

# **The cattle sector in Turkey. Global picture and focus on situation and perspectives for small cattle farms**

*Ç.Y. Kaya<sup>1</sup>, N. Akman<sup>2</sup> & G. Erdoğdu<sup>3</sup>*

<sup>1</sup> *Cattle Breeders' Association of Turkey, Konur 2 Sok. 71/6, 06440 Ankara, Turkey*

<sup>2</sup> *Ankara University, Faculty of Agriculture, Department of Animal Science, 06110 Ankara, Turkey*

<sup>3</sup> *Cattle Breeders' Association of Turkey, Konur 2 Sok. 71/6, 06440 Ankara, Turkey*

## **Abstract**

The cattle sector is one of the most important sub-sectors in agriculture since it provides the main elements for humans, such as nutrients like milk and meat. It has a remarkable economic importance as well, since its value amounted to nearly 14% of the total value of agricultural production and 56% of the total value of animal production in Turkey (Anonymous 2003). There are 10.5 million cattle in Turkey in more than 2 million farms. Even though the average yields differ a lot across the country, they are relatively low. The production of meat and milk is increasing but the consumption level of animal proteins is still lower than in many countries. The herd size is 5.2 cattle per farm in average but showing an increasing trend lately. The market for animal products is dominated by the private industry, therefore the prices show a very unstable trend negatively affecting the development of the sector. The improvement of cattle farms, the farm structure and herd size is predicted to occur faster in the near future than before because of the strong competition in the world markets.

*Keywords: small farms, cattle, dairy, meat, herdbook, Turkey*

## **Introduction**

In this section, the statistical data of the cattle sector and its products will be given so as to give a clear picture of the current situation in Turkey. The figures given in this section are the data of the Turkish Statistical Institute (Turkstat), the Ministry of Agriculture and Rural Affairs (MARA), the Central Bank of the Republic of Turkey (CBRT) and the Cattle Breeders' Association of Turkey (CBAT). However, it must be noted that statistical data in Turkey, in particular those about animal production, are mostly the result of calculations depending on the scientific assumptions for most of the factors.

In order to examine the development trends of the Turkish cattle sector, the number of cattle and the change in population by years should be first taken into consideration. The number of cattle had started to increase with the foundation of the Republic until 1980 when a decrease in cattle together with sheep and buffalo population began. The first and the last livestock census in Turkey took place in 1984 when the sharp fall in the number of all species was determined. The change in the number of cattle by years and the annual rate of change between 2005/1928 are given in Table 1.

**Table 1.** Number of different species by years (1000 heads) (Akman et al., 2000, Turkstat, <http://www.tuik.gov.tr/>, 2006) and annual rate of change.

	1928	1940	1950	1960	1970	1980	1990	2000	2005	
Cattle	6,934	9,759	10,123	12,435	12,756	15,894	11,377	10,761	10,526	
%TAV 2005/1928						0.54				

It could be said that Turkey had aimed to increase the livestock population after the Independence War and continued to implement the appropriate policy tools for this purpose for nearly 40 years, until the '60s. In the above table it can be seen that there is an increase in the number of cattle between 1928-1960. However, in the mid-'80s there had been a decrease in the number of all species, with the lowest rate in cattle. This change had occurred as a result of the changes in the country's agricultural and economical situation rather than intentionally decided policies. It should be noted that the increase in the number of inhabitants had been 1.34 times in the same period. Briefly, the decreasing trend of the Turkish livestock population after 1980 can not be considered compatible with the normal trend in the developed and even the developing countries of the world. Cattle population has been more stable than other species since the first livestock census, a fact that may be explained by the cattle breeding-oriented national policies.

