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Final Report
on

Livestock 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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1. INTRODUCTION

Syria's agriculture sector, and the livestock sub sector, will have a significant impact on the future growth of the country's economy. Agriculture accounts for 30 percent of the GDP, with livestock providing over 30 percent of the total value of agricultural production. Agriculture also accounts for 20 percent of the value of total exports and more than 50% of exports of all non-oil and gas revenues, while the livestock sector contributes 15 percent of the value of agricultural exports. Agriculture employs 29 percent of the total Syrian labor force (about 1.4 million people) and includes a high percentage of all active women. Moreover, most of the country's low income families live in rural areas and mainly depend on agricultural and/or livestock production for their livelihood. Growth in the livestock sub sector is therefore important for poverty reduction and overall growth of the economy.

Over the past twenty years there has been significant progress by Syria in meeting the growing demand for food. Syria has traditionally used a number of support mechanisms to support agriculture over the manufacturing sector. Production of cereals (wheat, barley and maize) has increased by about 36% from 3.87 million tonnes in 1980 to 5.27 million tonnes in 1998. Livestock products (milk and meat) grew by more than 94 percent to about 2,800 thousand tonnes by 1998. Syria is now nearly self sufficient in food grains and most livestock products.

While livestock is a major consumer of crop products for feed, the support to the sector continues to favour the production of crops over livestock. There is an interactive relationship between agriculture and livestock and between the various classes of livestock under production. This relationship is quite complex and does not justify the simple approach to support used in the past. The livestock sector and dairy production in particular, competes directly with crops for land and water, while sheep raising occurs predominantly in those areas where production of other forms of agricultural or livestock are not viable. However, cropping also encroaches on the margins of the pastoral lands. As sheep numbers and sheep production in Syria increases, sheep are increasingly and directly in competition with dairy, beef and poultry for the main resources of livestock feed – the crop residues and concentrates.

Recent moves to float the Syrian Pound (SP) and Government's increasing interest in improving the export competitiveness of the entire economy, supports a general shift in emphasis towards agriculture. Agriculture is thus expected to attract an increasing share of resources from the private sector over the next few years. Against this background, Syria's programme of reform and economic liberalisation also opens significant market-led opportunities for the livestock sector. Between 1993 and 1998, the value of livestock production, at 1995 constant prices, increased by 24 percent to SP 8.6 billion, and livestock accounted for 28.5 percent of the value of agricultural production by 1998. The export of live sheep is the major contributor to export revenues.

Livestock sector development has a significant beneficial impact in generating employment and reducing rural poverty. The sector employs 11 percent of Syria's total labour force, including many low income families in the rural areas. More than 8 million people are rural dwellers, 2.5 million of these are low income earners. More than 35 percent of all rural households own livestock; income derived from livestock in these households accounts for 15-100 percent of total family incomes. Improving the productivity of, and increasing the incomes from, livestock enterprises would benefit Syria's rural poor. However, the large livestock populations in Syria have resulted overgrazing and land degradation, particularly in the drier regions. The continuing growth in sheep numbers coupled with the diminishing areas of

traditional grazing, has put intense pressure on the rangelands, and has contributed to the degradation of Syria's land resources.

Development of the livestock sector must therefore be balanced with measures to conserve the environment. Thus, any development strategy for the sector, must attempt not only to achieve growth and reduce poverty, but also to maintain agricultural and environmental sustainability. This study assesses the structure, constraints, imperfections and opportunities within the livestock sector. It also explores possible policy options for improving the main livestock products derived from it. This report reviews the livestock sector and the support which the government provides to the sector. A number of recommendations are made on possible changes of focus of that government support.

2. Livestock Production and Performance Trends

A. Recent Population and Output Trends

Livestock Population. Syria's livestock population grew rapidly during the 1980's and then less slowly during the 1990's (**Table 1**).

Table 1 Livestock Population, 1960 - 1998 (thousands)

Year	Sheep	Cattle	Goats	Camels	Horses
Average					
1960-65	4035	453	668	11	67
1965-70	5899	506	803	10	67
1970-75	5312	513	709	8	61
1975-80	7645	687	1011	8	53
1980-85	13650	769	1097	7	50
1985-90	13309	753	1013	4	49
Annual					
1989	14011	800	1011	3.1	43
1990	14508	787	1000	4.6	41
1991	15193	771	962	5.0	39
1992	14665	765	951	2.9	37
1993	10147	680	986	5.4	27
1994	11256	720	1034	6.5	27
1995	11800	780	1200	6.5	27
1996	12000	800	1250	6.8	28
1997	13829	857	1100	7.5	27
1998	15424	931	1101	8.9	26

Source: MAAR - The Annual Agricultural Statistics Abstract

The national sheep flock almost doubled during the 1980's but increased by only seven percent over the decade from 1989 to 1998. The population slow-down occurred as the opportunity for exploiting rangeland and crop residues through more intensive management diminished while over exploitation caused an overall decrease in the productivity of the Syrian rangeland. By the beginning of 2000, the sheep population may have fallen below 1989 levels because of increased sales and lower productivity during the severe drought of 1999-2000. Conversely, cattle have shown more steady growth over both decades, with the national herd growing by 16 percent to more than 900,000 head in the last decade. The growth in dairy cattle was greater than in non-dairy animals, reflecting the increasing demand for dairy products and the liberalisation of the milk processing sector. The goat population has remained static over the decade, but there have been some fluctuation between years due to seasonal conditions. The average annual population of poultry has risen by 50 percent during the decade, while the average broiler population has doubled in line with population growth and demand for poultry meat. Camel numbers have reversed their long-term decline and have more than doubled during the decade, albeit from the low base of 3000 head. The population of horses declined by 40 percent, continuing a long term trend.

Livestock Yields and Output Trends. As the livestock populations expanded, output of the main livestock categories also grew (**Table 2**). Over the last decade, beef and poultry meats displayed the highest annual growth rates with output increasing by 138 percent and 97 percent respectively. By 1998, cow's milk accounted for 62 percent of the total milk supply, with sheep milk accounting for another 33 percent and goat milk providing the balance.

In the same year, sheep meat accounted for 55 percent of the total domestic production of meat, down from its contribution of just over 60 percent the year before. During the last ten years, domestic production of poultry meat doubled. Poultry contributed the main increase in meat production and contributed an extra 50 thousand tonnes over the decade.

Table 2 Livestock Production 1989-1998 (thousands of tonnes and litres)

	Sheep		Cattle		Goats		Poultry	
Year	Meat	Milk	Meat	Milk	Meat	Milk	Eggs mill	Meat
1989	113	438	18	777	6.2	60	1378	49
1990	114	497	19	771	6.0	63	1520	60
1991	124	513	20	780	4.8	58	1611	61
1992	113	512	29	776	4.6	62	1982	83
1993	92	437	29	742	5.9	64	2026	77
1994	120	395	31	764	5.4	67	2050	75
1995	131	454	34	889	5.8	71	2060	85
1996	143	499	40	934	7.4	75	2230	82
1997	148	524	42	1009	5.4	77	2273	93
1998	154	582	43	1119	5.9	79	2228	97

Source: MAAR - The Annual Agricultural Statistics Abstract

Milk yields from cross-bred cattle improved considerably between the 1980's and the 1990's due to better nutrition and management (**Table 3**). Per-animal yield for other livestock products remained static however, with any increase in production coming from larger livestock populations. Much scope exists to increase the per-head productivity for non-milk items, particularly through intensive feeding systems for beef and mutton, and improved conversion of feed into animal products. The expansion of the dairy cattle cross-breeding programme will continue to lift dairy cow yields, provided the resulting increase in their genetic potential is complemented by corresponding improvements in husbandry, nutrition and health care.

Table 3 Average Annual Animal Yields (kilograms per animal)

Commodity	Yield per Animal 1998	Average Annual Output per Adult Female	
		1980 –89	1989-98
Cows Milk			
indigenous	734	797	781
crossbred	2424	2165	2424
Sheep Milk	58	59	58
Meat			
mutton	15	13	15
beef	97	88	88
goat	8	9	8
eggs	169	166	169

Source: derived from MAAR data

In 1998, the sheep industry produced 15,000 tonnes of clean wool and skins worth SP 110 million.

Between 1994 and 1998, the value of animal production grew by more than 30 percent at 1995 constant prices and, by 1998, was worth SP 86 billion.

B. Consumption of Livestock Products

Despite the continuing increase in supply, Syria's per capita consumption of livestock products, with the exception of milk, is considerably lower than in industrial countries. Per capita consumption of milk is higher than in Australia and the US[1], while consumption of beef and poultry is about 10 percent and 14 percent of US consumption (**Table 4**).

Table 4 Per Capita Consumption of Livestock Products in Syria and Selected Countries, 1998 (kilograms per year)

Product	Syria	Other Countries
Sheep and goat meat	9.6	New Zealand - 20; Turkey - 6; Saudi Arabia - 19; China 1
Beef	2.7	Australia - 36; US - 43; China - 2; Philippines - 2.4
Poultry meat	5.8	US - 43; China - 4; Hong Kong - 43;
Milk (fluid milk)	110	Australia - 104; US - 104; China - 3; India - 65;
Eggs (pieces)	134	Australia - 170; US - 181; Turkey – 122; Japan - 276; China - 163;

Source: Syria - MAAR Annual Agricultural Statistical Abstract. Other countries- various and as quoted from USDA Livestock and Poultry: World Markets and Trade

Overall per capita consumption of livestock food products has remained fairly constant over the last fifteen years with per capita consumption of poultry meat and eggs slightly decreasing, and milk showing a small increase (**Table 5**). The relatively low levels of consumption of sheep meat, beef, poultry and eggs offer considerable opportunity for growth. Given that prices for most livestock products have risen slowly over the last decade, overall consumption of livestock food products has just kept pace with the rate of increase of the population.

Table 5 Per Capita Consumption of Livestock Products 1985 to 1998 (kilograms per capita)

Product	1985	1990	1992	1994	1996	1998
Beef	2.9	2.7	2.4	2.5	2.7	2.7
Sheep and Goat Meat	9.6	8.5	9.8	10.3	10.7	9.6
Poultry Meat	7.8	3.8	4.6	5.6	5.6	5.8
Eggs	148	119	152	143	145	134
Milk	109	109	104	89	100	111
Fish	0.6	0.5	0.5	0.7	0.7	0.7

Source: derived from MAAR Annual Agricultural Statistical Abstracts

Elasticity of Demand for Livestock Products. Animal products (dairy, meat and eggs) are an important and increasing component of consumer budgets (**Table 6**)(**Table 7**), although urban per capita expenditure is about 10 percent higher than in rural households. Having increased in recent years, the per capita household budget averaged just below SP 8,000 in 1995. The national per capita expenditure on food accounted for SP 4,160 of this, or 52 percent of the household budget.

[1] Figures for USA and Australia are for fresh milk consumption and based on a milk equivalent. Syria's consumption figure refers to both fresh milk (accounts for 40% of total milk production) as well as dairy products such as cheese, butter, yogurt, etc. processed milk.

Table 6 Rural and Urban Price Elasticities for Livestock Products

	Red Meat	Poultry	Eggs	Cheese	Milk
Rural	- 1.98	+ 1.46	- 0.15	+ 0.28	- 1.50
Urban	- 1.51	- 0.43	- 0.63	- 0.23	- 1.49

Source: Derived from MAAR Department of Agricultural Economics Household Survey 1994

In the decade earlier, expenditure on food items was significantly lower. In 1985 – 86 for example, while meats, eggs and dairy products still accounted for a large share of family expenditure on food items (34 percent) they were a significantly lower (17.6 percent) proportion of the average annual household expenditure of SP 47,319.

Table 7 Average Per Capita Rural and Urban Expenditure on Food and Non-food Commodities 1985-1986 in Syrian Pounds

Item	Urban	Rural	Average	Percentage of Total Food Expenditure	Percentage of All Expenditure	Average Family Expenditure
Non food commodities	4002	3615	3809	na	48.3	22852
Food Commodities	4247	3909	4078	na	51.7	24467
Meat and eggs	853	665	759	18.6	9.6	4554
Dairy products	694	572	634	15.5	8.0	3802

Source: Central Bureau of Statistics

While consumption of livestock products has remained relatively constant over the last fifteen years, prices have increased for all livestock products consumed. Given the social and cultural importance of meat and milk products in the Syrian diet, the demand for livestock products in Syria could be considered highly income elastic. No estimates of this elasticity are available. Experience from other countries in respect of consumption, indicates that demand increases as per capita gross domestic product (GDP) rises.

Consumer preferences for better quality and differentiated products is also increasing particularly in urban areas. For example, the urban market for poultry has changed from live birds to dressed birds, and more recently, to carcass segments. Urban butchers in the higher income areas also report an increasing demand for specific cuts of beef, and for mutton with a lower fat content.

C. Demand and Supply Projections

The population grew by more than three percent from 1998 to 1999, and this high rate of increase will slow some of the expected growth of the Syrian economy. The high price elasticity of livestock products however, will ensure a growing demand for these products, which is expected to be at least in line with the rate of population increase. Assuming the economy consistently grows at modest 3 percent per year while the population growth, price and income elasticities of the past ten years continue unchanged, estimates for 2020 indicate that the demand for meat, milk and poultry will increase by 34, 14 and 49 percent respectively.

If output growth rates between 1989 and 1999 are maintained over the same period however, the growth in demand for red meat can not be met from domestic production alone.

Table 8 Consumption of Selected Livestock Products in 2010 and 2020 at different rates of GDP Growth (thousand tonnes)

Commodity	Demand in 1998	Demand - GDP Annual Growth of					
		2%		3%		6.6%	
		2010	2020	2010	2020	2010	2020
Red Meat	198	220	241	223	265	281	352
Milk	1780	1754	1883	1832	2025	2122	2552
Eggs	2153	2669	2970	2850	3301	3526	4528
Poultry Meat	97	114	129	123	145	156	205

Source: Deducted from MAAR Department of Agricultural Economics - Household Survey 1994

Weather, technological advances, changes in price of inputs and the availability of alternative products will effect the domestic supply of livestock products. Variations in seasonal rainfall will impact on the supply of livestock, particularly the availability of young stock for fattening purposes and the productivity of sheep and goats, which rely on grazing rangeland for part of their feed requirements. Technological advances, particularly improvements in the efficiency of feed conversion, could substantially decrease the cost of production of meat and milk products which would result in increased supply of livestock products from within the existing natural resources of Syria. Similarly changes in prices of livestock feed would impact on the cost of production and hence the supply of livestock products from domestic production.

D. Livestock Production Systems

Syria's livestock production systems are changing. There is an increasing emphasis on intensive feeding in all production systems and a decreasing reliance on natural grazing alone. While there remain a large number of pastoral sheep and cattle production units, both the small and large ruminant systems are moving from methods of low input and low productivity to more intensive feedlotting. By following international trends, the poultry industry has already intensified and now has levels of productivity equivalent to those achieved in industrialised countries. While the dairy industry has also undergone some intensification, average milk production levels are still low compared to the major exporting countries of milk products.

Most sheep and cattle are raised in small herds and flocks (Table 9). Cattle production occurs on small farms where livestock production is a complementary activity to agricultural pursuits. The majority of sheep owners own less than 50 sheep and many of these smaller flocks belong to sedentary livestock producers who own land and are involved in either irrigated and/or dryland agricultural production. The major proportion of sheep production occurs on the rangelands, where the average size of flocks is much larger.

Table 9 Distribution of Cattle and Sheep Ownership by Size of Herd and Flock, 1998

Governerate	Sheep						Cattle				
	No. of holders	1-100	101-300	301-500	501-1000	> 1000	no. of holders	1-5	6-10	11-15	> 15
Hama	11767	9454	1832	315	132	34	17155	15875	1089	136	51
Homs	17786	7728	6115	2406	1218	319	26894	19967	5729	910	844
Raqqa	21648	17504	3235	536	253	120	2424	2254	149	11	10
Aleppo	37447	34405	2656	279	91	16	11643	10197	1055	226	165
To AlGhab from other governerates	484	268	167	37	9	3	67	67	0	0	0
In AlGhab	1691	1493	165	20	11	2	8613	8037	506	52	18
Total	90823	70852	14170	3593	1714	494	66796	56397	8528	1335	1088

Source: Data collected from Governerates sources by Task Force

Sheep Production Systems.

Traditionally sheep production has been concentrated in the more arid areas of eastern and south eastern Syria. Very little cropping occurs in these areas and the main feed source for the sheep is from grazing rangeland pastures. The sheep production system has been based on seasonal movement between the rangelands in the east and south east, and the dry and irrigated cropping areas in the west where the sheep are grazed on crop residues. This system is now changing. A decreasing proportion of the national sheep flock's nutritional requirements is obtained from grazing the rangelands, with an increasing proportion being provided through supplementary feeding. As a result, flocks are spending longer periods in the cropping zones and migration patterns have given way to an increase in sedentary production systems based on early weaning, and the feedlotting of young animals. This change in the system of sheep production has been facilitated by improvements to transportation and infrastructure, as well as the securing of national boundaries, an increasing sheep population and higher prices for young sheep. Live sheep for export, and meat and milk are the main products from sheep production. Sheep provide about 30 percent of the total milk consumed by the domestic market.

An estimated 150,000 families produce sheep in the Syrian rangelands. Most of these families own less than 300 head (Table 10).

Table 10 Flock size owned by Sheep Producing Families in the Al Badia

Flock Size (head)	Number of Families	Percentage of Total Sheep Owning Families
Less than 100	59,000	47
100 to 300	47,000	37
300 to 500	15,000	12
500 to 1000	3,750	3
More than 1000	625	> 1

Source: Al Badia Directorate

Constraints. The diminishing rangeland resource and a lack of feed and fodder continues to constrain the productivity of the sheep industry. The movement into feedlotting young sheep for meat and keeping lactating ewes for producing milk further increases the demand for

quality feed inputs, as these activities depend on the availability of quality formulated feeds for profitable rates of feed conversion.

Bovine Production Systems.

Syria's cattle industry is based on local and imported dairy breeds with beef production a by-product of the dairy industry. Of the one million cattle in the national herd, 70 percent are categorised as dairy cows. Government supports improvement of the low milk yields of indigenous breeds through breed improvement programmes based mainly on imported Friesian semen. This cross-breeding programme has substantially increased per-head milk production. The Livestock Production Department implements an artificial insemination programme for the private, public and cooperatives producers.

Dairy cattle have limited access to grazing and are mainly stall-fed with concentrates, crop residues and green fodder. Young males are either raised for veal on surplus milk or are sold at weaning to specialised beef producers who use a feedlotting system to grow out these young animals for meat production.

Constraints. Economic cattle production depends on converting feed into milk and meat efficiently. The inconsistent availability of good quality feed ingredients for preparing balanced rations, means achievement of high feed conversion efficiencies is often not possible. In addition, and notwithstanding the shortages of quality feed, the low productivity of local cattle is constrained by the lack of suitable genetic material through the herd improvement programmes, and the overall production of milk and meat per animal remains low.

Poultry Production

Most poultry are raised in intensive production systems. Both broiler and layer production stock are based on imported grandparent stock whose supply is controlled by a small number of importers. Parent stock is produced in specialised privately or publicly owned production units. About 40 breeders dominate the market for day-old broilers and layer chicks.

Constraints to Poultry Production. The supply and price of all major feed ingredients (maize, fishmeal, soybean meal and other oilseed cakes) varies throughout the year with some ingredients disappearing completely from the market at some times during the year. Further, access by the poultry industry to domestically produced ingredients is in direct competition with the dairy industry and the sheep and cattle feedlots operations. Poor feed quality has also been an issue for the industry, particularly the quality of imported maize and oilseed cake.

E. Conclusion

The ability of the Syrian livestock sector to meet the domestic demand for livestock products, will depend on its ability to intensify production and improve the quality of its animals, rather than from increasing animal numbers as happened in the past.

The opportunity to increase sheep production by better utilising the rangeland feed resource is limited, and as with cattle, sheep production gains will come from intensification. The trend towards sedentary production of Awassi sheep for the domestic and export markets requires improved husbandry practices and nutrition. These will involve increased levels of supplementary feeding, as well as earlier weaning with weaned animals grown out in feedlots.

Sheep production will also need to become more specialised, with the grazing/supplementary feeding system producing store animals for feedlotters for growing out and fattening for the

domestic and export markets. The changing economics of the export sheep market will require Syrian producers of Awassi sheep for export to improve their production efficiencies, through improved reproductive performance of their flocks. Increasing the off-take of young animals per breeding ewe and by improving feed conversion in the feedlots will be important determinants of future profitability of the sheep industry. Achieving these efficiencies will require new approaches to research and extension by the MAAR services. These services should be targeted at increasing the *profitability* of production rather than production *per se.* Greater involvement of the private sector in establishing livestock research priorities will also help MAAR to meet the needs of the producers.

More intensive production in the dairy sub-sector will be based on the use of genetically superior animals, increased stall feeding, improved utilisation of crop residues and use of more farm-produced fodder. This will more closely integrate crop and livestock production and it will improve efficiency in using crop and agro-processing by-products. Increased reliance on imported feed ingredients will also make feed ingredients such as barley, maize and cotton seed cake locally available at internationally competitive prices. More intensified dairy enterprises will result in more specialised cattle meat production units, and use of specific beef breeds in cross breeding programmes with dairy cattle.

Poultry production will continue to intensify, with growth in the sector coming mainly from the expansion of intensive production systems in the private sector. The development of a cold storage infrastructure will permit greater access to regional markets for frozen or chilled birds, as well as creating a more stable domestic market by enabling a larger reserve of processed birds to be held.

The most critical factor determining the ability of the Syria livestock producers to meet the increased domestic and international demand for livestock products will be the availability of high quality feed at international prices which will determine the profitability of their livestock enterprises - dairy stall feeding, intensive sheep and cattle feedlotting, and the efficiency and regional competitiveness of the poultry industry. The supply and demand of livestock feed is analysed in the following Chapter.

3. Livestock Feed and Fodder Supply

Ensuring an adequate supply of reasonable quality feed and fodder is one of the major challenges facing the Syrian livestock sector. Estimates of the exact size of the current feed deficit vary with seasonal conditions and assumptions made on the contribution of the range lands and crop residues to the national feed production. However, there is general agreement that the volume and quality of future animal feed supplies will be of vital importance in sustaining the growth of the livestock sector. This chapter reviews the current status of the feed and fodder system in Syria and identifies constraints that hamper its development. Structural problems and public sector policies influencing performance of the sector are examined.

A. Feed Sources and Consumption in Syria

The major sources of livestock feed in Syria come from natural pastures and rangeland, cultivated green and conserved fodder, crop residues, crop products and by-products, agro-processing by-products and slaughterhouse and hatchery residues.

Grazing provides the most important source of fodder for ruminants. In the western higher rainfall zones, crop stubbles and pastures on the borders of the cropping areas and the extensive rangelands in the drier eastern areas, provide the major source of grazing. As the livestock population increases and production intensifies, an increasing proportion of the dietary requirements of ruminants is being met through supplementary feeding with cereals and crop and agroprocessing byproducts.

Grazing. About half of Syria's land mass is classified as rangeland (*Al Badia*) covering 8 million hectares providing an estimated 15 percent or more of the national sheep flock's nutritional requirements in a "normal" rainfall year. While sheep are in the Al Badia (November to April), grazing is supplemented by barley during a period of about 90 days during winter. For the rest of the year, grazing takes place in the cropping and higher rainfall zones in the west of the country. The complementarity between intensive cropping systems and livestock production is exploited through the migration of sheep from the Al Badia to the wheat, barley and cotton growing areas after harvesting, to feed on the agricultural residues. Notwithstanding the dependence on these grazing lands, most of the natural grazing lands in Syria are considered to be degraded and the 1999-2000 drought has resulted in further degradation of the range land feed resource.

Concentrates. Barley, which is produced under dryland conditions, accounts for over 85 percent of cereal and legume grains grown for livestock feed. About 20 percent and eight percent of the area sown to barley and wheat is grazed as a standing crop. In years of lower rainfall, crops which are not economical to harvest for grain, are an important source of fodder for ruminants (Table **11**).

Crop Residues. The main agricultural stubbles are wheat, barley and cotton. Cotton seed cake provides the major source of supplementary protein to grazing animals. Wheat bran and straw are the most important crop residues/by-products for livestock feed production.

Table 11 Cereals and Legumes produced for Livestock Feed 1993- 1997 (thousands tonnes)					
	1993	**1994**	**1995**	**1996**	**1997**
Cereals					
Barley	1553	1482	1705	1653	983
Oats	neg	neg	neg	neg	1
Maize	200	204	199	250	303
Sorghum	6	4	5	6	3
Legumes					
Dry rambling vetch	15	6	15	9	7
Dry flowering sern	5	6	7	5	6
Dry bitter vetch	7	3	6	3	5

Source: MAAR

Green Fodders. The area under green fodder production is about 63,000 hectares with most of the production coming from irrigated fodder crops, predominantly barley, flowering sern and maize (Table 2). The area sown to fodder crops has increased by about 10 percent from 1990, with most of the increased sowing on irrigated land. The area under green fodder has only marginally increased since 1990, making a small contribution to the livestock feed budget, as other forms of crop production remain much more profitable for irrigation farmers.

Table 12 Cultivated Fodder Production, 1998 (thousands of hectares and tonnes)

Fodder Crop	Area	Production	Note
Grazing Flowering Sern	8	126	63% irrigation
Grazing Barley	42	373	55 % irrigated
Clover pasture	0.2	5	irrigation
Alf alfa	4	117	irrigation
Grazing maize	7	127	70 to 80 % irrigation
Other	2	21	

Source: Annual Agricultural Statistical Abstract 1998

Industrial Residues. Of the 3 million tonnes of industrial crop residues produced each year in Syria, residues from sugar beet, cotton and peanuts account for over 85 percent. Only an estimated 30 percent of this residue is currently used for feed for livestock production.

Agricultural Residues. Agricultural residues consumed by livestock consist mainly of wheat and barley straw. It is customary to collect residues immediately after harvest for stall and supplementary feeding during the lean season.

Table 13 Major crops - Area and Production 1998 (thousands of hectares and tonnes)

Crop	Area	Production
Wheat	1721	4111
Barley	1543	868
Lentils	142	154
Chick peas	108	85
Grazing barley	41	373
Bitter Vetch	14	8
Rambling Vetch	18	13
Maize	72	285
Sorghum	4	5
Cotton	274	1018
Soybean beans	4	7

Source: Annual Agricultural Statistic Abstract

Feed Supply. The supply of feed, fodder and feed ingredients is seasonal both in terms of quality and quantity. The availability and cost of feed and fodders is regarded as a major constraint to increasing the livestock production and the profitability of all livestock enterprises. Procurement of feeds and fodder accounts for a high percent of the cost of production of all categories of livestock (Table **14**). Although grazing of rangelands and crop stubbles provides a major proportion of the total nutritional requirements for goats and sheep, the cost of purchasing supplementary feed accounts for over 50 percent of the total cash cost of production.

Table 14 Contribution of Cash Cost of Fodder and Feed to Cost of Livestock Production, 1999

Enterprise	Cost of Concentrate Feeds and Fodders Syrian Pound	Feed Cost as Percentage of Total Production Cost
Dairy production		
- milk	7 to 8 /litre of milk	75
Layer production	80 to 90/bird	43
Egg production	2.1/egg	53
Broiler production	25/kg	40
Beef production - feedlot	8.5/kg	90

Source: Department of Economics MAAR, Farmer estimates

B. Fodder Marketing.

Due to the increasing intensity of animal production in all classes of livestock production, the market in feeds and fodders is well developed in both the public and private sectors. The public sector procures, stores and markets feed and fodders through the General Establishment for Cereals and the General Establishment for Fodder. The cooperative sector through the General Peasants Federation is the most important vehicle for distribution of this public sector feed and fodder. The major focus of the public sector activities in the marketing of fodder, until recently, had been provision of feed and fodder on concessional terms to sheep producers and to participants in government sponsored dairy and cattle development programmes. The marketing of poultry feeds is predominantly a private sector concern and most of the requirements of the poultry industry are imported. Concentrate (grains) feed is supplied by both the private and public sectors, although the private sector's role is restricted mainly to the manufacture of poultry feed using imported ingredients. Cattle and sheep feeds are produced from local feed ingredients. Three General Establishment for Fodder factories manufacture pellets or mixed feed for cattle and fish.

In 1998, the national production of livestock feed grains was 1178 tonne and 755 tonne were imported, of which the requirement for poultry was 666 tonnes of maize and 174 tones of soybean bean cake

C. The Feed Deficit

Estimates of the feed availability are about 8.9 million tonnes of dry matter per year with a requirement of about 10.7 million tonnes based on 1998 livestock population and production data. Slight changes in the assumptions regarding natural grazing yields have a considerable impact on the size of the deficit (**Table 15**)(Table 16).

