

## THE ECONOMIC AND CULTURAL IMPORTANCE OF ANIMAL FIBERS PRODUCTION IN TURKEY

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### Abstract

In today's world almost nine different animal kinds are used to produce fiber for trading purposes. All of these animals are mammals except silkworm. Mainly in Turkey wool, mohair, silk, goat coarse hair production is made and cashmere fiber and Angora rabbit wool production is made in very low levels. Between the years 1991 and 2011; the production of wool, mohair, goat coarse hair and silk decreased significantly. Also there is not enough data about production levels of cashmere fibers and Angora rabbit wool. The reasons of the decrease in animal fiber production in Turkey are rapid increase in the use of chemical fibers, changes in fashion which have negative impacts on the consumption of fibers especially mohair, the import of wool, and mohair in low prices and systematic problems on production of sheep, Angora goat, hair goat and silkworm. In contrast to the situation in Turkey, in recent years EU countries have attempted to increase both industrial production and income of small agricultural establishments which are on non-agricultural lands with different animal fiber production systems. However, Turkey has significant potential in animal fiber production. Therefore, in order to utilize this potential effectively, the development of different models, especially increasing the consumption of fiber products, will regularly provide raw materials needed for the textile industry and it will also considerably contribute to the rural development and conservation of the native animal's genetic resources and national culture at an important level.

**Keywords:** *Turkey, animal fiber, textile industry, rural development, culture.*

### Introduction

For the last 50 years, there has been a significant decrease in the production of natural plant fibers and animal fibers especially because these natural fiber types are unable to compete with the production of petrochemical fibers. In the recent years however, the importance given to the natural fibers has increased once again depending on the increased importance of these fibers in organic agriculture and in the protection of rural economy and ecosystem (Anonymous 2009a). In addition, there have been various studies in international arena to reduce the negative effects of competition with the synthetic fibers and the existing economic crisis on millions of people who work in the production and utilization of natural fibers. To give an example, there have been various fine animal fiber development projects in the European Union (EU) to utilize non-agricultural lands and to financially support small family businesses in other rural areas (Russel 1993). In accordance of this purpose, Food and Agriculture Organization of the United Nations declared the year 2009 as the international day of natural fibers (Anonymous 2009b). The number of similar studies is expected to increase in the future. In this study, the economic and cultural importance of animal fibers production in Turkey is going to be thoroughly examined and some suggestions are going to be made for the better development of this production area.

## **Animal Fiber Production in the World**

In the World, mainly there are three different groups of fiber production, namely; fibers of mammals (especially wool and luxury animal fibers), silk and poultry feathers. The total production of grease wool in the World is about 2.042.372 tons. However, there has been a decrease of 37% in total production of grease wool in the last decade depending on various factors (Anonymous 2011a). In today's world, grease wool production changes in two different directions. The first change is the transition from the production of medium-sized wool to the production of finer wool because of the increased demand of clothes which are made of light and soft wool. The second change is the increase in the production of coarse wool with more mutton for the instability of medium-sized wool market makes it difficult to market medium-sized wool thereby increasing its price (Cardellino 2003).

There are 11 different types of luxury fiber produced commercially in the World. These fiber types are grouped as luxury because of their low fiber diameters and low production levels. In recent years, there has been a decrease in the production of mohair, cashmere and cashgora and there has been an increase in the production of Angora rabbit, llama, vicuna and guanaco wools while there has not been any change in the production of alpaca wool (McGregor, 2012).

Silk is produced in more than 20 countries in the World and a very high labour force is employed in the sector of raw silk production and utilization. The total production of silkworm cocoons (reelable) in the World in 2010 is 485.906 tons and the foremost producers are China and India. There has been an increase of 31% in the production of silk in the last decade (Anonymous 2011a).

