amounts of crops other than wheat and cotton are produced as the country moves towards specialisation based on comparative advantage.

Thus, **it is recommended** that the MAAR investigate the possibility of inter-farmer exchange of area allocations that would take place after the initial plan for the village has been established but before farmers are provided with licences. This would then still allow each farmer to use his licence as a basis for acquiring inputs and services.

5.5 THE TIMING AND SEQUENCING OF POLICY REFORM

Structural reform must be correctly sequenced. Furthermore, it is essential that each reform measure is carefully planned and that, prior to its introduction, all necessary physical investments are made, all administrative procedures are in place and all implementing personnel are fully trained. Consequently, effective implementation of a full programme of reform such as that proposed for Syria necessarily takes many years to implement fully.

Careful sequencing of reform is essential since the inter-dependence of government policies means that the success of some reform measures is dependent on the prior *effective* implementation of others.

In the case of Syrian agriculture, reform of the physical planning mechanism requires, in particular, that a system that is not dependent on area planning be first established for effectively controlling water use.

Early reform of irrigation control is also important given the critical need for more efficient use of water. Therefore it is important that the Government give priority to implementing the measures for irrigation described in Sub-section 5.2.1 above, namely (a) installing metering on wells and (b) introducing the recommended crop-specific interim system for charging for water from government irrigation schemes. The former is likely to take a minimum of three years, but the latter could be introduced more rapidly.

It is recommended that the Government aim to introduce crop-specific charges for water in the agricultural year commencing on 26th September 2002, and that it utilise the intervening period to develop the necessary administrative procedures and appropriate rates as described in sub-section 5.2.1. If this target is adhered to, the system should be in place, thoroughly tested, and operating effectively by 2005. Provided all wells are also metered by mid 2005, the Government could commence relaxing its control of area planted by September of that year.

Full relaxation will however require that the Government is either prepared to drop its present crop-specific production target for wheat or that it is confident of being able to achieve the national target through manipulation of the producer price. As noted earlier, such issues relating to wheat are not discussed in this report due to their sensitivity.

In the case of individual commodities, the majority of the reforms and changes proposed in this report could be implemented as soon as they receive government approval, since they would have a beneficial impact without the need for prior reform. This applies to:

- the proposed measures relating to the rationalisation of wheat milling capacity; and
- all the proposed measures for barley, lentils, chickpeas, cotton and sugar.

In addition, steps to introduce the following general recommendations could be taken as soon as they gain government approval:

- that relating to the efficiency of setting of administered producer prices;
- that relating to an area planning system that steers national production systematically towards specialisation on the basis of comparative advantage; and
- that relating to inter-farmer exchange of crop area allocations.

6. RECOMMENDATIONS

This Paper contains the following recommendations:

WHEAT

It is recommended that the MSIT undertake a survey of the private milling sector aimed at (a) determining its structure and capacity, (b) estimating the level of currently unutilised capacity and (c) projecting the number of years before additional wheat milling capacity will be required in Syria.

BARLEY

It is recommended that (a) private feed mills be allowed to tender for GCM bran and that (b) the Government remove the price discrimination that favours the direct use by farmers of barley and other feed commodities rather than properly formulated feed prepared in feed mills.

It is recommended that the present requirement to re-ship grain rejected by the MAAR be dropped and that importers be allowed to correct deficiencies through fumigation, drying or cleaning, and be permitted to then re-submit the grain to the Government for re-testing.

It is recommended that the GECPT withdraw permanently from the acquisition of barley and that the barley market be regulated in the future through variable taxes and subsidies on exports and imports.

LENTILS AND CHICKPEAS

It is recommended that price control of the domestic lentil and chickpea market be abolished.

It is recommended that:

- the GECPT withdraw permanently from the acquisition of lentils and chickpeas;
- that it sell its lentil processing facilities to the private sector;
- and that a system of export subsidies for lentils and chickpeas be established to support the profitability of production in years of low world prices.

Alternatively:

It is recommended that the Government sells its lentil processing facilities to private buyers and rents processing services in the future as and when it requires them.

COTTON

It is recommended that the CMO undertakes a detailed study of means by which its interest costs can be reduced, including a possible ginnery construction programme aimed at reducing the length of the ginning period.

It is recommended that the CMO sell cotton fibre to domestic users at approximate ex-ginnery *export parity* prices, not at cost-plus prices or at prices set at some notional 'international' level that is above export parity.

It is recommended that the MSIT monitor systematically the state of competition within domestic markets for garments and textile goods and that price control be eliminated where there are sufficient suppliers to ensure competitive price formation.

SUGAR

It is recommended that the Government equalise the duties on raw and refined sugar imports and simultaneously switch to a policy of charging importers of raw sugar only the marginal cost of processing.

It is recommended that (a) sugar-beet sucrose discounts and premiums be set at levels that accurately reflect the full loss and gain to the GOS of deviations in sucrose content from the base percentage, and (b) this measure be supported by an extension campaign aimed at encouraging farmers to adopt optimal levels of fertiliser application.

It is recommended that the Government examines the possibility of eliminating price control on sugar completely and selling Syrian-produced sugar ex-factory by tender.

I**t is recommended** that the GOS in future sell its sugar beet pulp by tender.

It is recommended that the GOS, in liaison with the MSIT, set its molasses selling price to the domestic market at export parity.

It is recommended that the Government develops a programme for the gradual phasing out all sugar beet production. Such a programme should embody (a) research and extension efforts aimed at ensuring that farmers are supported effectively in their transition to alternative activities, and (b) a set of measures that aims to increase the efficiency of sugar beet production and processing during the transition period.

WATER

It is recommended that:

- on non-metered irrigation systems, the Government introduce per-hectare water charges, the rates of which are a function of the estimated water requirements of the crop grown;
- once an irrigation area is fully metered, the Government initially introduce water charges per cubic metre, the rate of which increases to a penal rate once a farmer uses more than is estimated as optimal for the crops that he is growing; and that the Government progressively reduce the difference between the standard and penal rates until they are unified at the rate that would lead to maximum sustainable usage or, in the case of areas where the water table has been depleted, to the optimal rate of replenishment.

GOVERNMENT INTERVENTION

It is recommended that, for those crops for which the Government continues to set an official producer price, it base its decisions on price levels on detailed empirical analysis that takes explicit account, *inter alia*, of inter-year production instability and both mean unit costs and variations in unit costs between producers.

It is recommended that the Government adopt explicitly a planning system that steers national production systematically towards specialisation on the basis of comparative advantage and which maximises the gains from trade.

It is recommended that the MAAR investigate the possibility of systematic inter-farmer exchange of area allocations that would take place after the initial plan for the village has been established but before farmers are provided with licences.

It is recommended that once the Government takes a policy decision to reduce the degree of public intervention or control, it supports the decision as rapidly as possible with appropriate legislation.

PROJECT PROFILES

PROJECT PROFILE 1

PROJECT TO DEVELOP IMPROVED DATA AND ANALYSIS FOR PRODUCER PRICE INTERVENTION

1. BACKGROUND

The Syrian Government buys wheat, barley, lentils, chickpeas, cotton , sugar beet and tobacco from farmers at prices that are set annually by the Supreme Agricultural Council. It is likely that this procedure will need to continue over the medium term for all these crops other than barley, lentils and chickpeas.

Next to interest rates and the exchange rate of the Syrian Pound, these administered agricultural prices are probably the most important economic variables in the country. They affect the crop combinations that farmers grow and they are a major determinant of rural incomes and household food security.

Each price is currently set on the basis of an estimated average annual cost of production. There is need for more sophisticated analysis that allows decision makers to take account of the full set of objectives that are being pursued though price intervention. This, in particular, requires explicit treatment of inter-year production instability and a more disaggregated approach to the estimation of costs of production, including the examination of the costs of marginal producers.

Technical work for the annual review of administered agricultural producer prices is centred on the Directorate of Agricultural Economics (DAE) of the Ministry of Agriculture and Agrarian Reform. The Directorate has its own cadre of research staff located in the Governorates but these currently do not have the capacity to collect and process cost of production data effectively.

In the case of barley, lentils and chickpeas, there is need to develop means of indirect control of producer prices that allows the withdrawal of the General Establishment for Cereal Processing and Trading (GECPT) from its role of buyer of last resort and the further development and consolidation of private sector marketing and processing.

2. OBJECTIVES

(i) To assist the DAE to develop an improved system for setting annually the level of administered producer prices for selected agricultural crops.

(ii) To develop systems for indirectly supporting the producer prices of barley, lentils and chickpeas that are compatible with processing and marketing being undertaken entirely by the private sector.

3. SCOPE OF WORK

(i) Review the present system for setting administered agricultural prices, including the underlying collection and analysis of data on farm costs.
(ii) Identify the set of objectives that the Government seeks to pursue through its influencing of the levels of producer prices.
(iii) Develop a methodology that allows these objectives to be pursued systematically.
(iv) Identify the data needed, including data relating to per-hectare costs of production, yield levels and instability, domestic price structures, and parity prices.
(v) Develop appropriate systems of data collection and analysis that, to the extent possible, use existing institutions, staff and equipment.
(vi) Identify associated training requirements.
(vii) In the case of barley, lentils and chickpeas, develop in detail systems for achieving producer price objectives that are compatible with market-based systems of price formation and do not require the GECPT to operate as a buyer of last resort.

4. TIMING AND STAFFING

The project would have a duration of two years.

Staffing: One full-time Team Leader/Economist based in the DAE.

National and/or international short-term specialists in:

- rural surveying of farming systems, costs and yields
- data processing and transmission

5. INSITITIONAL ARRANGEMENTS

The project would be based in the DAE, with the Team/Leader Economist reporting to the Director of the DAE. Close liaison would be required with other MAAR directorates, the Price Department of the Ministry of Supply and Internal Trade, and the Ministry of Finance.

PROJECT PROFILE 2

PROJECT TO SUPPORT THE DEVELOPMENT OF MORE EFFICIENT AGRICULUTURAL PLANNING AND WATER USE MANAGEMENT

1. BACKGROUND

The Syrian Government currently plans the areas to be planted to specific key crops. Through an iterative process, a national plan is developed under which each individual farmer who cultivates over 0.5 hectares is licensed prior to the start of each crop year to plant specific areas to specific crops. The technical work for this is centred on the Department of Planning and Statistics (DPS) of the Ministry of Agriculture and Agrarian Reform (MAAR).

Such production planning is currently required principally because (a) the Government seeks to achieve national production targets for certain crops, and (b) in the absence of metering or other price-based methods of allocation, this is the only means of controlling the use of irrigation water.

The present planning system focuses on technical issues, with only limited account being taken of the actual or potential international market value of each crop. The need is to adopt a system which, within the constraints set by government objectives, maximises the efficiency of agricultural resource use, especially use of the most scarce resource, water.

2. OBJECTIVE

To develop the existing system of agricultural planning so that, while continuing to meet government objectives, it takes account of comparative advantage and the need to maximise the efficiency of water use.