Table 15 Livestock Feed Consumption 1998 (thousand tonnes of dry matter, total digestible nutrients and crude protein)

Source	Dry Matter	Crude Protein	Total Digestible Nutrients
Rangeland	958.6	76	551
Uncultivated land and fallow	224.5 (89.6)	14	121
Crop stubbles and residues, and unharvested crops	4963 (5166)	111	2362
Agro processing by products	864 (625)	121	639
Green Fodder	117	11	87
Concentrated feed	1063 (1482)	89	822
Total Domestic Production (Roughage 76% and concentrated feed 24%)	8189	422	4582
Imported feed	670	112	542
Total Feed Utilisation	10193	883	5919

Source: Study calculations

Table 16 Requirements and Availability of Feed (millions of tonnes of Dry Matter DM, Total Digestible Nutrients TDN and Digestible Protein DP) 1998

	Type	Roughage	Concentrate Feed	TDN	Digestible Protein	DM
Supply	Grazing	1.95	-	0.76	0.10	1.30
	Crop		1.18	0.82	0.09	1.06
	Crop Residues	5.84	-	2.36	0.11	4.96
	Industrial Residues	-	0.97	0.64	0.10	0.86
Total domestic production		7.80	2.15	4.58	0.42	8.19
Imports			0.76	0.54	0.11	0.67
Total				5.12	0.53	8.8
Requirements	Cattle			1.21	0.15	2.41
	Sheep			3.84	0.37	6.30
	Goat			0.24	0.03	0.32
	Poultry			0.61	0.08	0.67
	Others			0.22	0.02	0.47
Total				6.12	0.65	10.17
Balance				-1.00	-0.12	-1.31

Source: study calculations

The livestock feed deficit is expected to grow in the future with a further widening of the gap between domestic production and the livestock sector requirements. Maintaining the sheep population at its theoretical level of 15 million, and maintaining the other sectors at their present rates of growth, by 2010 the livestock feed requirement will increase to 11 million tonnes of dry matter, 24 percent above current domestic level of feed and fodder production

Table 17 Annual Demand for Livestock Feed by 2010 and 2020 (thousands of tonnes of dry matter)							
	Growth Rate of Species Population	2010			2020		
		Dry Matter	Protein	Total Digestible Nutrients	Dry Matter	Protein	Total Digestible Nutrients
Sheep	0	5764	343	3515	5764	343	3515
	0.5	6119	364	3732	6432	382	3923
	1.0	6495	368	3961	7174	427	4376
Cattle	2	3280	215	1723	4613	317	2505
Goats	2	413	35	324	512	45	417
Poultry	9	1497	221	1383	3018	454	2802

Source: study calculations

D. Addressing the Feed Deficit

Managing the Common Grazing Areas[2]

An estimated 500,000 Syrian families rely on sheep production for a substantial proportion of their income. Most of this production has its roots in the Al Badia region although most of the sheep owning families migrate out of the Al Badia during the summer months to graze their animals on the crop residues in the higher rainfall areas of the country. This movement of sheep out of the Al Badia occurs generally in May with flocks returning in October/November depending on the opening rains. Estimates of the contribution of the feed production of the Al Badia to the total requirements of the sheep population vary according to the assumptions made as well as the annual rainfall. In 1998, the Al Badia had an estimated production of about one million tonnes of dry matter which met over 15 percent of the total digestible nutrient requirements of the Syrian sheep population.

Recent increases in sheep numbers have resulted in a decline in the productivity of the rangelands due to overgrazing of vegetation resulting in lower plant productivity. In years of "average" rainfall, sheep owners would graze their flocks in the Badia for about 140 days (during the short spring growing period) a year before moving flocks into the higher rainfall zones during the summer. The shortfall in rainfall in 1998/99 season has resulted in further deterioration of the rangeland. The availability of feed from grazing crop residues also declined during this period. The lower availability of feed has caused a significance increase in mortality, lower reproductive performance and lower productivity of the sheep flocks. Imports of barley to meet the shortfall in animal feed during 1998/9 was 711 thousand tonnes.

Some cropping is undertaken with surplus water at the margins of the Al Badia and within the larger oases, despite a Government edict issued in 1995 banning cropping in the Al Badia. The most common crop is rainfed winter barley. Yields are very low and such production would be uneconomic[3].

[2] This section was prepared from several sources predominantly from project reports provided by FAO GCP/SYR/003/ITA.
[3] IFAD (1993) terms this practice pseudo-cropping

The size and number of sheep flocks have increased substantially over the last three decades with a corresponding greater pressure on the range resources from both livestock and human population. The increased availability of water tankers and trucks for transport of animals has allowed even more effective and in many cases destructive utilisation of the range resources. Tightening of cross border movement of flocks has limited access to range land feed resources in the broader region. Besides grazing and overstocking, the degradation and subsequent decline of the productivity of the Al Badia is also attributed to cutting of woody vegetation for fire wood, and the gathering of plants for food and medicinal purposes.

Whether the Al Badia can recover its lost productivity is uncertain, but evidence from the FAO Project GCP/SYR/003/ITA indicates judicious management of the rangeland can increase biodiversity and productivity of the range. Achievement of some form of management which addresses the long term productive decline of the rangeland and to help protect the Al Badia from over exploitation requires a community based approach involving all the users of the Al Badia resource. However changing social conditions with the diminishing of traditional social systems of authority and increasing economic individualism provides challenges to the re-introduction of a community based system of management.

Important changes which have gradually occurred over the course of this century in the Al Badia include: (i) increasing settlement of the Bedouin marginal lands; (ii) switch from camel production to sheep production; (iii) collapse of the traditional migration patterns through widespread use of motorised transport and the closing of national boundaries, and; (iv) increasing level of dependence on imported feeds

Based on international and local experience, desirable features of management of common property resources such as the Al Badia requires:

- users and boundaries of the range resource should be clearly defined. In addition, access to benefits from the area should be equal for all members. Within the Al Badia, water resources consist of wells and dams owned by the Government and designed in a way that distance between each two wells doesn't exceed 15 kms. Yet, inevitably, those who live near these water sources benefit more than those living far away;
- users groups should have legal status; and;
- preconditions of membership in the group should include a binding commitment to user obligations and usage regulations

Water. After feed, water is the most important reason for migration of flocks within and out of the Al Badia. With an improved and expanded road network and an increased investment in water tanks and bores, trade in water for both stock and domestic purposes has increased rapidly over the last decade. Expenditure on water has become a significant cash cost for sheep producers. The increased access to transportable water and a greater density of water points has also intensified the exploitation of the feed resources and accelerated the degradation of the rangeland in some areas of the Al Badia

Land Policy Reform. The Syrian rangelands have been the focal point of state intervention for the past thirty years. State interventions have four major components: assertion of the state's ownership over the rangelands, settlement and transformation of livestock producers into farmers, formal reorganisation of the Bedouin population into range improvement and sheep

husbandry cooperatives, and the development of rangeland reserves. Each intervention has had land tenure implications and the rights of individuals and groups over the rangeland resource[4].

Over this period, considerable extension of cropping into the rangelands and the individualisation of the common range resources resulted in an estimated decrease the area of rangeland available to sheep decreasing from 7.9 hectare per sheep in 1961 to 2.6 hectare per sheep 1993. This decrease in availability of pasture has been accompanied by a decrease in the quality of the pasture.

Land policies implemented by the government have resulted in changes which are the root cause of the resource mismanagement and environmental degradation. With state assertion of ownership, customary institutions lost implicit control over their tribal lands; rangelands were taken out of traditional common property management into open-access and subsequent uncontrolled use and heavy degradation. Local communities have lost the ability to effectively control and manage the use of the rangeland resource. While individuals and communities in the Al Badia have developed an array of reciprocal access arrangements allowing members of neighbouring communities to use their pasture and water resources, these arrangements are being monetised and individualised.

One fact is clear from experience of successful management of common property resources, both from within Syria and internationally sustainable management of common property rangeland resources requires primary consideration of the human dimension and the direct participation in of the communities, who rely on the resource for their livelihood, in the conceptionalisation and implementation of rangeland development programmes. Fundamental to the human dimension is community participation in rangeland management in association with the granting of secure rights to communities. This requires a willingness of the government to recognise the role and rights of local communities and to provide the incentive for communities to be involved.

Crop and Crop residues. Increasing and intensifying crop production will result in increased availability of crop stubbles and crop by-products, and further intensification of livestock and crop production will result in greater livestock and crop production integration both horizontally and vertically. Opportunity exists for greater efficiency of utilisation of crop residues for livestock production through the wider application and adoption of local and international livestock feeding technology. Increased support to applied livestock nutrition research will be a key to achieving greater utilisation efficiency of all classes of Syria's domestic feed resource. Integrated multi-disciplinary approaches to both research and extension will be required, to seek strategies for practical application of known livestock nutrition technologies and management.

E. Government Interventions in Feed and Feed Ingredient Marketing

While livestock production is essentially a private sector activity, the government through a number of agencies, participates in the supply of inputs such as feed, credit, animal health products and services. The government supports a number of programmes to address the livestock feed and fodder demand and supply imbalance, which include import and export regulation, provision of storage and distribution infrastructure, support to research and extension services, and regulation of feed quality, quantity and price on the domestic market.

[4] IFAD (1996) Badia Rangelands Development Project - Appraisal Report Annex VI: Land Tenure and Property Rights

Table 18 National Production of Livestock Feed marketed by the General Establishment of Fodder 1985 - 1998 (thousands of tonnes)

		1985	1990	1995	1996	1997	1998
Barley	Production	740	846	1705	1653	983	867
	Marketed	67	75	73	8	53	60
	%	9	9	4	neg	5	7
Maize	Production	80	180	199	250	303	285
	Marketed	53	113	76	76	155	118
	%	66	62	38	30	51	41
Soybean Bean	Production	n/a	11	11	9	6	7
	Marketed	n/a	6	10	8	2	6
	%	n/a	54	90	88	33	86
Cotton seed cake	Marketed	83	52	87	78	72	59
Cotton seed husk	Marketed	31	14	52	57	59	75
Bran	Marketed	331	342	466	537	543	484

Source: General Establishment of Fodder

Feed and Fodder Prices Setting Mechanisms. The government manipulates livestock feed prices in an attempt to manage the supply of feed onto the domestic market and to ensure strategic stocks of feeds are produced and procured on favourable terms to the government.

Prices for strategic agricultural products, wheat, cotton, tobacco and sugar are determined by government and these products must be delivered to public sector processing facilities. Prices paid to producers are established on an estimated cost of production plus a profit margin. Since the late 1980's, all other grain and food crops have been were removed from the compulsory acquisition provisions of the government.

The main livestock feed grains, barley, maize and soybean, are subject to various interventions by the government through the network of parastatal "Establishments". These are vested with the responsibility to acquire, store, process and market agricultural products on behalf of the government. They endeavour to achieve national self sufficiency where possible and to minimise imports, with the overall objective of supplying the livestock sector with its feed requirements at stable prices. Prices are established on estimates of costs of production with an added margin for profit.

The government attempts to use price to influence the flow of imports and exports, and manages the supply of the main feeds onto the market to stabilise prices and acquire strategic reserves. Prices for livestock feeds have remained stable for the last three years for the main livestock feed grains and products. The prices are determined and declared before the start of the harvest season. For example, the General Establishment of Fodder, which plays a key role in the public sector intervention in the livestock feed market, has two primary roles: (i) distributing domestically produced livestock feed grain (barley and maize) and the by-products of processing wheat and cotton to the private and cooperative sectors in support of government development programmes, and; (ii) maintaining strategic reserves of livestock feed. While it markets less than 10 percent of the national production of barley, General Establishment of Fodder markets most of the maize, soybean, bran, cotton seed cake and cotton seed husk produced in Syria.

The main feeds of concern to the livestock sector are barley, maize, bran and cotton seed cake. Cattle and poultry are fed mainly on maize (only for poultry) and barley and imported grains

and concentrates. Imported soybean and fish and meat meal are utilised by the poultry sector. Barley is the main grain used to supplementary feed sheep.

Barley The General Establishment for Cereal Trade and Processing, procures and stores Barley on behalf of the General Establishment for Fodder at prices determined by the Supreme Agricultural Council (SAC), charging General Establishment of Fodder for transport and storage costs. In 1999, the trade in barley was liberalised with the removal of import restrictions and the barley tax levy. Recently, and as an emergency measure to support producers face the grought, the General Establishment of Fodder had to drop its prices 17 percent below its procurement prices and sold producers on bedt, including those who didn't even repay their old debts

Maize and Soybean The General Establishment for Feed procures its own requirements for maize and soybean directly at "official" prices which attempt to balance the incentive to farmers to produce, with the anticipated requirements of the General Establishment of Fodder. Delivery of both soybean and maize to General Establishment for Cereals Trade and Processing is optional but, until recently, the prices set by the General Establishment for Cereals Trade and Processing and the limited grain drying capacity in the private sector has resulted in the Establishment procuring all the maize produced in the country. Domestic production of soybean bean is less than 8,000 tonnes. Recently, the private sector has commenced taking a small role in the processing of soybean bean and maize to produce feed concentrate for the poultry sector. Private sector oil extraction plants are entitled to import soybeans after the end of the domestic production season. Barley quantities delivered to the Government have declined significantly in recent years as the Government prices have not increased since more than 5 years in order to encourage private marketing.

Cotton Seed Cake. The General Establishment for Fodder procures its requirements for cotton and cotton seed processing by-products, cake etc, from the General Establishment for Food Processing (affiliated to the Ministry of Industry) at cost price. Production from private sector oilseed extraction plants is sold in the free market, in line with prices set by the General Establishment for Fodder. The private sector processes about 50 percent of Syria's cotton seed and this capacity is expanding. In 1998, the public and private sectors produced 140,000 tonne and 119,000 tonnes of cotton seed cake respectively. Since local production covers local demand, no cotton seed cake is imported in the country.

Formulated Feeds. The General Establishment for Fodder produces feed mixes both in its own facilities and by utilising capacity of other processing facilities, both in the private and public sector. The Establishment establishes prices for its feed mixes in consultation with the Ministry of Supply based on a cost of production calculation. During the last three years, the prices established by the government and the market prices for feed grains, feed additives, feed ingredients and feed mixes have been more or less at parity, although import and export figures indicate a number of anomalies.

Poultry Feed Market. The poultry feed market is dominated by imported feed ingredients, a predominantly private sector activity. Importers require a licence and poultry feed ingredient imports are subject to tariffs and quotas.

The Fodder Fund

The Fodder Fund was established through World Bank support in the seventies to provide sheep producers with in-kind short term loans for fodder during the winter months (the so called "critical period"). The loans are repaid during the production season although

repayments can be deferred under certain circumstances such as drought. The Fund is administered by the MAAR, with the loan portfolio managed by the Agricultural Cooperative Bank. District "Peasants Federation" apply for their allocation of fodder, based on members' sheep numbers and MAAR guidelines, to the General Peasants Federation who in turn informs the General Establishment of Fodder and the MAAR. Funds are released by the Agricultural Cooperative Bank to the General Establishment of Fodder under instruction from the Ministry of Agriculture and Agrarian Reform to its financial capacity and to the General Establishment for Fodder prices and quantities. The allocation of fodder to a particular cooperative is based on the sheep owned by its members and the allocation per head decided by the General Establishment of Fodder and the MAAR. In the past this amount has been as high as 180 kilogram per sheep for the four month period but the allocation has declined to 35 kilogram per head in 2000 reflecting the financial capacity of the Fund and the feed reserves held by the General Establishment of Fodder. The allocation represents about 20 percent of a breeding sheep's winter maintenance ration. As with other feed allowances, the amount of benefit being delivered to sheep producers through this support scheme is decreasing while the overhead costs of delivery are increasing.

The Fund has also been used to establishing sheep breeding, steppe improvement extension centers and fodder stores. Recently the Fund has been supported by a number of international donors and agencies as a mechanism to deliver both human food and livestock fodder to the drought effected rural communities.

F. Impact of the Government's Pricing Mechanisms on Prices of Livestock Feed Prices

The cost of livestock feeds on the domestic market have in general been at a premium to international prices (Table 19) resulting in increased cost of production of livestock products. As consumer prices are based on cost of production calculations, the increased cost of livestock feed is passed onto the consumers, hence the crop producer is being supported by the livestock producer and the consumer.

Table 19 Nominal Protection Coefficients for Selected Feed Ingredients, 1990 –99

	1990	1995	1996	1997	1998	1999
Barley	1.38	1.14	1.24	1.43	1.84	1.69
Maize	1.30	0.89	1.38	1.60	1.87	1.90
Cotton seed cake	1.23	0.96	1.00	1.39	1.49	na
Soybean bean cake	1.56	1.30	1.21	1.98	1.81	na

Source: Appendix 2 Annex 3 tables

The General Establishment for Fodder product prices for fodder fluctuates above and below the "free market" price (Table 20). Most of the feed sold by the General Establishment of Fodder is sold through in-kind credit arrangements where the borrower is only able to source his feed from the General Establishment of Fodder. The ability of the General Establishment of Fodder to meet the demand of feed purchased through in-kind loans is dependent on its procurement of the domestic production, where prices are established on cost of production estimates, de-linked from domestic and international prices.

Table 20 Market and General Establishment for Fodder Feed Prices, Syrian Pound/kg, 1985 – 1998

	1985		1990		1995		1996		1997		1998	
	M	GEF	M	GEF	M	GEF	M	GEF	M	GEF	M	GEF
Barley	1.60	1.55	8.10	9.00	7.75	9.00	7.25	9.00	8.3	9.00	8.15	7.00
Maize	4.20	2.60	9.60	8.20	9.50	8.20	10.7	11.25	11	11.25	10.6	11.25
Soybean	-		10.6		10.20		12.0		14.4		15.4	

Source: MAAR - Department of Agricultural Economics

More than one million tonnes of grains, agro processing by-product and feed additives were traded during 1998, not including the free market trade between cereal producers and livestock producers.

Table 21 Import and Export of Livestock Feed Products 1985 - 1998 (thousands of tonnes)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Barley									
import	106	199	82	0	0	0	0	0	
export	103	0	0	156	379	594	556	297	18
Maize									
import	249	262	104	347	0	317	0	597	505
export	0	0	0	0	379	0	556	0	0
Wheat flour									
import	0	945	752	89	79	0	0	0	0
export	10	0	34	7	11	59	278	885	428
Concentrate									
import	30	28	20	36	21	29	29	20	2
export	0	0	0	0	0	0	0	0	0

Source: Ministry of Foreign Trade

G. Impact and Implications of Recent Drought for a Drought Policy

Syria experienced a prolonged period of unusually low rainfall in 1998 and 1999 culminating in the severest drought since the 1950's. The full impact of the drought on the Syrian economy and the incomes and livelihood of livestock producers in particular is yet to be established, however sheep producers in the Al Badia have been particularly hard hit. A review of the government's assistance programme to relieve some of the impact of the drought on livestock producers was prepared by one of the National Consultants.

By February 2000, some of the impact of the drought included: (i) increased indebtedness of the livestock producers; (ii) decreased sizes and value of producers' herds and flocks; (iii) increased number of non-viable family livestock enterprises particularly amongst sheep producing families; (iv) substantially decreased livestock family incomes; (v) overgrazed, depleted and less productive Badia, and; (vi) decreased productivity potential of the national herd and flock

Government programmes to alleviate some of the impact of the drought include: (i) providing extra rations to sheep producers on a subsidised and deferred payment basis; (ii) providing extra financial resources to feed the Fodder Fund and price support; (iii) increasing the level of lending by the Agricultural Bank for in-kind loans, through Farmer Cooperatives, for feed and fodder; (iv) authorising the General Establishment for Cereals Trade and Processing to import additional barley to meeat local demand, but the Establishment didn't import barely because

the imprts made by the private sector covered the local demand; (v) authorising grazing of conservation areas in the Badia; (vi) allowing the private sector to import feed, particularly barley, and; (vii) allowing the Farmers Association and the General Establishment of Meat to export Awazi sheep to the Gulf with exemptions to the two for one sheep import export requirement.

The drought in 1999 cost the sheep producers an estimated SP 8.8 billion due to loss of meat, milk and wool production and a further SP 37 billion due to increased expenditure on feed and water. Support through the Fodder Fund of about SP 700 million was offered as loans in the form of feeds, even to those who have not been able to clear their earlier debts.

Several key factors need to be considered in formulating a drought policy which makes the most efficient use of government support while ensuring such support is delivered equitably. A drought policy would be expected to have the possible aim to encourage farmers to manage droughts and difficult seasons (periods of unusually low rainfall) from their own resources, just as they do for other livestock production activities. Traditionally livestock producers, without government intervention, adjusted livestock numbers, sought alternative grazing areas in difficult periods and/or purchased more feed for their animals. A drought policy would ideally encourage greater self reliance or greater financial self sufficiency. The current approach is encouraging greater dependency on the government with a number of adverse effects.

Interest subsidies. Generally, interest subsidies indirectly penalise more successful farmers who make provision for droughts through building up cash or other reserves. They also encourage higher levels of debt for the less prepared, making their livestock business more vulnerable to failure. However, most of the livestock producers are small holders who can hardly keep a reserve for drought.

Entitlement to benefits from interest subsidies, or to repayment moratoria is assessed on the number of sheep owned by a livestock producer. Hence, as confirmed through informal discussions in the field, a major share of the government drought relief support is being received by the larger and more financially able livestock producers.

H. Conclusions and Recommendations

To be able to meet the future demand for livestock products, Syria's livestock production will need to improve substantially in terms of per-animal yield. Increasing flock and herd populations which is the alternative, will lead to lower per-animal yields due to lower levels of nutrition per productive animal.

The strategy for improving Syria's livestock feed deficit involves:

- increased integration of crop and livestock production systems
- improved management of common grazing lands, including introduction of appropriate forms of land tenure for common grazing land users
- integrated and multi-disciplinary approaches to improving the production and utilisation of feed and fodders
- elimination of unnecessary restrictions on the trade of feed and fodders

- changing the government support to applied research, technology adoption and feed standards

Improving the genetic pool within the cattle industry will increase productivity and improve feed efficiency. Increasing the integration of crop and livestock production systems would allow farmers to export the complementarity between these systems, since intensive cropping systems are important sources of crop residues.

Support to the vertical integration of the sheep production for both the domestic market and the live sheep export trade will lead to increase yields per breeding ewe, increasing incomes while decreasing pressure on the common grazing lands. Increasing the use of concentrate feeds would also help ease the pressure on grazing areas.

Access to standardised high quality feed products at world prices is a priority of all livestock enterprises. Government support to the feed and fodder industry must change to strengthening the regulation and monitoring of feed standards and the quality of feed and feed products formulated by the private sector.

Addressing the resource degradation problem

The proposed strategy of the Al Badia directorate to use participatory approaches to involve common grazing land users groups, will need to be supported by a commitment to changing current government policy on land tenure and land use within the Al Badia. More resources and greater integration of all parties concerned would ensure the aspirations of the development plans proposed for those communities who depend on the Al Badia resource for their livelihood, are met.

Allocating Legal Status to Users of the Common Property Resource of the AL Badia

Long term sustainable management of Al Badia will only be achieved if the resource users, as communities, are clearly defined and boundaries of the range resource are established with community participation. User groups must also have legal status. Provision of entitlements to the resource users - the sheep producers, would be matched by a reduction in the levels of unsustainable support such as feed and credit subsidies and water infrastructure development, as is presently provided to the sheep industry. Such a process will take time. In the meanwhile, the proposed US$ 100 million investment in mostly infrastructure development in the Al Badia should be submitted to an environmental impact assessment to ensure the activities proposed do not contribute to further degradation of the Al Badia.

Deregulation of the Feed and Fodder Sector.

Withdrawal of the Public Sector from the feed and fodder trade is a prerequisite for improving the efficiency of supply and the availability of quality livestock feeds. Removal of pricing mechanisms and the liberalising of the imports of livestock feeds will reduce their costs substantially, increase their availability and ensure more efficient utilisation of feed resources. As government input support to feed and fodder is allocated according to the number of animals owned, the benefits of price support and interest subsidies accrue to the larger and hence better-off producers. Alternative approaches need to be explored to support the majority of livestock producers who are poor and unable to access the government's fodder support programmes. Consideration of any future role of the General Establishment for Fodder in the livestock feed market, requires further study.

Promoting Greater Financial Self Sufficiency Ahead of Drought or Downturn in Prices

Government's role, when applying the principle of public good (discussed in Section 6), would be better directed to promoting improved preparedness of the livestock producers. Improving skills in a range of livestock management and planning areas would assist livestock producers to be better prepared. Investment in improving the availability of information on drought related issues such as better utilisation of supplementary feeds and improved weather forecasts (through support to research and participation in early warning systems) would be a more sustainable and equitable government contribution.

A drought policy embracing such approaches would be relevant to those producers in the cropping zones. A drought strategy to promote greater financial self sufficiency of livestock producers dependent on the Al Badia for grazing would also be needed to work in conjunction with the land tenure entitlement of the common property resource. A drought strategy would also need to define when assistance would be provided following an event of "exceptional circumstances" such has just occurred in Syria. This was the severest drought in thirty years, a rare and severe event outside those the livestock producer could be normally expected to manage.

4. Livestock and Livestock Product Marketing

The Syrian government supports a number of mechanisms for balancing production supply with consumer demand for livestock products at stable prices. Such support reflects a strategy which attempts to increase livestock production to meet local demand for livestock products while creating production surpluses for export, and protecting the local market from external competition where possible. The Syrian economy is also moving from a centrally managed one to a more market driven model. Policies issues and government investment in the livestock sector are under continual review and change due to the need of the government to respond to the dynamics of the internal economy as well as the international trade forces. This chapter reviews the livestock and livestock products markets as well as the impact of the government's market control mechanisms. It also assesses the impact of liberalising these markets through deregulation and strengthening the role of the private sector.

A. Livestock Marketing

Each governerate has markets where livestock and livestock products are traded. Some of these markets operate under the supervision of local government bodies, while others are privately managed. A more detailed description of the marketing channels for livestock and livestock products is presented in Appendix 4.

More than 90 percent of the national livestock production is marketed through the private sector. In the sheep and cattle markets (for live animals for breeding, store or slaughter), commission agents operate as the market facilitators. They provide a venue within the market place for the buyer and seller to negotiate a sale, facilitate the negotiation of prices according to traditional practices, guarantee both payment for and the quality of the animals sold, provide accommodation for unsold animals in the case of sheep, and may also provide purchaser finance. The market is dominated by a small number of well resourced commissioners who also trade and fatten animals themselves.

The major sheep and cattle domestic markets are in Aleppo and Hama. Aleppo is also the centre for the live sheep export trade and Hama is the focus for imported sheep. Livestock markets are held daily in the major urban centres. These markets cater for finished, store and breeding animals and are unregulated with no official data available on through-put. Live sheep and sheep meat market facilities are generally government owned and maintained. A number of live cattle market sites have been established on land purchased or leased by traders (commission agents) which operate independently of government. Poultry marketing occurs in urban wholesale and retail fresh markets which are supplied with either live or freshly slaughtered birds.

With a well developed road and communication infrastructure and the relatively short distances between markets, traders are able to actively compete in markets nationally. Market information and intelligence is in the private sector. The government, through the Ministry of Supply, gathers wholesale and retail market prices for price setting mechanisms, but no data is gathered on prices or numbers of animals sold through the main live animal markets.

B. Meat Processing

Most sheep and cattle slaughterhouses are owned and operated by the governerates. Government regulations stipulate sheep and cattle must be slaughtered in these government owned facilities to ensure quality control and to facilitate the implementation of public health and hygiene regulations. Each governerate has an abattoir which is let to private operators who contract slaughter animals on behalf of wholesale and retail traders. The General Establishment of Meat operates the abattoir in Damascus, built in the 1970's and regarded as the most modern in the country. In contrast to slaughterhouses elsewhere in the country, the General Establishment of Meat directly manages the Damascus facility, provides labour for the operation of the abattoir and charges a slaughter fee of SP 30/head for sheep and SP 150/had for cattle. The abattoir has a capacity, with two shifts, of 6000 sheep/day but in recent years the daily throughput has averaged about 500 sheep/day and a small number of cattle. Most traders, butchers and wholesalers prefer to slaughter their animals in the production governerates where the slaughter fees are lower as they are able to use their own labour, and where the enforcement of health and hygiene regulations is less rigorous.

Both sheep and cattle are slaughtered at a range of weights and ages according to consumer preference ranging from veal and milk lamb through to cast for age animals. Legislation exists which bans the slaughter of very young animals and most beef is produced from entire males of 350 to 500 kilogram live weight and over 10 months of age. The most popular sheep meat for domestic consumption is from entire males of 60 to 70 kilograms live weight and aged over 8 months (Table **22**).

Table 22 Sheep Meat Products - Definitions

Meat Product	Method of Feeding	Slaughter		Available
		Age	Weight	
1. Pink meat (*kharof wardi)*	Mother's milk	Less 2 months	7 to 11 kg	February and March
2. Weaner meat (*kharof muftoum)*	Mother's milk, grazing and some concentrate	3 to 4 months	30 kg	March April May
3. Not weaned (*kharof mharjun)*	Mother's milk, grazing, concentrate	5 to 6 months	50 kg	April, May June
4. Mature (*kharouf is'took'la)*	Weaners purchased and kept as a separate flock Only in good years in Al Badia	any		Autumn
5. Mature (*Kharouf mousaman)*	Weaners and store animals purchased and fed for 60 to 90 days	any	50 - 60 kg	all year - specialised job

Source: Field notes

Forward contracting is common practice between producers, fatteners, traders, wholesalers and retail butchers and is often associated with the provision of credit or a deposit. The traders and wholesalers most often organise and supervise the slaughter of animals. Animal fattening enterprise operators often secure their supply of young store animals through an advance payment to a producer or group of livestock producers. The "finished" animals are then sold to a trader who contract slaughters them and delivers the carcasses to the butcher shops.

Except for the GEM abattoir in Damascus, most slaughterhouses are old, unhygienic and lacking in essential services. While the slaughtering facilities and practices may be considered unsophisticated, meat quality is considered to be adequate although recovery rates of various

by-products such as hides and skins, tallow, blood, viscera, and organs is low. Estimates of under utilised by-products of sheep, goats and cattle is below 50 percent, particularly as only about 50 and 65 percent of sheep and cattle respectively are slaughtered in official facilities (Table 23). While some of this difference could be explained by the slaughter of animals for individual domestic consumption or for religious purposes, a considerable proportion of meat entering the meat markets is from animals slaughtered in unsupervised and unregulated conditions.

Table 23 Animals Slaughtered in Official Facilities, 1994 -1998 (thousand and percentage)

	Sheep		Cattle	
	Slaughtered in Official Facility	Percentage of Total	Slaughtered in Official Facility	Percentage of Total
1994	2352	49	104	67
1995	3189	61	124	73
1995	2756	48	111	55
1997	2423	41	119	55
1998	2380	37	104	48

Source: Derived from MAAR Statistical Compendium and Statistical Abstract Central Bureau of Statistics 1999

At the retail level, in the urban areas, most red meat is retailed in licensed butcher shops. There are about 1600 licensed butcher shops in the country, most with some cool storage facilities and a turnover of one to two sheep per day. The restaurant chains are supplied through contracts with traders and feedlot operators.

At this stage of the meat market's development, there is a trade-off between the cost of stricter regulations for domestic meat production and the benefits from consumer health protection. While regulations are essential for livestock product exports, enforcing similarly strict standards in domestic markets may not be economically feasible. In the longer term, the required capital investment in slaughterhouses will continue to be constrained by the general investment environment within Syria and the ongoing subsidised competition from government slaughterhouses. Inadequate processing facilities and poor enforcement of hygienic standards will continue to pose a health hazard to the public while constraining Syria's export competitiveness. The poor enforcement or absence of environmental standards of abattoir effluent and low levels of by-product utilisation will also increase the problems of pollution in the future.

