

Traditional Animal Production Systems in Adana Province of Turkey

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1. Introduction

The special attributes of animal make them particularly important in rural resource poor communities compared to other domestic ruminants include: ability to graze and utilize a wide range of poor quality forages and browse; efficient utilization of marginal lands; carcasses which are conveniently marketed or consumed over a short time period; and flocking instinct which makes herding by younger and older members of family possible (Lebbie,2004).

Animal products (mainly meat and dairy products) have interesting characteristics in their levels of flavor, taste, aromas and leanness as well as the specific composition of fats, proteins, amino and fatty acids. Their quality is very much linked to historical and cultural uniqueness right through the production, marketing and consumption chains. This refers at least in the Mediterranean region, to farming systems with dominant extensive grazing situations, specific technologies and conditions for slaughtering as well as for the transformation process of cheese making and its maturing (Boyazoglu and Morand-Fehr,2001). According to Ronchi and Nardone (2003), livestock systems in Mediterranean areas are far removed from an acceptable level of sustainability, considering animal health, environmental impact, quality of products and profitability. Feed availability was identified as one of the major constrains for small ruminant systems in the Mediterranean area.

According to FAO (2004), small ruminant populations around the world have increased significantly in response to increasing numbers of people to be fed (Haenlein and Abdellatif, 2004). Morand-Fehr and Boyazoglu (1999) indicated that, over last 15 years, the number of goats has

increased by almost 50% at the world level, whereas sheep decreased by 4%, and cattle increased by no more than 9%. For the greater part of livestock (except poultry) numbers have decreased in developed countries (cattle -15%, sheep -18%, poultry +9%). Goats were an exception even in developed countries (+26%). On the contrary, number of sheep,goats,cattle and buffaloes decreased while number of chicken increased in Turkey (Figure 1) during last 40 years.

According to statistical data demonstrated by FAO (2004), the number of cattle, sheep, buffaloes, goats have decreased by 27%, 38%, 88%, 72%, respectively, whereas chicken increased by 90% in the last forty years.

2. Livestock population in Seyhan Basin

Data were collected from archives of Ministry of Agriculture Branch at Tufanbeyli, Karaisalı, Aladag, Saimbeyli, Karataş and Kozan.The oldest file belongs to year 1984. Also the other handicap was the files not regular and some pages of files lost. The missing data were collected from Adana branch of Ministry of Agriculture, Commodity Exchange and Ministry of Forage. Additionally farmers were surveyed by interviews for collecting some information on farming systems.

Livestock population from 1984 to 2004 was summarized in Table 1.

Goat, sheep and cattle are the most common farm animal in Seyhan basin of Adana. Kozan is the district where the stockbreeding activity was hold intensively in 2004 as well as 1984. Small ruminant production was lowest in Karataş in contrary of cattle production. Karataş district located in the plain has considerably less small ruminant production eventhough and intensive cattle production is hold. In recent years,