In order to have a better idea about the cattle population of Turkey, the genotypic classification should also be examined. Cattle breeds in Turkey are classified under three main categories which are culture breeds, cross-breeds and native breeds. Culture breeds are the foreign cattle breeds like Holstein-Friesian (Black and White), Simmental, Brown Swiss and Jersey, which have higher milk and meat yields than the native breeds. Cross-breeds are the crosses of the native breeds with the culture breeds. There are 4 native cattle breeds which are found more frequently: Anatolian Black, Turkish Grey, East Anatolian Red, South Anatolian Red (EAAP, <http://www.tiho-hannover.de/einricht/zucht/eaap/breedlst/540total.htm>, 2006).

Actually, nearly half (43%) of the cattle population are cross-breeds of the various culture breeds and the population is showing an increasing trend since the artificial insemination practices have begun to be subsidized. But the share of cattle which are classified as "culture breeds" (22%) is increasing every year with the help of public support for genetic improvement studies, the establishment of new holdings, and the change taking place in the former holdings as a result of a more stabilized milk market, such as the increase in the number of purchasers/manufacturers, leading to increasing confidence of the producers in the sector and creating the guarantee to be able to sell the milk produced on the farm, enabling them to invest and enlarge their farms. The share of each genotype class in the population began to be calculated in 1990 and the number of cattle from culture breed class has increased by 2.32 times (2005/1990) since then. The rate of annual change (2005/1990) is 1.43 for crossbreds and -3.99 for the native cattle, while the total cattle population has decreased by 0.52 annually (Turkstat, <http://www.tuik.gov.tr/>, 2006).

The structure of agricultural production differs very much from one region to another. For example, while the eastern part of Turkey is still using the traditional methods of agricultural production, the western part makes use of the newest technological developments. Even though there is an ongoing project in south-eastern Anatolia to decrease these regional differences, the western parts have an advantage of being close to the big metropolitan centres, which facilitates the marketing of the products and with relatively higher prices. In addition, there are big differences in the ecological situation throughout the country (Kaya et al., 2004).

According to the results of the agricultural census in 2001, there are about 3 Mio agricultural holdings in Turkey. Within these, mixed cropping-livestock holdings constitute the greatest share of all farm types with about 2 Mio holdings (67.43%). The mixed farms hold the majority of the cattle population (96.55%) and sheep-goat population (90.79%) within 72.38% of the total agricultural lands. The number of holdings which produce only animal products is more than 72.000, a share of 2.36% of all types of farms. These livestock holdings are mostly found at the south-eastern part of Turkey where the sizes of herds are relatively small. It is a common error to think that these are specialized livestock holdings since these holdings do not fit to the general statistical definition of livestock holding; that is because in Turkish statistics holdings are considered in this class if they have no plant production. In fact, most of them are villagers with 1-2 cows, but mostly with relatively bigger flocks, without land (75.07%) or with very small non-agricultural land. Furthermore, these holdings hold only the 3.45% of the total cattle population while they hold 9.21% of the small ruminant population. The change in the number of all agricultural holdings, mixed cropping-livestock holdings and livestock holdings between 1991 and 2001 is given in Table 2.

**Table 2.** Number of holdings in 1991 and 2001 (Kaya et al., 2004, Turkstat, <http://www.tuik.gov.tr/>, 2006)<sup>1</sup>.

	1991	2001 <sup>2</sup>	Change (2001/1991)
Total Agricultural Holdings	4,091,530	3,076,650	-24.80%
Mixed Cropping-Livestock Holdings	3,943,340	2,074,439	-47.39%
Livestock Holdings	148,190	72,629	-50.99%

<sup>1</sup> The censuses include the agricultural holdings in all the villages and the districts having less than 5000 inhabitants.

<sup>2</sup> According to the provisional results of agricultural census of 2001, there are 4.106.983 house holds dealing with agriculture found at all of the villages and the provinces and districts where the population is less than 25000.

There has been an obvious decrease in the number of agricultural holdings in total and for both of the types, as shown in Table 2. As a result of the decreasing number of holdings in general and the increasing market competition for dairy products, together with the decrease in producer prices, a more remarkable decline in the number of both the agricultural and the cattle holdings could also be expected in the near future (Akman et al., 2000).

