Session: S1

Overview of the economic and social importance of the livestock sector in Cyprus

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Abstract

The value, in current prices, of livestock production in Cyprus exceeds the amount of C£ 160 million and accounts for about 42% of the value of total agricultural production. The country is self-sufficient in milk and milk products, eggs, pig and poultry meat, while production covers the demand for beef by 70-75% and for sheep and goat meat by 90%. Over the last 40 years, the production of meat increased more than 10-fold, of milk 6-fold and of eggs doubled. These achievements were the result of the gradual transformation from low to high input production systems in an effort to improve productivity to satisfy the increasing demand, to reduce production risks associated with frequent droughts, to decrease pressure on the environment from overgrazing, and to lower production costs. To day, in dairy cattle, pigs and poultry, the production is based on a small number of high input and medium to large size commercial farms using employed labour force, while in sheep and goats, farms are smaller and rely on family labour. In cattle and sheep, one predominant breed in each species is utilized for production, while in goats, two breeds and their crosses are used. Pig and poultry farms rely on imported breeds and hybrids. The per capita consumption of livestock products is among the highest in Europe leaving little room for further increases. The present trends relate to quality aspects of livestock products, introduction of new technology, improved production management, reduced costs and production methods friendly to the environment.

Introduction

The livestock production sector is very important for Cyprus in economic and social terms, contributing to the Gross Agricultural Output by about 40% over the last 5 years (Statistical Service, 2002). The value of livestock production in 2002 was 164 C£ millions with an added value of 40%, while other agricultural production amounted to 213 millions. The species used for animal production are cows, sheep, goats, pigs, rabbits, chicken, turkey, ducks, geese, quails and ostrich. Cyprus covers an area of 9251 km^2 and is divided into 3 geomorphological zones, the Troodos mountains, the Pentadactylos Range and the Mesaoria plain separating the two uplands. The climate is characterized by cool and wet winters from November to mid March and by very hot dry summers from May to mid September. Spring and Autumn seasons are short with rapid changes in weather conditions. From 1960 to 2002, the average annual precipitation over the whole island was 487 mm, ranging from 300 mm in the central plain to 1100 mm at the top of the Troodos mountains. However, frequent droughts (only one out of five years is considered good in terms of precipitation) is a distinctive feature of the climate adversely affecting agricultural production. The island is divided into four agro-economic zones: the Coastal, Dryland, Vines and Mountains. Agriculture employs about 8% of the workforce and its contribution to the GDP is just below 4%. About 24% of the total land is cultivated and 25% of the cultivated land is under irrigation from water stored is reservoirs and from ground water. Most of the livestock and mixed farming enterprises are found in the Coastal and Dryland Zones and farms are privately owned (Papayiannis and Markou, 1999). The main products are meat, milk and eggs. Cyprus is self sufficient in milκ and milk products, eggs, pig and poultry meat. The local production covers the demand for beef by 70-75% and for sheep and goat meat by 90%. Some aspects of the production systems and products for the main species used, the importance and impact of livestock production on the society, and the future prospects, are presented and discussed in this paper.

Livestock production and consumption

The relative contribution of each species to the production of meat, milk and eggs is shown in Table 1. Today, pig and chicken meat together account for 84% of total meat production, while ruminant species, for only 15%. Concerning milk production, cow milk comes first with 75%, followed by goat (15%) and sheep (10%) milk. Egg production is exclusively from laying hens.

Table 1. Contribution (%) of different species to the total production of meat, milk and eggs.

Species	Meat	Milk	Eggs
Cattle	4,5	75	--
Sheep	4,2	10	--
Goats	6,3	15	--
Pigs	52,0	--	--
Chicken	32,0	--	100
Others	1,0	--	--
Total	100	100	100

It is of interest to follow the developments regarding the production of these three commodities over the last four decades. Table 2 shows the quantity and value of meat, milk and egg production from 1960 to 2000. During this period, the production of meat increased 11-fold, of milk 6-fold and of eggs doubled, while the respective value of these products, increased 25-fold, 23-fold and 9-fold. In all species, improvements in production were realized, though in some cases, notably dairy cattle and pig and poultry meat, the changes were impressive.

Table 2. Quantity and value of livestock products in Cyprus

Year	1960		1970		1980		1990		2000	
Meat	Q[1]	V[2]	Q	V	Q	V	Q	V	Q	V
Beef/Veal	2,0	0,9	3,0	1,5	2,0	2,2	4,1	5,3	4,5	6,2
Sheep	2,6	1,0	4,3	2,1	3,1	4,5	3,9	8,3	4,2	9,2
Goat	1,1	0,4	3,6	1,7	2,2	3,0	4,2	9,1	6,3	14,3
Pig	1,4	0,3	12,2	3,3	15,3	7,2	31,4	17,6	52,3	26,2
Poultry	2,0	0,8	9,3	3,0	10,0	5,7	20,8	15,8	32,3	31,7
Total	9,1	3,4	32,4	11,6	32,6	22,6	64,4	56,1	99,6	87,6
Milk										
Cattle	10,0	0,4	18,8	0,9	33,3	3,0	100,0	12,1	147,0	25,7
Sheep	12,7	0,9	18,8	1,9	16,9	3,7	20,4	6,9	18,0	6,6
Goats	9,7	0,4	27,4	1,7	21,7	2,6	21,5	4,3	29,2	6,7
Total	32,4	1,7	65,0	4,5	71,9	9,3	141,9	23,3	194,2	39,0
Eggs	4,6	0,9	9,5	1,3	8,3	2,7	12,5	5,4	10,6	8,3