C. Marketing and Processing of Wool

Wool production in Syria has varied in line with the fluctuating sheep population over the last decade with about 15,000 tonnes of clean wool produced in 1998. The Awassi sheep produce on average 5 kg of greasy wool of 35 micron or stronger and a fibre length of 9 to 13 cm. Yields are below 40% and fleeces are generally of mixed colour, heavily contaminated with vegetable matter and sand, and generally weather damaged. Most of the wool is consumed in cottage industries for the production of blankets, tenting, mattress filling and felted rugs.

The General Organisation for Wool has two 600 tonne (clean wool) capacity plants. The General Organisation imports about 1000 tonne of 35 micron greasy wool from New Zealand and, using minimal amounts of locally produced wool, produces yarn for carpet manufacture in the government owned carpet factories.

Prices paid to producers for wool, either wool from shearing or fellmongering, varies little and the producers regard wool as having little commercial value. Locally produced wool is marketed through private traders, with most of the domestic production exported to Turkey. A number of wool washing facilities operate around Hama, Hums and Aleppo, providing clean wool for the local cottage industry which produce mattresses, pillows and felted blankets.

The break-even price for imported NZ wool is estimated by the General Organisation for Wool at about SP 140/kg clean. Imported wool attracts a tariff of 5% with no other restrictions, except capacity, on imports.

In 2000, as the government proposes to further "liberalise" its business operations, General Organisation for Wool intends to process only imported wools. Up until 1999, the General Establishment of Wool marketed 5% of Syria's wool production. With the lifting of trade restrictions, private traders, who have become entitled to keep 75% of the export foreign currency earnings, have entered the trade and now market the total clip.

D. Marketing and Processing Skins and Hides

An estimated 5 million sheep skins and 200 thousand cattle hides are harvested annually. Besides consumption by the handicraft industry, the General Establishment for Tanning is the only domestic market for these skins and hides, operating two companies which have sheep skin and cattle hide processing plants. The sheep skin plants process 3000 skins per day producing leather for both clothing and footwear manufacturing companies in the private sector. The balance of the skins are exported mainly to Turkey. The local supply of cattle hides covers about 10 percent of the General Establishment for Tanning's requirements. The rest of its requirements are imported by traders under tender.

E. Marketing and Processing of Milk

Cow's Milk. In 1998, Syrian dairy farmers produced an estimated 1.1 million tonne of milk, mainly from small herds in the peri-urban areas. A small number of producers milk more than 150 cows and some of these production units are vertically linked to private milk processing units. The off-take of surplus animals from the dairy herds provides the basis for the beef industry, with young stock grown out under semi-intensive feeding regimes supplemented by fodder produced mainly under irrigation. While the private sector dominates the dairy industry, the government has a substantial investment in both production and processing units.

Most milk is distributed fresh to consumer households for consumption or domestic processing into yoghurt and cheese. Over 60 percent of the milk consumed in the major urban markets is delivered fresh in open containers to the consumer's door by a network of milk vendors and milk dealers who source their supplies from small dairies close to the urban areas. Processed milk, in bottles or cartons, make up a small proportion of the market, due to its higher cost and consumer preference for raw milk. While claims of adulteration of milk are common but undefined, milk quality is a major constraint to improved milk and milk products industry due to unhygienic handling, transport and storage of milk which is produced in small quantities by a large number of producers. Seasonal supply volumes fluctuate from peaks in summer to lows in winter, resulting in low levels of processing plant capacity in both the public and private sector.

The marketing of processed milk products is explored in detail in "Implications for the Agricultural Sector of Recent Developments in the Private and Public Agricultural Marketing

and Processing Activities in Syria" prepared by Danielle Rama for the FAO Assistance in Institutional Strengthening and Agricultural Policy Project.

Several government sponsored projects have promoted small scale milk production and collection through the cooperative sector in an effort to develop strategies to improve the quality of the milk supply chain. Most strategies involve the installation of milk chilling facilities at milk collection centres. While recognising the need for such facilities, the private sector does not consider this investment as "profitable" unless supply contracts with small producers and cooperatives can be enforced. In the medium term, the processed milk industry will become more vertically integrated as private processing plants link up with the larger producers who can afford the required investment in milk handling, storage and transport infrastructure.

Sheep Milk[5]. About 500,000 tonnes of sheep milk is produced annually, accounting for a significant share (about 30%) of the total milk production in Syria. This equates to a per-capita consumption of 35 kg/head - one of the highest levels in the world. While no formal figures are available on consumption, about one third of the sheep milk produced is consumed fresh either within the sheep producer families or distributed locally in neighbouring towns and villages. However production is highly seasonal with production surplus to lamb and family needs occurring between February and May. This surplus is processed into cheese, yoghurt, butter and ghee, mainly by small processors, although government and some private dairies do process some sheep milk. Consumers place a high value on sheep milk products which are regarded as more nutritious than milk products from cows. Most of the milk is processed into Laban (yoghurt) and Gibneh Akawi (fresh white cheese) with other items produced from these basic products or from the skimmed milk and whey by-products. Estimates of the milk production available for marketing range from 40 to 80 kg per lactating Awassi ewe per season.

The main issues with improving the marketing of sheep milk and sheep milk products are: (i) seasonal supply of the milk; (ii) quality and reluctance to sterilise milk which effects quality and poses a human health risk, and (iii) low prices paid to the producers

In spite of much lower surpluses due to the drought, pilot projects have demonstrated that: (i) traditional sheep milk processing methods and equipment can be adapted to produce profitable, wholesome products suitable for the high value urban market; (ii) low capacity utilisation of processing facilities can be in part off set by utilising some cow and goats milk; (iii) processing facilities as small as 500 kg per day are a profitable investment as minimum risk; (iv) utilising lower cost cows milk and goats milk at rates up to 10% of the milk do not adversely effect the traditional characteristics of the end products; (v) some sheep milk products are more profitable than others, and; (vi) the productivity of sheep can be improved through improved husbandry and nutrition.

F. Marketing of Poultry

Broilers are sold either live or fresh dressed. There is currently no market in chilled or frozen dressed poultry in Syria. The market is dominated by small retailers operating out of the wet markets in the major urban centres. Broiler farms are located in all governerates but most are located closer to the big cities where traders contract with broiler producers to supply the trade.

[5] Extracted from B.T. Dugdil and A. G. Ghadri, May 1999, Milk Collection and Processing Technical Report, FAO SYR/93/004 and GCP/SYR/003/ITA.

Larger producers market directly to consumers through their retail outlets. Egg marketing is handled by traders or commission agents, or sold directly from the larger production units directly to retail and wholesale outlets

The General Establishment for Poultry, which supplies mostly public institutions, produces about 10 percent of the domestic consumption.

G. Market Price Setting Mechanisms for Livestock Products

The government has a continuing strong commitment to controlling the prices of livestock products. It utilises a number of instruments for stabilising prices while pursuing the other objectives of matching supply with demand, ensuring self-sufficiency of production and preventing excessive profit taking by traders and retailers.

Prior to 1986, the Government set wholesale and retail prices for most agricultural products. These prices remained fixed for a long time without reference to changes in production costs and profitability of production enterprises. To compensate farmers for falling incomes resulting from fixed prices and increasing costs, subsidies were introduced for farm inputs. The outcome of this strategy was stable food prices at levels lower than the costs of production and an increased demand for food products. These price support polices caused growing shortfalls in meeting domestic demand for food products, stimulating the development of a black market. An extensive informal trade developed both within Syria and across its national borders, with products selling at substantial premiums to the official prices. The official pricing structure also discouraged farmers from producing the main commodities, who preferred to cultivate secondary crops which were outside the umbrella of the official pricing setting system. Commodity prices fluctuated sharply and Syria had a production shortage in the main food crops.

As a result of this experience and with increasing foreign exchange shortages, official price setting mechanisms have been used since 1986 as a tool for implementing production plans for the major crops. These plans were generally aimed at self sufficiency in all food products, with the prices of food products established using cost of production calculations plus a profit allowance. Subsidies on agricultural inputs were gradually removed in line with increased prices paid for the main agricultural commodities, encouraging expanded production in all major food crops and livestock. Although over 95 percent of livestock products are produced and traded in the private sector, the Government also uses these pricing mechanisms (*the State Pricing System*) to stabilise prices of livestock food products paid by consumers and product prices received by producers. This pricing system also has the objective of discouraging excessive profit taking by traders, wholesalers and retailers. The State Pricing System, managed by the Supreme Agricultural Council[6], applies to plant and livestock products and to agricultural inputs.

Maximum retail price limits are established on estimates of demand and supply. Retailers risk prosecution if they sell food above these set maximum prices. Eggs and milk maximum prices are issued weekly, while dairy and meat product prices are set seasonally. The MAAR Department of Agricultural Economics estimate the Government-set maximum prices vary no more than 10 percent from the "free market prices". The Ministry of Supply monitors

[6] The Supreme Agricultural Council gives an indicative price for milk procured by public plants. In general this price is applicable on milk produced by the General Establishment for Cattle and sold to public dairy plants. These plants can also buy milk at market price to cover their demand.

consumer food products traded in the domestic market, regularly publishing these prices to discourage excessive profiteering.

Live Sheep Prices. The domestic market price for live animals is not regulated by the government, however the live sheep export trade is subject to government interventions. Indicative live sheep export prices are established by a committee comprised of representatives from the Pricing Department of the Ministry of Supply, and the Animal Health and Agricultural Economics Departments of the Ministry of Agriculture. These indicative prices are used in issuance of export declarations and the calculation of fees and foreign currency earnings, but they can and do vary considerably from actual prices realised by the exporters.

H. Market Price Behaviour

Despite government price setting mechanisms and import and export bans and controls to stabilise meat and milk prices to consumers, official data from a number of variable sources, indicates a more than 20 percent fluctuation in the prices for meat and milk over the last three years. Wholesale prices for livestock products are more volatile than retail prices, as retailers are able to maintain higher margins within the official retail price ceilings compared to the wholesalers who operate in a more competitive and less regulated market.

There has been no significant relative wholesale price change between beef, mutton and poultry over the last decade to encourage significant shifts in consumption and resources (**Table 24**), although the cost of broiler meat relative to beef and mutton favours its increased consumption. Consumers report meat and milk prices exhibit some seasonality, perhaps influenced by festivals and changing consumption, and animal feed supply (particularly for milk and mutton production). Government price setting strategies have not insulated consumers or producers from these price fluctuations.

Table 24 Price Ratios of selected Livestock Products 1985 – 1999

	Poultry Price over		Beef Price over
	Beef Price	Mutton Price	Mutton Price
1985	1.00	0.803	0.806
1990	0.604	0.470	0.776
1995	0.463	0.318	0.685
1996	0.543	0.436	0.803
1997	0.549	0.339	0.726
1998	0.517	0.400	0.774
1999	0.508	0.415	0.816

Source: Appendix 2 Annex 3 Tables

I. Market Intermediaries and Market Information

Mistrust of traders is pervasive in Syria and has served as part of the justification for extensive government intervention in livestock and livestock products markets. The allegedly high margins between farmer and consumer may reflect excessive profit taking, but these high transaction costs (more than 50 percent for mutton and 20 percent for beef) may also be partly attributed to the costs of complying with or evading government market rules and regulations. A factor contributing to these uncertainties is the limited resources allocated to the collection and analysis of livestock marketing data. Experience from many countries indicates that returns to marketing activities by traders are generally reasonable if there are no barriers to entry and that the high margins can be traced to high transaction costs (transport, spoilage, unofficial taxation and poor market information). A more comprehensive livestock information system, covering livestock producers circumstances, production and marketing would be the key to developing clear policy and strategies for developing livestock markets and the livestock sector.

J. Impact of the Government's Pricing Mechanisms on Retail Prices of Livestock Food Products

The use of price setting mechanisms encourages possible price inefficiencies. The use of cost of production estimates plus a profit margin to establish prices of meat and milk products does not directly encourage more efficient production in the public sector, while such estimates allow excessive and non competitive profit taking by a presumably more efficient private sector. As a result consumers pay a higher price for food products than the free market could deliver without government intervention.

K. Conclusion and Recommendations

For the livestock sector to grow, livestock and livestock markets will need to become more efficient. High transaction costs indicate opportunities for making considerable gains in efficiency in the market to the benefit to the consumer and the producer. In a more open market system, the government's role would be to ensure greater and fairer competition, to protect the consumer and the producer against predatory pricing practices and dumping by any market participant. Public sector enforcement of hygiene and sanitary standards will become more critical and require the allocation of more resources as consumers demand better quality products and more private sector participants enter the meat processing industry. Identification of real market bottlenecks through improved livestock market information systems would facilitate government policy formulation and more efficient public sector resource allocation. Improved market information would also be critical to improved market competition and hence efficiency.

5. Livestock Sector Trade

Until 1986, Syria maintained a highly restrictive domestic and international trade regime. There were import and export bans on most agricultural products, and imports and exports of essential agricultural products and inputs were channelled through public sector organisations. Post 1986, this regime was relaxed through Degree 10 to include public sector/private sector joint ventures who were allocated import and export privileges. Investment Law No 10 was introduced in 1991 which further liberalised the domestic and international trade regulations allowing the domestic and international private sector to enter the domestic market in "non strategic" agricultural and livestock inputs and products. This chapter reviews the development of Syria's international livestock sector trade, particularly the live sheep trade and makes recommendations for increasing the efficiency of this trade.

A. Recent Trends in Livestock and Livestock Imports and Exports

Between 1991-2 and 1996-98, at current prices, the value of imports of livestock products, excluding live animals, increased by more than 200 percent due to increased imports of powdered milk and butter. During the same time, the value of livestock and livestock products exports dropped 30 percent from a high of over SP 1 billion in the middle of the decade. Poultry meat exports fell by 85 percent to SP 7 million, while the export of white cheese tripled at current prices.

From 1996 to 1998, live sheep accounted for 50 percent and 81 percent of the average annual value of livestock and livestock products imports and exports respectively. The average annual value of imported sheep declined between 1990-2 and 1996-8 by 23 percent, while exports of live sheep increased by two percent during the same period (Table 25). Most livestock product imports, except live sheep, are sourced from the European Community while all exports, including live sheep, are to countries in the immediate region. Romania and Bulgaria are the major suppliers of live sheep (*bela)* to Syria although very little official data is available on this trade.

Table 25 Main Livestock and Livestock Products Imported and Exported, 1990-1998 (Two year averages, millions of Syrian Pounds)

	Imports			Exports		
	1991-1992	1993-1995	1996-1998	1991-1992	1993-1995	1996-1998
Live sheep	547	956	423	669	663	684
Greasy wool	2	13	21	12	19	12
Clean wool	11	20	8	20	13	11
Sheep skins (untan)	0	0	0	97	78	3
Sheep skins	0	8	0	28	223	0
Live Goats	0	0	0	148	67	30
Live cattle	23	36	4	0.3	0	0
Offal	0	0	0	11	22	34
Poultry meat	31	26	25	47	45	7
Table eggs	0.3	0.3	1	35	53	30
Powdered milk	73	185	331	0	0	0
Butter	18	40	38	0	1	3
White cheese	0	0.5	0.4	9	15	23
Total	705.3	1284.8	851.4	1076.3	1199	837

Source: Appendix 2 Annex 4 Tables

The increased volume and value of imported dairy products, particularly milk powder (no differentiation is made between whole milk powder and skimmed milk powder), is attributed to the inability of domestic milk production to keep pace with domestic demand, particularly in the low domestic production seasons. This shorfall in domestic supply is partly met by reconstituted milk which is often combined with fresh milk for the domestic fresh milk market.

Clean wool imports have been replaced by greasy wool imports as the General Organisation for Wool takes advantage of increased local scouring capacity. Given the size of the Syria non-wool textile industry, considerable opportunity exists to extend Syria's fibre processing capability to include imported wools for value adding. The growing export of offal and slaughter byproducts represents an opportunity for value adding in-country, particularly as Syria imports more than 2000 tonnes of meat meal for the poultry industry alone.

B. The Live Sheep Trade

In 1998, Syria exported over 685,000 sheep mainly to the Gulf States (**Table 26**) in a trade which has grown from less than 200,000 head in 1985 to become the livestock sector's major foreign exchange earner. The Awassi sheep breed command a premium in the Gulf live sheep markets over other sheep breeds sourced from Australia, New Zealand and South Africa.

Table 26 Destination of Live Sheep Exports 1998 (volume, value and unit price FOB)

	Heads (thousands)	Value (SP millions)	Unit price/head SP
Saudi Arabia	474	377	795
Kuwait	115	95	820
Qatar	91	72	790
Lebanon	2	16	8000
Other	2	2	1000

The Exchange rate applied on these prices is 11.25 SP/US$ whereas the actual rate is 46

Source: Ministry of Foreign Trade

In 1986, a number of joint ventures were established under Decree No 10 between the public and private sector to export sheep to the Gulf. The trade was lucrative so volumes increased sharply in 1989 resulting in a substantial increase in the price of mutton on the local market. To prevent further escalation of the domestic price, the government introduced the "Two for One" policy which required exporters to import live sheep equivalent to twice the volume of the proposed export shipment, before they were permitted to export Awassi sheep. A trader was allowed to export only against documented verification of the required imports. Imported non-Awassi sheep, whose CIF price was much lower than the Awassi FOB price, were to be slaughtered within three weeks of arrival into Syria to supply the domestic sheep meat market. The expected benefit was the lowering of the domestic retail price for sheep meat.

Between 1988 and 1992, between 500,000 and 1,800,000 sheep were imported annually from Bulgaria, Turkey and Romania, mainly by barter trade, through the General Establishment for Meat. Since the disintegration of the Soviet Union in 1992, the General Establishment for Meat has not imported any live sheep due to its inability to access foreign exchange credit to finance its trading activities. The import

trade is now entirely in the private sector. About ten traders dominate the sheep import market while an estimated twenty traders dominate the sheep export trade to the Gulf. Sheep importers own their own land, facilities and transport including ships, and are the major suppliers of sheep to the region as well as Syria. As there are no trade financing facilities within Syria for this trade, entrants into this trade need to have access to external sources of finance.

The link established by the government between the numbers of sheep imported and exported into and out of Syria led to the development of specialist importers and exporters, with the importers selling their import documentation to the specialist exporters of Awassi sheep to the Gulf.

The live sheep export trade caters to two major markets, Saudi Arabia and Emirates, with Saudia Arabia the major market. Heavier animals are demanded in the Saudi Arabian market than in the Emirates (40 kg compared with 50 kg), although the price is about the same per kg in both markets. The sheep must be male and below 12 months of age. Higher prices are obtained from October to March. In 1999, Awassi sheep sold for about US$ 2,500/tonne CIF the Gulf while imported sheep (*bela*) from Bulgaria were about US $ 1,200 to US$ 1,400/tonne CIF Tartus. In an attempt to protect Syria's perceived competitive advantage in the supply of Awassi sheep, only males can be exported.

Indicative prices for export quality sheep are set by the General Establishment for Meat on market information gathered in the Gulf through the Syrian Embassy. The Establishment monitors prices with the objective to ensure price stability, sheep availability for export and to protect producers' interests.

Table 27 Export Awassi Sheep Prices (FOB, Syrian Pounds per kilogram)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Jan.	19.51	33.83	59.72	58.5	67	72	90.33	94	99	99.82	105	102	88.83	80
Feb.	21.84	33.56	63.94	54.5	73.83	72	97.33	97	105.5	102.8	105	103	90	81.5
Mar.	21.23	34.52	74.78	53	75.83	75	105.3	104	107	105.7	103	111	83.34	81.5
April	23.97	40.63	91.68	49	78.5	76	111.1	103.3	105	94.19	108.5	108.5	69.83	91
May	24.17	41.41	81.48	52.2	66	82.5	109	106.5	102	88	105.5	92	71.45	76.5
June	25.26	39.63	67.53	55	64.66	80	85	97.5	99	92.37	100	85.5	75.53	73
July	24.87	40.39	66.33	56	66.33	74	75.66	99	99	89.84	95	78	85.13	68
Aug.	24.59	38.48	63.75	62	64.66	68	78	102	99	89.87	91	83	84.21	66.5
Sep.	24.24	38.18	62.40	61.5	60.66	65	83.33	101	91.75	98.19	91	75	84.55	-
Oct.	23.93	38.18	60	64	61.33	67	85.33	98	89.29	86.92	89	82	81.87	-
Nov.	23.15	83.99	60	66	65.33	77	94.5	95	87.95	98.87	88	83	83.66	-
Dec	28.22	44.64	62	64.5	71	83	97	96.5	89.47	95.22	91	92	87.26	-
Aver	23.74	42.29	67.80	58.00	67.92	74.29	93.23	99.48	97.83	95.15	97.67	91.25	82.14	

Source: General Establishment for Meat, 1999

Trends in the Live Sheep Export Trade. According to a number of major traders, the live sheep export trade has declined by about 50 percent over the last three years. Since 1997, the trade from the Aleppo sheep market, the main market in Syria, has declined from 500 trucks per day to about 20 trucks per week. The overall trend according to both importers and exporters is the export trade is diminishing in value and volume while the import trade is increasing in volume. One of the reasons provided for the fall in the livesheep export trade is that Iraq, which has the largest Awassi flock in the region, has been exporting large numbers of sheep over the last two years, considerably depressing prices for fat-tailed sheep in the Gulf markets. On the other hand, the price of imported sheep has risen as eastern European countries have begun supplying the more lucrative markets in Western Europe.

C. Livestock Trade Policy Reform

Given the dominance of the live sheep trade in the livestock sector, the most significant recent trade reform has been the decision, in 1999, to grant exemptions to the General Organisation for Meat and the National Peasants Association from the "two for one" trade restriction on the import and export of live sheep. These exemptions were granted to relieve the over-supply of sheep onto the local market due to the very severe drought of 1999. Subsequent to exemptions to the export restrictions being granted to the General Organisation for Meat and the National Peasants Association, the price of live sheep import documents, which previously traded at about Syrian Pounds 100/head, fell to Syrian Pounds 50/head, which would be expected to allow Syrian exporters to supply the Gulf market at more competitive prices.

Since the disintegration of the Soviet Union, there has been a growing concern by Syrian authorities about the declining standards of livestock quarantine, disease control and regulation in some of the sheep supplying countries. However, current Syrian quarantine regulations requires that sheep be landed in Syria within 15 days of issuance of pre-shipment certificate of health in the country of origin (Article 41A), which effectively excludes a number of potential supplier countries from entering this market. Countries such as Australia and New Zealand, who have efficient and effective disease control and quarantine systems, would be able to supply good quality disease free sheep to the Syrian market at competitive prices.

The future domestic market for chilled and frozen meat will also pressure the local sheep meat prices. With 80 percent of the local sheep meat market still provided by the national Awassi flock, provision of the remaining 20 percent could be more efficiently procured as chilled meat, thereby also removing a major disease risk to the Syrian livestock industry.

D. International Competitiveness

Trade, health, hygiene and quarantine requirements elsewhere will prevent Syria from accessing most other high value markets for the immediate future. Syria's immediate international markets for livestock and livestock products are therefore limited to those in the region of the Middle East and western Mediterranean. Syria has a comparatively disease-free livestock industry and, although a relatively small livestock producer by global standards, produces large volumes of mutton, beef, poultry and milk compared, (with the exception of Iraq) to its immediate neighbours. Based on a preliminary analysis of limited data, Syria would be competitive in the export of Awassi sheep to the Gulf countries, although that market is changing as the consumption of chilled and frozen meat increases, and the demand for live sheep decreases. Iraq is the major competitor in the Awassi market with Syria and is now able to supply sheep to the Gulf at cheaper prices due to the devalued Iraqi dinar. Australia's exports in chilled mutton to the Middle East have increased by 30 percent since 1996. The volume of live sheep exported by Syria has fluctuated between 1.2 million to under 500,000 during the same period, with only 540,000 sheep exported in 1998.

Syrian poultry producers claim a competitive advantage in the supply of hatching eggs for both layers and broilers. The competitiveness of Syria's poultry meat exports is highly dependent on lowering the transaction costs of imported feeds. Syrian poultry producers also claim a higher productivity in poultry meat over European

levels in addition to having lower labour, electricity and transportation overhead costs.

E. Policy Implications and Its Recommendations

Syria is claimed to be reasonably competitive as a low cost producer of Awassi live sheep, table and hatching eggs, milk, beef and poultry meat compared to its immediate neighbours. While no data was available to assess the level of competitiveness of Syria's livestock sector with that of its neighbours, the volume of unofficial cross border trade in livestock and livestock products from Syria reported in Lebanon would in part support this claim.

Liberalisation of trade, particularly lifting of import restrictions on livestock products, would have a potential major positive impact on livestock producers. As an example, livestock producers pay a considerable premium over global prices for their livestock feed concentrates. Besides improving the profitability of livestock production, liberalisation of the trade in animal feed and lower feed prices would encourage greater intensification of livestock production decreasing the grazing pressure on the Al Badia.

Available data on the live sheep trade is incomplete and inconclusive. Given the importance of this trade to the livestock producers in the Al Badia, the live sheep trade warrants further study to assess the potential impact of liberalising the "two for one" rule and the "fifteen day" rule. It is also necessary to appraise Syria's competitiveness in the live sheep trade to the Gulf in the short to medium term. The official data for the live sheep trade does not reflect actual market prices nor the "two for one" import to export requirements. Active monitoring of the live sheep import and export trade would allow Government to keep producers better informed of market conditions as providing a basis on which to develop better long term strategies for the trade.

6. Livestock Support Services

The profitability of investments in the livestock sector is strongly influenced by the availability and quality of animal health and breeding services and access to improved technologies and credit. Animal health services substantially reduce livestock losses caused by sickness and premature death. Animal breeding services increase the productivity and efficiency of feed resource use. To achieve their full benefits, health and breeding services must be supported by a strong technology generation and dissemination service. Further, access to credit facilitates investments by producers, traders and processors in improved technology, infrastructure and management systems. Availability and access to competitive and open domestic and export markets assists the realisation of profits from these investments.

This chapter reviews the current status of agricultural support services for Syria's livestock sector, particularly veterinary services, animal breeding, research and extension, and livestock credit programmes. The nature and level of government spending on research in the sector is also discussed.

A. Government and the Livestock Sector

Agricultural issues, including animal husbandry, are largely the responsibility of the Ministry of Agriculture and Agrarian Reform (MAAR). The MAAR is responsible for all livestock issues, including livestock production and health, animal development programmes, slaughterhouses, dairy development and collection and dissemination of livestock statistics.

Several institutions under MAAR undertake production, production support and input procurement activities. The General Establishments produce livestock products for the public sector consumption and, in the case of poultry, also for the private sector.

The MAAR is also responsible for education, research, technology development and extension on livestock related activities. These activities are undertaken through a number of institutions and national research centres. Livestock sector education, research and extension is also supported through the University of Damascus and Aleppo Faculties of Agriculture and Veterinary Science. The International Centre for Agricultural Research in Dry Areas (ICARDA) at Aleppo, as part of its international responsibilities, conducts livestock sector research in Syria.

B. Public Spending in the Livestock Sector.

From 1989 to 1998, the MAAR total annual expenditure increased from just over SP 1 billion to 4.4 billion. The share of operational spending going to the livestock sector programmes and activities, excluding allocations to extension and the General Establishments, ranged from 11 to 20 percent over the same period. In 1998, the core livestock sector programmes received SP 272 million or six percent of the operational budget.

MAAR expenditure on the General Establishments of Poultry, Meat, Cattle and Feed rose to over SP 164 million during the middle of the decade before declining to SP 110 million in 1998 as the Establishment organisations increased their level of cost

recovery from their operations. However, MAAR expenditure on the General Establishments with livestock responsibilities accounted for more than 25 percent of the total operational expenditure on livestock related activities (Table **28**).

Table 28 Ministry of Agriculture and Agrarian Reform Expenditure 1987 to 1998 (3 year averages in millions Syrian Pounds)

	1987-1989	1990- 1992	1993 - 1995	1996 - 1998
Operational Expenditure	640	1357	2036	3675
Agricultural Research	20	45	98	153
Agric Extension Development	5	68	75	95
General Establishments	272	378	398	391
Livestock Related Establishments				
GE.Poultry	71	58	55	41
GE.Cattle	29	52	29	19
GE. Feed	14	54	80	50
GE.Fish	8	10	3	5
State Farms	74	86	74	39
Livestock Related Activities				
Livestock Production Research Stations	4	20	38	60
Veterinary Services	22	39	61	67
Local Cows Development	11	24	26	48
Al Badia Wells	14	24	46	67
Syrian Badia Development	23	54	79	104
Al Badia Wells Completion	9	23	37	48
Arab Horses Farm	0	4	42	37
Altanf Project	3	32	71	55

Source: MAAR .

An analysis of the 1998 government expenditure in the livestock sector indicates several points.

Overhead support to the General Establishments, whose activities are mostly of a commercial nature, (such as poultry production, feed production and processing, cattle breeding and dairy production) account for over fifty percent of the budget for livestock development activities (excluding the Al Badia development programmes). Al Badia development is supported through three core programmes which receive more than 50 percent of the total livestock programme budget although the Al Badia accounts for about 15 percent of the livestock production. Livestock research receives 30 percent of the total MAAR research.

C. Livestock Credit Programmes

All banking in Syria is in the public sector and agricultural credit is provided by the Agricultural Cooperative Bank (ACB) under the Ministry of Economics and External Trade. The ACB acts as a public monopoly providing short, medium and long term loans at subsidised interest rates to the private, cooperative and public sectors. The reference interest rate has been steady for several years at 9 percent while lending rates vary with economic, social and banking considerations. Interest rates for

agriculture and livestock vary between 4 and 7.5 percent depending on the borrower (public, cooperative or private) and the length and purpose of the loan.
In 1998, the ACB lent more than SP 10 billion to the agricultural sector which included medium and long terms loans of SP 734 million for livestock related activities (Table 29). Medium to long term credit is provided for the establishment of livestock enterprises including the purchase of genetically improved species. Loans to individuals for livestock production are provided against collateral of either land or personal belongings such as machinery. Loans to sheep producers, who mostly do not own land, is provided through the cooperative sector who act as guarantor for the individual producers. The livestock sector received less than 10 percent of the total agricultural loan portfolio and within the sector, poultry received over half the value of the total loans (Table 30).