Cattle breeding in Turkey includes mostly the dairy cattle husbandry since there is not yet any specialized beef cattle production. Meat is obtained from the dairy herds.

The average herd size in Turkey is 5.2 heads of cattle in general, according to the results of the 2001 Agricultural Census. Among all the cattle farms, 84% have less than 5 heads (Anonymous 2001). The average herd size of the Herdbook farms was 11.35 cattle per farm in the same year.

Herd size is very much related to the type of holding and the size of the area of the holding. The mixed cropping-livestock holdings own 72.38% and the livestock holdings own 0.23% of all agricultural lands, which is 18.4 million ha in total (Turkstat, <http://www.tuik.gov.tr/>, 2006). The average size of the area is 6.43 ha for mixed cropping-livestock holdings and 2.39 ha for livestock holdings where it is 6.1 ha in general. Nevertheless, it should be kept in mind that 75.07% of livestock holdings do not have any land.

The average yield of cattle for meat and milk is another issue, which is rather low when compared to EU levels. However, Turkish statistics do not provide any data on yields; there are different sources of information which could provide yield data by calculating it from either the

animal numbers and total production amounts or the results of academic researches or surveys. According to the yield coefficients of different genotypes reported in 8<sup>th</sup> Five-Year Development Plans of the State Planning Organization (SPO), average milk yields for 1998 and 2005 are calculated in Table 3. The yields are calculated on the basis of total milk production and yield coefficients of these groups. The coefficients have been assumed to be 6 for the culture breeds, 3.5 for the crossbreds and 1 for the native breeds for 2005. In other words, culture breeds are considered as having 5 times and crossbreds having 3 times higher milk yield than native breeds. The average milk yield of Holstein-Friesian in 3 lactations for 305 days was 5542 kg according to the Herdbook data. The average milk yields for the three genotypes are calculated on the basis of the same method with these coefficients for year 2005 and given at the following table.

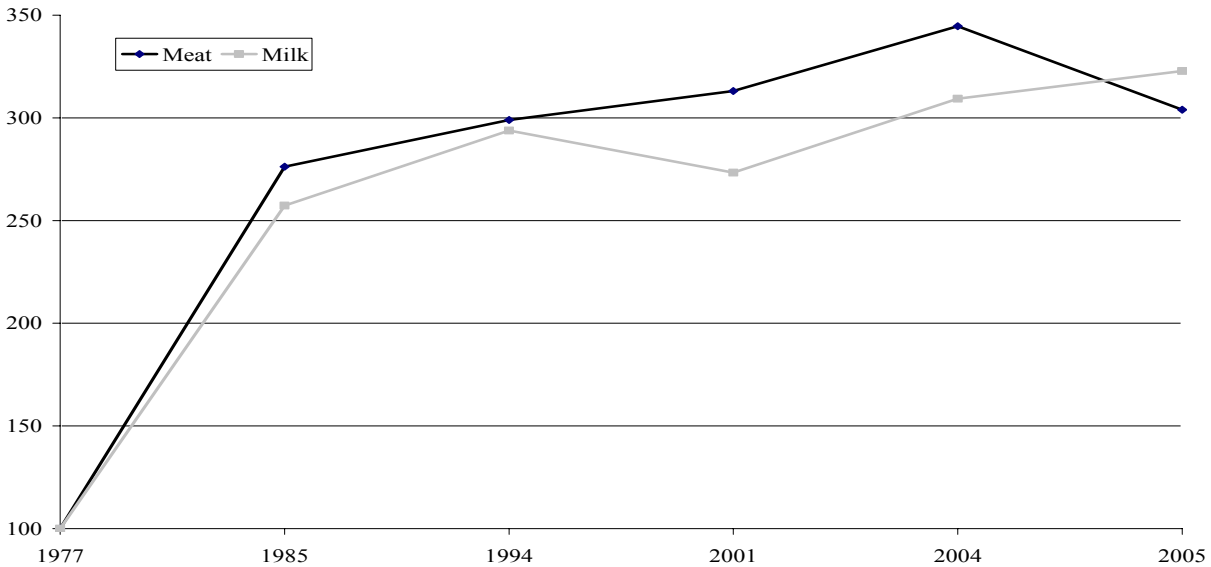
**Table 3.** Number of cows (head) and average milk yields (kg/year) of 3 genotype classes in 1998 and in 2005.