[1] Q=quantity in 000's , [2] V=value in CY £x10^6

The consumption of livestock products followed a parallel upward trend as shown in Table 3. The current per capita consumption of meat, milk and cheese is very high compared to developed and developing countries. During the last 2-3 years there are indications of no further increases in the consumption of livestock products.

Table 3. Per capita consumption of animal products

Year	1960	1970	1980	1990	2000		
Product/country	Cyprus					USA	EU
Meat (kg)	25,8	62,9	79,2	114,8	136,0	118,0	91,0
Milk [1] (L)	5,0	13,0	34,6	80,0	95,5	95,0	108,0
Halloumi (kg)	2,9	5,3	7,8	11,1	8,7	-	-
Other cheeses (kg)	3,1	5,3	7,8	12,1	12,2	13,6	15,0
Eggs (doz)	7,8	14,4	13,9	17,4	12,7	14,6(kg)	16,8

[1]Cow milk equivalent

Production Systems

(i) The change

While 30 to 35 years ago low input/extensive systems of production were prevailing, today, livestock production relies on medium and high input systems. The gradual transformation from low to high input systems started in the early 70s and this process was necessitated by the following:

(a) The need, as a consequence of the population growth, the rising standard of living and the rapidly expanding tourist industry, for increased productivity to meet the increasing demand for meat and milk that.

(b) The high production risks associated with frequent droughts and limited water resources. Ruminants which rely on pastures and roughage availability to produce, were more seriously affected than other species.

(c) The limited land for which other sectors of the economy (tourism, residential areas, industry etc) compete.

(d) Reduced labour availability and increased labour cost.

(e) The need to reduce pressure on the environment, especially in certain areas with large number of grazing sheep and goats.

(ii) The existing situation

In cattle, pigs and poultry, the production is based mostly on a small number of high input and medium to large size commercial farms, while in sheep and goats, farms are smaller but production systems are similar (Table 4). Only dairy cattle enterprises using the Friesian/Holstein breed operate in Cyprus and beef is considered as a by-product of the system. Animals are kept and fed in confinement and to cover nutritional requirements, they

Table 4. General characteristics of livestock farms in Cyprus

Species	No. of farms	No. of animals/farm	Farms (%)		Employment (persons/year)	
			Medium Input	High Input	Family	Extra Labour
Cattle	260	205	5	95	527	210
Sheep	776	104	5	95	4 157	80
Goats	2 104	80	10	90		
Sheep+Goats	1 440	(80+76)	5	95		
Pigs	149	3 030	2	98	126	345
Chicken	165	22 000	5	95	240	970

are offered the minimum amount of roughage and a lot of concentrates that are, to a large extent, imported. Roughage is the main limiting factor for ruminant production in the country and to overcome shortages during years of drought, the government introduced more than 20 years ago, a plan to promote hay production and storage by providing economic incentives (subsidies) to farmers. The plan has proven very successful and contributed to about 80% increase in hay production from 1980, when cereal straw was the main roughage source, compared to 100 000 tons of each type (hay, straw) currently produced during an average year. Farmers are advised to store enough roughage to cover their livestock needs for at least 2 years and this practice has worked very well, especially during the last decade when there were 4 dry years.

With very few exceptions, dairy farmers have introduced new technology for milking, feeding and managing their herds. Genetic improvement is achieved by artificial insemination of cows with imported frozen semen from progeny tested bulls. A well organized system for collecting the milk from the farms and distributing it to the processing units used to operate by the date of accession to the EU, under the Cyprus Dairy Industry Organization (CDIO). A farm quota for the amount of milk delivered to the CDIO every year is in effect. About 55% of milk produced is sold fresh after pasteurization and the rest is processed by the dairy industry.

The intensive production systems rely on purchased feeds and only a small proportion of farmers are self-sustained. Even in cases when sheep and goats utilize natural or cultivated pastures, it is essential to supplement them with concentrates and roughage at least during certain difficult periods of the year. Since two thirds of cereal grain and all high protein feeds are imported, the task is to maximize output per input unit. Therefore, the use of highly productive animals is justified under such conditions.