With negative real interest rates, credit is the single most important conduit for government subsidies to rainfed agriculture and rainfed livestock production. Most of the loans to the livestock sector are short term for the purchase of feed from the General Establishment for Fodder. These loans are provided as in-kind as stock feed through farmers cooperatives. During the 1998/2000 drought, the major government support to livestock producers was the provision of in-kind loans for feed provided by the ACB. To February 2000, loans totally SP 700 million had been provided to livestock producers for the procurement of livestock feed. Due to the severity of the drought, the government provided a moratorium on loan repayments to ease the financial burden of the impact of the drought on family incomes. A substantial informal credit system operates in parallel to the official ACB credit system, ranging from seasonal advances to sheep producers from the sheep cheese makers (Jabbans) to provision of capital funds inter and intra families for agro-processing investments.

Table 29 Loans provided by the Agricultural Cooperative Bank, Total Loans and Livestock Enterprises 1991-1998 (millions Syrian Pounds)(All mid term loans except those for stores and barns which are long term loans)

	1991	1992	1993	1994	1995	1996	1997	1998
Poultry	250	202	211	285	419	na	na	324
Cattle	50	61	53	83	142	na	na	218
Sheep	362	147	0	80	52	na	na	30
Other animals	38	25	89	53	60	na	na	72
Stores & barns	32	74	113	125	151	na	na	86
Total (all loans)	11681	13318	13537	14380	15440			10156

Source: Agricultural Cooperative Bank

The livestock sector credit consumption has varied between four and seven percent of all medium and long term loans in the agricultural sector during the last decade. The requirement for collateral, compliance requirements of licensing and administrative procedures limits the ability of many livestock producers to access credit. Despite the considerable bureaucratic procedures and detailed loan compliance requirements, an undefined but considerable proportion of loans to the agriculture/livestock sector are considered to have been used for alternative purposes.

A livestock producer can receive credit from the ACB through a number of mechanisms. As a licensed producer of either poultry, milk or beef, the producer becomes entitled to development loans from ACB for the construction and establishment of facilities and equipment. If the producer is a member of the cooperative, he becomes entitled to in-kind loans for the purchase of feeds. Further, in

the case of cattle production, the producer becomes entitled to in-kind loans for feed if he participates in the MAAR herd improvement cross breeding programme. A sheep producer can access loans through either being a member of a cooperative or as an individual by applying through the cooperative movement.

Table 30 Distribution of Loans received by the livestock sector 1991-1998 (percentage of total loans)

	1991	1992	1993	1994	1995	1996	1997	1998
Livestock loans / All agricultural loans								
	6.2	3.8	3.5	4.3	5.3	na	na	7.1
Enterprises loans/Livestock Loans								
Poultry	35	40	46	61	51	na	na	44
Cattle	7	12	11	13	17	na	na	30
Sheep	50	28	0	13	7	na	na	4
Other animals	4	5	19	8	7	na	na	10
Stores and Barns	4	14	24	15	18	na	na	12

Source: Appendix 2 Annex 5 Tables.

For those who are able to access the ACB credit, the cost of credit is well below the "market" rate. For those who are unable to access credit, in most cases, the resource poor, credit is expensive.

D. Animal Health

A network of veterinary clinics provide services to the poultry, cattle and sedentary sheep production industries but no specific services are provided to the transient sheep industry. The supply of animal health services is dominated by the public sector although the private sector has a major input supply role in the poultry industry and to a much lesser extent in the dairy industry.

E. Livestock Research

Public sector livestock research is supported through the MAAR and the Faculties of Animal Husbandry and Veterinarian Science. The budget for livestock production research in 1998 within the MAAR was SP 63 million which was about 30 precent of the total research budget for the Ministry. Most of this expenditure was attributed to staff and administration overhead costs. The budget for the livestock research conducted by the Universities is provided through the Ministry of Higher Education. Livestock research within Syria is uncoordinated within little attention to priority setting based on producer constraints. The private sector, mostly producers, are involved in breeding and nutrition research, particularly in the poultry and cattle industries. For example, leading poultry producers have established international contacts with access to research and technology worldwide.

F. Livestock Extension

Public extension services are under the responsibility of the MAAR through the Directorate of Agricultural Extension, and organised at the Governerate level (muhafazat) through Agricultural Extension Units (800 units nation wide). Each extension unit covers about 8,000 ha of rainfed or 2,000 ha of irrigated agricultural land and most extension units include several livestock oriented engineers. The

government extension services employs over 5000 extension workers of which half are university graduates. The main contribution to livestock extension is in animal health delivered through a network of 300 veterinarians and 1200 veterinarian supervisors, whose major activity is the delivery and supervision of vaccination programmes. Much less extension emphasis occurs on animal production and management issues. In the cropping zones, the extension services have a major responsibility for licensing livestock production facilities, issuing input entitlement certificates (for example for feed or vaccines) to licensed livestock producers, and collecting data for planning purposes.

Within the Al Badia, the Al Badia Directorate of MAAR is responsible for extension to sheep producers. This service has a predominantly animal health focus. Up until recently, *no e*ffective extension services were provided within the Al Badia although the Al Badia communities may benefit/participate in extension activities held in the borders of the Al Badia. A number of extension units are located in the Al Badia which are concerned with the cropping activities of the sedentary farmers in the oases. Recently, the Al Badia Directorate commenced the introduction of more participatory and consultative approaches to extension focusing on the problems and constraints of the sheep producing community. The main activities of the Al Badia Department Animal Production Section are the distribution of rams from breeding cooperatives and providing assistance to production cooperatives.

Budgets for extension, as with all other governerate and district budgets, as allocated on project or programme basis through centrally established planning processes.

Public Sector Planning. Public sector agricultural sector planning is centralised within the national office of MAAR and coordinated through the Department of Planning and Statistics. The Director of Statistics and Planning acts as the secretary to the Supreme Agricultural Council, the peak agricultural planning body in the country. Medium to long term planning is conducted in five-year periods. The Ninth Five-Year Plan commenced in 2000. The MAAR produces both a production and an investment plan. The production plan focuses on the determining and securing of inputs required for agriculture and livestock production (vaccines, medicines, feed) and the issuing permits to the private sector to import any shortfall. The investment plan sets out the required services to be provided by the government. The plans set targets for inputs and production expected from the investment in these services. Targets are established in consultation with the governerate directorates identifying the government inputs to be made, usually established on an per hectare for cropping enterprises or on a per head of livestock entitlement. For example, the major "target" set for the sheep industry is the entitlement for allocation of feed, at a market discount price, which at the time of this study was 20 kg of barley per head of sheep owned.

G. Livestock Insurance

Livestock insurance was recently introduced in 2000 through the Agricultural Chambers which is under written by the Agricultural Cooperative Bank.

H. Policy Issues and Recommendations

Syria's livestock sector's ability to achieve its targeted growth in productivity and output will be greatly influenced by the quality, availability and accessibility of livestock services. Livestock services do not have to be supplied by the public sector. International experience shows that adequate supply of certain livestock services could be still assured if these services were provided by the private sector.

The projected livestock population growth, the increased emphasis on more cross breeding in the cattle industry, vertical integration in the poultry industry, and better health, animal husbandry and nutrition in the sheep industry, coupled with other sectors' competing demands for financial resources, driven by the rate of population growth, will increase budgetary and administrative pressures on the national and governerate-level government livestock services.

A more efficient allocation of resources is critical. Achieving needed objectives will require: (i) redefining public and private roles in the livestock sector; (ii) creating a level playing field, and; (iii) establishing appropriate incentives

Public and Private Sector Roles. The appropriate roles of the public and private sectors in providing livestock services are determined by the economic characteristics of each service. Public involvement is required when market failures exist. There are three categories of services where this applies.

(i) Delivery of public goods. The benefits from these types of services, which include sanitary controls and basic research, are available to the entire community, and it is impossible to restrict use to the individual or group who paid for the service. Because of the free-rider problem, the private sector has no incentive to provide these services. They must, therefore, remain a public responsibility.
(ii) Products or services whose quality cannot be immediately assessed. Also called moral hazard problems, where incentives exist to pass on substandard products such as veterinary drugs, adulterated feeds, vaccines, and semen since the quality cannot be judged at the time of purchase. Public sector regulation is necessary to ensure that products meet established quality and safety standards
(iii) When externalities or spillovers occur because the service is used. Serves such as vaccinating for infectious diseases protect an individual farmer's animals from diseases (private benefits), and at the same time reduce the risk of a disease transferring to other farmers' animals (extra social benefits). Since farmers purchasing the service do not consider these extra social benefits, they tend to use the service less often than is socially optimal. Consequently, the government needs to control or subsidize these services to increase their use by farmers.

A New Perspective for Government Livestock Services. The role of government in the Syrian livestock services sector must be adapted to market realities. The private

sector can efficiently and effectively provide those services classified as private good or toll goods. In the case of private goods, the user can exclusively appropriate the benefits and is thus willing to pay the private fees. Consequently, private suppliers can appropriate the returns for the delivery of the service. Examples include clinical services, artificial insemination, and the production and distribution of veterinarian pharmaceuticals. The private sector can also efficiently delivery toll goods. Toll goods are products or services whose supply does not diminish as a result of one person's use, but access to them can be restricted so that only those who pay for the product or service can enjoy their benefits. An example of a toll good would be a herd milk recording scheme.

Future policies should strengthen the capacity of the government to manage tasks that remain in the public sector, such as research and most agricultural extension activities. Policies should limit public sector involvement in the delivery of private goods and, more importantly, phase out all public sector involvement with these tasks as the private sector becomes more established. In addition, public responsibility does not necessary imply public implementation. Some services, such as vaccinations, food inspection and research, can be subcontracted by the government to the private sector for delivery. The government's role in these activities would be reduced to monitoring and regulation. In some countries, vaccinations and food inspections are subcontracted to private veterinarians, and delivery is regulated through the confirmation of vaccinations and inspection certificates.

Creating a level playing field. Public sector domination of livestock services also constrains private initiatives in commercial functions. To remove these barriers, establishing a level playing field between government and private veterinarians or government and private feed companies for example will be critical. Specifically, clinical care, veterinarian drugs, improved genetic stock and semen, feeds and fodders and artificial insemination services should be provided with full cost recovery. Otherwise, private practitioners are not able to compete against the subsidised public sector. However, because most of the livestock producers, as indicated earlier, are poor small holders, it is recommended to phase-out the public support provided over a short period of about five years in order to avoid having negative impacts.

Establishing appropriate incentives. Public veterinarians are allowed to work in their own clinics outside the normal official hours and can take special leaves that may reach four years. However, the government should cease all interventions in areas where private veterinarians operate subcontract services at the enumerative rates, leasing out existing public sector facilities to prospective veterinarians.

Experience of other countries has shown that farmers are willing to pay for services that are reliable and effective. For full cost recovery to succeed, the delivery of quality and consistent services must be guaranteed. Moreover, a promotional campaign must accompany the program to bolster farmer appreciation of the returns from investing in livestock services.

The extension services to the livestock sector need to focus on the smallholder sector in dairy, beef and sheep production. The poultry sector could be left to its own devices. The continual training of public sector staff in extension techniques, technologies and approaches will be necessary to ensure the effectiveness of these measures.

Table 31 Economic Classification of the Types of Livestock Services - Private and Public Sector Balance

Service	Type of Economic Good		Measures to correct for		Public Sector		Private Sector
	Public	Private	Externality	Moral Hazard	Funding	Provision	Provision
Clinical Interventions							
Diagnosis		X**					YY
Treatment		X**					YY
Preventative and Eradication Services							
Vaccination		X*			Y*	Y*, S	YY
Vector Control		X*				Y*,S	YY
Veterinary Surveillance							
Epidemiology	X				YY	YY,S	Y*
Diagnostic Support		X*			Y*	Y*,S	YY
Quarantine			X		YY	YY	
Drug Quality Control				X	YY	YY,S	
Public Health and Hygiene							
Abattoir inspections				X	YY	YY	
Food Hygiene				X	YY	YY	
Provision of Veterinary Supplies							
Production		X					YY
Distribution		X					YY
Quality control				X	YY	YY	
Production Services							
Semen production		X					YY
Artificial Insemination		X					YY
Importation of Breeding Stock		X			Y		YY
Animal Research							
basic	X				YY	YY,S	Y*
applied	X	X*			Y*	Y*,S	YY
Extension	X	X*			Y*	Y*,S	Y
poultry		X			Y*	S	Y
sheep	X				Y*	Y,S	
dairying	X	X			Y*	Y,S	Y
beef	X	X			Y*	Y,S	Y
Insurance		X					YY
Promotion of exports	X				Y	Y,S	Y

X* - private good with consumption externalities, X** - private good with some consumption externalities only in the case of infectious disease, YY - economically justified, Y* - economically justified in special circumstances, S - delivery can be subcontracted out. Adapted from D.Umali, G.Feder and C. de Hann, 1994 "Animal Health Services: Finding the Balance Between Public and Private Delivery", World Bank Observer, Vol 9 No1, as cited in Indian Livestock Sector Review 1996.

7. Development for Whom?

In Syria, livestock production is predominantly a private process, although the government is involved in the production of poultry meat, eggs and milk through the General Establishments of Poultry and Cattle and in the production improved breeding stock for the sheep, cattle and poultry industries. Syria has a strong functioning private market system. While the regulation of trade in goods and services is, and will remain, a function of Government, production and trade themselves should be in private hands, and the market itself should rule prices. Thus the trade in livestock inputs such as feed, fodder and medicine should become an entirely private sector process.

The production of livestock, just as savings and investment in the livestock sector, responds to market prices and incentives and, in this respect, many of the factors critical to the development of the sector fall outside the sector itself. Broader issues, such as exchange rate arrangements, banking (licensing laws, unofficial sector), property rights (land and water, tenure, foreign investment), general protection policy issues (imports banned or subject to licence) and administrative issues (official and real duty on imports and unofficial cross border trade) impact on the livestock sector.

However, the efficient functioning of the private livestock production and trading system will depend upon both the development of a legal/regulatory framework that facilitates market operations and the level and quality of technical services or inputs which impact upon livestock productivity. In the long term, for example, animal health and management will be a far more critical determinants of the evolution of the size and composition of the national herd and flock than any price and support programmes and, possibly, any subsidised credit schemes. A significant improvement in the utilisation of feed and feed products, whether domestically produced or imported, offers the possibility of accelerated sectoral development without major infusions of capital from outside the sector.

The basic principle of supply of government technical services should be that, to the extent practically possible, they should respond to effective demand, that users should support their cost, and that they should be purchased through the market -- in reflection of three considerations: that private benefits should be privately financed; that the public cost-bearing capacity is ultimately limited; and that market procurement of services maximizes relevance to user needs. In practice, many of the critical improvements in the animal production system can be undertaken by livestock producers within their existing resources, supported by effective applied research, extension and animal health services, while others such as epidemic disease control and meat inspection are not easily provided in an appropriate form under acceptable cost-recovery mechanisms, and must be provided by a public agency. As a consequence, a three-pronged "partnership" approach to service supply is recommended, involving the livestock producing community, private input suppliers and traders and the public sector supply of “social” good services.

The focus of government assistance must be clearly defined: *it should be focused not on animals, but on people*. Within the category of livestock producers, the focus of government support and assistance should be on those livestock producing families with the least resources in terms of livestock numbers, land and other capital assets, rather than the current practice of providing support according to numbers of sheep and land owned by an individual. The value of government assistance to livestock producers will depend upon the extent to which the assistance reflects farmer concerns, hence the emphasis must be placed upon demand led activities. A much greater participation of smaller livestock producers will be required in defining the priorities of public services and the cooperatives, which supposedly represent them, as well as a change in the effective administration of those services. In particular, decentralization of planning and decision-making would help to ensure government livestock development programmes respond to local requirements. The primary interfaces of smaller livestock producers with Government services are the extension services, animal health services and the cooperatives. Effective supply of assistance in livestock production will very much depend upon exploitation of these primary interfaces or, in the case of the existing cooperatives, seeking alternative mechanisms.

8. POLICY RECOMMENDATIONS AND INVESTMENTS FOR THE LIVESTOCK SECTOR

The assessment of the current status of the livestock sector, undertaken by this study, indicates sustained growth of the sector will require policy reform to promotes efficiency, complemented by an investment programme to facilitate the supply response by livestock farmers and investors to emerging opportunities. While the growth of the livestock sector will be predicated on the implementation of reforms which are expected to occur in the general economy such as the liberalisation of external trade, foreign exchange markets and the banking system, the government's livestock policy reforms should, in particular, focus on

- elimination of remaining commercial trade restrictions, including barriers to private sector entry, in the trade of livestock production inputs (particularly feed and feed ingredients) and livestock products
- promoting competition in livestock markets by removing government involvement in price setting mechanisms for livestock inputs and products
- formulating national guidelines to improve the management of the Al Badia
- establishing the legal and regulatory framework to improve the management of the Al Badia and other common property areas
- rationalising the government's delivery of agricultural support services (extension, research, animal health and breeding services) to focus on the delivery of public goods and the needs and requirements of the resource poor livestock producers

Investment programmes would improve the capacity of farmers, private traders, private input suppliers, processors and providers of support services to respond to emerging opportunities as the government implements its policy reforms.

The investment programmes should focus on:

- institutional reform of government support services to establish clearer definition of public and private responsibilities and to promote alternative service delivery systems for animal health and breeding and livestock extension with an emphasis on the private sector and user group involvement
- establishing and promoting a national drought management policy with a focus on community self help, the poorer sections of the livestock owning community and early warning systems
- improving collection and dissemination of livestock production and marketing information to assist in the development and monitoring of livestock sector policies and development strategies

  livestock research and extension addressing the problems of smaller producers and their production systems, particularly in the nutrition and husbandry of their livestock

APPENDIX 1

TECHNICAL ASSISTANCE AND INVESTMENT PROJECT PROFILES

Technical Assistance Project Profiles

A number of areas have been identified for further study to define the scope and scale of policy reforms needed in the livestock sector

1. Development of a Long Term National Drought Policy

The recent drought, the most severe in forty years, provides experience onto which to build a national drought policy. The development of a national drought policy which, in dryland agriculture, recognises the need for livestock producers to take responsibility, except in the event of extreme occurrences, for the management of their risk of the incidence of below average seasonal rainfall. Shifting the responsibility for drought management to the producer will ensure better resource allocation decisions by the livestock producer while freeing the resources of government to address the welfare requirements of the poorer livestock producer families in periods of below average rainfall. Technical assistance is required to review and assess the approaches and strategies applied to the management of the recent drought.

The output of such technical assistance would be a comprehensive, cohesive and nationally applicable set of principles and policy objectives to deal with droughts. This technical assistance would be a precursor to the preparation of an investment programme for the development of drought management strategies such as early warning systems, public awareness programmes and drought management training for livestock producers

2. Strengthening Gathering of Livestock Sector Statistics for Policy Formulation

Development of effective livestock policies within a changing national and international economic environment will require accurate and relevant information on the livestock sector. Information on socio-economic status of livestock producers, supply and demand of livestock products for policy formulation and trader use is poor and often not available in timely manner.

Available livestock information needs to be strengthened in the areas of socio-economic data on livestock producers, markets of livestock products, market transaction costs, and imports and exports of livestock and livestock products. Technical assistance is required to work with MAAR and other government agencies to prepare an investment project for the establishment of a more comprehensive livestock information system which covers both production and marketing.

Improved production and market information collection and dissemination systems including the use of mass media would assist formulation and monitoring of livestock sector policies and livestock sector development strategies, particularly the impact on the poorer livestock producers. Better marketing information would also contribute to the reduction of marketing costs.

3. Liberalising the Livestock Feed Trade

Syrian livestock producers pay above world prices for feed for their animals due to indirect trade restrictions and high transaction costs within the country. The General Establishment of Fodder plays a significant role in the trade, storage and distribution of livestock feed and feed products through either regulation or direct involvement in feed businesses. Technical assistance is required to review the role and activities of the General Establishment of Fodder. The output of this assistance would be recommendations on how the responsibilities of the General Establishment of Fodder are to be realigned with feed market requirements to realise potential efficiency gains in the livestock feed industry.

4. Live Sheep Import and Export Policy

Live sheep are the most significant traded commodity in the Syrian livestock sector. The importation of live sheep for the domestic market makes an important contribution to the supply of sheep meat to the domestic market. The export of live sheep to the Gulf is a significant income earner for the livestock sector and direct influences the prices of domestically produced sheep. The short and medium trends of the import and export trade need further investigation as the demand and supply situation changes in both Eastern Europe, the Gulf and in competing supplier nations. Technical assistance would define the existing market, identify short medium and long term trends, assess the impact on market efficiency of existing trade regulations, such as the "two for one" and "fifteen day" rules, and make recommendations on reform needed to improve market efficiency.

Investment Project Profiles

1. Institutional Reform of Government Livestock Support Services

An efficient livestock sector will require Government Livestock Support Services which complement the activities of the private sector through the provision of public good services such as sanitary control, production quality control, quarantine operations, and focused public livestock research and extension. Government Livestock Services would also progressively withdraw from private sector responsibilities.

Investment in institutional reform of government support services is needed to establish clearer definition of public and private responsibilities and to promote alternative delivery systems for animal health and breeding, production inputs, and livestock research and extension.

Key issues which need to be addressed in the delivery of government support services include:

- subsidization of public veterinary sector services acts as a barrier to private entry
- the public sector continues to maintain production and breeding stations which only crowd out private sector involvement

- the quality and quantity of supply of livestock production inputs (feed, feed ingredients, medicines and vaccines) is erratic and often untimely, constraining improvements in efficiency and profitability of production

Key steps which need to be undertaken include:

- creating a level playing field by instituting full cost recovery for services where private participation should be promoted
- creating appropriate incentives, such as leasing government facilities, opening private subcontracting opportunities and flexible civil service arrangements
- existing government veterinary services need to shift to a more extension development focus after appropriate training
- introduce full cost recovery of artificial insemination services to create a level playing field with the private sector
- withdrawal of government service responsibilities for input supply
- enhancing the role of government services in monitoring and enforcement of the quality of livestock production inputs
- strengthening the administration and enforcement of livestock public health and hygiene services

Investment is required in training, skilling and equipping of government livestock support services staff so they are better able to change current practises and be more capable of fulfilling their roles under the policy reforms. Government facilities and resources in product quality control, quarantine, public health and hygiene, and epidemiology will need to be upgraded to enable the government services to better execute their increased and better defined responsibilities in delivery of public good support services.

The expected impact of this investment would be:

- increased availability and quality of veterinary services
- reduced losses due to disease
- enhanced adoption of improved breeds
- increased public sector effectiveness in providing public services such as disease surveillance and disease control
- reduced costs to the government of service delivery
- improved availability and ensured quality of livestock production inputs
- ensured quality of livestock products to consumers

Monitoring would be required of the potential impact of any full cost recovery for livestock support services on access by the poorer livestock producers.

2. Livestock Research and Extension

Public research and extension activities suffer from a lack of client focus, especially for the smaller livestock producers, inadequate funding and insufficient well trained and skilled staff. Public livestock research and extension needs to focus more on sustainable small producer production systems. New and alternative extension delivery methods, with greater producer and result orientation, need to be explored and tested to improve extension delivery. Existing technologies, available both within Syria and internationally, need to be tested and adapted to the circumstances of the

small producer. Improved uptake of productivity enhancing technologies, particularly in the nutritional management of livestock, would increase the efficiency and profitability of production of all classes of livestock.

As livestock numbers and production increase, crop products and crop residues are making an increasing proportional contribution to the total feed resource for the livestock sector. Crop production is also increasing through additional inputs, changing crop rotation practises, use of new varieties, production of different crops, and better management and husbandry of land and water resources. Opportunity exists for much greater integration of smallholder livestock and crop production enterprises. As crop production output increases, livestock production and productivity can also increase through improving the utilisation of crop products, by products and residues.

Realisation of this potential to improve the efficiency of integration of livestock and crop production will require multi-disciplinary approaches to applied research and extension with active participation of crop producers and livestock producers. Improving the utilisation of crop residues could contribute significantly to increasing the incomes of some of the 40 percent of rural farming families who are assessed to be below the poverty line. Research should be reoriented to focus on smallholder farming systems management, feed utilisation and "available" livestock nutrition technology.

The key issues to be addressed include:

- shortage of trained and skilled research and extension staff with a knowledge of and access to current research and extension approaches and methodologies
- inadequate understanding of participatory research and extension processes
- limited access to national and international livestock research and technology
- linkages between producers, agribusiness, researchers and extension services

Key steps to address these issues include:

- increased emphasis on education, training and skill building of research and extension staff
- change of focus of current research to the problems of small producers and the sustainability of their production systems
- promotion of integration of extension and research between producers and feed

Investment is required in staff training and education, improving and upgrading of research facilities and equipment, better resourced extension services, and in more cooperative research and extension programmes involving small producers. These investments would increase the availability of improved technologies appropriate for smallholder production systems and would improve the uptake of productivity enhancing technologies. Investment in the government research and extension services would also improve the competitiveness of domestic livestock production relative to imports.

APPENDIX 2

STATISTICAL ANNEXES

ANNEX 1 - DEMOGRAPHICS, ECONOMY, LIVESTOCK SECTOR

ANNEX 2 - LIVESTOCK PRODUCTION

ANNEX 3 - FEED AND FODDER

ANNEX 4 - IMPORTS AND EXPORTS

ANNEX 5 - LIVESTOCK SUPPORT SERVICES

ANNEX 1

Annex 1 Table 32 Percentage of Governerate's Inhabitants and Annual Growth Rate According to 1970, 1981 and 1995 Censuses

Description	Annual Growth Rate Per 000		% of Govermerate Inhabitants to Total Population		
	1970-1981	1981-1994	1970	1981	1994
Damascus	26.3	18	13.4	12.3	10.1
Rural Damas.	36.2	45.9	9.9	10.1	12
Aleppo	33	36.1	21	20.7	21.6
Homs	37.2	31.6	8.8	9	8.8
Hama	33.2	23.6	8.1	8.2	8
Lattakia	32.7	43.6	6.2	6.1	5.4
Deir Ezzor	31	34.8	4.6	4.5	5.2
Idlib	38.4	33.1	6.1	6.4	6.6
Al Hassakeh	33.2	35.9	7.4	7.4	7.4
Al Raqqa	33.1	23	3.8	3.9	4
Al Sweida'	32.9	40.3	2.2	2.2	1.9
Dara	41.5	21.9	3.7	4	4.4
Tartous	35.6	48.8	4.5	4.9	4.3
Kuneitera	43.4	33	0.3	0.3	0.3
Total	33.5	33	100	100	100

Note: compound interest equation has been used in calculating growth rates

Annex 1 Table 33 Population Structure During the Period 1985-1998 (000)

age groups	1985			1990			1995			1996			1997			1998		
	Male	female	total	male	female	total	male	female	total	male	female	total	male	female	total	male	female	total
less than 1	194	182	376	228	214	442	209	196	405	219	202	421	224	207	431	239	213	452
1- 4	802	760	1562	947	214	1161	863	832	1695	902	852	1754	934	878	1812	956	908	1864
5-9	907	845	1752	1069	895	1964	1108	1070	2178	1155	1097	2252	1189	1128	2317	1227	1168	2395
10-4	719	651	1370	848	999	1847	1050	1014	2064	1092	1034	2126	1128	1069	2197	1163	1106	2269
15-19	498	482	980	587	768	1355	827	811	1638	864	832	1696	896	863	1759	924	893	1817
20-24	388	363	751	458	570	1028	640	650	1290	670	660	1330	695	679	1374	717	702	1419
25-29	273	300	573	323	428	751	540	537	1077	559	549	1108	579	568	1147	597	588	1185
30 –34	253	273	526	297	353	650	439	440	879	453	446	899	472	465	937	494	481	975
35-39	257	259	516	303	323	626	338	336	674	352	340	692	363	354	717	374	366	740
40-44	225	204	429	265	307	572	280	266	546	288	272	560	293	280	573	303	290	593
45-49	174	158	332	203	242	445	209	196	405	214	202	416	224	207	431	231	214	445
50-54	127	122	249	151	187	338	173	175	348	180	181	361	185	184	369	191	191	382
55-59	100	92	192	119	144	263	144	133	277	143	137	280	147	140	287	151	145	296
60-64	103	107	210	121	107	228	144	140	284	151	141	292	154	148	302	159	153	312
more than 65	224	225	449	270	262	532	230	196	426	235	197	432	240	207	447	239	214	453
Total	5244	5023	10267	6189	6013	12202	7194	6992	14186	7477	7142	14619	7723	7377	15100	7965	7632	15597

Source: Annual Statistical Abstract, Central Bureau of Statistics
** not including Syrians Abroad*

Annex 1 Table 34 Population, Labor Force, and Manpower by Gender

Years	Employed								Unemployed						total
	Urban			urban female labor force percentage	Rural			rural female labor force percentage	Urban			Rural			
	male	Female	total		male	female	total		male	female	total	male	female	total	
1978	813	106	919	11.5	856	159	1015	15.7	39	4	43	40	7	47	2024
1983	943	122	1065	11.5	943	238	1181	20.2	34	3	37	31	9	40	2323
1984	1138	133	1271	10.5	808	167	975	17.1	51	7	58	32	20	52	2356
1989	1307	171	1478	11.6	1146	273	1419	19.2	77	21	98	56	27	83	3078
1991	1459	186	1645	11.3	1251	354	1605	22.1	92	50	142	56	38	94	3486

Population estimates in this table are derived from the population sample results
Source: Statistical Abstract, Central Bureau of Statistics

Annex 1 Table 35 Population Distribution by Gender, Urban and Rural

Year	urban			rural			Total			%
	Male	female	total	male	female	total	male	Female	total	
1970	1418	1323	2741	1815	1749	3564	3233	3072	6305	56.53
1981	2199.5	2057	4256.5	2422	2367.3	4789.3	4621.5	4424.3	9045.8	52.95
1981	2199.5	2057	4256.5	2422	2367.3	4789.3	4621.5	4424.3	9045.8	52.95
1989	3025	2830	5855	2961	2903	5864	5986	5733	11719	50.04
1990	3146	2941	6087	3043	2986	6029	6189	5927	12116	49.76
1991	3274	3061	6335	3126	3068	6194	6400	6129	12529	49.44
1992	3408	3186	6594	3212	3152	6364	6620	6338	12958	49.11
1993	3547	3268	6815	3295	3283	6578	6842	6551	13393	49.12
1994	3702	3410	7112	3369	3363	6732	7071	6773	13844	48.63