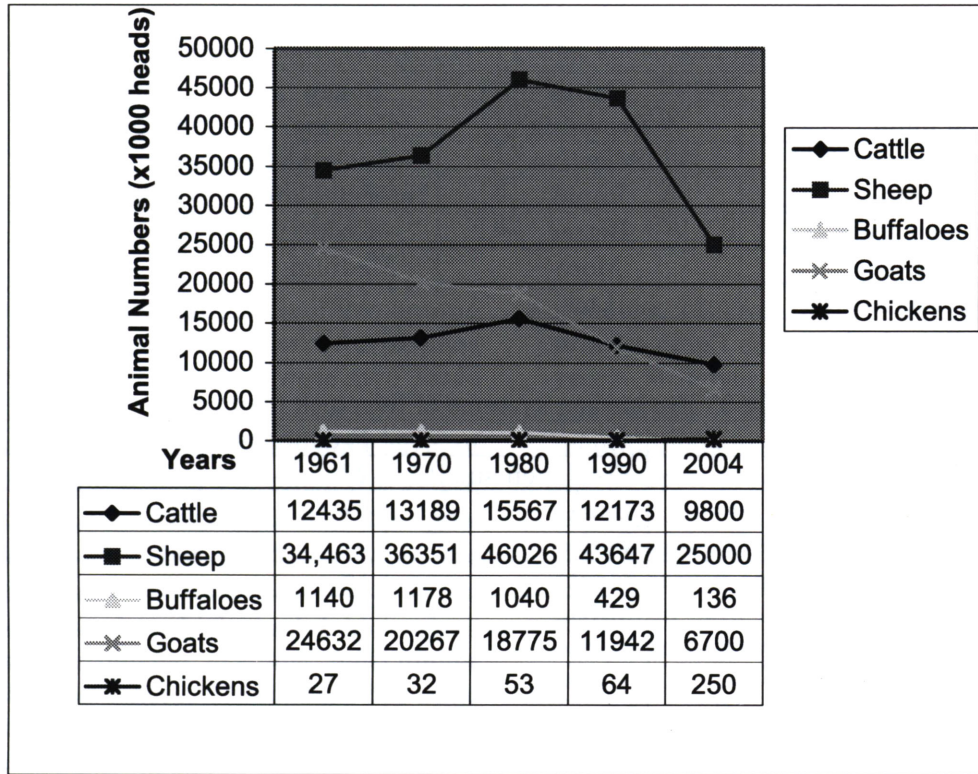


Figure 1. Changing livestock population of Turkey in last 40 years.

Table 1. Livestock Population (Head) in The Seyhan Basin
(Ref. Ministry of Agriculture, Adana Branches)

YEARS	SPECIES	ALADAĞ	KARAIŞALI	KARATAŞ	KOZAN	S.BEYLİ	T.BEYLİ
1984	SHEEP	-	30442	16397	41540	22811	31703
	GOAT	-	101621	644	69177	35290	10601
	CATTLE	-	21838	18964	33717	7823	13230
1990	SHEEP	36377	23027	19283	45488	42860	34172
	GOAT	35647	66990	60	57590	45460	12890
	CATTLE	8617	14761	13288	25223	7910	12865
2004	SHEEP	16334	20679	6082	42000	16980	5890
	GOAT	20568	23567	220	35690	25908	5600
	CATTLE	7689	8790	7022	27098	2087	9109

it's been observed that the cattle production in the district has taken the intensive system. This is pretty much dependant to various geographical form.

According to statistical data demonstrated by Adana branch of Ministry of Agriculture, the number of cattle, sheep and goats decreased sharply during last twenty years. The most important reasons of this decrease were socio-economical and political. Goat production has been forbidden in forest area by government. This was the most effective obstacle in goat production sector in Turkey. Besides

migration of rural people, from rural to urban had also negative effects on animal production. In fact, livestock farming is the most important animal production activity in mountainous area of Mediterranean Region - Turkey. People, living in this area, are very poor and do not have any other alternative for their subsistence's. In addition, milk and meat products derived from animals are very important for population, living in marginal areas. Animals provided home supplies and supported self-sufficiencies of families.

Table 2. Relative comparison between goats, sheep and cattle

Traits	Goats	Sheep	Cattle
Fedding habit	Browsing	Grazing	Grazing
Forage preference	Selective	Not selective	Not selective
Digestive rate	Rapid	Intermediate	Slow
Use of poor feed	Better	Good	Poor
Heat Tolerance	More	Medium	Less
Production cost	Low	Low	High

Table 3. Production systems of livestock farming

Traits		Frequency (%)
Housing Type	Free(open shed)	27
	Barn	67
	Both	6
Main production	Meat	15
	Milk	77
	Both	8
Concentrate feeding	Yes	88
	No	12
Daily milking time	1 times a day	70
	2 times a day	30
Weaning time	1-2 months	9
	2-4 months	53
	4-6 months	38
Mating Time	Seasonal	71
	Aseasonal	29

3. Livestock Production Systems of Seyhan Basin

In order to rise different approaches, the animals can be compared with respect to types and a new analysis should be done on their distribution differences. In Table 2. different types are compared. Due to its geographic and socio-economic situation, animal production is very popular in this area . Mediterranean and Anatolian weather systems influence climate of the mountains, bringing hot summers and cold winters into the area. High Platos of Taurus Mountains are the summer homes of all villages and the summer grazing of animal herds. Livestock moves from lower to higher land (nomadic system) where it spends the months from spring to winter.