Genotypes	1998		2005	
	Number of Cows	Average Milk Yields	Number of Cows	Average Milk Yields
Culture	879,841	3223	925,618	4656
Crossbreds	2,346,093	1934	1,717,309	2716
Native	2,263,109	645	1,355,170	776
Total	5,489,043	1609	3,998,097	2508

The same inadequacy of statistics can be observed for average carcass weight as well. The abovementioned report gives an average carcass weight of 176 kg in year 1998. Akman et al. in one of his latest articles (2005) mention that the official statistics could be considered more reliable for carcass weights than milk yields since carcass weights are collected from the licensed slaughterhouses. It is reported that the average carcass weight has increased from 200 kg in 1991 to 235 kg in 2003 for culture breeds; from 160 kg to 203 kg for crossbreds and from 124 kg to 150 kg for native breeds.

It is also important to know production data in order to understand the sector. Similar to the statistics of average yields, production data are also the results of assumptions. A different method is used when calculating red meat production. Apart from the data collected, Turkstat also tries to add the slaughters of the feast of sacrifice to the number of slaughtered cattle from time to time (Anonymous 2006). The evolution of production is summarized in Figure 1.

As can be seen in the figure, meat and milk production has increased by 3 and 3.2 times respectively, in 2005, when compared to the production levels of 1977. The steady increase of these two main products in 1984 could only be explained by the change of method of calculation of the State Institute of Statistics (SIS).



**Figure 1.** Evolution of meat and milk productions between 1977-2005 (1977 Values=100) (Turkstat, <http://www.tuik.gov.tr/>, 2006).

Prices are the most important part of an economic activity in order to understand the structure of production and whether it is profitable or not to produce. The production costs and product prices should be at an acceptable ratio in order for production to be profitable and sustainable. It is the rules of the liberal market economy that determine the prices in Turkey, especially after 1995 when the public dairy factories were privatized or closed. Since then, cattle product prices have been showing an unstable trend almost constantly.

Mat carcass prices increased by 1.78 times since 1990 and the price of 1 kg of carcass in 2005 was €4.07 when calculated according to the data of MARA. Carcass prices have had a 57.30% annual rate of change between the same years where the retail price indices for food changed by 57.10% per year. The beef feed prices showed an almost similar trend through the years, reaching 18 €/100 kg in 2005.

The dairy sector could be considered as more fragile than the meat sector in Turkey since it has been affected more by the huge amounts of live animal and dairy products importations, in particular between 1986-1996. The high feeding costs, an unprotected heifer market, the organized powerful dairy industry (that also controls the volumes of milk to be processed), the non-organized producers and mostly non-functional dairy cooperatives, all caused a very unstable and risky environment for milk production because of the nature of this production and the consumption pattern of its products. Among others, it was the privatization of the Public Dairy Factory in 1995 which affected, and weakened most of all, the role of producers in the market. The ratio of raw milk prices to dairy feed prices has been generally between 1 and 1.5 since then. The ratio began to decrease in 1992 and is still showing a decreasing trend. It is worth paying attention to the ratio between 1990-92 when the value is over 2, and between 1992-96 where it falls near 1.25 and afterwards when it becomes 1. Milk (46.94%) and dairy (49.71%) feed prices showed a lower increasing trend through the years when compared with the annual change of retail price indices for food and carcass prices.

## Perspectives for small cattle farms

There were more than 2 million farms considered to hold cattle or buffalo in 2001. The smallest and largest herd sizes are calculated as 1.5 and 272.9 heads according to Turkstat data. In order to make clear the current situation of the cattle sector in Turkey, figures from the CBAT database are used in the following tables and graphs.