3. SCOPE OF WORK

(i) Review the present system of agricultural planning in detail, highlighting its main strengths and drawbacks.
(ii) Identify key objectives that the Government sets for the system and determine how these are related to changes in the combinations of crops that farmers produce.
(iii) Develop a set of models for key crops for each of the major agro-climatic zones in which they are grown; isolate the crops that make the most efficient use of agricultural resources, especially irrigation water, taking account of domestic and international marketing opportunities and constraints.
(iv) Develop a revised system of planning that employs this analysis, with the aim of maximising efficiency while also meeting other key government objectives.
(v) Provide analytical advice and support for the establishment of this system through one complete planning cycle.
(vi) Evaluate the performance of the system, identify problems, and develop remedial measures.

4. TIMING AND STAFFING

The project would have a duration of two and a half years: one year for preparatory theoretical and empirical analysis, one year for pilot implementation and monitoring, and six months for evaluation, problem identification and the development of remedial measures.

Staffing: One full-time Team Leader/Economist based in the DPS.

National and international short-term specialists in:

- rural surveying and analysis of farming systems;
- international markets and trade for selected commodities;
- data processing, transmission and analysis;
- monitoring and evaluation.

5. INSTITUTIONAL ARRANGEMENTS

The project would be based in the DPS, with the Team/Leader Economist reporting to the Director of the DPS. Close liaison would be required with other MAAR directorates, especially the Directorate of Irrigation, the State Planning Commission, the Central Bureau of Statistics and the hierachy of committees responsible for plan development and monitoring.

PROJECT PROFILE 3

PROJECT TO SUPPORT EFFECTIVE MANAGEMENT OF THE PROGRESSIVE LIBERALISATION OF THE AGRICULTURAL SECTOR

1. BACKGROUND

The Syrian Government is progressively liberalising its management of the agricultural sector, substituting market-based for administered prices, reducing the extent and degree of price support and relaxing the intensity of physical control and planning.

Given the importance of the agricultural sector to the Syrian economy, it is essential that future liberalisation measures are appropriately designed and that the process and phasing of change is optimal. This will be difficult to achieve, since the issues and problems that are encountered during liberalisation are complex. Many other countries have been through similar processes in recent years and it is important that Syria draws on the lessons learned for the design of its own programmes. Assistance will be most needed by the two directorates of the Ministry of Agriculture and Agrarian Reform (MAAR) that are most closely involved with the Government's agricultural planning and price intervention activities, namely the Directorate of Agricultural Economics (DAE) and the Directorate of Planning and Statistics (DPS).

It will be a number of years before the Agricultural Policy Centre (APC) of the MAAR is developed to a state that it is in a position to undertake fully the necessary analysis and provide the necessary advice. In the interim, it is essential that those MAAR departments at the heart of the liberalisation process receive strong, full-time support both for their involvement in the design of the process of change and for addressing associated issues and problems as they arise.

There will also be a need for the proposed support for the radical restructuring of the pricing and agricultural planning systems to be reinforced with advice from experienced economists on measures to address the associated problems that are likely to arise from day to day as the restructuring proceeds.

Finally, it will be important that senior government staff witness at first hand the useful contributions that experienced economists can make to general policy development, to the design of specific policy measures, and to the solution of *ad hoc* problems. This will serve to demonstrate the productive ways in which the APC's economists will be able in the future to support the MAAR line departments and should strengthen the demand for the Centre's analytical and advisory services.

2. OBJECTIVES

To provide key MAAR directorates with technical analysis and advice that will:

(i) support the development of policies, programmes and measures to liberalise and otherwise enhance the efficiency of Syria's agricultural sector;
(ii) assist in developing optimal solutions to associated issues and problems as they arise; and
(iii) demonstrate the valuable contribution that experienced economists can make to the work of the MAAR line departments.

3. SCOPE OF WORK

The assistance would be provided by one full-time economic advisor in each of the two directorates, each of whom would:

(i) liaise with government staff, advisors and consultants working on the development of policies and measures relating to the restructuring of intervention and support in the agricultural sector, identify practical issues and problems relating to these policies and measures, undertake analysis and provide advice on means of addressing these issues and problems, and thereby support the institutionalisation and consolidation of the restructuring;

(ii) support the detailed technical design of liberalisation measures not directly related to base producer prices or area planning, such as the current effort to set ex-ginnery cotton fibre prices at international levels;

(iii) assist with the preparation of the papers, memoranda and draft legislation required for associated decision-making and implementation;

(iv) liaise at a technical level with economists in the APC and help develop the capacity of the APC to address and become progressively more involved in analysis relating to the liberalisation process.

4. TIMING AND STAFFING

The project would have a duration of two years with the possibility of renewal for a further period.

Staffing:

- Two full-time Economists, one to be based in the DEA and one in the DPS, with one of the two being appointed Project Team Leader.
- Local and international short-term consultants recruited to work as and when required on issues requiring specialist skills.

5. INSTITUTIONAL ARRANGEMENTS

The Team/Leader Economist would report on behalf of the project to the Deputy Minister. For their day-to-day activities, the Economists would report, respectively, to the Directors of the DEA and DPS.

ANNEX 6: REVIEW OF ESCWA'S 1994 ESTIMATION OF DOMESTIC RESOURCE COSTS

In 1994, the Economic and Social Commission for West Asia (ESCWA) developed a set of policy analysis matrices for selected Syrian crops,[51] using budgets for 1993 for:

- wheat, cotton, sugar beet, maize and sunflower grown under irrigation on farms located in Aleppo, Al Hassake, Hama and Damascus Governorates; and
- wheat, barley, lentils and chickpeas in four rainfed agro-ecological zones.

Domestic resource cost (DRC) ratios derived from these PAMs showed for the strategic crops that:

- Syria has a strong comparative advantage in all four rainfed crops (wheat, barley, lentils and chickpeas);
- Syria has a strong comparative advantage in cotton;
- Syria has a comparative advantage in irrigated wheat only in Damascus Governorate using shallow wells, water from rivers or gravity feed; and
- Syria does not have a comparative advantage in sugar beet.

These findings are frequently quoted by those who wish to argue that, other than for sugar beet, Syria is using its agricultural land reasonably efficiently.

Unfortunately, description of the data employed in the analysis is confined to one short paragraph in ESCWA's 95-page presentation. Furthermore, there is no discussion whatsoever of the yields employed and no mention of how border prices were estimated. Yields and border prices are key variables, small changes in which can have relatively large impacts on the DRCs.

Furthermore, some of the methodology employed is irrational. For example:

- it is assumed that imported refined sugar is transported to sugar factories rather than directly to distribution points;
- in the case of the calculation of the export parity price of lentils, no adjustment is made for (a) processing costs (b) weight loss or (c) byproduct realisation; moreover a transport cost from 'the mills to the port' is used to estimate the cost of transporting from a collection centre to the port;
- in the case of the calculation of the import parity price of sugar beet, no allowance is made for the realisation from the sale of molasses and pulp.

Most importantly, the study makes the fundamental error of assuming that the social price of rainfed land is zero because there are no competing crops to the four that are being cultivated (wheat, barley, lentils and chickpeas). This ignores the fact that the opportunity cost of devoting rainfed land to one of the four crops is foregoing the income of the most profitable of the other three. This error explains why the ESCWA study shows that Syria has a strong comparative advantage in growing all four crops on the same land.[52]

We have checked the yields and border prices used in the ESCWA study against, respectively, data on achieved yields and the levels of 1993 world price indicators. This shows that the yields and border prices employed both contained a heavy upward bias, resulting in the DRCs being substantially underestimated. Even in the comparatively favourable world market conditions

[51] Economic and Social Commission for West Asia, *Evaluation of Agricultural Policies in the Syrian Arab Republic (Policy Analysis Matric Approach), New York 1995.*

[52] It is possible for a country to have a comparative advantage in a set of crops, but not on the same land.

existing in 1993,[53] Syria almost certainly did not enjoy a comparative advantage in the wide range of crops and conditions indicated by ESCWA. In particular, irrigated wheat almost certainly did not enjoy a comparative advantage in any governorate no matter what type of irrigation was employed.

[53] See the time series of international price indicators for wheat, barley, cotton and sugar presented in Table 4.1.

ANNEXES

ANNEX TABLE 1.1: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Irrigated Wheat

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	591,336	607,116	666,560	696,500	714,800	722,394
Yield (kg/ha)	4,000	4,100	4,085	4,096	4,150	4,169
Production (tons)	2,365,344	2,489,176	2,722,898	2,852,864	2,966,420	3,011,661
5-YEAR PLAN						
Area (ha)	624,727	649,716	675,705	702,733	730,842	760,076
Yield (kg/ha)	3,824	3,878	3,932	3,987	4,043	4,099
Production (tons)	2,388,956	2,519,599	2,656,872	2,801,796	2,954,794	3,115,552
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.06	1.07	1.01	1.01	1.02	1.05
Yield	0.96	0.95	0.96	0.97	0.97	0.98
Production	1.01	1.01	0.98	0.98	1.00	1.03

Rainfed Wheat

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	940,655	947,695	957,044	897,000	714,800	900,000
Yield (kg/ha)	1,630	1,800	1,803	1,830	2,000	2,007
Production (tons)	1,533,268	1,705,851	1,725,550	1,641,510	1,429,600	1,806,300
5-YEAR PLAN						
Area (ha)	1,018,916	1,029,105	1,039,396	1,049,790	1,060,288	1,070,891
Yield (kg/ha)	1,436	1,450	1,465	1,480	1,494	1,509
Production (tons)	1,463,163	1,492,202	1,522,715	1,553,689	1,584,070	1,615,975
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.08	1.09	1.09	1.17	1.48	1.19
Yield	0.88	0.81	0.81	0.81	0.75	0.75
Production	0.95	0.87	0.88	0.95	1.11	0.89

Wheat

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	1,531,991	1,554,811	1,623,604	1,593,500	1,429,600	1,622,394
Yield (kg/ha)	2,545	2,698	2,740	2,820	3,075	2,970
Production (tons)	3,898,612	4,195,027	4,448,448	4,494,374	4,396,020	4,817,961
5-YEAR PLAN						
Area (ha)	1,643,643	1,678,821	1,715,101	1,752,523	1,791,130	1,830,967
Yield (kg/ha)	2,344	2,390	2,437	2,485	2,534	2,584
Production (tons)	3,852,119	4,011,801	4,179,587	4,355,486	4,538,864	4,731,526
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.07	1.08	1.06	1.10	1.25	1.13
Yield	0.92	0.89	0.89	0.88	0.82	0.87
Production	0.99	0.96	0.94	0.97	1.03	0.98

ANNEX TABLE 1.2: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Irrigated Barley

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	5,762	4,859	2,776	3,500	3,932	4,280
Yield (kg/ha)	3,047	3,100	2,264	2,230	2,257	2,465
Production (tons)	17,557	15,063	6,285	7,805	8,875	10,550
5-YEAR PLAN						
Area (ha)	8,361	8,695	9,043	9,405	9,781	10,172
Yield (kg/ha)	614	626	639	652	665	678
Production (tons)	5,134	5,443	5,778	6,132	6,504	6,897
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.45	1.79	3.26	2.69	2.49	2.38
Yield	0.20	0.20	0.28	0.29	0.29	0.28
Production	0.29	0.36	0.92	0.79	0.73	0.65