Source: Statistical Abstract, Central Bureau of Statistics

Annex 1 Table 36 Population, Total, Agricultural and Livestock Labor Force

Source	Description	Population	Total labor force	Percentage of labor force to total population	Total agr. Labor force	Percentage of agricultural labor force to total labor force	Percentage of agricultural labor force to total population	Livestock labor force	Percentage of livestock labor force to total labor force	Percentage of livestock labor force to total population
CBS, 90 page 77	1984	9934	2246	22.61	571	25.42	5.748	1.811	32	0.0182
	1991	12529	3486	27.82	924	26.51	7.375	2.743	37	0.0219
Arab Organization	1994	13844	3997	28.87	1300	32.52	9.390	2.808	30	0.0203
	1995	14153	4237	29.94	1284	30.30	9.072	2.758	30	0.0195
	1996	14619	4165	28.49	1341	32.20	9.173	2.578	28	0.0176
Growth rate Estimates	1997	15100	4581	30.34	1340	29.25	8.874	2.831	32	0.0187
	1998	15597	4750.50	30.46	1384.22	29.14	8.875	3.328	38	0.0213

Source: Central Bureau of Statistics, Statistical Abstract, 1990

Arab Organization

Growth rate Estimates

Annex 1 Table 37 Distribution of Labor Force by Economic Activity and Gender for 1984/1991

Description	1984			1991		
	male	female	total	male	female	total
Agriculture, fish, forests	428954	142449	571403	630224	294050	924274
Mining	17364	300	17664	6852	0	6852
Manufacturing industries	301763	34932	336695	430361	35898	466259
energy, gas, water	18168	1104	19272	8067	766	8833
building & construction	361794	4817	366611	344186	6436	350622
Domestic & foreign trade	243437	9434	252871	374580	10345	384925
Transportation & storage	122572	5118	127690	161572	8607	170179
finance, insurance, real estates	13048	4215	17263	20578	4475	25053
Social & personal services	438491	97977	536468	776467	187455	963922
Total	1945591	300346	2245937	2752887	548032	3300919

Source: Central Bureau of Statistics, Statistical Abstract

Annex 1 Table 38 Percentage distribution of labor force by age and sex 1998 (urban -rural)

Age groups	Urban			Rural			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
(10-14)	2.4	1	2.2	2.3	6.4	3.2	4.7	7.4	2.7
(15-19)	13	6.7	12	15	21	16	28	28	14
(20-24)	16	17	16	14	20	15	30	37	16
(25-29)	14	22	15	15	15	15	29	36	15
(30-34)	13	18	14	13	12	12	26	30	13
(35-39)	11	15	11	11	7.9	10	22	23	11
(40-44)	9.1	9.5	9.1	8.2	6.3	7.8	17	16	8.5
(45_49)	7	5.2	6.7	6.5	4.5	6	14	9.7	6.4
(50-54)	5.6	3.6	5.4	5.3	4	5.1	11	7.6	5.2
(55_59)	3.6	1.2	3.2	3.6	1.8	3.2	7.2	3	3.2
(60-64)	2.6	0.8	2.4	2.9	1.3	2.6	5.5	2.1	2.5
More than 65	2.6	0.2	2.2	3.6	1	3	6.2	1.2	2.7
TOTAL	100	100	100	100	100	100	100	100	100

Source: Central Bureau of Statistics, Statistical Abstract

Annex 1 Table 39 Food Budget in Syria

Description		total	plant	animal	milk	fish
1992-1 995	Daily calorie	2853	2552	301	195	
	Daily protein (gr.)	78.6	61.2	17.4	9	
	Daily fat (gr.)	73.9	53.3	20.6		
1994-1997	Daily calorie	3036	2713	323	203	28
	Daily protein (gr.)	82.2	62	20.2	11.1	2.7
	Daily fat (gr.)	85	61.4	23.6		

Source: Agricultural Economics Dept., MAAR

Annex 1 Table 40 Development of Food Commodity Balance and Per capita Share

		1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Population (000)		10276	12202	12529	12958	13393	13844	14186	15100	15597	16110	
Milk 000 ton	Production	1116	1331	1370	1351	1244	1226	1414	1508	1610	1780.2	
	Import	0	0	0	0	0	0	0	0.256	0.047	0	
	Export	0	0		0	0	0	0.07	0	0.018	0.008	
	T. supply	1116	1331	1370	1351	1244	1226	1413.9	1508.3	1610	1780.2	
Per capita share kg/year			**108.6**	**109.1**	**109.3**	**104.3**	**92.9**	**88.6**	**99.7**	**99.9**	**103.2**	**110.5**
Eggs Mil.	Production	1529	1519	1611	1981	2028	2049	2060	2229	2273	2228	
	Import	1	18	0	1.2	0.042	2	0	0.1	0.58	0	
	Export	0	84	73	17.6	96.1	75	25	47.1	74	75	
	T. supply	1530	1453	1538	1964.6	1932	1976	2035	2182	2200	2153	
Per capita share egg/year			**148.89**	**119.08**	**122.76**	**151.61**	**144.25**	**142.73**	**143.45**	**144.5**	**141.03**	**133.64**
Poultry Meat 000 tons	Production	80	47	60	61	83	77	75	85	82	93	
	Import	0	0	0	0	0	0	0	0	0	0	
	Export	0	0.767	0	1	0.2	0.1	0	0.07	0.015	0	
	T. supply	80	46.233	60	60	82.8	76.9	75	84.93	81.985	93	
Per capita share kg/year			**7.79**	**3.79**	**4.79**	**4.63**	**6.18**	**5.55**	**5.29**	**5.62**	**5.26**	**5.77**
Fish 000 tons	Production	5.8	6	6	6	9	9	10	11	12	11.8	
	Import	0	0.007	0	0	0.08	0.1	0.01	0.01	0.017	0.013	
	Export	0	0	0	0	0.008	0	0	0	0	0	
	T. supply	5.8	6.007	6	6	9.072	9.1	10.01	11.01	12.017	11.813	
Per capita share kg/year			**0.56**	**0.49**	**0.48**	**0.46**	**0.68**	**0.66**	**0.71**	**0.73**	**0.77**	**0.73**
Cattle beef 000 tons	Production	29.2	32.3	32.6	28.6	28.6	30.5	33.8	40	41.8	43.4	
	Import	0.22	1.2	1	2.4	1.45	3.8	0.4	1.24	0.4	0.06	
	Export	0	0	0	0	0	0	0.17	0.05	0.05	0	
	Supply	29.4	33.5	33.6	31	30.1	34.3	34.1	41.2	42.2	43.5	
Per capita share kg/year			**2.9**	**2.7**	**2.7**	**2.4**	**2.2**	**2.5**	**2.4**	**2.7**	**2.7**	**2.7**
Mutton 000 tons	Production	86.1	114	124	113	92.1	120	131	143	148	154	
	Import	10.2	1.44	20	32.4	42.3	35.1	19.6	21.9	15.2	7.31	
	Export	3.02	14.5	21.4	21.1	18.8	14.5	16.2	9.43	8.12	12.3	
	Supply	93.3	101	123	124	116	141	134	155	155	149	

Per capita share kg/year		**9.1**	**8.25**	**9.81**	**9.59**	**8.63**	**10.17**	**9.45**	**10.29**	**9.97**	**9.26**
Goat meat 000 tons	Production	6.4	5.98	4.82	4.65	5.9	5.36	5.84	7.38	5.37	5.89
	Import	0	0	0	0.02	0.09	0	0	0.04	0	0
	Export	0.9	3.53	0.72	1.55	2.38	2.95	0.99	1.17	0.59	0.36
	Supply	5.5	2.45	4.1	3.12	3.61	2.4	4.85	6.24	4.78	5.53
Per capita share kg/year		**0.5**	**0.20**	**0.33**	**0.24**	**0.27**	**0.17**	**0.34**	**0.41**	**0.31**	**0.34**
Total animal meat	Production	121.7	152	162	146	127	156	170	190	196	204
	Import	10.4	2.64	21	34.8	43.9	38.9	20	23.1	15.6	7.37
	Export	3.9	18.1	22.1	22.7	21.2	17.5	17.4	10.7	8.76	12.7
	Supply	128.2	137	161	158	149	177	173	203	202	198
Per capita share kg/year		**12.5**	**11.20**	**12.82**	**12.23**	**11.15**	**12.82**	**12.19**	**13.43**	**12.97**	**12.30**

Source: Agricultural Statistical Abstract, MAAR

Annex 1 Table 41 Average Livestock Share of GDP at market prices (1996-1998) (million SP)

	Total	Agr. Sector	Agr. Share of total	livestock sector	% to Agriculture	% to the total
G D P	1307211	307823	23.55	129901	42.20	9.94
Labor forces 000	4498	1355	30.12	441	0.33	9.80
Export	40319	8238	20.43	848	10.29	2.10
Import	47263	3004	6.36	856	28.50	1.81

Source : Central Bureau of Statistics

Annex 1 Table 42 Development of Area and Production of Some Vegetable Crops and Growth Rates for 1980-1998

	Area (000 ha.)		Production (000 ton)		growth rate 1980-1998	
	1980	1998	1980	1998	surface	production
Wheat	1450	1721	2238	4111.6	2.44	4.96
Lentils	85	142.6	83	154.1	-0.13	0.43
Broad Beans	7.3	7.8	13.5	15.7	3.47	3.96
Chick Peas	91.4	108	73.4	84.6	-1.21	-1.35

Source : Central Bureau of Statistics

ANNEX 2

Annex 2 Table 43 Table Milk Average Growth Development (number and yield) 1980-1998 – No. 000 heads, production 000 ton, yield: kg/year

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Average 1980-1998	growth rate 1989-1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average 1990 - 1998	Growth rate 1990-1998
Local cow production	214.1	190.8	152.1	147.0	142.9	133.5	117.7	80.7	86.3	76.5	134.2	-10.8	74.8	63.8	58.1	61.3	65.1	61.7	61.7	55.9	48.1	61.2	-5.36
No. Of local milky cow	267.8	246.4	208.1	194.7	181.9	147.0	124.0	100.8	112.0	110.5	169.3	-9.4	96.5	75.0	77.6	72.8	75.3	101.0	80.7	67.0	65.5	79	-4.72
Annual production of local cattle (Kg.)	799.3	774.5	730.9	754.7	785.7	908.5	949.3	801.1	770.5	692.7	796.7	-1.6	774.9	851.2	749.2	842.3	864.6	610.5	765.5	834.6	734.3	781	-0.67
Developed cow production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148	222	251	207.2	30.0	245.6	316.2	321.7	367.9	362.0	451.0	514.6	558.2	703.5	427	14.06
Local improved cattle	0	0	0	0	0	0	0	72	101	112	95.1	24.5	114.3	139.0	141.1	161.5	141.3	169.2	199.3	218.6	284.3	174	12.07
Annual production of improved cattle (kg.)	0	0	0	0	0	0	0	2050	2211	2234	2165.0	4.4	2149.1	2274.7	2279.7	2277.6	2561.1	2664.9	2581.9	2553.2	2474.8	2424	1.78
Sheep production	346	447	446	512	353	419	420	457	506	439	434.4	2.7	497.1	513.2	512.1	436.7	395.4	453.8	498.7	523.8	581.9	490	1.99
No. Of milking sheep	5874	6385	7007	8292	7811	7144	6950	7624	8403	8323	7381.2	3.9	8927.7	9498.5	9274.7	6396.2	7144.3	7819.9	8506.6	8980.4	10074.4	8514	1.52
Annual production of sheep (kg.)	59	70	64	62	45	59	60	60	60	53	59.1	-1.2	55.7	54.0	55.2	68.3	55.3	58.0	58.6	58.3	57.8	57.9	0.46
Goat production	70.1	78.5	85.8	82.3	73.3	74.7	71.6	66.9	68.4	59.6	73.1	-1.8	62.8	57.6	62.2	43.3	66.6	70.9	74.8	76.8	78.7	66	2.86
No. Of milk Goats	710	707	764	720	685	698	655	666	676	645	692.6	-1.1	658.6	634.3	624.3	687.2	704.0	724.4	745.4	754.0	770.4	700	1.98

Annual production of goat per kg.	98.7	111.1	112.3	114.3	107.0	107.0	109.3	100.5	101.2	92.4	105.4	-0.7	95.4	90.8	99.6	63.0	94.6	97.9	100.3	101.9	102.2	94	0.86

Annex 2 Table 44 Meat Average Growth Development (number and yield) 1980-1998 – No. 000 heads, production 000 ton, yield: kg/year

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Average 1980 to 1998	Growth rate 1980 to 1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average 1990 to 1998	Growth rate 1990 to 1998
Beef production	26	33	36	34	29	29	30	23	30	30	30.0	1.7	32	33	29	29	31	34	40	42	43	35	3.76
No. Of dairy cattle	368	386	373	336	330	332	304	285	336	351	340.2	-0.5	331	333	329	316	304	367	375	390	448	355	3.87
Cattle production kg/year	71	84	97	100	87	88	99	82	89	87	88.4	2.2	98	98	87	90	100	92	107	107	97	97	-0.11
Sheep production	81	84	96	111	127	86	90	98	107	113	105.9	7.6	114	124	113	92	120	131	143	148	154	127	3.87
No. Of milk sheep	5874	6385	7007	8291	7811	7144	6950	7624	8403	8323	8116.6	4.5	8927.7	9498.5	9274.5	6396.2	7144.3	7819.9	8506.6	8980	10074	8514	1.52
Sheep production kg./ Year	14	13	14	13	16	12	13	13	13	14	13.0	3.0	13	13	12	14	17	17	17	17	15	15	2.31
Goat Meat production	7	6	7	9	8	6	6	5	5	6	6.5	-0.5	6	5	5	6	5	6	7	5	6	5.69	-0.21
No. Of milky goat	710	707	764	720	684	698	655	666	676	645	692.6	-1.1	659	634	624	687	704	724	745	754	770	700	1.98
Goat meat production	9	9	9	13	11	9	8	8	8	10	9.4	0.5	9	8	8	9	7	8	9	7	8	8	-1.94

Annex 2 Table 45 Per Capita Share of Lives Stock Products by Governerates (Unit: Gr/day, Price: SP/kg by states for 1994

		Red Meat				White Meat				Eggs				Cheese				Milk			
Rural		Urban		Rural		Urban				Rural		Urban		Rural		Urban		Rural		Urban	
		Consumption	Prices s.p / kg.	Consumption	Prices s.p / kg.	Consumption	Prices s.p / kg.	Consumption	Prices s.p / kg.	Consumption	Prices s.p / dish	Consumption	Prices s.p / kg.	Consumption	Prices s.p / kg.	consumption	prices s.p / kg.	consumption	prices s.p / kg.	consumption	prices s.p / kg.
Damascus	first stage	16	280	20	280	20	60	21	60	13	90	33	90	9	65	22	65	39	16	37	16
	second stage	26	300	27	300	27	65	24	65	12	70	43	70	11	80	20	80	62	15	40	15
	third stage	19	300	27	300	34	70	33	70	22	75	29	75	11	85	14	85	57	16	44	16
Aleppo	first stage	20	240	39	240	26	65	30	65	26	90	22	90	12	60	29	60	60	13	46	13
	second stage	23	260	40	260	36	70	33	70	22	70	22	70	10	65	27	65	43	15	43	15
	third stage	26	260	38	260	41	75	25	75	33	79	20	79	13	70	30	70	15	17	46	17
Homs	first stage	19	250	24	250	37	65	37	65	27	85	28	85	10	65	16	65	68	14	52	14
	second stage	30	270	47	270	28	60	39	60	22	65	44	65	8	69	32	69	43	15	107	15
	third stage	10	280	31	280	37	70	31	70	26	75	15	75	12	70	20	70	45	16	89	16
Idleb	first stage	21	225	12	225	19	75	18	75	15	85	20	85	13	60	13	60	28	14	35	14
	second stage	25	250	24	250	24	65	18	65	30	70	19	70	22	965	12	965	79	15	55	15
	third stage	35	250	35	250	41	80	37	80	21	75	26	75	12	70	14	70	38	16	62	16
Lattakia	first stage	34	280	24	280	35	75	34	75	34	90	29	90	5	70	15	70	75	14	67	14
	second stage	23	290	9	290	21	65	48	65	19	75	27	75	19	75	15	75	23	14	71	14
	third stage	12	295	24	295	32	85	31	85	24	85	23	85	3	90	18	90	55	16	26	16
Sweida’	first stage	12	280	12	280	25	65	19	65	27	80	25	80	8	85	5	85	54	15	54	15
	second stage	15	300	16	300	43	70	20	70	27	75	25	75	8	90	3	90	68	15	28	15
	third stage	10	300	9	300	24	75	12	75	17	80	14	80	4.9	95	5	95	43	16	32	16
Alraqqa	first stage	26	230	21	230	35	70	23	70	16	90	23	90	3	60	13	60	20	15	11	15
	second stage	37	250	36	250	42	70	39	70	23	75	30	75	21	75	20	75	104	15	18	15
	third stage	27	240	33	240	69	75	16	75	12	80	30	80	30	80	17	80	52	16	14	16

Source: Study Carried out by the Agricultural Economics Dept., MAAR

Annex 2 Table 46 Eggs, Broiler and wool Average Growth Development (number and yield) 1980-1998

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	average 1980 to 1989	growth rate 1980 to 1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	average 1990 to 1998	growth rate 1990 Ü1998
Egg production- Million	1332	1546	1684	1727	1804	1529	1692	1386	1650	1378	1520	0.38	1520	1611	1982	2026	2050	2060	2229	2273	2228	1997.67	4.90
No. of layers 000	8287	9328		9726		8538	9269	7955	9509	8988	9180	0.91	10	10	11	12	12	12	13	13	13	11.77	3.66
Chicken production eggs/year	161	166	166	178	179	179	183	174	174	153	171	-0.53	154	168	174	169	174	169	173	176	169	169.38	1.19
Chicken meat production		55.1	72	75	80.5	79.9	77.7	64.3	61.3	49	58	-12.70	na	na	na	na	na	na	na	na	na	na	na
Sheep production from wool	9.7	11.6	12.8	13.9	12.6	12.2	12.5	13.3	13.7	14.9	13	4.88	15.7	16.6	17.6	11.1	12.3	13.3	14.4	14.9	15	14.54	-0.57
Total sheep No.	9.3	10.5	11.4	13.3	12.7	11	11.7	12.7	13.7	14	12	4.65	14.5	15.2	14.7	10.1	11.2	12	13.1	13.8	15.4	13.33	0.76
Sheep production per sheep	1.0	1.1	1.1	1.0	1.0	1.1	1.1	1.0	1.0	1.1	1	0.22	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.09	-1.31

Source: Agricultural statistical abstract, MAAR

Annex 2 Table 47 Development of Eggs, Broiler and Wool Production and Yield

	1981	1982	1983	1984	1985	1986	1987	1988	1989	Average 1980-1989	Growth rate 1980-1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average 1990-1998	Growth rate 1990-1998
Egg production Million	1332	1546	1684	1727	1804	1529	1692	1386	1650	1378	1520	0.38	1520	1611	1982	2026	2050	2060	2229	2273	2228	1997.67	**4.**90
No. Of layer chicken 000	1980	9328	10130	9726	10073	8538	9269	7955	9509	8988	9180	0.91	10	10	11	12	12	12	13	13	13	11.77	3.66
Chicken production egg/year	161	166	166	178	179	179	183	174	174	153	171	-0.53	154	168	174	169	174	169	173	176	169	169.38	1.19
Chicken meat production		55.1	72	75	80.5	79.9	77.7	64.3	61.3	49	58	-12.70	na	na	na	na	na	na	na	na	na		
Sheep wool production	9.7	11.6	12.8	13.9	12.6	12.2	12.5	13.3	13.7	14.9	13	4.88	15.7	16.6	17.6	11.1	12.3	13.3	14.4	14.9	15	14.54	-0.57
Total sheep No.	9.3	10.5	11.4	13.3	12.7	11	11.7	12.7	13.7	14	12	4.65	14.5	15.2	14.7	10.1	11.2	12	13.1	13.8	15.4	13.33	0.76
Sheep production	1.0	1.1	1.1	1.0	1.0	1.1	1.1	1.0	1.0	1.1	1	0.22	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.09	-1.31

Source: Agricultural statistical abstract

Annex 2 Table 48 Total number of cows and their production 1989-1998

Number: head Production: million tons

Year	Number						Milk & dairy products					
	Oxen	Calves	Females		Total	Total	Fresh Consumption	Ghee %4	Butter %6	Cheese %17		Yogurt
			Milking	Non milking	Total	Cows						
1989	16205	241165	351260	191128	542388	799758	777427	410982	3139	1333	22376	146166
1990	14264	220973	330566	221388	551954	787191	770688	395083	2873	1547	19157	160092
1991	11856	224310	332929	202023	534952	771118	798814	391513	3225	1689	23242	158350
1992	12577	224049	328882	199358	528240	764866	775785	391284	3433	1687	20205	115822
1993	12454	215975	316323	162416	478739	707168	742153	384317	2823	1407	22181	146992
1994	11511	222617	303951	182567	486518	720646	764126	386537	2697	2173	22620	154628
1995	11866	199609	366659	196694	563353	774828	888838	452822	2862	766	25920	181567
1996	12005	244006	374685	179454	554139	810150	934357	464821	4131.5	1531	28239	174638
1997	12391	255253	390346	199107	589453	857097	1008719	513609	3475.7	1390	31270	211066
1998	7266	280977	448061	195678	643739	931982	1118775	542411	4059	1733	36481	234363

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 49 Number and Production of Local Cows 1989-1998

Number: heads production: Ton

Year	Total number						Milk	Meat
	Oxen	Calves	Females			Total Cows		
			Milked	Non milked	Total			
1989	8386	94285	110460	80930	191390	294061	76521	5480
1990	6896	68951	96493	94162	190655	266502	74773	5005
1991	5087	48996	78974	84865	163839	217922	63820	4116
1992	5505	50876	77587	81566	159153	215534	58127	3880
1993	7262	80644	72773	60665	133438	221344	61295	3958
1994	6554	75931	75344	68242	143586	226071	65140	4786
1995	6603	35800	101014	64264	165278	207681	61667	3796
1996	6492	62565	80666	53794	134460	203517	61748	3720
1997	6249	61861	67015	64766	131781	199891	55929	3311
1998	3950	73760	62236	40314	102550	180260	48124	3517

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 50 Shami cows number and production 1989-1998 Number: heads production: tons

Year	Total number						Milk	Meat
	Oxen	Calves	Females			Total cows		
			Milked	Non milked	Total			
1989	872	17440	16276	5571	21847	40159	28055	1423
1990	847	19308	20923	8691	29614	49769	41570	2060
1991	187	6754	8127	3133	11260	18201	14924	701
1992	202	6164	6456	2331	8787	15153	13000	585
1993	78	2403	2959	2801	5760	8241	7435	358
1994	212	2848	2730	3040	5770	8830	8131	374
1995	284	1974	3655	3138	6793	9051	8155	449
1996	320	3145	4205	2181	6386	9851	8011	400
1997	325	3651	4626	2420	7046	11022	9270	423
1998	273	10847	10495	4216	14711	25831	20992	1234

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 51 Foreign cows number and production 1989-1998 Number: heads production: tons

Year	Oxen	Calves	Females			Total Cows	Milk	Meat
			Milked	Non milked	Total			
1989	2700	65694	112264	48019	160283	228677	422030	13702
1990	2461	64227	98876	57513	156389	223077	408755	14713
1991	2291	67979	106809	44788	151597	221867	403850	14247
1992	2660	66461	103706	43651	147357	216478	382919	11557
1993	1512	45396	79043	29067	108110	155018	305475	9854
1994	1274	46485	84532	34926	119458	167217	328857	10229
1995	1298	53972	92743	37722	130465	185735	367991	13408
1996	1531	54469	90500	39689	130189	186189	349982	14184
1997	1625	57449	100089	40653	140742	199816	385354	20603.3
1998	950	47536	91057	36091	127148	175634	346152	12128

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 52 Improved Cows Number and Production 1989-1998 Number: heads production: tons

Year	Oxen	Calves	Females			Total Cows	Milk	Meat
			Milked	Non milked	Total			
1989	4247	63746	112260	56608	168868	236861	250821	9789
1990	4060	68487	114274	61022	175296	247843	245590	10520
1991	4291	100581	139019	69237	208256	313128	316220	13556
1992	4210	100548	141133	71810	212943	317701	321739	12620
1993	3602	87532	161548	69883	231431	322565	367948	14477
1994	3471	97353	141345	76359	217704	318528	361998	15106
1995	3681	107863	169247	91570	260817	372361	451025	16206
1996	3662	123827	199314	83790	283104	410593	514616	21696
1997	4192	132292	218616	91268	309884	446368	558166	17468
1998	2093	148834	284273	115057	399330	550257	703507	26353

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 53 Number and Production of Sheep 1989-1998 Number: head production: ton

Year	Total	Milked	Un milked	Milk & dairy products						Meat	Washed Wool
				Total	Fresh Consumption.	Ghee %6	Butter %8	Cheese %20	Yogurt		
1989	14010514	8322741	5687773	438833	58166	8631	919	39189	48417	113248	14936
1990	14508608	8927718	5580890	497127	69222	9462	1776	42043	48344	113805	15698
1991	15193659	9498476	5695183	513219	62716	9897	1050	48236	53445	124336	16586
1992	14665086	9274674	5390412	512076	66213	9627	1061	48547	51841	113001	17571
1993	10146617	6396194	3750423	436713	87269	4818	2309	32313	90615	92125	11116
1994	11256623	7144327	4112296	395447	64385	6063	1696	36553	45043	120163	12291
1995	12075190	7819884	4255306	453843	67005	7713	1791	35478	48094	130732	13321
1996	13119498	8506611	4612887	498728	93958	6841	1039	42096	86420	142912	14472
1997	13829316	8980353	4848963	523755	82584	8538	1125	50241	56437	148353	14944
1998	15424717	10074419	5350298	581939	100655	7731	1585	54763	83789	154234	14954

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 54 Sheep Indicators

Year	Total Flocks	Producing Flocks	No. Of Births	Male Births	Female Births	Loss (births)	Loss (adults)	Emergency Slaughter
1989	14010514	9106834	7504031	3752016	1876008	938004	469002	280210
1990	14508608	9430595	7770810	3885405	3885405	777081	435258	290172
1991	15193659	9875878	8137724	4068862	4068862	813772	455810	303873
1992	14665086	9532306	7854620	3927310	3927310	785462	439953	293302
1993	10146617	6595301	5434528	2717264	2717264	543453	304399	202932
1994	11256623	7316805	6029047	3014524	3014524	602905	337699	225132
1995	12075190	7848874	6467472	3233736	3233736	646747	362256	241504
1996	13119498	8527674	7026803	3513402	3513402	702680	393585	262390
1997	13829316	8989055	7406982	3703491	3703491	740698	414879	276586
1998	15424717	10026066	8261478	4130739	4130739	826148	462742	308494

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 55 Goats Number and Production 1989-1998 Number: head production: ton

				Milk & dairy products					
Year	Total	Milked	Un milked	Total	Fresh	Ghee 4%	Butter 7%	Cheese 20%	Others
1989	1011002	645374	365628	59612	18471	534	160	3481	8729
1990	999677	658568	341109	62819	19111	491	200	4036	8422
1991	962943	634263	328680	57611	18445	465	192	3345	8055
1992	951200	624297	326903	62247	20628	466	163	3491	9609
1993	985959	687194	298765	64341	20317	483	328	3604	8461
1994	1034946	703998	330948	66629	18114	425	182	4963	10639
1995	1062573	724351	338222	70903	21660	485	370	4114	10157
1996	1081875	745361	336514	74826	23046	426.16	324.59	4678.4	12202
1997	1100405	754024	346381	76790	24388	510.52	266.35	5012.6	13442
1998	1100983	770442	330541	78704	20879	459	198	6395	11544

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 14 Goats Number and Production 1989-1998 Number: heads

Year	Total	Shami		Mountain		Milk production tonne Total	Shami	Mountain	Meat	Hair
		Un milked	Milked	Un milked	Milked					
1989	1011002	23429	35501	342199	609873	59612	10010	49602	6178	700
1990	999677	23962	41359	317147	617209	62819	9904	52915	5976	604
1991	962943	20517	40930	308163	593333	57611	10268	47343	4820	595
1992	951200	18431	35844	308472	588453	62247	10329	51918	4649	575
1993	985959	13152	25282	285613	661912	64341	7473	56868	5900	857
1994	1034946	14266	26143	316682	677855	66629	6924	59705	5355	653
1995	1062573	16666	32231	321556	692120	70903	10480	60423	5838	685
1996	1081875	18549	35203	317965	710158	74826	10510	64316	7375	706
1997	1100405	19360	35535	327021	718489	76790	10684	66106	5374	714.1
1998	1100983	14693	27338	315848	743104	78704	9122	69582	5888	1917

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 56 Livestock Holding According to Livestock Census of 1998

Governerate	Sheep						Cattle					Goat						
	No. Of holders	1-100	101-300	301-500	501-1000	> 1000	No. Of holders	1-5	5-10	11-15	> 15	No. Of holders	1-10	11-20	21-30	31-40	41-50	> 50
Total Hama	11767	9454	1832	315	132	34	17155	15875	1089	136	51	7454	6629	548	161	27	37	51
Total Homs	17786	7728	6115	2406	1218	319	26894	19967	5729	910	844	5922	3574	1325	564	135	203	121
Total Raqqa	21648	17504	3235	536	253	120	2424	2254	149	11	10	14984	13424	1174	259	51	36	40
Total Aleppo	37447	34405	2656	279	91	16	11643	10197	1055	226	165	26448	25084	1017	242	46	37	22
Total animals coming to alghab from other governerates	484	268	167	37	9	3	67	67	0	0	0	274	184	51	29	4	2	4
Total alghab without animals coming form other governerates	1691	1493	165	20	11	2	8613	8037	506	52	18	1437	1174	132	64	25	15	30
Total	90823	70852	14170	3593	1714	494	66796	56397	8528	1335	1088	56519	50069	4247	1319	288	330	268