Pre-herdbook System is one of the data collecting and database systems established with the cooperation of MARA and CBAT in 2000, in order to register and identify the smaller farms which could not be recorded in the Herdbook System. The records include the farms, cattle numbers, artificial insemination data and progeny of the cattle kept in these farms. The difference from the Herdbook System is that these farms have less than 5 purebred cows and do not keep the records of milk yields of their cows. In fact, examining the data of the Pre-herdbook statistics could provide a better understanding for the small farms since it covers 35.62% of all the livestock farms and 26.39% of the national cattle population. Table 4 gives the number of farms, cattle and average herd size registered to the Pre-herdbook System.

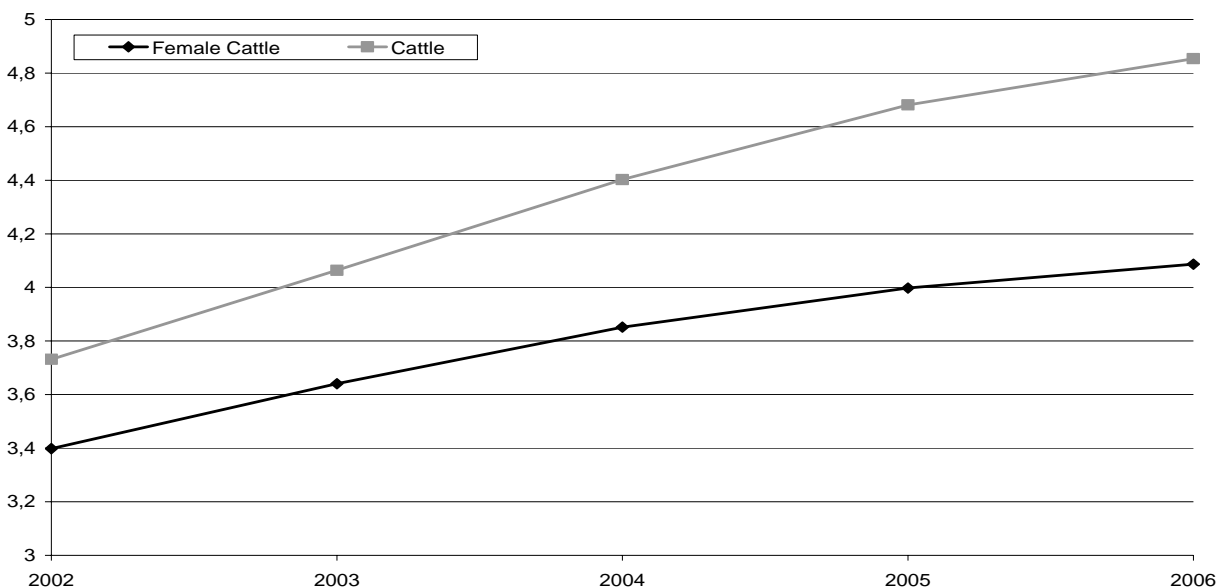
**Table 4.** Number of provinces recorded by the system, number of farms, cattle, and female cattle recorded in the Pre-herdbook System and average herd sizes by years.

Years	Nb. of Provinces	Nb. of Farms	Nb. of Cattle	Nb. of Female Cattle	Average Herd Size (head female cattle/farm)
2000	65	23,783	100,730	94,654	3.98
2002	77	257,002	964,125	872,620	3.40
2004	79	512,583	2,042,958	1,809,097	3.53
2005	79	764,857	2,778,291	2,455,479	3.21
2006	80	917,990	3,217,378	2,809,565	3.06