### **Production of Animal Fiber in the European Union (EU)**

Silk along with bad and middle quality wools form most of the fibers produced in the European Union. However, the production amounts of these fibers are of low level. In 2010, 185 028 tons grease wool and 930 tons wet silkworm cocoons were produced in the European Union (Anonymous 2011a). In the last ten years, there was a decrease in the total wool and wet silkworm cocoons production (30% and 46%, respectively). However, in the recent years there have been important changes in the policies of animal fiber production in the EU. Activities to develop the production of fine animal fiber like fine wool, cashmere, mohair and Angora rabbit wool have increased in order to use non-agricultural lands and to increase the incomes of small family businesses in rural areas (Russel 1993, Hopkins 1993).

### **The Economic and Cultural Importance of Animal Fiber Production in Turkey**

#### *The Level of animal fiber production*

At the present time, there are four different animal fibers as wool, mohair, cashmere, coarse hair and silk commercially important produced in Turkey. According to 2011 data, there are 23.811.036 head native sheep and 1.220.529 head Merino sheep and 42.739 and 3.847 tons of grease wool are produced from these animals, respectively. Most of the wool produced from native sheep is of coarse quality and mainly appropriate for carpet production. In the last ten years, there occurred a decrease of 26% in the amount of wool produced from native sheep. This decrease can be mainly said to result from the rapid decrease (40%) in the number of sheep. The decreasing in the number of sheep is resulted from generally negative changes in the characteristic of the structural, technical and socioeconomic of sheep raising. Although there has been an increase in the number of Merino sheep and in the production of fine wool in the last decade, this level also can not be said to sufficient.

Table 1. Production of animal fiber in Turkey (Anonymous 2011b)

Resources of animal fiber production	The number of animals and production amounts	1991	1995	2000	2005	2011	1991-2011 Change (%)
Native Sheep	The number of sheep	39 590 493	32 985 000	27 719 000	24 551 972	23 811 036	- 40
	Wool production (Ton)	57 902	48 288	40 706	43 801	42 739	- 26
Merino Sheep	The number of sheep	841 847	806 336	773 000	752 353	1 220 529	+ 45
	Wool production(Ton)	2 590	2 492	2 435	2 374	3 847	+ 49
Hair Goat	The number of hair goat	9 579 256	8 397 000	6 828 000	6 284 498	7 126 862	- 26
	Hair production(Ton)	3 955	3 397	2 697	2 654	3 062	- 23
Angora Goat	The number of Angora Goat	1 184 942	714 000	373 000	232 966	151 091	- 87
	Mohair production (Ton)	1 379	797	421	302	194	- 86
	The number of silkworm boxes opened	50 623	9 702	3 147	5 669	5 808	- 89
Silkworm	Production amount of wet cocoon(Ton)	1 353	271	60	157	151	- 89

Mohair is produced only from Angora goat in the World and native country of Angora goat is Turkey. According to 2011 data, the number of Angora goat and the amount of mohair production are 151.091 head and 194 tons, respectively and in the last decade there has been a significant decrease for both (87% and 86%, respectively) (Anonymous 2011b). The main factor for this significant fall in mohair production is that most of the mohair producers left Angora goat breeding. This situation is mainly due to the decreasing of the demand of knitted products made of mohair, the reducing of the prices of native mohair because of the import of cheaper prices of mohair from abroad, the not making use of Angora goats for meat and milk production, effectively and the other systematic problems which adversely affect this goat breed. However, in the recent years in Turkey Angora goat has been taken under protection within the context of project for the conservation of native animal's genetic resources and financially supported for mohair and this goat breed by the state.

Cashmere and goat coarse hair are mainly produced from Hair goat in Turkey. The number of Hair goat is 7.126. 862 head and the amount of produced goat coarse hair is about 3.062 tons (Table 1). For this goat breed is not effectively benefited for cashmere fiber, there is not any data regarding the values of cashmere production (Anonymous 2011b).

The number of silkworm boxes opened is 5.808 and the production amount of wet cocoons is 151 tons in 2011 in Turkey. However, in the last decade there has been a decrease of 89% in the number of silkworm boxes opened and in the production amount of wet cocoons because of swift rural depopulation, cut of mulberry trees, increased utilization of agricultural and chemical pesticides and substances. Besides, other alternative agricultural production areas bring better income than sericulture and it is another reason for this 89% decrease (Dikici 2008, Anonymous 2011b).