Special study, Mulki Sameer

Annex 2 Table 57 Foreign Cows Indicators

Year	Total Herd	Producing Herd	No. Of Births	Male Births	Female Births	Loss (births)	Loss (young)	Loss (adults)
1989	228677	98331	73748	36874	36874	7375	1327	4574
1990	223077	95923	71942	35971	35971	7194	1295	4462
1991	221867	95403	71552	35776	35776	7155	1288	4437
1992	216478	93086	69814	34907	34907	6981	1257	4330
1993	155018	66658	49993	24997	24997	4999	900	3100
1994	167217	71903	53927	26964	26964	5393	971	3344
1995	185735	79866	59900	29950	29950	5990	1078	3715
1996	186189	80061	60046	30023	30023	6005	1081	3724
1997	199816	85921	64441	32220	32220	6444	1160	3996
1998	175634	75523	56642	28321	28321	5664	1020	3513

Annex 2 **Table 58** **Shami cows indicators**

Year	Total Herd	Producing Herd	No. Of Births	Male Births	Female Births	Loss (births)	Loss (young)	Loss (adults)
1989	40159	16064	11245	5622	5622	1124	202	803
1990	49769	19908	13935	6968	6968	1394	251	995
1991	18201	7280	5096	2548	2548	510	92	364
1992	15153	6061	4243	2121	2121	424	76	303
1993	8241	3296	2307	1154	1154	231	42	165
1994	8830	3532	2472	1236	1236	247	45	177
1995	9051	3620	2534	1267	1267	253	46	181
1996	9851	3940	2758	1379	1379	276	50	197
1997	11022	4409	3086	1543	1543	309	56	220
1998	25831	10332	7233	3616	3616	723	130	517
			Local cows indicators					
Year	Total Herd	Producing Herd	No. Of Births	Male Births	Female Births	Loss (births)	Loss (young)	Loss (adults)
1989	294061	88218	48520	24260	24260	4852	873	5881
1990	266502	79951	43973	21986	21986	4397	792	5330
1991	217922	65377	35957	17979	17979	3596	647	4358
1992	215534	64660	35563	17782	17782	3556	640	4311
1993	221344	66403	36522	18261	18261	3652	657	4427
1994	226071	67821	37302	18651	18651	3730	671	4521
1995	207681	62304	34267	17134	17134	3427	617	4154
1996	203517	61055	33580	16790	16790	3358	604	4070
1997	199891	59967	32982	16491	16491	3298	594	3998
1998	180260	54078	29743	14871	14871	2974	535	3605
			Improved cows indicators					
Year	Total Herd	Producing Herd	No. Of Births	Male Births	Female Births	Loss (births)	Loss (young)	Loss (adults)
1989	236861	94744	66321	33161	33161	6632	1194	4737
1990	247843	99137	69396	34698	34698	6940	1249	4957
1991	313128	125251	87676	43838	43838	8768	1578	6263
1992	317701	127080	88956	44478	44478	8896	1601	6354
1993	322565	129026	90318	45159	45159	9032	1626	6451
1994	318528	127411	89188	44594	44594	8919	1605	6371
1995	372361	148944	104261	52131	52131	10426	1877	7447
1996	410593	164237	114966	57483	57483	11497	2069	8212
1997	446368	178547	124983	62492	62492	12498	2250	8927
1998	550257	220103	154072	77036	77036	15407	2773	11005

Annex 2 Table 59 Total Cows Indicators

Year	Total Herd	Producing Herd	No. Of Births	Male Births	Female Births	Loss (births)	Loss (young)	Loss (adults)
1989	799758	297357	199834	99917	99917	19983	3597	15995
1990	787191	294919	199247	99623	99623	19925	3586	15744
1991	771118	293311	200281	100141	100141	20028	3605	15422
1992	764866	290887	198576	99288	99288	19858	3574	15297
1993	707168	265383	179141	89570	89570	17914	3225	14143
1994	720646	270668	182889	91445	91445	18289	3292	14413
1995	774828	294735	200962	100481	100481	20096	3617	15497
1996	810150	309294	211351	105675	105675	21135	3804	16203
1997	857097	328844	225492	112746	112746	22549	4059	17142
1998	931982	360036	247690	123845	123845	24769	4458	18640

Annex 2 Table 60 Shami Goats Indicators

Year	Total Herd	Producing Herd	Live births Rates	No. Of Births	Loss (births)	Loss (adults)	Emergency Slaughter
1989	58930	38305	30644	52094	10419	2947	2947
1990	65321	42459	33967	57744	11549	3266	3266
1991	61447	39941	31952	54319	10864	3072	3072
1992	54275	35279	28223	47979	9596	2714	2714
1993	38434	24982	19986	33976	6795	1922	1922
1994	40409	26266	21013	35722	7144	2020	2020
1995	48897	31783	25426	43225	8645	2445	2445
1996	53752	34939	27951	47517	9503	2688	2688
1997	54895	35682	28545	48527	9705	2745	2745
1998	42031	27320	21856	37155	7431	2102	2102
			Mountain goats indicators				
Year	Total Herd	Producing Herd	Live births Rates	No. Of Births	Loss (births)	Loss (adults)	Emergency Slaughter
1989	952072	647409	453186	498505	74776	28562	47604
1990	934356	635362	444753	489229	73384	28031	46718
1991	901496	613017	429112	472023	70803	27045	45075
1992	896925	609909	426936	469630	70444	26908	44846
1993	947525	644317	451022	496124	74419	28426	47376
1994	994537	676285	473400	520740	78111	29836	49727
1995	1013676	689300	482510	530761	79614	30410	50684
1996	1028123	699124	489387	538325	80749	30844	51406
1997	1045510	710947	497663	547429	82114	31365	52276
1998	1058952	720087	504061	554467	83170	31769	52948

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 61 Total Goats Indicators

Year	Total Herd	Producing Herd	Live births Rates	No. Of Births	Loss (births)	Loss (adults)	Emergency Slaughter
1989	1011002	685713	483830	550599	85195	31509	50550
1990	999677	677821	478720	546973	84933	31297	49984
1991	962943	652958	461065	526342	81667	30117	48147
1992	951200	645188	455159	517609	80040	29622	47560
1993	985959	669299	471008	530100	81214	30347	49298
1994	1034946	702551	494412	556461	85255	31857	51747
1995	1062573	721083	507936	573986	88259	32855	53129
1996	1081875	734062	517338	585842	90252	33531	54094
1997	1100405	746629	526208	595956	91820	34110	55020
1998	1100983		525917	591623	90601	33870	55049

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 62 Poultry Products

Year	Egg layers (000)				Table eggs (000)		Broiler production Ton	
	Poultry farms		Domestic					
	Total	Producing	Total	Producing	Total	Producing	Broiler farms	Meat
1989	7310	5309	6324	3679	1026681	351123	38147	10879
1990	7218	5280	6697	4036	1044705	385407	49184	10587
1991	7481	5373	7305	4200	1024813	406079	51517	9811
1992	9444	6895	8069	4485	1546236	435479	71791	11449
1993	9078	6368	8095	5673	1269283	568859	65279	11617
1994	9909	6788	8573	5001	1399784	489960	64563	10741
1995	9763	6956	8983	5298	1353572	518739	75279	10086
1996	10573	7477	9239	5452	1478506	561693	69039	12782
1997	10585	7624	9340	5252	1547920	524513	78804	12484
1998	10956	7929	9465	5252	1537587	530474	82976	14267

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 63 Poultry Parents Farms, Eggs and Chicks Production

Year	No. Of broiler farm		Poultry parents farms		Parents no. (000)			Boiler hatching	Broiler
	Licensed	Unlicensed	Licensed	Unlicensed	Total	Producing	Eggs (000)	Chicks (000)	
1989	2694	49	44	0	455	333	55180	34410	
1990	2780	56	46	0	737	501	73514	42127	
1991	2758	74	70	0	850	588	91409	48112	
1992	2747	120	64	0	1067	776	124637	67123	
1993	2871	180	73	0	1190	839	159777	85296	
1994	3043	212	80	0	1094	775	145152	75499	
1995	3077	295	100	7	1450	1018	162944	103839	
1996	3462	370	95	4	1422	1011	156122	91245	
1997	3374	486	111	5	1398	1020	168926	105642	
1998	3414	626	70	4	1244	884	133350	85796	

Source: The annual agricultural statistical abstract of 1998

Annex 2 Table 64 Total Milk, Wool, Meat and Hair Production tonne

Year	Milk				Meat				Washed Wool	Hair Production
	Cattle	Sheep	Goats	Total	Cattle	Sheep	Goats	Total		
1989	777427	438833	59612	1275872	30394	113248	6178	149820	14936	700
1990	770688	497127	62819	1330634	32298	113805	5976	152079	15698	604
1991	798814	513219	57611	1369644	32620	124336	4820	161776	16586	595
1992	775785	512076	62247	1350108	28642	113001	4649	146292	17571	575
1993	742153	436713	64341	1243207	28647	92125	5900	126672	11116	857
1994	764126	395447	66629	1226202	30495	120163	5355	156013	12291	653
1995	888838	453843	70903	1413584	33859	130732	5838	170429	13321	685
1996	934357	498728	74826	1507911	40000	142912	7375	190287	14472	706
1997	1008719	523755	76790	1609264	41805	148353	5374	195532	14944	714
1998	1118775	581939	78704	1779418	43232	154234	5888	203354	14954	1917

Annex 2 Table 65 Livestock population (3 year moving average)

Year	Milk				Meat			
	Cattle	Sheep	Goats	Total	Cattle	Sheep	Goats	Total
1989-1991	78	48	6	133	3	12	1	15
1990-1992	78	51	6	135	3	12	1	15
1991-1993	77	49	6	132	3	11	1	14
1992-1994	76	45	6	127	3	11	1	14
1993-1995	80	43	7	129	3	11	1	15
1994-1996	86	45	7	138	3	13	1	17
1995-1997	94	49	7	151	4	14	1	19
1996-1998	102	53	8	163	4	15	1	20

Annex 2 Table 66 Average Cattle Milk Production Cost

Description	**Value SP**	**Details**
1- Costs cows depreciation	10000	Cow purchase value 6000 / Cow's economic age 6
Barn depreciation	600	Barn area x square meter value 6 x 2000 / Economic age of the barn 20
Stores depreciation	300	Stores area x square meter value 3 x 2000 / Stores economic age 20
Labor costs	1080	Monthly labourer's wage x no. of months 4500 x 12 / No. of cows served by each worker 50
Fodder value concentrates	17793.7	6.5 kg. x 7.5 SP x 365 Concentrated fodder per day x 356 days x kg. value

green other fodder	7300 7665	20 kg. x 1 SP x 365 Green fodder per day x 365 days x kg. value 6 kg. x 3.5 SP x 365 fodder per day x 365 x kg. value
Drink water & electricity	299.3	14965 x 2% 2% of the dry + green ration value
Mineral salt value	540	Quantity needed per year x kg. value
Veterinarian care	1200	Vet. wage per month x months 5000x12 No. of cows per vet. 50
Vet. medicines value	3000	2% of the cow value
Losses & injuries	1200	2% of the cow value
Other expenditures	1200	2% of the cow value
Total of item (1)	52178	

- barn area means the area needed per head
- stores area means the area needed per head
- mineral salts value represents 2% of the dry ration weight x 365 days x kg. value
- assuming that each worker takes care of 50 heads
- these calculations have been made according to the estimates of the General Establishment for Cattle and the Department of Agricultural Economics forms. Figures have been derived from a previous study

Description	Value SP	*Details*
2- Revenue value of a newly born cow	3000	Calculated at the age of 7 days on the basis of 7% of the cow value after deducting 10% for the loss caused by death
Dung and guts value	1500	1% of the cow value 5 m^3 x 300
Value of meat	3750	Half of the cow value ---------- economic age of the cow cow value x 3.7% 60000 x 3.7 ---------- = ---------- = 3750 economic age 6
Total of item (2)	8250	

Net costs = costs – revenue
52178 – 8250 = 43928
annual dairy milk production = 4200 kg

dairy milk cost of production farm gate = $\frac{\text{net cost}}{\text{annual production}} = \frac{43928}{4200} = 10.4$ SP/kg.

Annex 2 Table 67 Cost of Egg Production

Description	Value SP	Details
Hen production Coop depreciation	4	Coop area 1000 x 2000 ---------- x square meter value ---------- 10000 x 2.5 10000 x 2.5 ---------- ---------- economic age of the coop 20
Stores depreciation	0.4	Store area 100 x 2000 ---------- x square meter value ---------- 10000 x 2.5 10000 x 2.5 ---------- ---------- economic age of the store 20
* Tools & equipment depreciation	0.08	Tools & equipment * 42000 ---------- ---------- 10000 x 2.5 1000 x 2.5 ---------- ---------- economic age of tools and equip. 20
Maintenance and spare parts	2.24	50% of the total depreciation 4.48 x 50%
Preparation costs	0.67	15% of the total depreciation 4.48 x 15%
Layer chick value	40	
Sawdust value	0.4	No. of bags in one round x value 200 x 70 ---------- ---------- 10000 10000
**value of processed fodder	86.67	8.10 kg. x kg value** 8.10 x 10.7
Heating, lighting and drink water	16	40% of the chick value
Vaccines & medicines	20	50% of the chick value
Labourer and supervisor's wages	4.8	Monthly wage of labourer and supervisor x 4 months ---------- 10 000 12000 x 4 ---------- 10 000
Other expenditures	8	20% of the chick value
Total cost	184.26	
Death & injuries	12.9	7% of the total cost
Total cost of a layer hen	197.15	

Note:

- The figure 10000 refers to the number of hens kept in the coop at the rate of 10 hens / m^2
- The figure 2.5 refers to the number of breading cycles per year (5 months for each breeding cycle)
- * tools & equipment
- water containers (no. 40 x price 600) = 24000
- food containers (no. 60 x price 300) = 18000
  total 42000
- assuming that there is no need for a mixer because the feed is processed
- **value of processed feed:
  value price SP
- maize 30% 0.3 x 7 = 2.1
- barley 40% 0.4 x 6 = 2.4

- super 10% 0.1 x 30 = 3
- soybeans 20% 0.2 x 16 = 3.2

10.7

Annex 2 Table 68 Cost of Eggs Production (cont)		
Description	**Value SP**	**Details**
Eggs production cost Coop depreciation	12.5	Coop area 1250 x 2000 ---------- x square meter value ---------- 10000 10000 ---------- ---------- economic age of the coop 20
Stores depreciation	1	Store area 100 x 2000 ---------- x square meter value ---------- 10000 x 2.5 1000 x 2.5 ---------- ---------- economic age of the store 20
* Tools & equipment depreciation	0.36	Tools & equipment * 42000 ---------- ---------- 10000 10000 ---------- ---------- economic age of tools & equipment. 20
Maintenance and spare parts	6.93	50% of the total depreciation 13.86 x 50%
Preparation costs	2.08	15% of the total depreciation 13.86 x 15%
Layer hen value	197.15	Taken from the first period cost (hen cost)
Heating, lighting and drink water	5.9	3% of the hen cost
Value of operation electricity	5.9	3% of the hen cost
Fodder value	472.50	47.250 kg. x kg. price (10)
Vaccines & medicines	59	30% of the hen cost
Labourer and supervisor's wages	14.4	2 labourers per month x 12 months 2 x 6000 x 12 ---------- ---------- 10 000 10 000
Picks trimming and injections	3.9	2% of the hen value
Total cost	781.62	
Death & injuries	91.05	12% of the total production costs (death) 2% of the total production costs (injuries) 758.75**
Total cost	887.84	

Note:

- The figure 10000 refers to the number of parents kept in the coop at the rate of 10 hens / m^2
- Eggs production period is 12 months at the average of 220 eggs/180 days which is the production season period.
- * tools & equipment
- water containers (no. 40 x price 600) = 24000
- food containers (no. 60 x price 300) = 18000
- eggs machines (no. 30 x price 1000) = 30000
- total 72000

** Production period starts from the raw including the hen value

Annex 2 Table 69 Boiler Cost of Production

Description	Value SP	Details
Coop depreciation	19.23	Coop area 500 x 2000 ---------- x square meter value ---------- 5000 x 5.2 5000 x 5.2 ---------- economic age of the coop 20
Stores depreciation	0.38	Store area 100 x 2000 ---------- x square meter value ---------- 5000 x 5.2 5000 x 5.2 ---------- economic age of the store 20
* Tools & equipment depreciation	0.08	Tools & equipment * 42000 ---------- ---------- 5000 x 5.2 5000 x 5.2 ---------- economic age of tools and equipment. 20
Maintenance and spare parts	9.85	50% of the total depreciation 19.69 x 50%
Preparation costs	2.15	15% of the total depreciation
Broiler chick value	16	Average price ranges between 8-30 SP
Sawdust value	0.98	No. of bags in one round x value 70 x 70 ---------- ---------- 5000 5000
Value of processed fodder	46	4 kg. per bird x kg. value 4 x 11.5
Heating, lighting and drink water	4	25% of the chicks value
Vaccines & medicines	4.8	30% of the chicks value
Labourer and supervisor's wages	2.4	Labourer's and supervisor's wage per month x 2 months ---------- 10 000 6000 x 2 ---------- 10 000
Other costs	1.6	10% of the chicks value
Total cost	108.27	
Death & injuries	6.50	6% of the total cost
Total cost	114.77	

Note:

- * tools & equipment
- water containers (no. 40 x price 600) = 24000
- food containers (no. 60 x price 300) = 18000
- total 42000

Assuming that there is no need for a mixer because feed is processed

- ** value of processed feed:

		value	price SP
- maize	0.7	x 7	= 4.9
- soybeans	0.2	x 16	= 3.2
- super	0.1	x 30	= 3
- salts & additives			0.4
			11.5
Average bird weight			1.8
Average cost per kg.			63.75

Notes:

1- 5000 refers to the number of birds kept on a typical coop
2- store area 100 m^2
3- 5.2 refers to the breeding cycles per year
4- average weight per bird 1.350-1.500 kg. during the fattening period

Annex 2 Table 70 General Establishment for Poultry Production Capacity (1999)

Gov.	Broiler			Layers			Broiler parents			Layers parents			Hatcheries		
	No.	Annual capacity (000)	000 birds /cycle	No.	Annual capacity (million eggs)	000 birds /cycle	No.	Annual capacity (million broiler chicks)	000 birds /cycle	No.	Annual capacity (million chicks)	000 birds /cycle	No.	Annual capacity (000 eggs)	Type of breeding
Total	7	4620	1097	10	641	642	3	15.5	48	3	3.4	30	5	672	Layers parents
														1344	Broilers parents

Annex 2 Table 71 Sheep Production Indicators	
	Percentage or weight
Producing herd percentage	65%
Births percentage	80% of the producing herd
Live births per 100 heads	103%
Births mortality rate	10%
Adult mortality rate	3% of the total
Emergency slaughter percentage	2% of the total
Replacement percentage	20% of the producing herd
Sheep weight at the beginning of fattening period (kg)	18-23
Fattened sheep weight (kg)	35
Average milk production per head (kg)	60
Imported fattened sheep (kg)	35
Washed wool (kg)	1.2
Growth rate	6%

Annex 2 Table 72 **Goat Production Indicators**		
	Shami goats	Mountain goats
Producing herd percentage	65%	61%
Births percentage	80%	70%
Live births per 100 heads	170%	110%
Births mortality rate	20%	15%
Adult mortality rate	5%	3%
Emergency slaughter percentage	5% of the total	3%
Replacement percentage	20% of the total	20% of the total
Goats weight at the beginning of fattening period (kg)	10	8
Fattened males weight (kg)	35	30
Average milk production per head (kg)	400	80
Washed hair (kg)	1.5	2
Growth rate	112%	102%

Annex 2 Table 73 Cattle Production Indicators			
Description	Foreign	Shami	Local
Producing herd percentage	43%	40%	30%
Live births per 100 heads	75%	70%	55%
Births mortality rate	12%	2%	2%
Adult mortality rate	12%	2%	2%
Replacement percentage of the producing herd	20%	20%	20%
Average milk production per head	4250	3050	750
Average slaughter weight			
Fattened calves weight (kg)	225	250	80
Excluded cows weight (kg)	250	200	200
Growth rate	5%	3%	1%

Description	Crossed	First generation	Second generation
Producing herd percentage	40%	40%	40%
Live births per 100 heads	70%	70%	70%
Births mortality rate	10%	10%	10%
Adult mortality rate	2%	2%	2%
Replacement percentage of the producing herd	20%	20%	20%
Average milk production per head	2500	1800	2500
Average slaughter weight			
Fattened calves weight (kg)	175	150	175
Excluded cows weight (kg)	225	200	225
Growth rate	3%	3%	4%

Annex 2 Table 74 Cost of Milk Production - Australia 1997/98

	NSW (mostly liquid/market milk, irrigation)	Victoria (mostly manufacturing milk market, rainfed)
Milking cows (head)	132	170
Total production (litres)	645,000	800,000
Income		
Milk (AUD$)	222,000	182,000
Sale of animals	29,000	22,000
Total Income	251,000	204,000
Costs		
Feed costs	66,300	49,660
Livestock costs	14,060	11,630
Machinery, fuel, contractors	33610	29,510
	113,970	90,800
Gross Margin	143,030	118,200
Overhead costs		
Rates	5080	8470
Other services	27210	20000
Hired labour	17550	16410
Imputed Cost		
Depreciation	18500	19940
Owner labour	43300	39520
Capital	1,450,000	1,080,000
Debt	181,000	220,000

Source Australian Dairy Research Corporation - field surveys

ANNEX 3

Annex 3 Table 75 Quantities Produced and Marketed by General Establishment of Fodder (unit: ton)

Item		1985	1990	1995	1996	1997	1998
Maize	Production	80214	179999	198782	250000	303260	285009
	Marketed	53403	113238	77500	75578	154870	117880
	Marketed (%)	66.58	62.91	38.99	30.23	51.07	41.36
Soybean	Production	-	10778	11247	9364	6185	7233
	Marketed	-	5699	9724	7690	1808	6495
	Marketed (%)	-	52.9	86.5	82.1	29.2	89.8
Barley	Production	740219	846178	1705142	1653018	982654	868848
	Marketed	67234	74636	73394	8232	52590	60364
	Marketed (%)	9.08	8.82	4.30	0.50	5.35	6.95
Cotton seed cake	Production	82973	51526	88679	77872	71522	59313
Cotton peel	Marketed	30649	14138	51612	56747	59082	75341
Bran	Marketed (%)	331475	342256	465965	536911	543080	484211

Annex 3 Table 76 Cereals Delivered and Sold By the General Establishment for								
		1985	1990	1995	1996	1997	1998	total
Maize	Delivered	53403	113238	77500	75578	154870	117880	592469
	Sold	208442	31513	66089	60960	30058	31465	428527
	% marketed	390.32	27.83	85.28	80.66	19.41	26.69	72.33
Sovbea	Delivered		5699	9724	7690	1808	6495	31416
	Sold							0
	% marketed							0
Barlev	Delivered	178555	74427	137210	64645	103328	52613	610778
	Sold	67234	74636	73394	8232	52590	60364	336450
	% marketed	37.65	100.28	53.49	12.73	50.90	114.73	55.09
Cotton	Delivered	12662	101482	114848	115710	126015	130607	601324
	Sold	82973	51526	88679	77872	71522	59313	431885
	% marketed	655.29	50.77	77.21	67.30	56.76	45.41	71.82
Cotton	Delivered	50060	25457	54532	59921	67728	68287	325985
	Sold	30649	14138	51612	56747	59082	75341	287569
	% marketed	61.22	55.54	94.65	94.70	87.23	110.33	88.22
Bran	Delivered	331475	342256	465965	536911	543080	484211	2703898
	Sold	280057	201541	384676	469798	423891	330674	2090637
	% marketed	84.5	58.9	82.6	87.5	78.1	68.3	77.3

Annex 3 Table 77 Purchase and Sale Prices for Major Fodder Commodities by General Establishment for Fodder (unit: SP/kg)

Item		Maize	Bran	Barley	Cotton cake		Cotton seed peel	Soybean cake	Milk cattle ready fodder	Condensed fodder		Sheep ready fodder (fattening)
					Scaled	Non			Chicken	Layer		
1986	Purchase price	2250	420	1470	1250	1050	600					
	Sale price	2567	520	1550	1412	1262	765	5395	3865	5000	4700	
	Profit margin %	14	24	5	13	20	28					
1990	Purchase price	7000	5000	8450	7300	5500	2500	na	na			
	Sale price	8200	5500	9000	7900	6000	3000	15000	9000	22600	20000	
	Profit margin %	17	10	7	8	9	20					
1995	Purchase price	7000	3300	7000	7300	5500	2500	16000	6340			
	Sale price	8200	3700	9000	8810	6000	3000	16500	7100			
	Profit margin %	17	12	29	21	9	20	3	12			
1996	Purchase price	9000	3300	8450	8210	6410	3410	16000	6340			
	Sale price	11250	3700	9000	8810	6910	3910	16700	7100			
	Profit margin %	25	12	7	7	8	15	4	12			
1997	Purchase price	9000	3300	8450	8210	6410	3410	18000	6700			
	Sale price	11250	3700	9000	8810	6910	3910	16100	7500			
	Profit margin %	25	12	7	7	8	15	-11	12			
1998	Purchase price	9000	3300	8450	8210	6410	3410	16000	6800			6460
	Sale price	10400	4750	7000	8810	6910	3910	18300	7575			7100
	Profit margin %	16	44	-17	7	8	15	14	11			10
1999	Purchase price	9000	3300	8450	8210	6410	3410	na	na			6460
2000	Sale price	8500	4750	7000	7000	6910	3910	na	na			7100
2001	Profit margin %	-6	44	-17	-15	8	15					10

Source: General Establishment for Fodder

Annex 3 Table 78 Private Sector Imported Feed

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Maize	138471	255009	248099	155328	372197	360470	411557	316510	522598	528775	666700
Soya husk	34771	64894	74885	117749	110388	201721	104762	120228	107156	174413	191006
barley		101845	208335	516156							702856
meat	1633	7003	16136	17905	29680	21302	25285	22960	10362	4086	2615
fish	696	483	1375	956	5026	2316	3023	3679	4160	11025	11329
fodder supplementary	1203	561	959	1117	2942	2252	4302	4515	5839	15355	14355
poultry concentrates	27439	27893	27015	19899	37920	21831	32120	30469	21192	4661	1724
Cakes	675				5005		16228		3087	17555	9450
bran & lentil cakes		500									
wheat bran											16822
Total	204888	457688	576804	364569	563158	609892	597277	498361	674394	755870	

Source: General Establishment for Fodder

	Maize 1999	Barley 1999	Maize 1998
Normal	591071	555720	459597
Iraqi	27924	146895	69158
Law no. 10	22775		
Total	641770	702615	528755

Annex 3 Table 79 Feed Grains, Oilseed and Oilseed Meal Prices, 1989 to 1999 (US $/tonne)

Year	US No 2 Yellow Corn	US No 2 Barley	Soybeans	Soybean Meal[7]	Cotton Seed Cake
1989	111	123	247	204	122
1990	107	116	241	198	119
1991	110	122	237	203	122
1992	98	115	246	207	124
1993	115	112	259	202	121
1994	105	119	248	184	110
1995	160	167	303	256	154
1996	132	138	297	278	167
1997	112	118	258	197	118
1998	95	96	207	182	109
1999	93	99			

Source: 1999 Australian Bureau of Agricultural and Resource Economics - Australian Commodity Statistics, sourced from International Grains Council Market Report, London; US Dept of Agriculture, Economic Research Service Oilseeds: World Markets and Trade.