Rainfed Barley

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	1,657,065	1,545,217	1,624,000	1,490,998	1,430,000	1,429,719
Yield (kg/ha)	958	1,000	1,013	1,036	1,040	1,040
Production (tons)	1,587,468	1,545,217	1,645,112	1,544,674	1,487,200	1,486,908
5-YEAR PLAN						
Area (ha)	1,954,888	1,974,437	1,994,181	2,014,123	2,034,264	2,054,607
Yield (kg/ha)	591	597	603	609	615	621
Production (tons)	1,155,339	1,178,739	1,202,491	1,226,601	1,251,072	1,275,911
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.18	1.28	1.23	1.35	1.42	1.44
Yield	0.62	0.60	0.60	0.59	0.59	0.60
Production	0.73	0.76	0.73	0.79	0.84	0.86

Barley

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	1,662,827	1,550,076	1,626,776	1,494,498	1,433,932	1,433,999
Yield (kg/ha)	965	1,007	1,015	1,039	1,043	1,044
Production (tons)	1,605,025	1,560,280	1,651,397	1,552,479	1,496,075	1,497,458
5-YEAR PLAN						
Area (ha)	1,963,249	1,983,132	2,003,224	2,023,528	2,044,045	2,064,779
Yield (kg/ha)	591	597	603	609	615	621
Production (tons)	1,160,472	1,184,182	1,208,270	1,232,733	1,257,577	1,282,808
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.18	1.28	1.23	1.35	1.43	1.44
Yield	0.61	0.59	0.59	0.59	0.59	0.59
Production	0.72	0.76	0.73	0.79	0.84	0.86

ANNEX TABLE 1.3: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Irrigated Lentils

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	3,166	1,848	0	0	0	100
Yield (kg/ha)	1,403	1,500	0	0	0	1,500
Production (tons)	4,442	2,772	0	0	0	150
5-YEAR PLAN						
Area (ha)	11	11	12	12	13	13
Yield (kg/ha)	1,455	1,484	1,514	1,544	1,575	1,606
Production (tons)	16	16	18	19	20	21
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.00	0.01				0.13
Yield	1.04	0.99				1.07
Production	0.00	0.01				0.14

Rainfed Lentils

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	162,189	164,436	145,000	177,935	192,651	188,047
Yield (kg/ha)	953	1,000	1,100	1,100	1,100	1,100
Production (tons)	154,566	164,436	159,500	195,729	211,916	206,852
5-YEAR PLAN						
Area (ha)	126,395	127,659	128,936	130,225	131,527	132,842
Yield (kg/ha)	889	898	907	916	925	934
Production (tons)	112,365	114,638	116,945	119,286	121,662	124,074
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.78	0.78	0.89	0.73	0.68	0.71
Yield	0.93	0.90	0.82	0.83	0.84	0.85
Production	0.73	0.70	0.73	0.61	0.57	0.60

Lentils

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	165,355	166,284	145,000	177,935	192,651	188,147
Yield (kg/ha)	962	1,006	1,100	1,100	1,100	1,100
Production (tons)	159,008	167,208	159,500	195,729	211,916	207,002
5-YEAR PLAN						
Area (ha)	126,406	127,670	128,948	130,237	131,540	132,855
Yield (kg/ha)	889	898	907	916	925	934
Production (tons)	112,381	114,654	116,963	119,305	121,683	124,095
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.76	0.77	0.89	0.73	0.68	0.71
Yield	0.92	0.89	0.82	0.83	0.84	0.85
Production	0.71	0.69	0.73	0.61	0.57	0.60

ANNEX TABLE 1.4: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Irrigated Chickpeas

	1995	1996	1997	1998	1999	2,000
ANNUAL PLAN						
Area (ha)	82	82	0	160	170	650
Yield (kg/ha)	1,500	1,500	0	1,812	1,794	1,577
Production (tons)	123	123	0	290	305	1,025
5-YEAR PLAN						
Area (ha)	115	120	124	129	135	140
Yield (kg/ha)	1,687	1,721	1,755	1,790	1,826	1,863
Production (tons)	194	207	218	231	247	261
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.40	1.46	#DIV/0!	0.81	0.79	0.22
Yield	1.12	1.15	#DIV/0!	0.99	1.02	1.18
Production	1.58	1.68	#DIV/0!	0.80	0.81	0.25

Rainfed Chickpeas

	1995	1996	1997	1998	1999	2,000
ANNUAL PLAN						
Area (ha)	80886	84,187	89,100	110,774	111,000	107,090
Yield (kg/ha)	840	1,003	1,000	1,000	1,025	1,025
Production (tons)	67,944	89,100	89,100	110,774	113,775	109,767
5-YEAR PLAN						
Area (ha)	76,935	77,704	78,481	79,266	80,059	80,859
Yield (kg/ha)	619	625	631	638	644	651
Production (tons)	47,623	48,565	49,522	50,572	51,558	52,639
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.95	0.92	0.88	0.72	0.72	0.76
Yield	0.74	0.62	0.63	0.64	0.63	0.64
Production	0.70	0.55	0.56	0.46	0.45	0.48

Chickpeas

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	80,968	84,269	89,100	110,934	111,170	107,740
Yield (kg/ha)	841	1,059	1,000	1,001	1,026	1,028
Production (tons)	68,067	89,223	89,100	111,064	114,080	110,792
5-YEAR PLAN						
Area (ha)	77,050	77,824	78,605	79,395	80,194	80,999
Yield (kg/ha)	621	627	633	640	646	653
Production (tons)	47,817	48,772	49,739	50,803	51,805	52,900
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.95	0.92	0.88	0.72	0.72	0.75
Yield	0.74	0.59	0.63	0.64	0.63	0.64
Production	0.70	0.55	0.56	0.46	0.45	0.48

ANNEX TABLE 1.5: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Cotton

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	200,750	214,766	230,000	240,000	255,200	228,204
Yield (kg/ha)	3,150	3,150	3,203	3,400	3,468	3,594
Production (tons)	632,363	676,513	736,690	816,000	885,034	820,165
5-YEAR PLAN						
Area (ha)	204,338	212,512	221,012	229,852	239,047	248,608
Yield (kg/ha)	3,005	3,065	3,126	3,189	3,253	3,318
Production (tons)	614,036	651,349	690,884	732,998	777,620	824,881
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.02	0.99	0.96	0.96	0.94	1.09
Yield	0.95	0.97	0.98	0.94	0.94	0.92
Production	0.97	0.96	0.94	0.90	0.88	1.01

ANNEX TABLE 1.6: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Autumn Sugardbeet

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	14,696	13,500	12,550	16,675	15,200	15,100
Yield (kg/ha)	38,795	42,359	47,330	47,790	45,188	45,500
Production (tons)	570,131	571,847	593,992	796,898	686,858	687,050
5-YEAR PLAN						
Area (ha)	23,629	19,375	23,700	16,412	15,494	
Yield (kg/ha)	48,784	45,000	43,956	46,690	50,743	
Production (tons)	1,152,728	871,878	1,041,765	766,275	786,208	
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.61	1.44	1.89	0.98	1.02	
Yield	1.26	1.06	0.93	0.98	1.12	
Production	2.02	1.52	1.75	0.96	1.14	

Summer/Spring Sugarbeet

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	7,800	7,500	6,100	4,900	4,900	4,900
Yield (kg/ha)	40523	41,000	40,133	38,878	35,327	35,341
Production (tons)	316,079	307,500	244,811	190,502	173,102	173,171
5-YEAR PLAN						
Area (ha)	7,680	3,050	2,947	3,947	4,377	
Yield (kg/ha)	32,989	33,533	28,716	28,082	34,188	
Production (tons)	253,358	102,275	84,626	110,840	149,641	
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.98	0.41	0.48	0.81	0.89	
Yield	0.81	0.82	0.72	0.72	0.97	
Production	0.80	0.33	0.35	0.58	0.86	

Winter Sugar Beet

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	9,504	9,000	9,150	8,425	10,400	10,000
Yield (kg/ha)	41,810	44,516	48,217	49,089	46,168	50,180
Production (tons)	397,362	400,644	441,186	413,575	480,147	501,800
5-YEAR PLAN						
Area (ha)	23629	19375	23700	8304	10082	
Yield (kg/ha)	48,784	45,000	43,956	39,142	39,133	
Production (tons)	1,152,728	871,878	1,041,765	325,038	394,538	
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	2.49	2.15	2.59	0.99	0.97	
Yield	1.17	1.01	0.91	0.80	0.85	
Production	2.90	2.18	2.36	0.79	0.82	

Sugar Beet

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	32,000	30,000	27,800	30,000	30,500	30,000
Yield (kg/ha)	40,112	42,666	46,043	46,699	43,938	45,401
Production (tons)	1,283,573	1,279,991	1,279,988	1,400,975	1,340,107	1,362,021
5-YEAR PLAN						
Area (ha)	31,309	31,309	31,309	31,309	31,309	31,309
Yield (kg/ha)	42,471	43,320	44,187	45,071	45,972	46,891
Production (tons)	1,329,725	1,356,306	1,383,451	1,411,128	1,439,337	1,468,110
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.98	1.04	1.13	1.04	1.03	1.04
Yield	1.06	1.02	0.96	0.97	1.05	1.03
Production	1.04	1.06	1.08	1.01	1.07	1.08

ANNEX TABLE 1.7: DATA ON FIVE-YEAR AND ANNUALLY PLANNED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1995-2000

Irrigated Tobacco

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	4,395	3,920	3,713	4,247	5,184	6,069
Yield (kg/ha)	1,909	1,911	1,947	1,944	1,978	2,020
Production (tons)	8,390	7,491	7,229	8,256	10,254	12,259
5-YEAR PLAN						
Area (ha)	4,397	5,113	4,531	4,892	5,853	
Yield (kg/ha)	3,380	2,497	2,684	2,507	2,482	
Production (tons)	14,861	12,766	12,163	12,266	14,525	
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	1.00	1.30	1.22	1.15	1.13	
Yield	1.77	1.31	1.38	1.29	1.25	
Production	1.77	1.70	1.68	1.49	1.42	

Rainfed Tobacco

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	10,110	10,110	10,800	12,861	12,890	13750
Yield (kg/ha)	873	865	861	873	872	848
Production (tons)	8,826	8,745	9,294	11,228	11,240	11,660
5-YEAR PLAN						
Area (ha)	9,445	9,089	10,434	10,130	10,310	
Yield (kg/ha)	900	1,027	1,032	1,071	987	
Production (tons)	8,500	9,338	10,768	10,849	10,175	
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.93	0.90	0.97	0.79	0.80	
Yield	1.03	1.19	1.20	1.23	1.13	
Production	0.96	1.07	1.16	0.97	0.91	

Tobacco

	1995	1996	1997	1998	1999	2000
ANNUAL PLAN						
Area (ha)	14,505	14,030	14,513	17,108	18,074	19,819
Yield (kg/ha)	1,187	1,157	1,139	1,139	1,189	1,207
Production (tons)	17,216	16,236	16,524	19,484	21,494	23,919
5-YEAR PLAN						
Area (ha)	13,842	13,842	13,842	13,842	13,842	13,842
Yield (kg/ha)	1,465	1,494	1,524	1,555	1,586	1617
Production (tons)	20,279	20,680	21,095	21,524	21,953	22,383
RATIO OF 5-YEAR PLAN TO ANNUAL						
Area	0.95	0.99	0.95	0.81	0.77	0.70
Yield	1.23	1.29	1.34	1.37	1.33	1.34
Production	1.18	1.27	1.28	1.10	1.02	0.94

ANNEX TABLE 2.1: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Irrigated Wheat