It was obvious that, a big part of animals were fed by concentrate especially in winter time, while they were housed. Particularly barley, different types of bran,

oilcake and hay were given to the goats in this period of time. Big part of goats had seasonal breeding.

Big part of goats and ewes had seasonal breeding. But cows were inseminated by using AI method. Average 91 % of kids,lambs and calves were weaned while they were 4 to 6 months old. Residual milk was used in feeding together with grazing. Older female child or women were responsible for herding in the grazing time. Goat herds were grazed in natural forages from March to November. Feeding was mainly based on natural grazing and agricultural products like straw, stubble and grains. All animals grazed and utilized uncultivated parts of farms to transform wasteland into high value commodities. In this way, goats add value to farm enterprises (Lebbie,2004). Oak trees (quercus) were used for feedstuff. Besides olive or acorn tree branches were used as feedstuff in goat production. Sometimes farmers cut the foliage just to feed their animals. This was the big

Table 4. Some production traits of goats, sheep and cattle in this area

Traits	Goats	Sheep	Cattle
Litter size (%)	102	93	97
Mortality rate (%)	15	17	12
Grazing periods(months)	8	7	6
Lactation milk yield(kg)	82	50	1042

problem in this area due to soil erosion and deforestation. Productive characterizations of different type of livestock were give Table 4.

As seen in Table 4 the litter size of goats was highest than the other two types. Eventhough it's considered that the goat milk yields low, but productivity is the highest in goat.

Some herds which had been raised under semi-intensive systems had higher yield than the others. These were big-scale farms and goats were fed with small amount of concentrate together with grazing in summer time. Daily concentrate amount was depending on their physiological conditions. In addition, kids were kept with their mother till they were 6 months old. This is another reason for low yield. Mortality rate of kid's was 15 %.

Brucella (34%), Ecthyra (54%), Foot and mouth disease (23%) were common diseases in this area. Almost all farmers vaccinated their animals (74%). They reported that, if any disease occurred, either they asked other farmers or bought medicine by themselves. Only 45 % of farmers called a veterinary for their animals. Goats, Sheep and cattle were kept in breeding until they are 6 years old.

Cattles consume 900 – 1000 kg concentrates while sheep and goats consume only 30-40 kg annually. Additional feeding is provided all the year long to the cattles where the sheep and goat consume the concentrate only when they are kept into the barn. Since the fruitful land is used for cultivation, and since the forests are prohibited for small ruminants, farmers had to start feeding with additional concentrate. Feeding in open land is mainly suitable between 09-17 hours for the cattles and between 03-21hours for small ruminants. In addition to open feeding lands, it's also possible for the animals to get fed by

residues of crop after harvesting. This process didn't change during all those past years. However, it's been learned by the interviews done by farmers in mountainous areas that the goats still got fed in open area even in winter time. In the past, due to heavy snow falls, this was not possible. On the other hand, it's been also observed that the height of the open area feed (grass) is no longer tall when compared to past, as a result of less falling rain.

Australian pine (pinus nigra Arnold), Cedar (cedrus libani), crimson pine (Pinus butia), Oak (Quercus sp L.) and Ocaliptus are common trees of forest area (Internet,2004). When compared according to types, goats are more selective in feed type, digesting faster and taking better advantage of low quality feed. They are also gaining the advantage of being more resistant to hot climate. Since sheep and goat production has low production costs, it's widely continued in regions, where other types less resource needing cultivation processes are done. When all these arguments are taken into consideration, it's obvious to understand why small ruminant production is more intensive in mountainous areas.