Annex 3 Table 80 Sale Prices for Major Fodder commodities by General Establishment for Fodder (US $/tonne)

Commodity	1990	1995	1996	1997	1998	1999
Barley	184	152	184	184	184	184
Maize	152	152	196	196	196	196
Soybean Cake	326	348	348	391	348	
Cotton Seed Cake	159	159	178	178	178	178
Bran	109	72	72	72	72	72

[7] Cottonseed meal trades at about 60 percent of soybean meal

Annex 3 Table 81 Nominal Protection Coefficients for Selected Feed Ingredients, 1990 -99						
Commodity	1990	1995	1996	1997	1998	1999
Barley	1.38	1.14	1.24	1.43	1.84	1.69
Maize	1.30	0.89	1.38	1.60	1.87	1.90
Cotton seed Cake	1.23	0.96	1.00	1.39	1.49	na
Soya bean cake	1.56	1.30	1.21	1.98	1.81	na

Annex 3 Table 82 General Establishment of Fodder - Feed Prices, SP/kg, 1985 - 1998						
	1985	1990	1995	1996	1997	1998
Barley	1.6	8.1	7.75	7.25	8.3	8.15
Maize	4.2	9.6	9.5	10.7	11	10.6
Sorghum	-	10.6	10.20	12.0	14.4	15.4

Source: MAAR - Department of Agricultural Economics

ANNEX 4

Annex 4 Table 83 Sheep Foreign Trade 1985-1998

Years	Import			Export			
	1000. (Head)	Value (Million SP)	Price/Head CIF	1000. (Head)	Value (Million SP)	Price/Head FOB	Trade Balance
1985	568	110	193	168	92	548	18
1990	501	421	841	807	2365	2930	-1944
1991	1114	787	706	1190	132	111	655
1992	2351	307	130	1173	1205	1028	-899
1993	2351	1298	552	1045	927	887	371
1994	1950	977	501	806	605	751	372
1995	1087	593	546	901	457	507	136
1996	1215	685	564	524	990	1889	-305
1997	844	384	454	451	515	1143	-131
1998	406	199	491	686	548	799	-349

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 84 Cattle Foreign Trade 1985-1998

Years	Import			Export	
	1000. (Head)	Value (Million SP)	Price/Head CIF	1000. (Head)	Trade Balance Million SP
1985	1	2	1841	0	2
1990	1	14	16195	0	14
1991	4	22	5244	0	22
1992	5	24	4839	0	24
1993	7	48	6794	0	48
1994	19	55	2962	0	55
1995	2	6	3658	0	6
1996	6	5	904	0	5
1997	2	6	4106	0	6
1998	0	1	3390	0	1

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 85 Goats Foreign Trade 1985-1998

Years	Import	Export			
	Value (Million SP)	1000. (Head)	Value (Million SP)	Price/Head FOB	Trade Balance Million SP
1985	0	50	13	259	-13
1990	0	196	191	975	-191
1991	0	316	199	630	-199
1992	0	86	54	630	-54
1993	3	132	77	587	-4
1994	0	164	95	577	-95
1995	0	55	31	555	-31
1996	1	65	71	1085	-70
1997	0	33	21	652	-21
1998	0	2	1	407	-1

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 86 Poultry meat foreign trade 1985-1998

Years	Import	Export	
	Value (Million SP)	Value (Million SP)	Trade Balance Million SP
1985	11	0	11
1990	32	25	7
1991	27	51	-24
1992	35	43	-8
1993	24	46	-22
1994	37	50	-13
1995	17	40	-23
1996	23	7	16
1997	23	7	16
1998	30	7	23

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 87 Powder Milk Foreign Trade 1985-1998

Years	Import	Export	
	Value (Million SP)	Value (Million SP)	Trade Balance Million SP
1985	92	0.	92
1990	57	0	57
1991	102	0	102
1992	43	0	43
1993	166	0	166
1994	195	0	195
1995	194	1	193
1996	250	0	250
1997	393	0	393
1998	350	0	350

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 88 Butter Foreign Trade 1985-1998

Years	Import		Export	
	Value (Million SP)	Price CIF/tonne SP	Value (Million SP)	Trade Balance Million SP
1985	42	5437	0	42
1990	29	23445	0	29
1991	10	18305	0	10
1992	26	21731	0	26
1993	41	19983	0	41
1994	41	19396	1	40
1995	37	26230	1	36
1996	48	25273	4	44
1997	26	21268	3	23
1998	41	23269	2	39

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 89 Kashkawan Cheese Foreign Trade 1985-1998							
Years	Import			Export			
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF	Quantity 1000 (Ton)	Value (Million SP)	Price/ton FOB	Trade Balance Million SP
1985	5	0	11	0	0	0	0
1990	28	1	32	0	0	0	1
1991	6	0	28	5	0	85	0
1992	8	0	38	0	0	0	0
1993	36	2	64	0	0	0	2
1994	37	3	80	0	0	0	3
1995	7	2	275	0	0	0	2
1996	2	0	244	46	2	38	-2
1997	7	0	19	55	2	32	-2
1998	4	0	14	216	2	10	-2

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 90 <u>Animal Ghee</u> Foreign Trade 1985-1998							
Years	Import			Export			
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF	Quantity 1000 (Ton)	Value (Million SP)	Price/ton FOB	Trade Balance Million SP
1990	842	16	19	0	0	0	16
1991	2230	45	20	94	6	69	39
1992	3542	82	23	161	6	37	76
1993	7871	159	20	329	14	43	145
1994	4640	100	21	235	11	47	89
1995	4088	99	24	170	9	54	90
1996	3825	100	26	133	9	67	91
1997	5152	117	23	161	11	68	106
1998	309	73	238	71	4	62	69

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 91 Eggs Foreign Trade 1985-1998

Years	Import			Export			
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF SP	Quantity 1000 (Ton)	Value (Million SP)	Price/Ton FOB	Trade Balance Million SP
1985	0	0	39	0	0		0
1990	0	0	371	5	50	11	-50
1991	0	1	270	4	35	9	-34
1992	0	0	125	4	35	10	-35
1993	0	1	446	5	67	14	-66
1994	0	0		4	81	22	-81
1995	0	0	567	0	10	29	-10
1996	0	0		2	29	12	-29
1997	0	3	105	4	27	7	-24
1998	0	1	314	4	33	9	-32

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 92 Washed Wool Foreign Trade 1985-1998

Years	Import			Export			
	Quantity 1000(Ton)	Value (Million SP)	Price/Ton CIF SP	Quantity 1000(Ton)	Value (Million SP)	Price/tonne FOB	Trade Balance Million SP
1985	1	15	11	0	1	4	14
1990	0	5	56	2	24	14	-9
1991	0	13	49	2	25	12	-12
1992	0	18	42	1	12	9	6
1993	0	11	38	2	14	7	-3
1994	1	30	30	2	14	7	16
1995	1	22	39	2	12	8	10
1996	0	2	66	2	12	7	-10
1997	0	0	0	2	12	8	-12
1998	0	0	0	1	9	8	-9

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 93 Barley Foreign Trade 1985-1998

Years	Import			Export			
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF SP	Quantity (Ton)	Value (Million SP)	Price/Ton FOB	Trade Balance Million SP
1985	143570	154	1074.51	0	0		154
1990	106471	210	1977.52	10382	14	1343.67	196
1991	198578	318	1599.72	0	0		318
1992	82157	65	791.27	0	0		65
1993	0	0		156490	155	990.96	-155
1994	0	0		378834	373	985.37	-373
1995	0	0		594136	623	1048.98	-623
1996	0	0		556495	999	1794.93	-999
1997	0	0		296766	471	1587.35	-471
1998	0	0		18	37	2055.56	-37

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 94 Maize Foreign Trade 1985-1998

Years	Import			Export			
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF SP	Quantity (Ton)	Value (Million SP)	Price/Ton FOB	Trade Balance Million SP
1985	208287	323	1550.95	0	0		323
1990	249352	675	2707.08	0	0		675
1991	26223	490	18678.95	0	0		490
1992	104096	188	1804.21	0	0		188
1993	347585	505	1452.53	0	0		505
1994	0	0		378834	373	985	-373
1995	316632	512	1617.17	0	0		512
1996	0	0		556495	999	1794	-999
1997	596673	920	1541.60	0	0		920
1998	505323	832	1646.11	0	0	18600	832

Source annual statistical abstract, Syrian foreign trade

Annex 4 Table 95 Concentrates Used For Fodder Production Foreign Trade 1985-1998

Years	Import			Export		
	Quantity (Ton)	Value (Million SP)	Price/Ton CIF SP	Quantity (Ton)	Value (Million SP)	Trade Balance Million SP
1985	31	1	3058	0	0	1
1990	29816	157	5277	0	0	157
1991	27854	143	5147	0	0	143
1992	19786	102	5168	0	0	102
1993	35690	178	4993	0	0	178
1994	21015	104	4951	0	0	104
1995	28711	143	4985	0	0	143
1996	28858	143	4968	0	0	143
1997	20312	80	3937	0	0	80
1998	2027	11	5469	0	0	11

Source annual statistical abstract, Syrian foreign trade

ANNEX 5

Annex 5 Table 96 Development of MAAR Investments 1989-1998 (thousand Syrian Pound)

	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Cent. Adm.	73706	441222	536574	472446	665077	734982	1069435	1271771	1566871	1650182	2018407	2470824	3455626	3882535	4020074
Establishments	98026	210615	220580	226915	294306	294102	240890	313007	304884	369939	468658	354409	459786	409578	302191
Real estates	19604	13505	16528	11696	37166	56485	11696	37166	56485	48890	53419	49686	61295	62927	74640
Total	191336	665342	773682	711057	996549	1085569	1322021	1621944	1928240	2069011	2540484	2874919	3976707	4355040	4396905

Source:MAAR

Annex 5 Table 97 Public Milk Dairy Processing Companies

Year	Data	Damascus Diary Fresh milk	Actual Production	Homs Diary Fresh milk	Actual Production	Aleppo Diary Fresh milk	Actual Production
1988	Sterilized Milk	10565	4087	6727	2698	5903	4081
	Yogurt		7784		5626		4263
	Double fat yogurt		1043		736		251
	cheese		274		158		90
	ghee & butter cream		604		385		224
1989	Sterilized Milk	12540	4804	10123	3084	9339	4385
	Yogurt		3779		4601		3831
	Double fat yogurt		868		814		192
	Cheese		199		128		125
	ghee & butter cream		126		81		126
1990	Sterilized Milk	12732	4916	14637	3821	8831	4389
	Yogurt		3606		5031		2515
	Double fat yogurt		952		819		170
	Cheese		345		523		94
	ghee & butter cream		297		300		178
1991	Sterilized Milk	13106	4954	11392	3256	9620	3907
	Yogurt		3063		4057		2507
	Double fat yogurt		875		858		109
	Cheese		192		365		247
	ghee & butter cream		427		424		228
1992	Sterilized Milk	11840	4886	9838	2882	7811	3191
	Yogurt		2770		4325		2688
	Double fat yogurt		381		835		89
	cheese		283		232		131
	ghee & butter cream		117		89		48
1993	Sterilized Milk	12551	6052	9982	3558	8669	4769
	Yogurt		3977		5245		2535
	Double fat yogurt		762		1501		65
	Cheese		210		414		188
	ghee & butter cream		619		179		204
1994	Sterilized Milk	13548	5165	16089	4217	8503	6322
	Yogurt		3607		5672		2921
	Double fat yogurt		778		1826		107
	Cheese		313		748		88
	ghee & butter cream		338		619		167
1995	Sterilized Milk	14225	5276	18312	4622	7833	3904
	Yogurt		2382		5174		1639
	Double fat yogurt		617		1668		133
	Cheese		420		697		182
	ghee & butter cream		802		278		276
1996	Sterilized Milk	11822	5284	10701	3606	9113	5192
	Yogurt		2018		2441		1265
	Double fat yogurt		300		480		18
	cheese		240		340		154
	ghee & butter cream		784		519		413
1997	Sterilized Milk	11884	5045	8707	2948	10345	5355
	Yogurt		1610		2011		1522
	Double fat yogurt		219		618		16
	Cheese		347		301		228
	ghee & butter cream		758		365		291
1998	Sterilized Milk	10127	4003	8428	2644	9873	6081
	Yogurt		1461		2280		1473
	Double fat yogurt		374		663		10
	Cheese		313		356		148
	ghee & butter cream		643		171		146

Source: MAAR

Annex 5 Table 98 Agricultural Extentionists & their Educational Levels 1990-1996

	1990	1991	1992	1993	1994	1995	1996
male agricultural engineers	1721	1696	1880	2161	2045	2388	1988
female agricultural engineers.	406	418	437	522	514	599	597
veterinarians	545	579	573	766	1083	1389	1573
agricultural supervisors	303	430	509	576	865	883	952
total	3075	3123	3410	4035	4507	5259	5110

Annex 5 Table 99 Number of Agricultural Extension Units by Governerates

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	total
Damascus	3	9	13	9	6							1	1			1	43
Homs	3	9	13	9	16					6			2	2		1	61
Hama	3	7	10	6	10					6	3		3	1		1	50
Aleppo	4	12	14	12	20				13	15				3		1	94
Edlib	3	7	12	7	11					5			1	2	1	1	50
Lattakia	3	9	13	7	13					17			3	2	1	1	69
Tartous	3	9	13	7	13					17		1	2	2	2	1	70
Al Raqqa	7	9	13	9	12				13	10	5	3		1	2	1	87
Deir Ezzor	7	9	13	10	21					15			2	1	2	1	81
Al Hassakeh	7	10	13	11	19				13	20			4	5			102
Dara'	4	8	13	7	10											1	43
Sweida'	4	8	13	6	10												40
Kuneitera	1	2	2	1													6
Al Ghab		7	6	4	7								2	2	2	2	32
Total	52	115	160	105	167				39	111	8	5	20	23	10	12	828

Annex 5 Table 100 Number of Centrally Trained Engineers

	Agricultural Extension courses		household economics courses	
	no. of courses	trainees	no. of courses	trainees
1980	1	25		
1981	2	52	1	26
1982	3	93	3	70
1983	3	80	2	36
1984	6	170	1	16
1985	6	173	1	23
1986	6	161	2	45
1987	9	194	2	30
1988	4	80	2	30
1989	5	104	2	27
1990	6	119	2	39
1991	6	118	2	34
1992	6	83	2	37
1993	3	51	1	10
1994	2	33	2	17
1995	2	37	2	31
1996	6	130	3	76
total	71	1703	30	549

Annex 5 Table 101 Number of Technicians and Farmers who Took Training Courses

Year	Technicians courses		Male courses		Females courses			
	No. Of courses	Trainees	No. Of courses	Trainees	Short courses		Long courses	
					No. Of courses	Trainees	No. Of courses	Trainees
1980	28	484						
1986	46	713						
1987	47	685	43	767				
1988	41	635	72	1250				
1989	49	672	85	1510	20	383		
1990	31	405	50	875	22	392		
1991	32	467	99	2026	27	543		
1992	26	405	90	1662	24	413		
1993	39	537	96	1640	29	524	68	1480
1994	36	495	124	2263	93	1453	50	1137
1995	33	525	93	1649	68	1123	51	1066
1997	80	1204	332	6517	114	2104	148	3171
Total	277	4038	884	75980	377	6552	317	6859

Annex 5 Table 102 Long Term Specialized Training

Year	no. of courses	trainees	subject
1988	2	23	crops: wheat, barley and sugar beet from farming up to harvesting (1989)
	3	24	fruit trees (apples, citrus, olives) from farming up to harvesting (1989)
1989	2	19	crops (cotton and maize) from farming up to harvesting
	2	29	cattle and poultry
	2	25	crops (wheat, barley and sugar beet)
1990	3	24	fruit trees (apples, citrus, olives)
	1	12	cattle (1991)
1991	2	20	cotton and maize from farming up to harvesting
1992	2	21	crops: wheat, barley and sugar beet from farming up to harvesting (1989)
	3	22	fruit trees (apples, citrus, olives) from farming up to harvesting (1989)
	1	9	cattle (1993)
1993	2	15	crops (cotton and maize)
1994	5	48	wheat, barley, sugar beet, apples, citrus and olives
	1	12	cattle (up to 1995)
1995	2	17	crops (cotton and maize)
1996	5	46	wheat, barley, sugar beet, apples, citrus and olives (up to 1997)
Total	24	271	

Annex 5 Table 103 Number of Domestic and Foreign Training Courses in 1998

No. Of courses	Trainees	Beneficiaries
558	9180	male & female engineers
995	15810	farmers
120	5164	students
77	265	engineers
36	44	engineers & engineers assistants

Annex 5 Table 104 Development of Agricultural Schools and Students in 1980-1999

	Students	Schools	Notes
1980-1981	1306	9	males
1990-1991	4699	14	males & females
1992-1993	4874	15	an agricultural high school was established in Al Sweida'
1993-1994	5414	12	an agricultural high school was established in Homs
1994-1995	7330	12	an agricultural high school was established in Homs
1995-1996	9354	22	4 agricultural high schools were established in Hama, Efreen, Manbeg and Ain Al Arab
1996-1997	11588	29	8 agricultural high schools were established
1997-1998	14500	32	3 agricultural high schools were established
1998-1999	16681	32	1 agricultural high schools were established

Annex 5 Table 105 development of Agricultural and Veterinarian Institutes Students in 1978-1998

	1987-1988	1990-1991	1992-1993	1995-1996	1997-1998
Dier Ezzor veterinarian institute	166	23	148	87	263
Al Hassakeh agricultural Institute	279	137	179	238	94
Al Kuneitera agricultural Institute	68	198	204	313	165
Sweida' agricultural Institute	122	312	320	407	189
Dara' Institute	131	246	301	266	243
Homs agricultural Institute	183	104	264	278	349
Deir Ezzor agricultural Institute	113	187	181	314	326
Edlib agricultural Institute	33	109	409	318	129
Tartous institute					94
Al Raqqa institute					59
Al Raqqa veterinarian institute					154
Lattakia veterinarian institute					90
Total	1095	1316	2006	2221	2155

Annex 5 Table 106 Development of Agricultural and Veterinarian Institutes Graduates in 1988-1998

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Dier Ezzor veterinarian institute	71	55	93	80	94	122	148	136	150	200
Al Hassakeh agricultural institute	23	22	37	49	22	43	63	50	29	40
Al Kuneitera agricultural institute	38	21	23			26	19	37	51	32
Sweida' agricultural institute	96	52	61	42		21	44	41	47	45
Dara' institute	80	55	27	51	40	23	40	55	56	36
Homs agricultural Institute	119	139	85			86	100	138	109	110
Deir Ezzor agricultural Institute	67	24	37			11	54	32	36	86
Edlib agricultural Institute	25	19	10	10	19	17	26	26	14	36
Total	519	387	373			349	494	515	492	585

Annex 5 Table 107 Cumulative and General Report for Livestock Farms

Description		No. of livestock breeding farms licenses during the month	Production capacity of livestock farms during the month	No. of livestock breeding farms licenses during 1999	Production capacity of livestock farms during 1999	Total number licensed farms	Total production capacity of licensed farms
Cattle farms		7	207 cows 330 calves	84	2089 cows 2442 calves	537	14966 cows 17687 calves
Sheep farms		-	3	1485	14	1620 females/cycle 4588 males/cycle	27370336 birds/cycle
Poultry -							
	Broiler	6	31300	86	547370	3849	10608746 birds/cycle
	Layers	-	-	12	121000	1071	161900 birds/cycle
	Broilers parents	6	19800	12	124700	127	183300 birds/cycle
	Layers parents	-	-	1	9200	11	146200 birds/cycle
	Broilers grand parents	-	-	1	17600	7	9581020 eggs/cycle
	Hatcheries	-	-	1	192000	30	

Annex 5 Table 108 Private Fodder Plant licensed by Livestock Department, MAAR		
Product	**Production capacity range**	Number
Premixes for broiler	3-5	3
Meat & Bone meal	2-20	3
Premixes for milk production	0.5-50	20
Concentrates for egg layers	5	1
Premixes & concentrates for milk production	4	1
Concentrates for poultry & milk production	2	1
Concentrates for broiler & layers	na	1
Premixes for poultry and milk production	3	2
Poultry concentrates & premixes	10	1
Concentrates for poultry	3-8	6
Concentrates & meat and bone meal	2	1
Cotton seed cake	20	2
Cotton seed cake & premixes for milk production	2	1
Soybean cake	2	1
Concentrates & premixes for milk production	4	1
Premixes for cattle	50	1
Premixes for broiler & layers	4-10	2

Annex 5 Table 109 Dairy Plants Established up to the end of 1998						
Governerate	Damascus	**Aleppo**	Lattakia	Raqqa	Hama	Homs
Number	8	2	9	3	1	2
Annual Production capacity (ton)	262	1525	1386	2.3	3090	2760150
Source: Ministry of Industry						

Annex 5 Table 110 Livestock Credit Demand Table

poultry credits

short term loans for chicks, feed and services

type	demand date	credit allocation/unit	due payment date	notes
egg layers	around the year	75 LS	after 10 months	according to the production capacity mentioned in the license
parents	=	150 LS	=	=
boiler	=	40 LS	after 7 months	=
hatching	=	4.5 LS	after 3 months	=

mid term loans for equipment procurement to improve the farm investment

like incubators, feed mixers, power generators, etc.

investment	credit allocation/unit	notes
parents, eggs	60 LS	according to the production capacity mentioned in the license
broiler	40 LS	=

local cattle, milk and fattening sheep, fattening calves and horses

mid terms loans for local cattle and sheep

variety	credit allocation/unit	demand date	due payment date	notes
Friesian and shami	35000 LS	around the year	maturity age	
hybridized	30000 LS	=	=	ten heads for a specialized cooperative member and 5 for multiple purposes coop. Members
sheep	2500 LS	from May to Sep.	May and June	

short term loans for cattle, sheep and horses feed

Friesian, shami or hybridized cows	6000 LS	around the year		in kind loans delivered by the GEF, in case feed is un available, producers are provided with cash loans
local cows	3000 LS	=	=	
Arab horses	14000 LS	=	=	
sheep	350 LS	from Oct. to Mar.		

feed and fattening calves and sheep procurement				
			loan term	
fattening sheep	750 LS	250 LS	6 months	in kind loans delivered by the GEF, in case feed is unavailable, producers are provided with cash loans
fattening calves (foreign)	6000	2000	10 months	
fattening calves (local)	3000	1000	10 months	
Notes: horses loans are given just to Arab horses breeding cooperatives sheep prices are reconsidered on an annual basis				

Annex 5 Table 111 Loans by Enterprise 1991-1998

Year	1991	1992	1993	1994	1995	1996	1997	1998
Poultry	250	202	211	285	419			324
Cattle	50	61	53	83	142			218
Sheep	362	147	0	80	52			30
Other animals	38	25	89	53	60			72
Stores & barns	32	74	113	125	151			86
Total	11681	13318	13537	14380	15440			10156

Annex 5 Table 112 Vaccination and treatment programme

Months	Parasite treatments	Precautionary vaccination
January	_	cattle plague
February	_	_
March	liver -fluke disease- Stomach worms- pulmonary worms top worms	cattle foot-and- moth disease
April	liver -fluke disease- Stomach worms- pulmonary worms top worms- theileriosis- babesia	cattle foot-and- moth disease brucella
May	theileriosis- babesia - ectoparasite	cattle foot-and- moth disease - anthrax
June	_	brucella melitensis - anthrax
July	_	brucella melitensis
August	theileriosis- babesia - ectoparasite	avine variola -goot variola
September	theileriosis- babesia - ectoparasite	melitensis foot-and- moth disease - avine variola- goot variola
October	liver -fluke disease- Stomach worms- pulmonary worms top worms	melitensis foot-and- moth disease -
November	liver -fluke disease- Stomach worms- pulmonary worms top worms	cattle foot-and- moth disease- – brucellosis
December		cattle plague

Annex 5 Table 113 Development of MAAR Investments 1989-1998 **Unit: 000 SP**

Years	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Poultry	63147	80996	69356	77122	99697	80138	42826	69557	51655	51143	44470	27534
Cattle	22199	23629	41091	22199	23629	41091	43625	29738	13620	12835	20546	21885
Fish	5264	7542	10850	5264	7542	10850	1525	3485	3364	2879	9650	282
Feed	7432	18048	16204	7432	18048	16204	79435	81450	79965	77750	51796	20779
Seed multiplication	18117	13671	21719	18117	13671	21719	35124	73515	57273	161661	113600	76105
Agricultural Machinery	30288	20872	11808	30288	20872	11808	5415	2758	1250	810	939	999
Al Ghab Investment	27979	39900	44231	27979	39900	44231	83001	104207	109510	108730	124129	126156
State Farms	52489	89648	78843	52489	89648	78843	78988	103948	37772	43978	44448	27905
Total	226915	294306	294102	240890	313007	304884	369939	468658	354409	459786	409578	301645

Source: Ministry of Agriculture and Agrarian Reform

Annex 5 Table 114 Development of MAAR Investments 1987-1998 **Unit: 000 SP**

Years	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Agriculture Scientific Research Stations	16059	20183	23450	32754	41560	61100	71288	105288	117934	137121	151733	168717
Livestock production research stations	3040	4424	6221	14070	23662	21625	26477	40581	47633	52577	63349	63478
Agriculture Extension development	4657	3486	6373	55754	72369	76133	63380	72988	89741	88572	89899	104873
Land classification	7437	9404	12522	11525	5748	5000	4716	28626	44199	39053	38618	44234
Control support	23783	22560	27373	36163	38864	66695	81710	85792	94705	108285	145507	143363
Fruit trees production	152410	125782	129333	165655	158596	167516	186338	184065	213881	290333	249903	257944
Fruit trees planting	100190			199247	229645	246340	258627	301997	327794	467493	609464	564825
Kuneitera fruit trees project	6638	9231	8419	10075	9489	11850	9996	10430	12971	17907	15991	18952
Dier Ezzor green belt	-	12589	6221	12000	8612	13000	14087	11738	11500	24473	13984	18962
Forests development	61373	111733	130202	210806	269568	293108	285961	336161	334646	636826	493817	635885
Forest development	_	_	_	_	_	11871	25221	38112	28589	32817	34795	
Forest conservation & fire control	_	_	_	_	_	_	_	10572	34829	18579	47330	94645
Vet. generalization	18265	19080	28015	31669	39259	45062	29937	73637	79492	75825	61327	63841
Local cows development	4877	11157	17733	20972	14700	34948	17405	28579	33304	59527	42860	42162
Fish development	_	_	_	_	_	_	_	_	16923	40123	39199	39599
Al Badia Wells	12956	17398	11957	13681	17995	38881	44488	44158	48884	56521	63122	83061
Syrian Badia development	20459	16029	32069	42259	44136	75667	69975	74045	94425	80908	103052	127872
Al Badia wells completion	_	10087	17412	37180	20387	12518	31711	30737	48908	54261	49765	39599
Al Taleela conservation	_	_	_	_	_	5940	1989	2146	1600	1843	1842	
Bees breeding & honey prod.	_	13776	16059	28141	23295	26282	25093	31065	29312	31921	35213	37259
Southern region development	40302	60788	54621	55388	49058	69487	115155	121024	166796	316221	378719	227629
Water management improvement	_	9637	8000	8557	12324	22385	18477	20451	21263	23437	32346	13680
Mhasseh natural resource improvement	_	548	17308	17597	24893	20205	11785	43585	23481	19199	22058	

Al Tanf project	_	_	7932	9241	8962	79366	70608	70234	72972	58480	82041	24770
Mouh project	_	_	15000	56701	39881	30476	10963	5259	5000	4688	3765	
al Khrab project	_	_	138	_	15963	24503	19069	18783	17913	12756	16595	843725
Agr. Roads	_	_	19150		98828	99035	132854	167546	326844	547896	792318	0
Arab horses farm	_	_	_	_	2977	7878	17501	41665	65786	42553	44556	25512
Dara' project	_	_	_	_	1000	_	5371	3915	3949	2984	9495	
Rain making	_	_	_	_	_	_	_	15228	24472	22598	29458	6801
Al Hoss project	_	_	_	_	_	_	_	_	31078	46562	38583	
Sweida' project	_	_	2500	_	_	_	_	_	_	5000	4207	
Fertilizers application development	_	_	_	_	_	_	_	_	_	37387	35987	39639
Central & coastal development	_	_	_	_	_	_	_	_	_	900	41637	73278
Total	472446	66507	734982	1069435	1271771	1566871	1650182	2018407	2470824	3455626	3882535	

Source: Ministry of Agriculture and Agrarian Reform

Annex 5 Table 115 Type and Distribution of Farmers Cooperatives for 1996

Governerate	Multi purpose coops.	Production			Breeding			Fattening			Poultry	Silk cocoons	Fish	Horses	Camels	Honey bees	Total
		Farming	Cattle	Fish	Sheep	Range	Cattle	Sheep	Calves	Camels							
Damascus	223		1		11	22	19	5	1	1	11			2		2	309
Aleppo	884				64	16	5	8					5				982
Homs	330				70	123	27	33	2		12		3	1	1	3	605
Hama	364				8	27	1	14			1	1	1				417
Lattakia	410										1					1	476
Edlib	397				27	3	3	26	1							3	460
Deir Ezzor	91	1				99	42	8					1	1	1		244
Al Hassakeh	508				57	32		3					1	2			604
Al Raqqa	188				78	103	7	1					6		1		384
Sweida'	113				32	14										1	160
Dara'	104				39	2	23				1			1		3	173
Tartous	339	1											3			1	344
Kuneitera	60		1				4										65

Source: Farmers' Statistical Abstract

APPENDIX 3

POVERTY AND PER CAPITA CONSUMPTION

Appendix 3

Human Situation and Per Capita Share in the Syrian Arab Republic

The Department of Agricultural Economics has carried out a field survey about food consumption patterns, per capita share of the food products and plant and animal products content of protein, fat and calories. The questionnaires related to daily consumption were filled by the household head.

Samples were selected from urban and rural areas in a way that covers all the social classes. One third questionnaires were distributed to families with an income less than 4 000 SP, one third to families between 4 000-6 000 SP and one third to families of income above 7 000 SP.

The results of the survey

Average daily per capita consumption of food commodities was as follows:

- 378 gr. of bread; 37 gr. of crushed wheat; 28 gr. of other wheat products, taking into consideration that rural areas, particularly Al Raqqa, consume more than urban areas.
- 43 gr. of rice; 15 gr. of lentils; 9 gr. of broad beans; 12 gr. of chickpeas; 8 gr. of other legumes
- 24 gr. of red meat; 36 gr. of poultry meat; 7 gr. of fish; 3 gr. of canned meat and fish;
- 25 gr. of eggs;
- 55 gr. of fresh milk; 3 gr. of powder milk; 78 gr. of yogurt; 19 gr. of double fat yogurt; 15 gr. of cheese; 8 gr. of ghee or equivalent quantity of fresh milk, taking into account that the conversion coefficient: powder milk 5:1, yogurt 1:1, double fat yogurt 1:4 and cheese 1:5.

Per capita average consumption of other products is as follows:

- 15 gr. of olive oil; 11 gr. of hydrated oils;
- 58 gr. of potatoes; 5 gr. of dry garlic; 12 gr. of olives; 56 gr. of sugar; 12 gr. of vegetable oil; 7 gr. of nuts; 18 gr. of dry onion; 25 gr. of apples; 2 gr. of sesame paste; 7 gr. of tea; 5 gr. of coffee.

Poverty

Per capita share of GDP (in 1985 constant prices) increased from 4496 SP in 1970 to 8218 SP in 1980 and 8680 SP in 1994.

According to the Unified Economic Arab Report of 1994 Syrian per capita share of GDP at $ 1000, whereas according to the Human Development Index it is $ 1170.

Whatever the figure is, the GDP is not distributed equally to the population, which is the important issue to addressed in the future studies.

The Economic Development Report of 1994 indicates that 2.5 million Syrians live in conditions below the poverty line. Whereas the study carried out by the Ministry of Agriculture and Agrarian Reform indicates that 43% of the households included by the survey live under the poverty line and that the average household income is around $ 927 per year.

The results of the above mentioned research indicate that 35% of the rural population and 18% of the urban population are under the poverty line. But the fact that should be taken into account is that most of those people receive free services like basic education, health services and main food commodities such as sugar and rice.

Source: experts meeting on the poverty eradication strategy in Arab countries 28-29/2/1996.

Size and Structure of Per Capita Expenditure

Total per capita expenditure is 7 969 SP out of which 4 112 SP is spent on food commodities (51.6%), 3865 SP on non food commodities (48.4%) which is a reasonable result that complies with the developing countries situation, where people give the main food commodities the first priority.

The comparison of rural to urban per capita expenditure refers to the fact that urban expenditure is 734 SP more than the rural one (8259 SP- 7525 SP), which means that the urban living standards are better than those of the rural ones.