#### *The Economic value of animal fiber production*

Total agricultural production value of Turkey in 2011 is 73 billion USD. Within this figure, 49.4 billion USD is crop production while 23.6 billion USD is animal production (Anonymous 2012a). The highest 3 production values in animal products belong to red meat (34.3%), milk (32.3%) and white meat (20.5%). The value rates of animal fibers, however, are of quite low level. The production values of wool (native and merino), mohair, goat coarse hair and silk are 0.3%, 0.02%, 0.01% and 0.04% respectively (Anonymous 2012b).

Table 2. Agricultural Product Production Values of Turkey (Anonymous 2012a)

Production	Agricultural Production Values (Million USD)			
	2010	Share	2011	Share
Crop	44 466	67,8	49 406	67,7
Animal	21 183	32,2	23 651	32,3
TOTAL	65 649	100	73 057	100

Table 3. Animal Product Production Values of Turkey (Anonymous 2012b)

Product	Animal Product Production Values (Million USD)			
	2010	Share	2011	Share
Red Meat	7 948	37,5	8 114	34,3
Milk	6 822	33,6	7 659	32,3
White Meat	3 843	18,1	4 842	20,5
Egg	1 323	6,2	1 916	8,1
Honey	793	3,8	959	4,2
Leaf	66	0,3	70	0,3
Wool	57	0,3	70	0,3
Beeswax	27	0,1	29	0,1
Mohair	0,6	0,02	0,6	0,02
Hair	2	0,01	3	0,01
Silkworm Cocoon	1	0,05	1	0,04
Total	21 182	100*	23 318	100*

\*Figures on the table may not add up to the total figure because of rounding off the numbers.

#### *Raw animal fiber and the sector of fiber products*

Turkey's total export value of raw wool, clean wool and raw goat coarse hair is 24.7 million USD while the total import value of the same materials is 148.8 million USD in 2010. Within this import value, raw and clean wool have an important share. Turkey is among the important countries which utilize wool in yarn sector although wool production is at low levels in Turkey. Total import values of grease and clean wool is higher than the total export value in 2010 and it can be said to result from this case. Turkey's total export value of wool thread in 2010 is 49.8 million USD while its total import value of wool thread is 59.6 million USD. Mohair produced in Turkey is bought and distributed to the domestic market solely by Mohair Association. Turkey's total export value of raw mohair in 2010 is 1.194 million USD and this year there is not any import (Anonim 2011c,d, Sevim 2011).

Cashmere production and processing sector has not sufficiently developed in Turkey. It mainly results from the low of (decreased) amount of cashmere (about 40-50 gr per a goat) produced from hair goats. However, cashmeres collected in the spring may be sold to the markets of foreign countries as well as to domestic market by some merchants. Despite being in very low levels, Turkey exports and imports goat coarse hair and this fiber type is used in different textile areas as the production of interlining and tents.

Sericulture has a past of about 1500 years in Turkey. The importance of this sector's place continues in the country's economy despite the fact that there have been various significant decreases in silk production in the last decade. Premiums and subsidies given by the state have an important effect in this situation (Dikici 2008). In Turkey, total value of raw silk exported in 2009 is 503 000 USD while total value of raw silk imported is 1.202 million USD. In 2010, however, total value of exported clean silk and silk thread is 400 000 USD while the total value of imported clean silk and silk yarn (thread) is 6.5 million USD (Anonim 2011c,d, Sevim 2011). In Turkey, this production area is also important to supply employment. About 500 000 people work in the production of raw silk, in its processing and marketing. All of the produced wet silk cocoons in Turkey is bought by cooperative associations which are affiliated to Kozabirlik and these cocoons are given to the domestic and foreign market (Dikici 2008).