As seen in the table, the number of registered farms and female cattle increased by 38.59% and 29.68% since the first year of the system, respectively. This is mostly because of the differentiated subsidies given to the Pre-herdbook and Herdbook farms and cattle by the government in order to encourage the breeders to get organized and to increase the number of recorded farms or, in other words, to support the first cattle database of Turkey. However, when the annual rate of change for the average herd sizes (female cattle/farm and cattle/farm) are calculated, it is found to be -4.28 and -3.10, which could be interpreted as a decrease, but as mentioned above, the number of farms has increased through the years with the new registers of smaller farms. If we neglect the first year's expansion of the system, the number of registered farms show an annual increase rate of 43.63% between 2001 and 2006, while it is -1.67% for the average herd sizes (female cattle/farm). The highest increasing rate for the average herd size (female cattle/farm) is observed between 2002-2003 with 2.04%. Moreover, it should be noted that the quality of data obtained has increased and the results of the last years are more accurate. To have a better idea of the development trends in small cattle farms, the holdings which had been in the system since 2002 could be analyzed. There are 253.664 farms recorded in the system and they are still in the Pre-herdbook System in 2006. When the average herd sizes for total cattle and female cattle are calculated for these farms through the years, it can be seen that the number of cattle and female cattle per herd show both an increasing trend. This could be interpreted as a result of the subsidies given for the milk sold to the licensed dairies, buying of pure-bred

pregnant heifers, and pure-bred calves. The trend of average herd sizes is given in the following figure.

The annual rate of change is calculated as 4.72% for average herd size for female cattle while it is 6.79% for total cattle between 2002-2006.



**Figure 2.** Change in the average herd sizes for total cattle and female cattle per farm recorded in the Pre-herdbook System since 2002.

The genotypic classification of the registered cattle in the Pre-herdbook could also be taken into consideration. The rate of crossbreds and native cattle is increasing through the years, while the percentage of registered culture breeds is relatively decreasing. This could be linked to the special support schemes being applied to the native breeds, as well as the increasing registers of the smaller farms from North-east and South-east Regions to the Pre-herdbook System. If compared with the general distribution of the Turkish cattle population, culture breeds seem to be in majority in the Pre-herdbook system. Culture breeds are mostly recorded in the system because of the subsidies given for pure-bred heifers and calves. Therefore, the rate of registered crossbreds is rather low when compared with the national share of this genotype. Nonetheless, the national subsidy given for artificially inseminated cows provides the registration of the crossbreds.

The data of the Herdbook System are more accurate and detailed than that of the Pre-herdbook data since the purpose of the Pre-herdbook System is to provide more holdings and cattle to the Herdbook System which could fulfill the necessary requirements. The following part of the article will be focused on the Herdbook Statistics in order to provide more accurate information and to show the development trends of the Herdbook farms which could be classified as medium sized holdings of Turkey. The Herdbook holds the records of 1.96% of Turkish livestock holdings and 8.77% of the national cattle population.

The number of Herdbook farms, cattle and female cattle, and the average herd size since 1995 are given in Table 5. The number of provinces included in the system and the number of farms has increased steadily since 1995, as the associations grew bigger, the quality and variety

of services given by the associations increased, and the governments supported the Herdbook farms in order to increase the number of records. In particular the number of provinces included in the Herdbook system increased nearly by 4 times in the last 10 years. The annual rate of change is calculated as 48% between 1995-2006 for the number of farms and 46.44% for the registered cattle. If the annual rates of change every two years is calculated, it can be seen that the number of registered farms increased (the biggest increase observed between 2003-2004 with a rate of 76.35%) together with the number of cattle (92.91%) and female cattle (99.12%), whereas the biggest enlargement of the herds took place between 2005 and 2006. This may be attributed to the new support scheme, the so-called calf support, put into force by the government for the registered farms. Furthermore, it is obvious that the Turkish Herdbook System has not yet completed its growing process.