In sheep, the Chios breed and its crosses with the local fat-tailed breed, and in goats, the Damascus breed and its crosses with local goats, proved after many years of experimentation to be good producers of milk and meat. Today, the Chios breed is the dominant one in the sheep industry at the expense of the local sheep breed which faces the danger of extinction, a rather unfortunate situation. A government plan for the in situ conservation of the breed is in operation. In goats, the majority of animals are crosses between the Damascus and local

breeds, but there is also a purebred population of Damascus and of local (Machaeras) goats. The Chios sheep and Damascus goats are characterized by high prolificacy (~ 2,0), good growth rate and good milk yield after weaning (250 and 450 kg, respectively). For these two breeds, there are government run nucleus herds (elite units). A small number of farmers participating in a government-operated recording scheme play the role of multipliers of superior genetic material. Purebred males and a small number of females are disseminated from the nucleus herds to multipliers and also, to other farmers, and from the multipliers to farmers. The selection of breeding animals in the nucleus and multiplier herds is based on pedigree information and on individual performance that are combined in an index for milk and growth traits (Mavrogenis and Constantinou, 1991a,b).

Sheep and goats are usually kept and fed in confinement with restricted grazing (2-3 hours daily), except for the mountainous areas of Lemesos and Pafos districts where grazing for longer periods is quite common. In these areas, farmers prefer the native Machaeras goat which is a good grazing animal giving quality products (Papachristoforou and Mavrogenis, 1996). The prevailing production systems in small ruminants favour the development of part-time farming and this condition applies to about 35% of sheep and goat farmers.

Sheep and goat milk is used for the production of the traditional halloumi cheese and for other dairy products. Sheep milk is also used for yogurt making. Lambs and kids are weaned at 5 and 7 weeks, respectively, and then fattened on creep feed until slaughtered between 16 and 20 weeks of age. This system has significantly contributed to increased meat production from these two species compared with the old system of slaughtering suckling lambs/kids at a younger age (8 to 12 weeks).

Pig production is based on a few medium to large-scale units exploiting exotic breeds and commercial hybrids (Dalland, Large White, Pietrain). Males and semen are imported, and used for straight breeding and crossing. The majority of pig farms apply new technology for housing, feeding and management of animals. The situation in chicken production (eggs and broilers) is quite similar to that in pigs regarding the size and level of technology of farms. The genetic material used consists of commercial hybrids imported from breeding companies.

Recent developments and prospects

The livestock sector is currently undergoing significant changes due to the accession of Cyprus to the EU and the adoption of the *acquis communautaire* and of the common agricultural policy (CAP). The lift of government subsidies on maize and barley grains has led to significant increases in the prices of animal feedstuffs especially that of barley. Farmers are turning to cheaper alternative feeds either produced locally, including by-products, or imported. It is anticipated that, where this is feasible, sheep and goat grazing will expand and this possibility should be closely observed in order to avoid unwanted situations (overgrazing).

Among the priorities of CAP, are environmental considerations, animal welfare aspects, hygiene and quality of products. In this regard, farmers are making use of incentives and financial aid offered through the 2004-2006 National Rural Development Plan partly funded by the EAGG Fund of the EU, to upgrade and improve their operations (buildings, machinery and equipment, milking facilities). It is expected that technical improvements will help farmers to introduce better and more efficient management methods.

For certain commodities (e.g. all types of milk) prices until 30 April, 2004, were determined by intervention mechanisms. Now, prices are determined by supply and demand and as a

consequence, prices of cow, sheep and goat milk have fallen; for various reasons, producers' prices of meat from these three species, unlike pig and poultry meat, have also fallen. Lower prices coupled with increased feeding costs mean lower income and a difficult situation for the ruminant sector. The survival and prospects of the ruminant production industry will be determined by the outcome of efforts to reduce production costs by the introduction of new technology and improved herd management and feeding, and to promote traditional dairy products (halloumi, cheese, dry anari, trachanas) made of sheep and goat milk. It is hoped, that in the first place, a PDO/PGI will be awarded for halloumi cheese and this is expected to boost demand and sales of the product. Special attention should be given to the conservation and exploitation of the native breeds, especially the fat-tailed sleep and the Machaeras goat. These breeds are not ideal for high input systems but they have the potential to contribute to traditional/high quality products.

Considering the present situation in terms of production aspects (quantity, quality, costs) along with the demand and prices of pig and poultry products, it is not foreseen that these two sectors will face serious problems in the future.

Conclusions

The growth and development of the livestock sector in Cyprus over the last 40 years has been impressive and has led to self sufficiency in almost all livestock products. It provides employment to more than 6 500 persons and helps maintaining human presence and activities in rural and, in many cases, remote areas. The sector faces major challenges but it has the necessary strength and potential to adapt to a new competitive environment. The changes that need to be made relate to improvement of infrastructures, introduction of new technology, adoption of production and management methods that take care of animal welfare and environmental aspects, reduction of production costs, improvement of animal genetic resources and paying particular attention to the quality and hygiene of products, especially the traditional ones.

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