Turkey is also the native country of Angora rabbit but the data of the wool production and the number of this rabbit bred are not sufficient. At the beginning of 1990's, there was a significant increase in the number of businesses established for Angora rabbits. However; the cheaper importation of the necessary raw Angora rabbit wool for the sector mainly from China and from other foreign countries caused most of these businesses to be closed down. At

the present time, the data regarding the amount of this sector's demand of this fiber and the way how this demand is met is also insufficient.

#### *The cultural importance of animal fiber production*

The production of animal fibers in Turkey contributes to the formation and protection of folkloric culture at an important level. As it is clearly seen on the Table 4, different handicrafts like carpets, rugs, sacks and pullovers are produced depending on different fiber types produced in different regions. Most of these handicrafts meet the basic needs of families living in rural areas and reflect historical, cultural, ecologic and geographic features of these regions through different types, designs and colours.

Table 4. Handicrafts produced according to the type of animal fibers in Turkey

Type of animal fiber	Handicrafts
wool	rug weaving, flatweavings, felting, tablet weaving, knitting, fabric weaving (regional weavings)
mohair	fabric weaving (Siirt blanket, Sof weaving in the past), flatweavings, rug weaving, tablet weaving, knitting
silk	rug weaving, flatweavings, fabric weaving, needlework, embroidery
goat coarse hair	fabric weaving (tent, floor covering, nosebag, bag, animal covering), tablet weaving, flatweavings, knitting (blended coarse hair and down fiber)
down fiber (Cashmere)	knitting (hat, glove, footwear, scarf)
angora rabbit wool	knitting (hat, glove, scarf)
camel wool	knitting (hat, glove, footwear, scarf)
camel hair	fabric weaving (floor covering, bag), tablet weaving

#### **The future of animal fiber production in Turkey**

In Turkey, the share of animal fiber production in the economy is quite low when it is compared with meat and milk production. It can be said that this situation is mainly due to the continuing of using of synthetic/chemical fibers in the textile and other sectors, the negative changes in the consumers' demand of products made of primarily mohair and other animal fibers and other systematic problems which adversely affect on animal fiber production resources. Economic and cultural contribution of animal fiber production is expected to decrease in the coming years if these problems are not overcome or their adverse effects are not reduced. For this reason, the following applications can be suggested to develop animal fiber production in Turkey in the near future:

- The production of fine quality wool is at a quite low level. For this reason, it is necessary to work for the domestic production of at least a small part of currently imported fine quality wool.
- It is necessary to work for the domestic production of quality and amount of mohair demanded by mohair processing sector instead of importing it and to increase the efficiency of projects for the protection and breeding of Angora goats.
- Cashmeres produced from Hair goats in Turkey is at World standards in terms of its quality features (Dellal et al. 2001). But its production is not sufficient to make production at an industrial level. For this reason, it is necessary to carry out genetic and environmental improvement studies in order to increase the production of cashmere in required amount and quality.
- At the present time in Turkey, both raw silk production and processing sectors can be said to contribute much more to the country's economy than the production of animal fibers by having higher level of employment. For this reason, it is necessary to enable agricultural businesses with low sufficient income levels and/or other families to produce raw silk which is imported by this sector.
- It is necessary to work to increase the consumption of products made of Angora rabbit wool. Besides, developing meat rabbit raising will make it possible to benefit from these rabbits in the production of fiber and fur.

- It is necessary to carry out some activities for the developing of animal fibers production and handicrafts from these fibers in the agricultural businesses with low sufficient family income levels exist in the various rural areas, specially in the forestlands and mountainsides, aimed at agro, eco and other tourism branches. These activities will also contribute to the solution of goat breeding and forestry relations problem.
- Turkish carpets and rugs have an important place in the national and international folkloric culture for hundreds of years. But it is a reality that Turkey's importance in this field in the World has decreased in recent years. For this reason, it is necessary to work on developing new colours and designs which can affect customers' preference in a positive way for the restoration of carpet and rug production.
- It is necessary to work to increase customer demand of woven and knitwears made of animal fibers mainly from mohair and it is equally important to work for the creation of new areas of utilization.

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