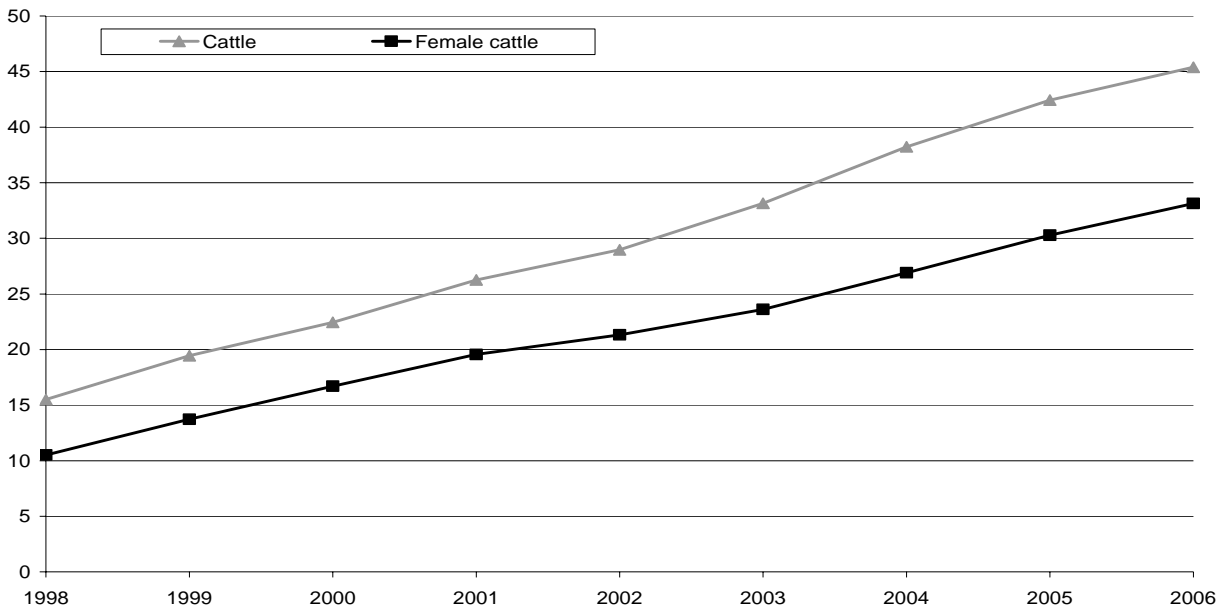
**Table 5.** Number of provinces recorded by the system, number of farms, cattle and female cattle recorded in the Herdbook System and average herd sizes by years.

Years	Nb. of Provinces	Nb. of Farms	Nb. of Cattle	Nb. of Female Cattle	Average Herd Size (cattle)	Average Herd Size (female cattle)
1995	18	564	13,894	7,821	24.63	13.87
1997	21	1,451	22,138	13,935	15.26	9.60
1999	25	2,757	34,818	24,210	12.63	8.78
2001	28	5,669	64,361	46,280	11.35	8.16
2003	38	11,357	179,450	124,831	15.80	10.99
2004	48	20,028	346,175	248,568	17.28	12.41
2005	56	31,822	574,134	419,856	18.04	13.19
2006	68	42,090	922,886	679,926	21.93	16.15

The average herd size (head female cattle/farm), which had a rather unstable trend, tends to increase since 2001. Average herd size (head female cattle/farm) has increased by 1.98 times since 2001 with an annual rate of change of 14.63%.

The farm gate milk prices have also a big effect on average herd size. As seen from the table, there had been a steady decreasing trend between 1995-1997, which was caused by the decreasing milk and meat prices because of the big amounts of imported breeding heifers. Just after the closing of the borders because of animal diseases, herd size began to increase slowly until 2000 when milk prices fell steadily. After the 2001 milk crises, milk prices showed a rather stable trend even though milk prices were still low. There had been another steady fall in milk prices in 2005 but this was compensated by the decrease of feed prices together with the national supports. Briefly, the market stability creates a reliable platform for the breeders who would like to invest. Therefore, the average herd size showed an increasing trend since 2001 with the positive effect of price stability.