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	243,624	267,823	300,000	332,000	431,859	516,660	591,336	607,116	666,560	696,500	714,800
Yield (kg/ha)	3,615	3,683	3,717	3,850	3,875	4,000	4,000	4,100	4,085	4,096	4,150
Production (tons)	880,701	986,392	1,115,100	1,278,200	1,673,454	2,066,640	2,365,344	2,489,176	2,722,898	2,852,864	2,966,420
ACTUAL											
Area (ha)	237,257	274,179	369,532	435,340	550,950	619,657	624,727	625,534	684,802	689,868	669,937
Yield (kg/ha)	2,473	3,338	3,340	3,981	3,956	3,610	3,906	3,700	2,950	3,593	3,083
Production (tons)	586,737	915,210	1,234,237	1,733,089	2,179,558	2,236,962	2,440,184	2,314,476	2,020,166	2,478,696	2,065,416
RATIO OF ACTUAL TO PLANNED											
Area	0.97	1.02	1.23	1.31	1.28	1.20	1.06	1.03	1.03	0.99	0.94
Yield	0.68	0.91	0.90	1.03	1.02	0.90	0.98	0.90	0.72	0.88	0.74
Production	0.67	0.93	1.11	1.36	1.30	1.08	1.03	0.93	0.74	0.87	0.70

Rainfed Wheat

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	1,236,140	1,238,000	1,160,260	1,098,000	993,358	988,017	940,655	947,695	957,044	897,000	714,800
Yield (kg/ha)	1,483	1,522	1,491	1,559	1,597	1,612	1,630	1,800	1,803	1,830	2,000
Production (tons)	1,833,196	1,884,236	1,729,948	1,711,782	1,586,393	1,592,683	1,533,268	1,705,851	1,725,550	1,641,510	1,429,600
ACTUAL											
Area (ha)	1,002,651	1,066,418	899,101	945,414	834,184	933,708	1,018,916	993,654	1,075,997	1,031,544	933,083
Yield (kg/ha)	432	1,083	1,242	1,388	1,735	1,570	1,712	1,777	940	1,583	671
Production (tons)	433,145	1,154,931	1,116,683	1,312,235	1,447,309	1,465,922	1,744,384	1,765,723	1,011,437	1,632,934	626,099
RATIO OF ACTUAL TO PLANNED											
Area	0.81	0.86	0.77	0.86	0.84	0.95	1.08	1.05	1.12	1.15	1.31
Yield	0.29	0.71	0.83	0.89	1.09	0.97	1.05	0.99	0.52	0.87	0.34
Production	0.24	0.61	0.65	0.77	0.91	0.92	1.14	1.04	0.59	0.99	0.44

Wheat

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	1,479,764	1,505,823	1,460,260	1,430,000	1,425,217	1,504,677	1,531,991	1,554,811	1,623,604	1,593,500	1,429,600
Yield (kg/ha)	1,834	1,906	1,948	2,091	2,287	2,432	2,545	2,698	2,740	2,820	3,075
Production (tons)	2,713,896	2,870,628	2,845,048	2,989,982	3,259,846	3,659,323	3,898,612	4,195,027	4,448,448	4,494,374	4,396,020
ACTUAL											
Area (ha)	1,239,908	1,340,597	1,268,633	1,380,754	1,385,134	1,553,365	1,643,643	1,619,188	1,760,799	1,721,412	1,603,020
Yield (kg/ha)	823	1,544	1,853	2,206	2,618	2,384	2,546	2,520	1,722	2,389	1,679
Production (tons)	1,019,882	2,070,140	2,350,920	3,045,323	3,626,867	3,702,883	4,184,568	4,080,199	3,031,603	4,111,630	2,691,514
RATIO OF ACTUAL TO PLANNED											
Area	0.84	0.89	0.87	0.97	0.97	1.03	1.07	1.04	1.08	1.08	1.12
Yield	0.45	0.81	0.95	1.05	1.14	0.98	1.00	0.93	0.63	0.85	0.55
Production	0.38	0.72	0.83	1.02	1.11	1.01	1.07	0.97	0.68	0.91	0.61

ANNEX TABLE 2.2: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Irrigated Barley

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	3,422	4,624	6,530	7,000	6,902	5,558	5,762	4,859	2,776	3,500	3,932
Yield (kg/ha)	3,000	2,754	2,635	3,000	2,905	3,053	3,047	3,100	2,264	2,230	2,257
Production (tons)	10,266	12,734	17,207	21,000	20,050	16,969	17,557	15,063	6,285	7,805	8,875
ACTUAL											
Area (ha)	16,086	4,581	11,155	14,934	8,298	8,735	8,361	5,831	3,741	3,906	5,266
Yield (kg/ha)	1,094	2,257	1,844	2,101	3,062	1,782	2,189	2,896	2,365	2,999	2,187
Production (tons)	17,598	10,339	20,570	31,376	25,408	15,566	18,302	16,887	8,847	11,714	11,517
RATIO OF ACTUAL TO PLANNED											
Area	4.70	0.99	1.71	2.13	1.20	1.57	1.45	1.20	1.35	1.12	1.34
Yield	0.36	0.82	0.70	0.70	1.05	0.58	0.72	0.93	1.04	1.34	0.97
Production	1.71	0.81	1.20	1.49	1.27	0.92	1.04	1.12	1.41	1.50	1.30

Rainfed barley

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	2,736,692	2,537,140	2,281,142	2,414,000	1,872,612	1,682,240	1,657,065	1,545,217	1,624,000	1,490,998	1,430,000
Yield (kg/ha)	903	889	899	900	1,068	948	958	1,000	1,013	1,036	1,040
Production (tons)	2,471,233	2,255,517	2,050,747	2,172,600	1,999,950	1,594,764	1,587,468	1,545,217	1,645,112	1,544,674	1,487,200
ACTUAL											
Area (ha)	2,875,641	2,724,775	2,221,968	2,251,518	2,160,579	1,885,320	1,954,888	1,543,980	1,568,452	1,538,716	1,408,961
Yield (kg/ha)	88	307	441	471	707	778	863	1060	621	557	294
Production (tons)	253,056	836,506	979,888	1,060,465	1,527,529	1,466,779	1,687,068	1,636,619	974,009	857,065	414,235
RATIO OF ACTUAL TO PLANNED											
Area	1.05	1.07	0.97	0.93	1.15	1.12	1.18	1.00	0.97	1.03	0.99
Yield	0.10	0.35	0.49	0.52	0.66	0.82	0.90	1.06	0.61	0.54	0.28
Production	0.10	0.37	0.48	0.49	0.76	0.92	1.06	1.06	0.59	0.55	0.28

Barley

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	2,740,114	2,541,764	2,287,672	2,421,000	1,879,514	1,687,798	1,662,827	1,550,076	1,626,776	1,494,498	1,433,932
Yield (kg/ha)	906	892	904	906	1,075	955	965	1,007	1,015	1,039	1,043
Production (tons)	2,481,499	2,268,252	2,067,953	2,193,600	2,020,000	1,611,732	1,605,025	1,560,280	1,651,397	1,552,479	1,496,075
ACTUAL											
Area (ha)	2,891,727	2,729,356	2,233,123	2,266,452	2,168,877	1,894,055	1,963,249	1,549,811	1,572,193	1,542,622	1,414,227
Yield (kg/ha)	94	310	448	482	716	783	869	1,067	625	563	301
Production (tons)	270,654	846,845	1,000,458	1,091,841	1,552,938	1,482,345	1,705,371	1,653,505	982,856	868,779	425,751
RATIO OF ACTUAL TO PLANNED											
Area	1.06	1.07	0.98	0.94	1.15	1.12	1.18	1.00	0.97	1.03	0.99
Yield	0.10	0.35	0.50	0.53	0.67	0.82	0.90	1.06	0.62	0.54	0.29
Production	0.11	0.37	0.48	0.50	0.77	0.92	1.06	1.06	0.60	0.56	0.28

ANNEX TABLE 2.3: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Irrigated Lentils

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	1,411	975	851	1,600	2,205	2,540	3,166	1,848	0	0	0
Yield (kg/ha)	1,320	1,464	1,495	1,350	1,482	1,432	1,403	1,500	0	0	0
Production (tons)	1,863	1,427	1,272	2,160	3,268	3,637	4,442	2,772	0	0	0
ACTUAL											
Area (ha)	1,952	939	452	83	116	313	11	116	1	94	214
Yield (kg/ha)	800	1,496	819	1,735	1,060	1,495	1,727	1,707	1,000	1,085	1,000
Production (tons)	1,562	1,405	370	144	123	468	19	198	1	102	214
RATIO OF ACTUAL TO PLANNED											
Area	1.38	0.96	0.53	0.05	0.05	0.12	0.00	0.06			
Yield	0.61	1.02	0.55	1.29	0.72	1.04	1.23	1.14			
Production	0.84	0.98	0.29	0.07	0.04	0.13	0.00	0.07			

Rainfed Lentils

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	151,207	150,000	157,217	155,012	175,000	172,385	162,189	164,436	145,000	177,935	192,651
Yield (kg/ha)	940	950	950	950	957	923	953	1,000	1,100	1,100	1,100
Production (tons)	142,135	142,500	149,356	147,261	167,475	159,111	154,566	164,436	159,500	195,729	211,916
ACTUAL											
Area (ha)	186,312	130,307	82,071	87,825	104,445	117,832	126,395	140,738	120,299	142,555	147,427
Yield (kg/ha)	335	831	600	850	910	984	1,167	1,076	728	1,080	293
Production (tons)	62,415	108,285	49,243	74,651	95,045	115,947	147,503	151,434	87,578	153,959	43,196
RATIO OF ACTUAL TO PLANNED											
Area	1.23	0.87	0.52	0.57	0.60	0.68	0.78	0.86	0.83	0.80	0.77
Yield	0.36	0.87	0.63	0.89	0.95	1.07	1.22	1.08	0.66	0.98	0.27
Production	0.44	0.76	0.33	0.51	0.57	0.73	0.95	0.92	0.55	0.79	0.20

Lentils

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	152,618	150,975	158,068	156,612	177,205	174,925	165,355	166,284	145,000	177,935	192,651
Yield (kg/ha)	944	953	953	954	964	930	962	1,006	1,100	1,100	1,100
Production (tons)	143,997	143,927	150,628	149,421	170,743	162,749	159,008	167,208	159,500	195,729	211,916
ACTUAL											
Area (ha)	188,264	131,246	82,523	87,908	104,561	118,145	126,406	140,854	120,300	142,649	147,641
Yield (kg/ha)	340	836	601	851	910	985	1,167	1,077	728	1,080	294
Production (tons)	63,976	109,690	49,613	74,795	95,168	116,415	147,522	151,632	87,579	154,061	43,410
RATIO OF ACTUAL TO PLANNED											
Area	1.23	0.87	0.52	0.56	0.59	0.68	0.76	0.85	0.83	0.80	0.77
Yield	0.36	0.88	0.63	0.89	0.94	1.06	1.21	1.07	0.66	0.98	0.27
Production	0.44	0.76	0.33	0.50	0.56	0.72	0.93	0.91	0.55	0.79	0.20

ANNEX TABLE 2.4: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Irrigated Chickpeas