Hair goat (Kil), Akkaraman sheep and crossbred of Holstein Friesian x Native Black cattle were the most common breeds in this area. 92 % of families had goat while 69 % families had sheep. Some (76%) of the families had cattle. The average number of cattle was 3-4 heads per family. Besides, poultry was also raised for domestic consumption.

Even if the government had forbidden, goat farmers did not give up goat rearing in forest area, because of the mentioned factors in above.

4. Social Structure of Livestock Farmers

Livestock farmers are lack of training in the research area. There were not any educational activities carried out for those people. It was observed that 66% of male goat owners were literate. Literate women ratio (29.6 %) was lower than literate male ratio. Almost all farmers practiced cereal production but most of them (85.2%) performed crop production activities generally for their subsistence. Farmers had small agricultural land and average land size per family was 27.5 da. All villages have primary schools. Roads were in bad conditions. Except one village, electricity and water resources in all villages had been established. Rural households were significantly poor in this area. Similar as Lebbie's (2004) findings, rural people, living in this area lack of modern management skills which are essential to improve the productivity of their livestock.

Most of the goat farms were family managed. Besides, whole family took part in goat production; particularly women and daughters were responsible for the flock. Male teenager was also helping their mothers by holding animals in milking time. The most common type of business is the family type. Women were working in goat activities 2.8 a day in average. Woman continued to work in livestock production even if she was pregnant. Few male (12%) took part in livestock production. Livestock production was unique source of family livelihood in this area. They did not have any other alternatives because of land structure, infrastructure and economic conditions. A main income of families was based on goat and sheep production. According to questionnaire results, goats spend the days in higher zones between spring to winter (nomadic system). Greatest

part of farms (73%) is involved in housing for their livestock in winter.

5. Production of Animal Products and Marketing Opportunities

Milk technologies and other conservation methods have developed in the region due to the climate changes. As an example, cheese is produced on daily conditions instead of traditional methods. Only, in a few regions, cheese fermentation is still done by traditional methods. In the past, products were digged into ground or into the snow in highlands where it's impossible these days. Main products of the farms were milk, cheese and yogurt. Farmers' family consumed average 25 % of the whole milk. Families prefer to sell their milk as a cheese because of high income opportunity. Approximately 89.30% of the feeders produce white cheese and 25.90% produce tulum cheese. All farmers produce "lor, çökelek and butter" additionally. Animals were milked twice a day by women or female children. Additionally, they sold live animal, when they need cash money. Goats were used or sold only when necessary to meet family needs, especially in case of emergencies, slaughter is performed only for needs of the family. The price of some products and differences from 1988 to 2003 were given in Table 5.

6. Conclusion

This research represents an important step for better understanding the animal production systems in East

Table 5. Price of some products (Ref. Adana Commodity Exchange, 2004)

Products	YEARS							
	1988	1989	1989	1991	1992	1993	2002	2003
White cheese (TL/kg)	3448	5720	9658	14740	24401	40732	3404097	4177981
Beef (TL/kg)	3520	5738	10142	17075	33600	66065	8101328	11715112
Mutton(TL/kg)	3263	5085	8946	14654	28281	8929	7638901	10415111
Milk (TL/kg)	954	1547	2669	3651	6098	11656	1258399	1424324
Yoghurt	815	1302	2117	4801	7914	14602	1845994	2065955
Butter	7832	11473	17918	23090	37573	66402	9394599	9993799

Mediterranean part of Turkey. It's obviously clear that, productivity per animal should be improved with new breed in this area. Moreover, grazing must be planned in this area. It has to be emphasized here that, small ruminant production is essential for this area. People living in this area do not have any other alternatives for the sake of life. The future development of livestock farming systems in mountainous area of East Mediterranean part of Turkey in term of extensive systems will largely depend on the application of modern management strategies, especially for planning and monitoring functions together with political and financial adjustments.

Moreover, educational studies should be started at utmost priority right away. People should be acknowledged on new technologies.

The economic significance of livestock and research into their uniqueness should increasingly be a priority in this area.

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