The average per capita consumption on food commodities varies according to the importance of that commodity:

- bread comes at the top of the list in the cereals group;
- lentils comes at the top of the list in legume group;
- sheep meat comes at the top of the list in meat group, and;
- white cheese comes at the top of the list in dairy group.

Expenditure priority was given to house, meat and olive oil.

APPENDIX 4

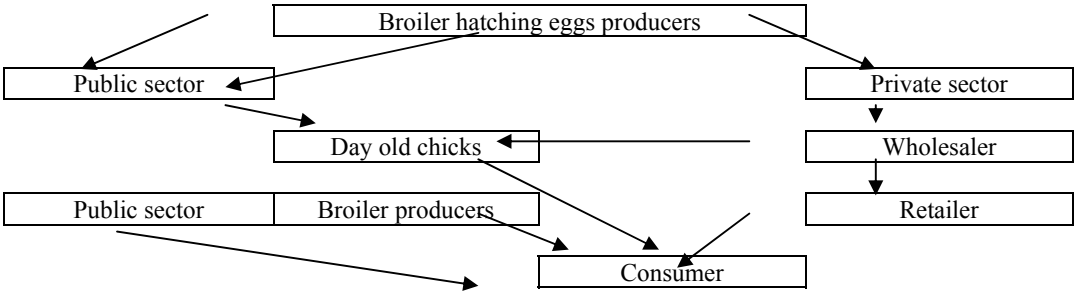
MARKET CHANNELS FOR LIVESTOCK PRODUCTS

Appendix 4

Market Channels for Main Livestock Products

Broiler Hatching Eggs Producers

Note: in 1998 the licensed farms came up to 3414 where as the unlicensed farms were 626. Licensed broiler parents farms were 70 and the unlicensed were 4, whereas grand parent farms were 4.
Broiler average price in the same year ranged between 45-60 SP/kg for live weight and 60-80 SP/kg for meat. Average production cost was 50 SP/kg live weight.
In 1998 the General Establishment for Poultry produced 4848 tons of meat, 1654 tons of out of production broiler.
Total production was 82976 tons of meat and 14267 tons of out of production broiler.

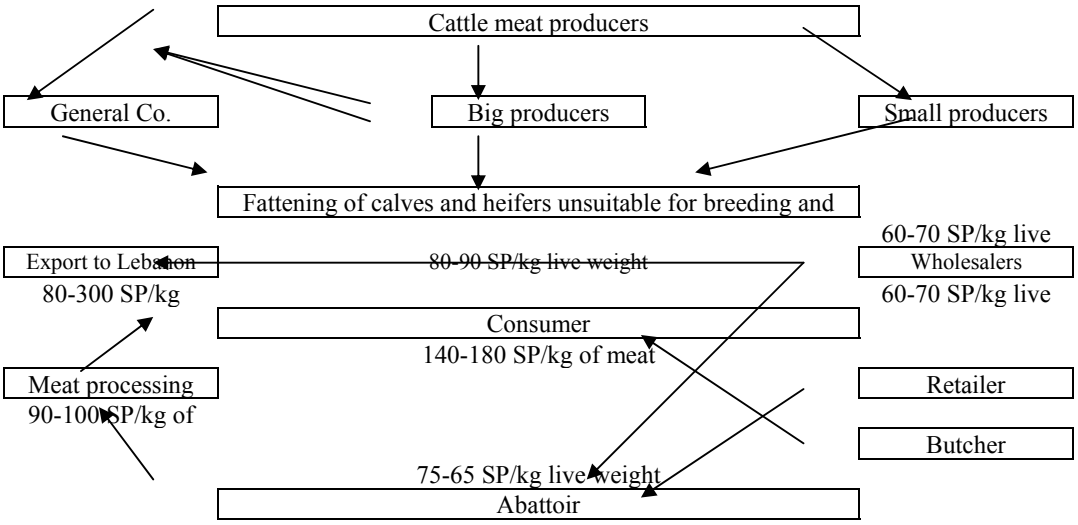


Cattle Beef Producers

Prices mentioned in the graph apply to young calves and heifers only, where as older cattle meat prices are as follows:

- 40-50 SP/kg live weight;
- 120-140 SP/kg meat.

Around 104 000 heads have been slaughtered in 1998, assuming that the average weight is 400 kg, the price of the produced meat would be:
Maximum = 104 000 x 400 x 140 = SP 5.824 billion
Minimum = 104 000 x 400 x 120 = SP 4.992 billion

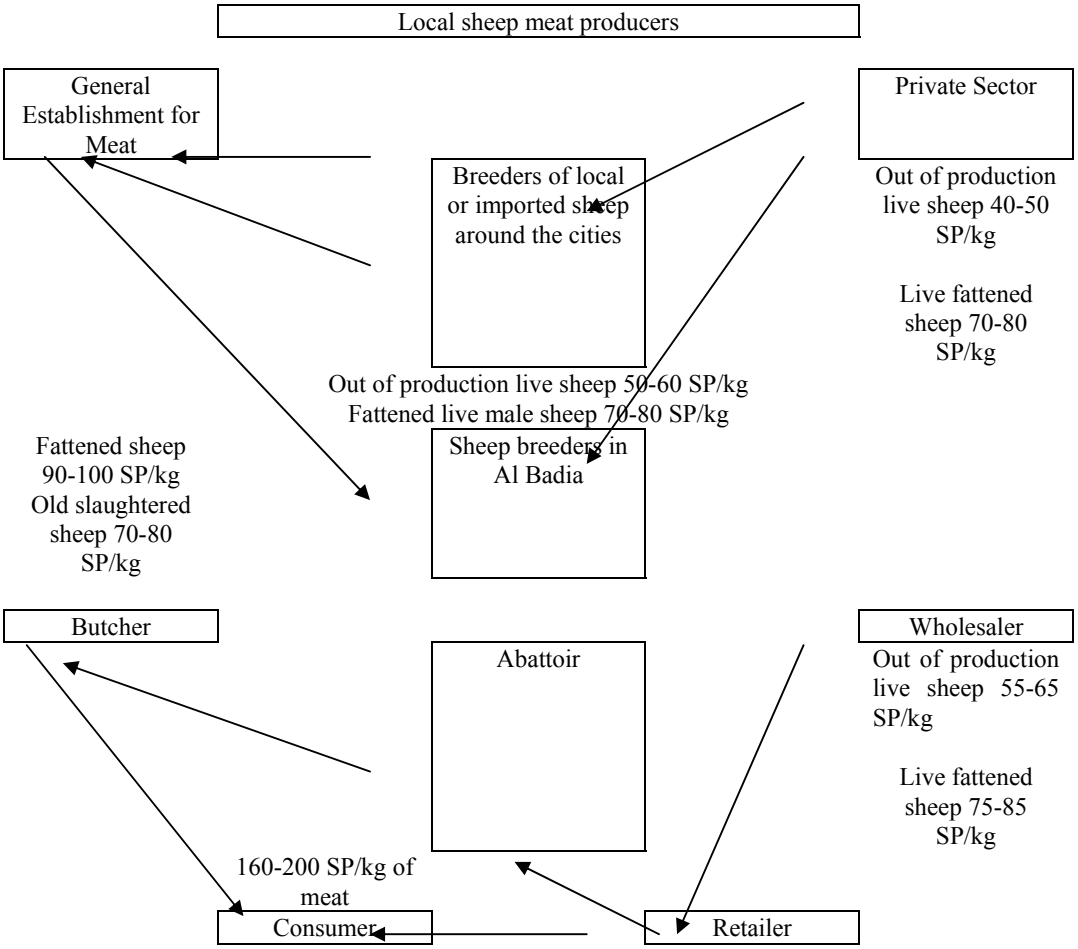


Sheep Meat Producers

154 285 heads were exported in 1998 and 389 304 heads were exported in 1999 through the General Establishment for Meat to the Gulf countries.
Exported and imported sheep numbers vary from one year to another, but generally the 2 to 1 regulation is applied.

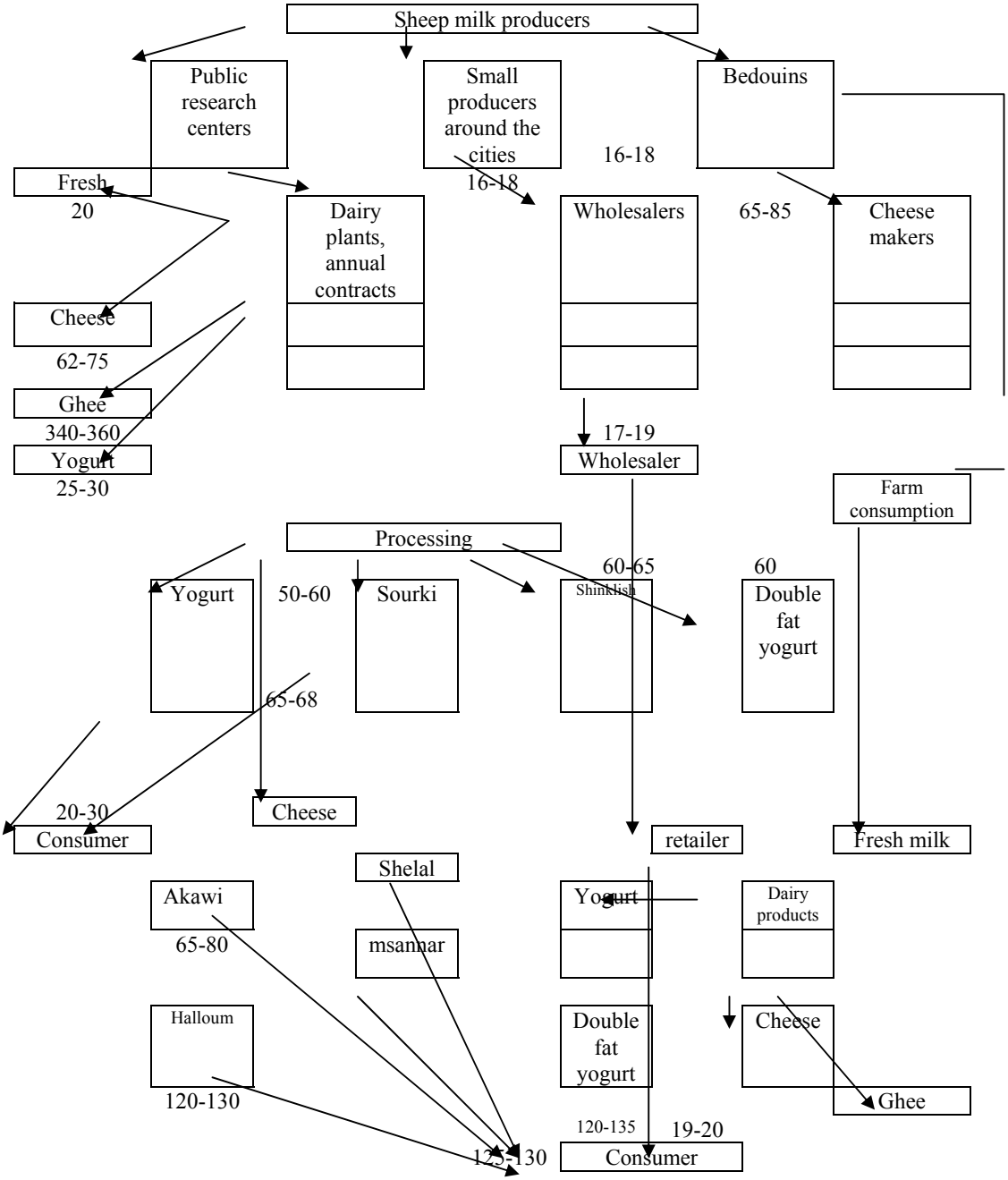
The prices mentioned in the graph are the live sheep price which vary according to demand and supply by 5-10 SP/kg for live weight and 10-15 SP/kg for meat.

Prices of live imported sheep are 10 SP/kg less than the local sheep, whereas the imported meat price is 20-40 SP/kg less.
According to the statistical abstract of 1998, the number of sheep slaughtered in the government abattoirs was 2.4 million heads. Assuming that the price was 45 kg, the value of the produced meat was as follows:
Maximum 2.4 million x 45 kg x 180 SP = SP 19.4 billion
Minimum 2.4 million x 45 kg x 150 SP = SP 16.2 billion


Local sheep meat producers
General Establishment for Meat
Private Sector
Breeders of local or imported sheep around the cities
Out of production live sheep 40-50 SP/kg
Live fattened sheep 70-80 SP/kg
Out of production live sheep 50-60 SP/kg
Fattened live male sheep 70-80 SP/kg
Fattened sheep 90-100 SP/kg
Old slaughtered sheep 70-80 SP/kg
Sheep breeders in Al Badia
Butcher
Wholesaler
Abattoir
Out of production live sheep 55-65 SP/kg
Live fattened sheep 75-85 SP/kg
160-200 SP/kg of meat
Consumer
Retailer

Sheep Milk Producers

The total sheep milk production in 1998 was 582 000 tons produced by 10.074 million milking heads out of the total herd of 15.425 million heads. The estimated value of the produced milk is as follows:
Maximum 582 000 tons x 18 SP = SP 10.5 billion
Minimum 582 000 tons x 16 SP = SP 9.3 billion
A table including the number of sheep and their productivity is attached.
Note: each 100 kg of sheep milk produced 28-30 kg of white akawi cheese sold at a price that ranges between 65-80 SP/kg, 500-600 gr. of ghee at the price of 200-225 SP/kg and 2-3 kg of cottage cheese (karessheh) at the price of 50-60 SP/kg.
Note: these prices vary between summer and winter by 5-10 SP/kg according to rain fall and fruits and vegetables production as well as national and religious occasions.



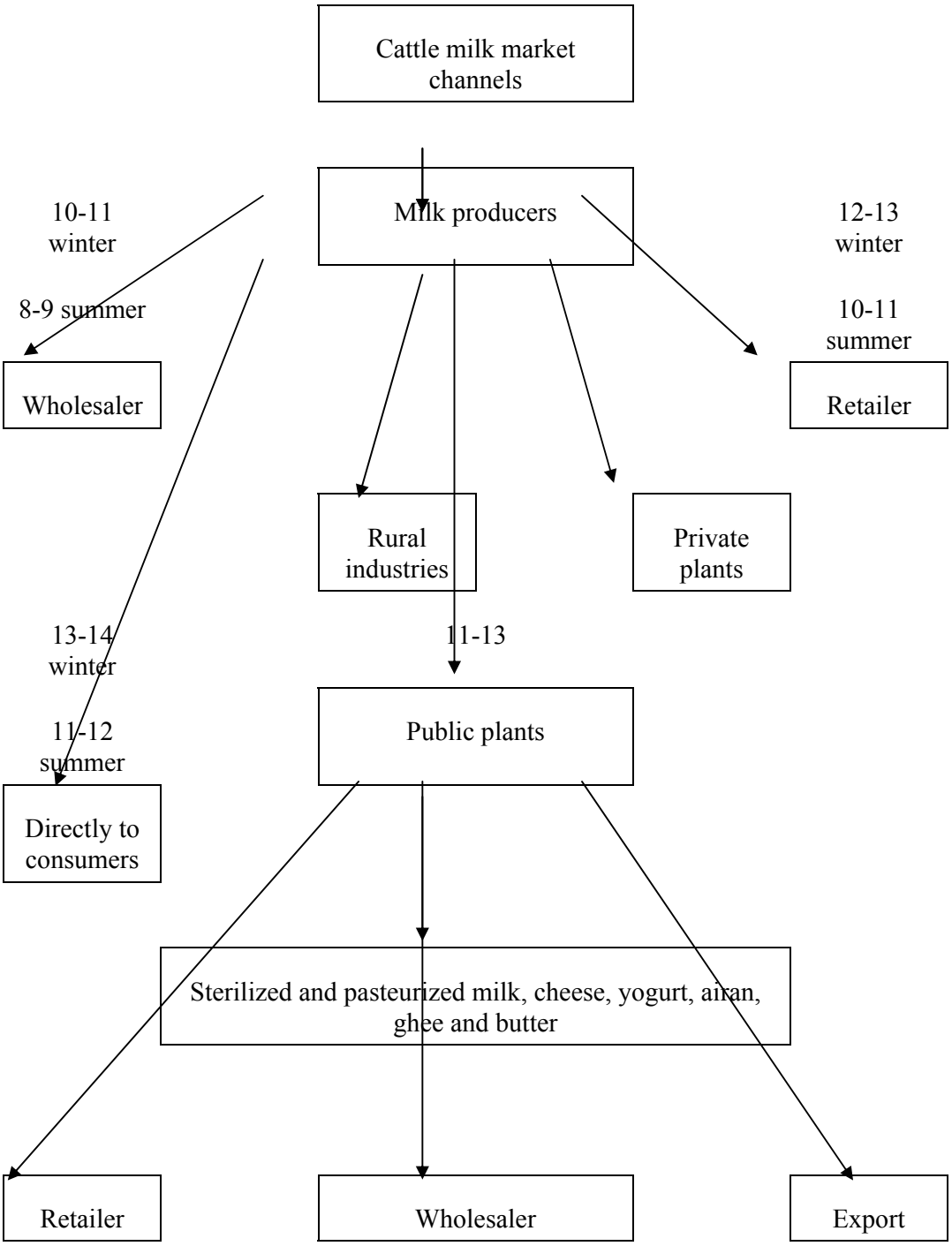
Cattle Milk Producers

Cattle milk production in 1998 was 1 119 000 tons produced by 448 000 milking cows out of the total herd of 932 000 heads. The estimated value of the produced milk is as follows:
Maximum 1 119 000 x 13 SP = SP 14.5 billion
Minimum 1 119 000 x 10 SP = SP 11.19 billion

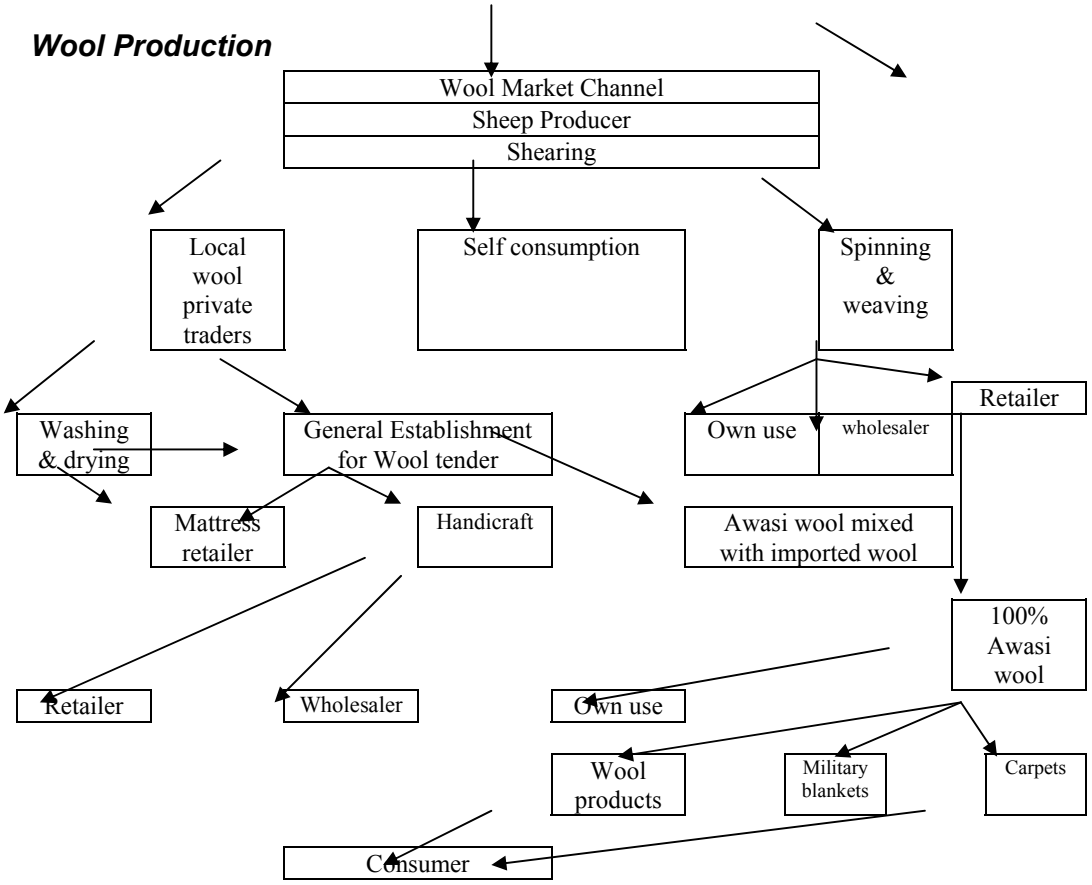
MAAR carried out a study about the development of milk production during the period 1986-1995 and calculated the production cost as well as the wholesale price to estimate the profit margin.
Note: Syrian imports powder milk, cooked cheese, butter and canned cream. Exports are limited to cheese which is exported exclusively to Lebanon, Jordan and the Gulf countries.

Price list in the local market:

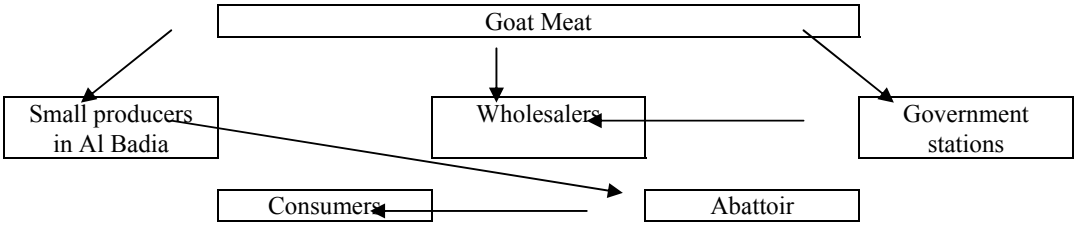
- sterilized milk: 30 SP/ 1 kg bottle;
- sterilized milk: 25 SP/ 1 kg poly ethylene bag;
- pasteurized milk: 45 SP/bottle;
- powder milk 2.5% fat: 375 SP/kg;
- Kashkawan cheese: 220 SP/kg;
- Double fat yogurt: 60 SP/kg;
- Airan: 15 SP/ 300 ml bottle;
- Cooked chees: 220 SP/kg;
- Butter: 160-170 SP/kg;
- Cream: 130-140 SP/kg;
- Ghee: 200-240 SP/kg;
- Halloum cheese: 110-120 SP/kg;
- Shellal cheese: 100-115 SP/kg;
- Akawi cheese: 60-70 SP


Cattle milk market channels
Milk producers
10-11 winter
8-9 summer
12-13 winter
10-11 summer
Wholesaler
Retailer
Rural industries
Private plants
13-14 winter
11-12 summer
11-13
Public plants
Directly to consumers
Sterilized and pasteurized milk, cheese, yogurt, airan, ghee and butter
Retailer
Wholesaler
Export

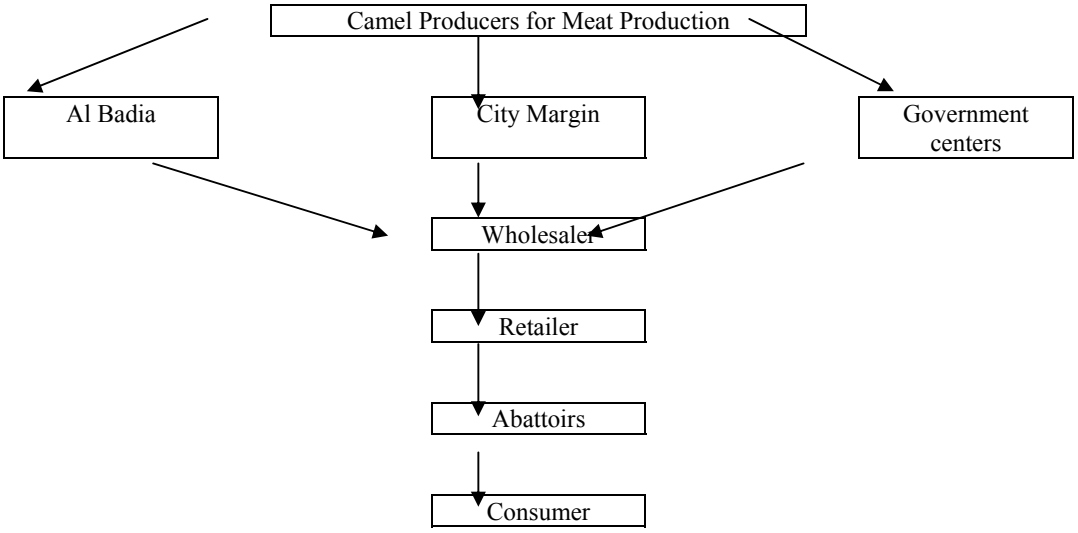
Wool Production



Goat Meat



Camel Meat



APPENDIX 5

PRICES FOR FOOD COMMODITIES 2000

Appendix 5

Ministry of Supply Price List for Food Commodities for the year 2000

The Head of the Executive Board of Damascus Governerate Council resolves the following:

Article 1- the maximum price for top quality commodities in Damascus are determined as follows:

/1/

Sheep meat Syrian Pounds

Products & Specification	Awasi male	Bila male (imported sheep)	Bila female (imported sheep)
lean meat	200	140	
Meat with 10% fat	230		
Meat with fat of 50 %	170 s.p	135	190
thigh with its bone without fat	185 s.p	165	115
Armpit with its bone	165	155	105
Neck with bone	150	135	150
Glut	80	75	

All butchers should not combine any 2 of the above-mentioned products in addition they should announce the price and the kind of meat that have.

Sheep Offal:
Selling price of 1 kg of pluck with 2 eggs and 2 pieces of kidneys from each kind or with out it for consumer , restaurant and for sandwich shops is 74 s.p.
General establishment for trade determines selling price of sheep eggs which is 69 s.p for all sector (private, public and joint venture). Also the sheep offal price for consumer is determined as following:

Products & Specification	Kg.	Consumer price
Sheep liver	1	130 s.p
Kidney	1	120
Sheep eggs	1	65
Cleaned sheep heart without fat	1	80
Un-cleaned heart	1	60
Sheep Spleen	1	75
Red sheep meat		**10**
Lean calf meat	1	185
Calf steak		200

Calf meat without bone 50 % fat	1	150
/2/		
Lean cow meat	1	150
Cow meat without bone 50 % fat	1	120
Lean camel meat	1	200
Camel meat without bone 50 % fat	1	150

Raw sheep offal

Product	unit	consumer price
Sheep Coccyx	kg	100 s.p
Entire cleaned offal with tongue & spinal		88
Cleaned Head with tongue and spinal		55
Un-cleaned head & tongue		38
One Spinal		17
Head		23
Tongue without bone		15
4 cleaned leg (calf of leg)		20
Sausage		54
Cleaned paunchy/pot/		9
Intestine		4

Boiled sheep offal:

Product	price
Entire head with tongue and spinal	**61**
Head with tongue	**43**
Head	27
Boiled spinal	18
Intestine	5
Tongue without bone	16

Product	w/s price/ kg.	consumer price
Fresh milk un-skimmed	13.5	15
Cow yogurt		17
Condensed full fat yogurt		55
Cow cheese with full fat		85

All traders should announce the full fat products and the product of diary company + the decided price .

APPENDIX 6

LIVESTOCK FEED IMPORTATION REGULATIONS

Appendix 6

Livestock Feed Importation Regulations

In 1987 resolutions no. 795 and 796 were issued by the Prime Minister allowing private traders to import feed.

According to resolution no. 795, importers were only permitted to import poultry feed not locally produced. According to resolution no. 796 of June 2, 1987, the following imports were opened to private sector against 180 days credit facilities: agricultural machinery and equipment; chemical control materials and medicines; concentrated feed, vitamins and other supplements; veterinarian medicines; tires and spare parts; feed including maize, sorghum, barley, bone and meat meal, fish meal, methonine, colleen chloride, laticine, small fish mixes, soybean cake and layers and broilers concentrates.

The Minister of Agriculture was authorized to determine the import tax to be levied on sorghum and barley with sale prices are to be determined according to the local market prices, with sorghum additional import tax = SP 25/ton and barely additional import tax = SP 5/ton.

Note: the General Establishment for Feed is not entitled to receive any import commission. However imports are delivered in the Establishment's name which delivers them to the importer when they arrive in the country.

If an importer decides to import feed, he need to obtain a pro forma invoice from the delivering company for example the pro forma invoice price is $ 117/ton CIF. The importer presents an application to the Department of Livestock Production together with a copy of the pro forma invoice to obtain an import approval; the application should include the name of the company, country of origin, type of product, quantity, importers name, company location, and the entry port; the Customs Department, Ministry of Economy and Foreign Trade, Livestock Production Department Director and the General Establishment for Feed are informed of the livestock department approval; the approval is presented to the GEF together with the import cost; eg. 10000 tons x $ 117 = 1 175 000; exchange rate 11.25 SP; value in Syrian Pounds = 13 162 500

In case the importer is a trader, he should be a member in the chamber of commerce, but if he is a poultry producer, he should have an agricultural record; the Commercial Department of the Ministry of Economics issues an import license which includes information about the company name, country of origin and the commercial record.

Documents are sent to the bank which notifies the importer to receive them; the importer presents the following documents to the GEF: a copy of the bank's letter; the original invoice; an authenticated copy of the bill of lading endorsed by the bank; a copy of the certificate of origin; a copy of the health certificate; a copy of the chemical analysis certificate; a copy of the number and weight certificate; a copy of the license and the technical specification.

The GEF issues a waiver letter according to which the importer can clear the imported material. An importer pays a customs tariff that varies according to the type of product. Estimated cost is 10 SP/kg including transportation, loading and off loading costs. Current maize price is SP 6000/ton, but it varies according to supply and demand to reach SP 8500/ton.

GEF prices are fixed and the quantities it sells should be used for farm consumption not for trading.
Pricing: according to resolution no. 428 of 24/3/1983, the Supply Department determined the maximum profit margin at 15% of the import cost for importers and 5% of the sale price for traders.
Import cost is calculated as follows: the invoice value; banks commission = 0.003; credit costs = 0.004 shipment costs; off loading costs; transportation to the customs department stores; storage costs; additional import tax for maize and barley; documents authentication costs; transportation from the customs stores.

APPENDIX 7

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