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	129	100	500	66	0	90	82	82	0	160	170
Yield (kg/ha)	1,790	1,970	2,000	1,500	0	1,500	1,500	1,500	0	1,812	1,794
Production (tons)	231	197	1,000	99	0	135	123	123	0	290	305
ACTUAL											
Area (ha)	126	64	603	249	107	184	115	169	212	153	218
Yield (kg/ha)	1,000	594	1,552	1,884	2,000	1,402	1,487	1,645	1,264	1,967	1,573
Production (tons)	126	38	936	469	214	258	171	278	268	301	343
RATIO OF ACTUAL TO PLANNED											
Area	0.98	0.64	1.21	3.77	#DIV/0!	2.04	1.40	2.06	#DIV/0!	0.96	1.28
Yield	0.56	0.30	0.78	1.26	#DIV/0!	0.93	0.99	1.10	#DIV/0!	1.09	0.88
Production	0.55	0.19	0.94	4.74	#DIV/0!	1.91	1.39	2.26	#DIV/0!	1.04	1.12

Rainfed Chickpeas

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	77,684	84,000	79,674	80,000	84,850	77,757	80886	84,187	89,100	110,774	111,000
Yield (kg/ha)	900	855	855	855	854	850	840	1,003	1,000	1,000	1,025
Production (tons)	69,916	71,820	68,121	68,400	72,462	66,093	67,944	89,100	89,100	110,774	113,775
ACTUAL											
Area (ha)	33,532	69,648	42,838	81,903	80,224	48,836	76,935	66,291	94,251	107,859	50,426
Yield (kg/ha)	393	520	622	895	685	511	693	686	622	782	566
Production (tons)	13,178	36,217	26,645	73,303	54,953	24,955	53,316	45,476	58,624	84,346	28,541
RATIO OF ACTUAL TO PLANNED											
Area	0.43	0.83	0.54	1.02	0.95	0.63	0.95	0.79	1.06	0.97	0.45
Yield	0.44	0.61	0.73	1.05	0.80	0.60	0.83	0.68	0.62	0.78	0.55
Production	0.19	0.50	0.39	1.07	0.76	0.38	0.78	0.51	0.66	0.76	0.25

Chickpeas

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	77,813	84,100	80,174	80,066	84,850	77,847	80,968	84,269	89,100	110,934	111,170
Yield (kg/ha)	901	856	862	856	854	851	841	1,059	1,000	1,001	1,026
Production (tons)	70,147	72,017	69,121	68,499	72,462	66,228	68,067	89,223	89,100	111,064	114,080
ACTUAL											
Area (ha)	33,658	69,712	43,441	82,152	80,331	49,020	77,050	66,460	94,463	108,012	50,644
Yield (kg/ha)	395	520	635	898	687	514	694	688	623	784	570
Production (tons)	13,304	36,255	27,581	73,772	55,167	25,213	53,487	45,754	58,892	84,647	28,884
RATIO OF ACTUAL TO PLANNED											
Area	0.43	0.83	0.54	1.03	0.95	0.63	0.95	0.79	1.06	0.97	0.46
Yield	0.44	0.61	0.74	1.05	0.80	0.60	0.83	0.65	0.62	0.78	0.56
Production	0.19	0.50	0.40	1.08	0.76	0.38	0.79	0.51	0.66	0.76	0.25

ANNEX TABLE 2.5: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Cotton

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	169,883	174,000	173,000	178,000	194,000	202,850	200,750	214,766	230,000	240,000	255,200
Yield (kg/ha)	3,044	3,034	2,800	2,896	3,100	3,150	3,150	3,150	3,203	3,400	3,468
Production (tons)	517,124	527,916	484,400	515,488	601,400	638,978	632,363	676,513	736,690	816,000	885,034
ACTUAL											
Area (ha)	158,050	156,358	170,441	211,843	196,475	189,412	204,338	219,500	250,600	274,585	243,835
Yield (kg/ha)	2,725	2,822	2,357	3,251	3,252	2,827	2,937	3,462	4,179	3,707	3,798
Production (tons)	430,686	441,242	401,729	688,702	638,937	535,468	600,141	759,909	1,047,257	1,017,887	926,096
RATIO OF ACTUAL TO PLANNED											
Area	0.93	0.90	0.99	1.19	1.01	0.93	1.02	1.02	1.09	1.14	0.96
Yield	0.90	0.93	0.84	1.12	1.05	0.90	0.93	1.10	1.30	1.09	1.10
Production	0.83	0.84	0.83	1.34	1.06	0.84	0.95	1.12	1.42	1.25	1.05

ANNEX TABLE 2.6: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS,1989-1999

Autumn Sugarbeet

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	15,579	15,370	16,267	13,850	13,850	14,900	14,696	13,500	12,550	16,675	15,200
Yield (kg/ha)	38,500	38,500	38,968	37,192	39,942	39,185	38,795	42,359	47,330	47,790	45,188
Production (tons)	599,792	591,745	633,892	515,109	553,197	583,857	570,131	571,847	593,992	796,898	686,858
ACTUAL											
Area (ha)	12,133	16,977	15,492	19,611	22,681	23,051	23,629	19,375	23,700	16,412	15,494
Yield (kg/ha)	18,350	18,843	33,435	41,788	36,491	44,019	48,784	45,000	43,956	46,690	50,743
Production (tons)	222,638	319,899	517,975	819,498	827,663	1,014,681	1,152,728	871,878	1,041,765	766,275	786,208
RATIO OF ACTUAL TO PLANNED											
Area	0.78	1.10	0.95	1.42	1.64	1.55	1.61	1.44	1.89	0.98	1.02
Yield	0.48	0.49	0.86	1.12	0.91	1.12	1.26	1.06	0.93	0.98	1.12
Production	0.37	0.54	0.82	1.59	1.50	1.74	2.02	1.52	1.75	0.96	1.14

Summer/Spring Sugar Beet

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	4,891	4,727	4,731	6,300	7,400	8,100	7,800	7,500	6,100	4,900	4,900
Yield (kg/ha)	38,500	38,500	38,500	40,634	41,514	40,333	40523	41,000	40,133	38,878	35,327
Production (tons)	188,304	181,990	182,144	255,994	307,204	326,697	316,079	307,500	244,811	190,502	173,102
ACTUAL											
Area (ha)	7,904	4,467	4,197	10,306	9,176	10,408	7,680	3,050	2,947	3,947	4,377
Yield (kg/ha)	20,443	22,804	32,066	52,922	44,583	42,013	32,989	33,533	28,716	28,082	34,188
Production (tons)	161,582	101,866	134,579	545,419	409,095	437,267	253,358	102,275	84,626	110,840	149,641
RATIO OF ACTUAL TO PLANNED											
Area	1.62	0.94	0.89	1.64	1.24	1.28	0.98	0.41	0.48	0.81	0.89
Yield	0.53	0.59	0.83	1.30	1.07	1.04	0.81	0.82	0.72	0.72	0.97
Production	0.86	0.56	0.74	2.13	1.33	1.34	0.80	0.33	0.35	0.58	0.86

Winter Sugar Beet

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	9,822	9,903	9,680	15,050	11,638	10,504	9,504	9,000	9,150	8,425	10,400
Yield (kg/ha)	38,500	38,500	38,990	38,810	39,409	42,495	41,810	44,516	48,217	49,089	46,168
Production (tons)	378,147	381,266	377,423	584,091	458,642	446,367	397,362	400,644	441,186	413,575	480,147
ACTUAL											
Area (ha)	12,133	16977	15492	19611	22681	23051	23629	19375	23700	8304	10082
Yield (kg/ha)	18,350	18,843	33,435	41,788	36,491	44,019	48,784	45,000	43,956	39,142	39,133
Production (tons)	222,638	319,899	517,975	819,498	827,663	1,014,680	1,152,728	871,878	1,041,765	325,038	394,538
RATIO OF ACTUAL TO PLANNED											
Area	1.24	1.71	1.60	1.30	1.95	2.19	2.49	2.15	2.59	0.99	0.97
Yield	0.48	0.49	0.86	1.08	0.93	1.04	1.17	1.01	0.91	0.80	0.85
Production	0.59	0.84	1.37	1.40	1.80	2.27	2.90	2.18	2.36	0.79	0.82

Sugarbeet

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	30,292	30,000	30,678	35,200	32,888	33,504	32,000	30,000	27,800	30,000	30,500
Yield (kg/ha)	38,500	38,500	38,903	38,500	40,107	40,500	40,112	42,666	46,043	46,699	43,938
Production (tons)	1,166,242	1,155,000	1,193,459	1,355,194	1,319,042	1,356,921	1,283,573	1,279,991	1,279,988	1,400,975	1,340,107
ACTUAL											
Area (ha)	32,170	38,421	35,181	49,528	54,538	56,510	54,938	41,800	50,347	28,663	29,953
Yield (kg/ha)	18,864	19,304	33,272	44,105	37,853	43,649	46,576	44,163	43,064	41,942	44,416
Production (tons)	606,858	741,664	1,170,529	2,184,415	2,064,421	2,466,628	2,558,814	1,846,031	2,168,156	1,202,153	1,330,387
RATIO OF ACTUAL TO PLANNED											
Area	1.06	1.28	1.15	1.41	1.66	1.69	1.72	1.39	1.81	0.96	0.98
Yield	0.49	0.50	0.86	1.15	0.94	1.08	1.16	1.04	0.94	0.90	1.01
Production	0.52	0.64	0.98	1.61	1.57	1.82	1.99	1.44	1.69	0.86	0.99

ANNEX TABLE 2.7: DATA ON PLANNED AND ACHIEVED AREAS, YIELDS AND PRODUCTION OF STRATEGIC CROPS, 1989-1999

Irrigated Tobacco

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	5,050	4,150	4,200	3,800	3,150	3,670	4,395	3,920	3,713	4,247	5,184
Yield (kg/ha)	1,819	1,907	1,892	1,898	2,179	2,283	1,909	1,911	1,947	1,944	1,978
Production (tons)	9,186	7,914	7,946	7,212	6,864	8,379	8,390	7,491	7,229	8,256	10,254
ACTUAL											
Area (ha)	3,595	2,881	3,449	4,597	3,134	3,273	4,397	5,113	4,531	4,892	5,853
Yield (kg/ha)	1,870	2,281	2,228	2,475	2,771	2,824	3,380	2,497	2,684	2,507	2,482
Production (tons)	6,721	6,571	7,683	11,379	8,684	9,242	14,861	12,766	12,163	12,266	14,525
RATIO OF ACTUAL TO PLANNED											
Area	0.71	0.69	0.82	1.21	0.99	0.89	1.00	1.30	1.22	1.15	1.13
Yield	1.03	1.20	1.18	1.30	1.27	1.24	1.77	1.31	1.38	1.29	1.25
Production	0.73	0.83	0.97	1.58	1.27	1.10	1.77	1.70	1.68	1.49	1.42

Rainfed Tobacco

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	11,074	11,350	11,450	11,460	8,900	9,200	10,110	10,110	10,800	12,861	12,890
Yield (kg/ha)	813	800	792	792	860	880	873	865	861	873	872
Production (tons)	9,003	9,080	9,068	9,076	7,654	8,096	8,826	8,745	9,294	11,228	11,240
ACTUAL											
Area (ha)	10,609	9,885	10,954	13,216	8,686	8,758	9,445	9,089	10,434	10,130	10,310
Yield (kg/ha)	597	662	778	923	682	577	900	1,027	1,032	1,071	987
Production (tons)	6,329	6,542	8,518	12,196	5,924	5,056	8,500	9,338	10,768	10,849	10,175
RATIO OF ACTUAL TO PLANNED											
Area	0.96	0.87	0.96	1.15	0.98	0.95	0.93	0.90	0.97	0.79	0.80
Yield	0.73	0.83	0.98	1.17	0.79	0.66	1.03	1.19	1.20	1.23	1.13
Production	0.70	0.72	0.94	1.34	0.77	0.62	0.96	1.07	1.16	0.97	0.91

Tobacco

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
PLANNED											
Area (ha)	16,124	15,500	15,650	15,260	12,050	12,870	14,505	14,030	14,513	17,108	18,074
Yield (kg/ha)	1,128	1,096	1,087	1,067	1,205	1,280	1,187	1,157	1,139	1,139	1,189
Production (tons)	18,189	16,994	17,015	16,289	14,518	16,475	17,216	16,236	16,524	19,484	21,494
ACTUAL											
Area (ha)	14,204	12,766	14,403	17,813	11,820	12,031	13,842	14,202	14,965	15,022	16,163
Yield (kg/ha)	919	1,027	1,125	1,323	1,236	1,188	1,688	1,556	1,532	1,539	1,528
Production (tons)	13,050	13,113	16,201	23,575	14,608	14,298	23,361	22,104	22,931	23,115	24,700
RATIO OF ACTUAL TO PLANNED											
Area	0.88	0.82	0.92	1.17	0.98	0.93	0.95	1.01	1.03	0.88	0.89
Yield	0.81	0.94	1.03	1.24	1.03	0.93	1.42	1.34	1.35	1.35	1.29
Production	0.72	0.77	0.95	1.45	1.01	0.87	1.36	1.36	1.39	1.19	1.15

ANNEX TABLE 3.1: IMPORT PARITY PRICE STRUCTURE FOR SOFT WHEAT, FLOUR AND STANDARI

IMPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
Soft wheat fob ex-W.Europe US$/ton	*114.63*			
		(SP per ton)		
Soft wheat fob ex-W.Europe SP/ton	5,732			
Transport W.Europe to Latakia/Tartous	900			
CIF Latakia/Tartous	6,632			
Offloading into port silo	3			
Port storage (4weeks)	30			
Losses (0.6%)	38			
Port fees	55			
Loading onto truck	3			
Onto-truck Latakia/Tartous	6,759			
Transport to GECIT silo in Damascus (348 km)	208			
Into-GES silo Damascus*	**6,968**			
Into-GES silo Damascus*	**6,968**			
Storage cost	43			
Losses(0.6%)	42			
Ex-GES silo Damascus	7,053			
Transport from GES silo to Damascus mill	20			
Into-mill Damascus	7,073	16,500	9,427	*2.33*
Milling cost (including loading and offloading)	679			
Cost of bags	160			
(Sale of bran)	-620			
Ex-mill flour bagged (per ton of wheat)	7,292			
Ex-mill flour bagged (per ton of flour)	9,348			
Transport to bakery	20			
Into-bakery standard flour bagged**	9,732	7,200	-2,532	*0.74*

Baking cost (including other ingredients)	2,294			
(Sale of second-hand bag)	-100			
Ex-bakery standard bread (per ton of flour)	11,827			
Ex-bakery standard bread (per ton of bread)	9,938			
Retail margin	570			
Retail standard bread per ton	10,508			
Retail standard bread per kg	*10.51*	*8.57*	*-1.94*	*0.82*

* Assumed main first joint marketing point at which imported soft wheat competes with that grown in Syrian s

** Based on flour with 60% soft wheat and 40% hard wheat. The hard wheat unit cost is based on the into-ba

D BREAD

Rate of Exchange (SP per US$) 50

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
	(SP per ton)			
IMPORT PARITY PRICE STRUCTURE TO FARM GATE AT AL HASSAKE				
Into-silo Damascus*	**6,968**			
Transport from Al Hassake to Damascus (642 km)	376			
Ex-Al Hassake silo	6,592			
Cost of storage	48			
Losses (0.6%)	40			
Into Al Hassake silo	6,504	10,800	4,296	*1.66*
Transport from farm to Al Hassake silo	6			
Farm-gate producer price	6,497			

surplus areas.
akery import parity price of Syrian hard wheat.

ANNEX TABLE 3.2: IMPORT PARITY PRICE STRUCTURE FOR SOFT WHEAT, FLOUR AND STANDARI

IMPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
Soft wheat fob ex-W.Europe US$/ton	*114.63*			
		(SP per ton)		
Soft wheat fob ex-W.Europe SP/ton	5,732			
Transport W.Europe to Latakia/Tartous	900			
CIF Latakia/Tartous	6,632			
Offloading into port silo	3			
Port storage (4weeks)	30			
Losses (0.6%)	38			
Port fees	55			
Loading onto truck	3			
Onto-truck Latakia/Tartous	6,759			
Transport to GECIT silo in Damascus (348 km)	208			
Into-GES silo Damascus*	**6,968**			
Into-GES silo Damascus*	**6,968**			
Storage cost	43			
Losses(0.6%)	42			
Ex-GES silo Damascus	7,053			
Transport from GES silo to Damascus mill	20			
Into-mill Damascus	7,073	16,500	9,427	*2.33*
Milling cost (including loading and offloading)	679			
Cost of bags	160			
(Sale of bran)	-620			
Ex-mill flour bagged (per ton of wheat)	7,292			
Ex-mill flour bagged (per ton of flour)	9,348			
Transport to bakery	20			
Into-bakery standard flour bagged**	9,793	7,200	-2,593	*0.74*

Baking cost (including other ingredients)	2,294			
(Sale of second-hand bag)	-100			
Ex-bakery standard bread (per ton of flour)	11,887			
Ex-bakery standard bread (per ton of bread)	9,989			
Retail margin	570			
Retail standard bread per ton	10,559			
Retail standard bread per kg	*10.56*	*8.57*	*-1.99*	*0.81*

* Assumed main first joint marketing point at which imported soft wheat competes with that grown in Syrian s

** Based on flour with 60% soft wheat and 40% hard wheat. The hard wheat unit cost is based on the into-ba

D BREAD

Rate of Exchange (SP per US$) 50

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
	(SP per ton)			
IMPORT PARITY PRICE STRUCTURE TO FARM GATE AT AL HASSAKE				
Into-silo Damascus*	**6,968**			
Transport from Al Hassake to Damascus (642 km)	376			
Ex-Al Hassake silo	6,592			
Cost of storage	48			
Losses (0.6%)	40			
Into Al Hassake silo	6,504	10,800	4,296	*1.66*
Transport from farm to Al Hassake silo	6			
Farm-gate producer price	6,497			

surplus areas.
akery export parity price of Syrian hard wheat.

ANNEX TABLE 3.3: IMPORT PARITY PRICE STRUCTURE FOR HARD WHEAT, FLOUR AND STANDAR

IMPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
Hard wheat fob ex-Gulf US$/ton	*131.75*			
		(SP per ton)		
Hard wheat fob ex-Gulf SP/ton	6,588			
Transport US Gulf to Latakia/Tartous	750			
CIF Latakia/Tartous	7,338			
Offloading into port silo	3			
Port storage (4weeks)	30			
Losses (0.6%)	38			
Port fees	55			
Loading onto truck	3			
Onto-truck Latakia/Tartous	7,465			
Transport to silo in Damascus (348 km)	208			
Into-silo Damascus*	**7,674**			
Into-silo Damascus*	**7,674**			
Storage cost	43			
Losses(0.6%)	46			
Ex-silo Damascus	7,763			
Transport from silo to Damascus mill	20			
Into-mill Damascus	7,783	16,500	8,717	*2.12*
Milling cost (including loading and offloading)	679			
Cost of bags	160			
(Sale of bran)	-620			
Ex-mill flour bagged (per ton of wheat)	8,002			
Ex-mill flour bagged (per ton of flour)	10,259			
Transport to bakery	20			
Into-bakery standard flour bagged**	9,732	7,200	-2,532	*0.74*

Baking cost (including other ingredients)	2,294			
(Sale of second-hand bag)	-100			
Ex-bakery standard bread (per ton of flour)	11,827			
Ex-bakery standard bread (per ton of bread)	9,938			
Retail margin	570			
Retail standard bread per ton	10,508			
Retail standard bread per kg	*10.51*	*8.57*	*-1.94*	*0.82*

* Assumed main first joint marketing point at which imported hard wheat competes with that grown in Syrian surplus area

** Based on flour with 60% soft wheat and 40% hard wheat. The soft wheat unit cost is based on the into-bakery import pa

:D BREAD

Rate of Exchange (SP per US$) 50

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
	(SP per ton)			
IMPORT PARITY PRICE STRUCTURE TO FARM GATE AT AL HASSAKE				
Into-silo Damascus*	**7,674**			
Transport from Al Hassake to Damascus (642 km)	376			
Ex-Al Hassake silo	7,298			
Cost of storage	48			
Losses (0.6%)	44			
Into Al Hassake silo	7,206	11,800	4,594	*1.64*
Transport from farm to Al Hassake silo	6			
Farm-gate producer price	7,199			

s, and that domestic wheat would not sell at a premium over imported hard wheat in the Syrian marke
arity price of Syrian soft wheat.

ANNEX TABLE 3.4: EXPORT PARITY PRICE STRUCTURE FOR HARD WHEAT, FLOUR AND STANDARD

EXPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
Hard wheat cif Jordan US$/ton+	*156.75*			
Hard wheat cif Jordan SP/ton*	7,838			
Clearing and other costs at the Jordan border	250			
Transport from Al Hassake to Jordan border (750km)	428			
Ex-silo Al Hassake*	**7,160**			
Ex-silo Al Hassake*	**7,160**			
Transport from Al Hassake to Damascus (642km)	376			
Into-silo Damascus	**7,536**			
Storage cost	43			
Losses(0.6%)	0			
Ex-silo Damascus	7,579			
Transport from silo to Damascus mill	20			
Into-mill Damascus	7,599	17,520	9,921	*2.31*
Milling cost (including loading and offloading)	679			
Cost of bags	160			
(Sale of bran)	-620			
Ex-mill flour bagged (per ton of wheat)	7,818			
Ex-mill flour bagged (per ton of flour)	10,023			
Transport to bakery	20			
Into-bakery standard flour bagged**	9,638	7,200	-2,438	*0.75*
Baking cost (including other ingredients)	2,294			
(Sale of second-hand bag)	-100			
Ex-bakery standard bread (per ton of flour)	11,732			
Ex-bakery standard bread (per ton of bread)	9,859			
Retail margin	570			
Retail standard bread per ton	10,429			

Retail standard bread per kg	*10.43*	*8.57*	*-1.86*	*0.82*

+ Assumed that Syrian hard wheat would fetch a US$10 per ton quality-based premium above the CIF Jordon p
* Assumed main last joint marketing point at which exported and domestically consumed hard wheat compete.
** Based on flour with 60% soft wheat and 40% hard wheat. The soft wheat unit cost is based on the into-bake

) BREAD

Rate of Exchange (SP per US$) 50

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
EXPORT PARITY PRICE STRUCTURE TO THE FARM GATE AT AL HASSAKE				
Ex-silo Al Hassake*	**7,160**			
Cost of storage	48			
Losses (0.6%)	43			
Into-Al Hassake silo	7,069	11,800	4,731	*1.67*
Transport from farm to Al Hassake silo	6			
Farm-gate producer price of soft wheat	7,062			

price of US No. 2 Hard Winter wheat.

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ery import parity price of Syrian soft wheat.

ANNEX TABLE 3.5: IMPORT PARITY PRICE STRUCTURE FOR BARLEY

Rate of Exchange (SP per US$) 50

	Parity	Official	Difference between official and parity	*Ratio of official to parity*
	(SP per ton)			
CIF Latakia/Tartous (US$113)	5,650			
Cost from CIF to onto truck (excluding government fees)	530			
Importers profit (3%)	185			
Onto-truck sale to domestic trader Latakia	6,365			
Transport from Latakia to Al Hassake via Aleppo	407			
Into trader's store Al Hassake	6,773			
Storage cost	43			
Losses(0.006)	41			
Trader's profit	150			
Ex-store imported barley price to livestock farmer	7,006			
Quality premium on domestic barley (5%)	350			
Ex-store domestic barley price to livestock farmer	7,356	7,000	-356	*0.95*
Transport from farm to store	40			
Farm-gate producer price of barley	7,316	7,500	184	*1.03*

Source: Private traders.

ANNEX TABLE 3.6: EXPORT PARITY PRICE STRUCTURE FOR LENTILS, 1999/2000

Rate of Exchange (SP per US$)

EXPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Official	Difference between official and parity	*Ratio of official to parity*
	(SP per ton)			
FOB Latkia US$*	490			
FOB Latkia SP/ton	24,500			
Stacking	17			
Port fees	6			
Offloading, stevedoring, etc.	86			
Delivered on truck Latakia	24,391			
Transport from Aleppo to Latakia	300			
Processed on truck factory gate, Aleppo (1.00 tons)	24,091			
Processed on truck factory gate, Aleppo (1.00 tons)	24,091			
Transport from Aleppo to Damascus	205			
Delivered on truck Damascus	24,296			
Storage, local movement	300			
Retail Margin (15%)	3,689			
Retail price in Damascus market	28,285	32,000	3,715	*1.13*

EXPORT PARITY PRICE STRUCTURE TO FARM GATE AT AL HASSAKE
Processed on truck factory gate, Aleppo (1.00 tons)
Processed on truck factory gate, Aleppo (.833 tons)+
Loading trucks
Cleaning and processing
(Sale of byproducts from processing (13%))
Offloading from truck
Into-processing factory Aleppo, unprocessed
Transport from Al Hassake to Aleppo
Assembly trader's costs and margin
Farm-gate producer price++

* For grade 2+2
* 10% cleaning loss, 20% additional loss in splitting (sold for animal feed).
+ based on a 7.5% cleaning loss, a 3.5% moisture gain during soaking and a further 13% splitting loss.
++ Note that this is close to the price of some SP18,000 per ton that traders report to have paid farmers in 2000.

Parity	Official	Difference between official and parity	*Ratio of official to parity*
	(SP per ton)		
24,091			
20,066			
42			
1,500			
-975			
50			
19,449			
400			
250			
18,799	16,000	-2,799	*0.85*

ANNEX TABLE 3.7: EXPORT PARITY PRICE STRUCTURE FOR CHICKPEAS, 1999/2000

Rate of Exchange (SP per US$) 50

EXPORT PARITY PRICE STRUCTURE TO RETAIL IN DAMASCUS	Parity	Official	Difference between official and parity	*Ratio of official to parity*
	(SP per ton)			
*FOB Latkia US$**	*670*			
FOB Latkia SP/ton	33,500			
Stacking	17			
Port fees	6			
Offloading, stevedoring, etc.	86			
Delivered on truck Latakia	33,391			
Transport from Aleppo to Latakia	205			
Processed on truck factory gate, Aleppo	33,186			
Processed on truck factory gate, Aleppo	33,186			
Transport from Aleppo to Damascus	300			
Delivered on truck Damascus	33,486			
Storage, local movement	300			
Retail Margin	5,068			
Retail price in Damascus market	38,854	38,000	-854	*0.98*

EXPORT PARITY PRICE STRUCTURE TO FARM GATE IN ALEPPO	Parity
Processed on truck factory gate, Aleppo	33,186
Processed on truck factory gate, Aleppo (0.90 tons)'*	*29,867*
Loading trucks	45
Cleaning and processing	620
Offloading from truck	50
Into-processing factory Aleppo, unprocessed	29,152
Transport from assembly point to Aleppo	50
Assembly trader's costs and margin	250
Farm-gate producer price	28,852

* Mixed 7,8 and 9mm grade.

** 10% cleaning loss; no byproducts.

Official	Difference between official and parity	*Ratio of official to parity*
(SP per ton)		
17,800	-11,052	*0.62*

ANNEX TABLE 3.8: EXPORT PARITY PRICE STRUCTURE FOR COTTON SEED AND COTTON FIBRE

Rate of Exchange (SP per US$): 50

	Parity	Actual	Difference between actual and parity	Ratio of actual to parity
		(SP per ton)		
Cotton fibre FOB Latakia S.P+	67,650			
Export agent's comission (1%)	677			
Cotton fibre FOB Latakia net of commission	66,974			
Export costs and charges	250			
Transport from Al Hassake ginnery to Latakia	470			
Cotton fibre ex-ginnery*	66,254	86,560	20,307	1.31
Ginning cost per kg of cotton fibre produced	3,424			
Realisation from sale of cotton seed	-14,223			
Interest on working capital**	2,755			
Into-ginnery 3.33 tons of seed cotton bagged	74,297			
Into-ginnery 1.0 tons of seed cotton bagged	22,291			
Into-CMO buying centre price of seed cotton to farmer	22,291	29,290	6,999	1.31

\+ Note that this FOB price is based on a SP50 per US$ market exchange rate rather than the official SP46 per US$ at which the CMO export earnings were converted in 1999/2000.

* The figure that appears in the 'actual' column is the mean 1999/2000 ex-ginnery price at which the CMO sold to domestic mills.

** 6 months at 7.5%

Note: It has been assumed that, under a free market, private sector unit costs of ginning, transporting and exporting would be similar to those incurred by the CMO, other than for the interest on working capital which has been reduced to reflect the lower outlay on acquiring cotton from farmers stemming from the lower, export-parity producer price.

ANNEX TABLE 3.9: IMPORT PARITY PRICE STRUCTURE FOR SUGAR BEET AND REFINED SUGAR

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
IMPORTED REFINED SUGAR				
*CIF Latakia/Tartous US$**	*271*	*248*		
CIF Latakia/Tartous	13,551			
Bank commission	271			
Interest	143			
Import licence	124			
Handling charges & transit	55			
General fees	69			
Administrative fees	454			
Losses (2.25%)	330			
Onto-truck Latakia/Tartous	14,996			
Transport to Damascus market	208			
Into-Damascus wholesaler++	**15,204**			
Into-Damascus wholesaler++	**15,204**			
Wholesale margin (3%)	456			
Into-Damascus retailer	15,660			
Retail margin (5%)	783			*Ratio*
Retail Price Damascus (open market)**	16,443	19,000	2,557	*1.16*

Retail Price Damascus (rationed)	16,443	7,000	-9,443	*0.43*

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* The actual price refers to imports by GFTOCF in August 2000. Private importers are assumed to be able to import at
the data in Table 5 to adjust to a mean unit value for the period January 1987 to June 2000.
** The actual open market consumer price is above import parity partly because imports of refined sugar are subject to a
+ Assumed that domestically produced refined would sell at a 10% discount below the price of imported refined at the w

Rate of Exchange (SP per US$): 50

	Parity	Actual	Difference between actual and parity	*Ratio of actual to parity*
(SP per ton)				
				Ratio
Into-Damascus wholesaler++	***15,204***			
DOMESTICALLY PRODUCED SUGAR				
Into-Damascus wholesaler+	**13,683**			
Transport from sugar mill to Damascus	250			

Ex-mill gate refined sugar	13,433	34,006	20,573	*2.53*
Processing cost	8,014			
(Sale of molasses)	-1,269			
(Sale of pulp)	-2,900			
Bags (21 per ton @ SP 34 per bag)	714			
Into-mill price of beet (refined sugar equivalent)	8,874			
Into-mill price of 11.9 tons of sugar beet	*8,874*			
Into-mill price of 1.0 ton of sugar beet	746	2,150	1,404	*2.88*
Transport from farm to mill (40km)	50			
Notional sugar beet price at the farm gate	696			

5% lower cost. The parity price figure takes account of this assumption and also uses

a duty of 15% per ton plus other small government specific levies.
wholesale level due to its lower quality.

ANNEX TABLE 4.2 : ESTIMATES OF THE PROFITABILITY OF PRODUCTION IN 1999 USING OFFICIAL COSTS, OFFICIAL AND ESTIMATED PER-HECTARE YIELDS, AND OFFICIAL PRODUCER PRICES

	Irrigated soft wheat	Rainfed hard wheat	Irrigated hard wheat	Barley	Lentils	Chickpeas	Cotton	Summer Sugar
Official producer price (SP per kg)	10.80	11.80	11.80	7.50	16.00	17.80	30.75	2.25
1989-99 mean annual national yield (kg/ha)								
Highest	2,960	1,589	4,380	1,067	1,167	898	4,179	45,623
Lowest	1,109	295	1,250	94	294	396	2,725	19,081
Mean	2,245	905	2,597	569	806	637	3,292	37,883
Official yield (kg/ha)								
1997	4,000	-	3,760	900	900	850	3,200	45,000
1998	4,000	1,150	3,760	800	900	850	3,400	45,000
1999	3,560	770	3,346	625	621	650	3,400	45,000
Official 1999 cost of production (SP/ha)								
Total	40,871	11,681	41,028	6,734	16,604	16,118	97,754	107,731
Total less land rental and interest adjustment	34,675	9,911	34,808	5,709	14,289	13,627	82,605	91,316
Unit cost of production* (SP per kg)								
With highest 1989-99 yield	11.71	6.24	7.95	5.35	12.24	15.18	19.76	2.00
With lowest 1989-99 yield	31.25	33.63	27.85	60.90	48.53	34.45	30.31	4.79
With mean 1989-99 yield	15.44	10.96	13.40	10.04	17.72	21.38	25.09	2.41
Profit/loss* (SP per kg)								
With highest yield	-0.91	5.56	3.85	2.15	3.76	2.62	10.99	0.25
With lowest yield	-20.45	-21.83	-16.05	-53.40	-32.53	-16.65	0.44	-2.54
With mean yield	-4.64	0.84	-1.60	-2.54	-1.72	-3.58	5.66	-0.16
Profit/loss* (SP per ha)								
With highest yield	-2,703	8,836	16,881	2,290	4,387	2,352	45,912	11,337
With lowest yield	-22,692	-6,434	-20,060	-5,006	-9,578	-6,586	1,188	-48,383
With mean yield	-10,425	764	-4,163	-1,444	-1,387	-2,284	18,637	-6,079
Unit cost of production* (SP per kg)								

With 1997 official yield	8.67	-	9.26	6.34	15.88	16.03	25.81	2.03
With 1998 official yield	8.67	8.62	9.26	7.14	15.88	16.03	24.30	2.03
With 1999 official yield	9.74	12.87	10.40	9.13	23.01	20.97	24.30	2.03
Profit/loss* (SP per kg)								
With 1997 official yield	2.13	-	2.54	1.16	0.12	1.77	4.94	0.22
With 1998 official yield	2.13	3.18	2.54	0.36	0.12	1.77	6.45	0.22
With 1999 official yield	1.06	-1.07	1.40	-1.63	-7.01	-3.17	6.45	0.22
Profit/loss* (SP per ha)								
With 1997 official yield	8,525	-	9,560	1,041	111	1,503	15,795	9,934
With 1998 official yield	8,525	3,659	9,560	291	111	1,503	21,945	9,934
With 1999 official yield	3,773	-825	4,675	-1,022	-4,353	-2,057	21,945	9,934

* Based on the official 1999 total cost of production less land rental and interest adjustment

ANNEX TABLE 4.2 : ESTIMATES OF THE PROFITABILITY OF PRODUCTION IN 1999 USING OFFICIAL COSTS, OFFICIAL AND ESTIMATED PER-HECTARE YIELDS AND PARITY PRICES

	Irrigated soft wheat	Rainfed hard wheat	Irrigated hard wheat	Barley	Lentils	Chickpeas	Cotton	Summer Sugar
Parity price (SP per kg)	6.50	7.20	7.20	7.32	18.80	28.85	22.29	0.75
1989-99 mean annual national yield (kg/ha)								
Highest	2,960	1,589	4,380	1,067	1,167	898	4,179	45,623
Lowest	1,109	295	1,250	94	294	396	2,725	19,081
Mean	2,245	905	2,597	569	806	637	3,292	37,883
Official yield (kg/ha)								
1997	4,000	-	3,760	900	900	850	3,200	45,000
1998	4,000	1,150	3,760	800	900	850	3,400	45,000
1999	3,560	770	3,346	625	621	650	3,400	45,000
Official 1999 cost of production (SP/ha)								
Total	40,871	11,681	41,028	6,734	16,604	16,118	97,754	107,731
Total less land rental and interest adjustment	34,675	9,911	34,808	5,709	14,289	13,627	82,605	91,316
Unit cost of production* (SP per kg)								
With highest 1989-99 yield	11.71	6.24	7.95	5.35	12.24	15.18	19.76	2.00
With lowest 1989-99 yield	31.25	33.63	27.85	60.90	48.53	34.45	30.31	4.79
With mean 1989-99 yield	15.44	10.96	13.40	10.04	17.72	21.38	25.09	2.41
Profit/loss* (SP per kg)								
With highest yield	-5.22	0.96	-0.75	1.96	6.56	13.67	2.53	-1.26
With lowest yield	-24.76	-26.43	-20.65	-53.59	-29.73	-5.60	-8.02	-4.04
With mean yield	-8.95	-3.76	-6.20	-2.72	1.08	7.47	-2.80	-1.66
Profit/loss* (SP per ha)								
With highest yield	-15,440	1,526	-3,273	2,094	7,654	12,275	10,560	-57,293
With lowest yield	-27,466	-7,790	-25,810	-5,023	-8,754	-2,214	-21,861	-77,087
With mean yield	-20,086	-3,398	-16,112	-1,549	870	4,759	-9,212	-63,066
Unit cost of production* (SP per kg)								

With 1997 official yield	8.67	-	9.26	6.34	15.88	16.03	25.81	2.03
With 1998 official yield	8.67	8.62	9.26	7.14	15.88	16.03	24.30	2.03
With 1999 official yield	9.74	12.87	10.40	9.13	23.01	20.97	24.30	2.03
Profit/loss* (SP per kg)								
With 1997 official yield	-2.17	-	-2.06	0.97	2.92	12.82	-3.52	-1.28
With 1998 official yield	-2.17	-1.42	-2.06	0.18	2.92	12.82	-2.00	-1.28
With 1999 official yield	-3.24	-5.67	-3.20	-1.82	-4.21	7.89	-2.00	-1.28
Profit/loss* (SP per ha)								
With 1997 official yield	-8,685	-	-7,739	875	2,631	10,897	-11,272	-57,758
With 1998 official yield	-8,685	-1,632	-7,739	144	2,631	10,897	-6,814	-57,758
With 1999 official yield	-11,544	-4,368	-10,720	-1,137	-2,614	5,127	-6,814	-57,758

* Source: Table 5.2. Note that hard wheat is valued at import parity.

** Based on the official 1999 total cost of production less land rental and interest adjustment

ANNEX TABLE 5.1
ESTIMATION OF THE LOSSES INCURRED BY THE GENERAL COMPANY FOR MILLS IN 1998/99

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US$mill.@50)	% of GDP+
Into-mill cost of wheat	18,430	2,017,349	37.18	744	4.58
Processing cost++	219	2,017,349	0.44	9	0.05
Total GCM cost (wheat)	18,649		37.62	752	4.64
GCM revenue (flour)	7,200	1,573,532	11.33	227	1.40
GCM loss (wheat)**	13,033	2,017,349	26.29	526	3.24
GCM loss (flour)**	16,709	1,573,532	26.29	526	3.24

Note: Further smaller losses are made by GECPT, GCSILOS and GCBAKERIES.

* Flour quantity is based on a 78% extraction rate for standard flour.

** These losses result from the subsidisation of producers and consumers and for the fact that the price at which the General Company for Mills buys wheat from the General Establishment for Cereals contains the finance cost of maintaining national wheat stocks.

\+ Based on estimated 1999 GDP of SP 811,640,520,000.

++ Net of byproduct realisation.

ESTIMATION OF THE SUBSIDISATION OF WHEAT PRODUCERS AND CONSUMERS OF STANDARD FLOUR AND BREAD

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US$mill.@50)	% of GDP+
Parity Producer Price*	6,044	2,017,349	12.19	244	1.50

Official Producer Price	11,400	2,017,349	23.00	460	2.83
Subsidy to Producer	5,356	2,017,349	10.80	216	1.33
BREAD					
Parity Consumer Price*	9,560	1,872,503	17.90	358	2.21
Official Consumer Price	8,500	1,872,503	15.92	318	1.96
Subsidy to Consumer	1,060	1,872,503	1.98	40	0.24
Total Subsidy			12.79	256	1.58

+ Based on estimated 1999 GDP of SP 811,640,520,000

* based on the import parity price models for hard and soft wheat in Annex Table ??, adjusted for 1999 import prices.

Note: The calculations in both tables are based on a 60:40 hard wheat:soft wheat combination.

ANNEX TABLE 5.2
ESTIMATION OF THE LOSSES INCURRED BY THE COTTON MARKETING ORGANISATION IN 1998/99

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US$mill.@50)	% of GDP+
Into-ginnery cost of seed cotton	29,200	981,122	28.65	573	3.53
Cotton fibre					
Into-ginnery cost of seed cotton	94,194	304,148	28.65	573	
CMO costs to ex-ginnery	6,179	304,148	1.88	38	0.23
Byproduct realisation**	-15,140	304,148	-4.60	-92	
Total CMO cost	85,232	304,148	25.92	518	3.19
CMO ex-ginnery domestic sales	84,180	80,689	6.79	136	0.84
CMO loss on domestic sales	1,052	80,689	0.08	2	0.01
CMO export sales (ex-ginnery)	54,743	207,840	11.38	228	1.40
CMO loss on export sales	30,489	207,840	6.34	127	0.78
Total CMO loss		288,529	6.42	128	0.79

+ Based on estimated 1999 GDP of SP 811,640,520,000

ESTIMATION OF THE SUBSIDISATION OF SEED COTTON PRODUCERS AND THE TAXATION OF DOMESTIC CONSUMERS OF COTTON FIBRE

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US$mill.@50)	% of GDP+

SEED COTTON					
Parity producer price*	19,128	981,122	18.77	375	2.31
Official producer price**	29,200	981,122	28.65	573	3.53
Subsidy to producer	10,072	981,122	9.88	198	1.22
COTTON FIBRE					
Parity ex-ginnery price*	55,710	80,689	4.50	90	0.55
Ex-ginnery price for domestic sales	84,180	80,689	6.79	136	0.84
Taxation of domestic buyers	28,470	80,689	2.30	46	0.28

+ Based on estimated 1999 GDP of SP 811,640,520,000

* Based on the export parity price model for cotton in Annex Table ??, adjusted for 1998/99 export prices.

** After taking account of quality discounts.

ANNEX TABLE 5.3
SUGAR : ESTIMATION OF GENERAL ESTABLISHMENT FOR CONSUMPTION LOSSES IN 1999

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US mill.$@50)	% of GDP**
Into GEC cost of Syrian sugar	34,006	94,806	3.22	64.5	0.40
GEC distribution costs	2,720	94,806	0.26	5.2	0.03
Total GEC cost of Syrian sugar	36,726	94,806	3.48	69.6	0.43
GEC revenue from Syrian sugar	7,000	93,858	0.66	13.1	0.08
GEC loss on Syrian Sugar			2.82	56.5	0.35
Into GEC cost of imported sugar	11,079	190,000	2.10	42.1	0.26
GEC distribution costs	554	190,000	0.11	2.1	0.01
Total GEC cost of imported sugar	11,633	190,000	2.21	44.2	0.27
GEC revenue from imported sugar	7,000	188,100	1.32	26.3	0.16
GEC loss on imported sugar			0.89	17.9	0.11
GEC loss on all sugar			3.72	74.4	0.46

ESTIMATION OF THE SUBSIDISATION OF SUGAR BEET PRODUCERS AND CONSUMERS OF REFINED SUGAR IN 1999

	Price/Unit Value (SP/ton)	Quantity (tons)	Cost/Value (SP billion)	Cost/Value (US$ mill.@50)	% of GDP**
SUGAR BEET					

Parity Producer Price+	485	933,176	0.45	9.1	0.06
Official Producer Price*	2,150	933,176	2.01	40.1	0.25
Subsidy to Producer	1,665	933,176	1.55	31.1	0.19
REFINED SUGAR					
Parity Consumer Price+	12,718	284,806	3.62	72.4	0.45
Official Consumer Price	7,000	284,806	1.99	39.9	0.25
Subsidy to Consumer	5,718	284,806	1.63	32.6	0.20
Total Producer and Consumer Subsidy			3.18	63.6	0.39

* After taking account of quality discounts.

** Based on estimated 1999 GDP of SP 811,640,520,000

\+ based on the parity price models for sugar in Annex Table ??, adjusted for 1999 import prices.

COMPARISON OF OFFICIAL AND PARITY PRICES TO PRODUCERS

	Soft Wheat (Import)	Hard Wheat (Import)	Hard Wheat (Export)	Barley (Import)	Lentils (Export)	Chickpeas (Export)	Cotton (Export)	Sugar (Import)
Official Producer Price	10,800	11,800	11,800	7,500	16,000	17,800	29,290	2,150
Parity Producer Price	6,497	7,199	7,062	7,316	18,799	28,852	22,291	746
Ratio Official to Parity	1.66	1.64	1.67	1.03	0.85	0.62	1.31	2.88

NOTE THAT THIS TABLE IS NOT REQUIRED FOR THE REPORT SINCE IT HAS ALREADY BEEN READ INTO THE MAIN TEXT