In order to ignore the effects of expansion caused by the new registers, 1075 farms that have been registered to the system since 1998 were analyzed. Average herd size for cattle in these farms has increased nearly 3 times in the past 8 years, while it increased more than 3 times (3.15) for the average female cattle per farm. In fact, this chart reflects the results of the genetic improvement studies together with the services provided by the breeders' associations. Even though Herdbook farms only hold the 2% of Turkish cattle farms, nearly half of the processed milk is produced on these farms and almost all the marketed breeding heifers in Turkey come from these holdings.



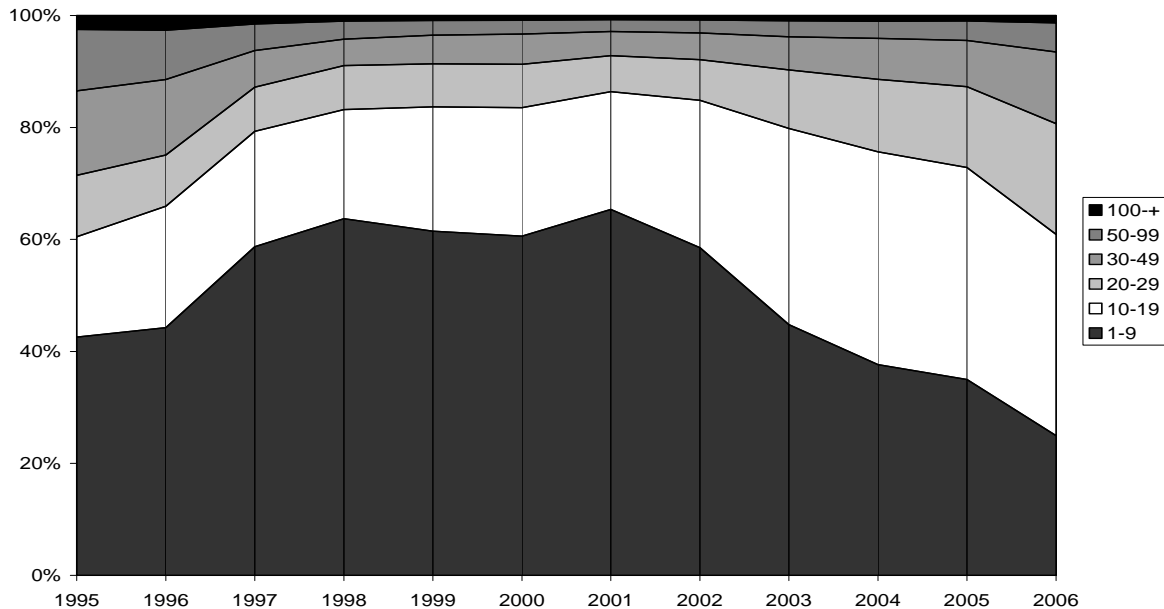
**Figure 3.** Trend of the average herd sizes (heads of cattle and female cattle per farm) of the 1075 farms registered in the Herdbook System since 1998.

The breed distribution of Herdbook cattle shows a rather different trend than the overall breed distribution of the cattle population but somehow similar to the Pre-herdbook results. The Herdbook studies had started in the Holstein farms of several big provinces. In fact, the first associations were named as “Holstein Breeders’ Association”. Therefore, at the beginning neither crossbreeds nor the native cattle breeds were recorded in the system. Together with the establishment of the umbrella organization, namely the Cattle Breeders’ Association, in 1998, the necessity to serve other breeds and lastly the change in the national acts regarding animal breeding in 2001, the names and the scopes of the associations began to change and all the associations are named as “Cattle Breeders’ Association” today. Other factors, like the changing support system of the government and the policies, have also had an effect on the breed distribution of registered cattle population.

Among of the most important data is the share of farms from different herd size classes in the total registered farms. In Figure 4, the distribution of farms from 6 different herd size classes by years can be seen. Herd size classes are given both for total cattle and female cattle numbers. It can be seen that the average herd size of most farms falls into the second group, with 10-19 cattle. After the first years’ increasing trend for Herdbook farm registers, the herd sizes tend to increase. Above all, the herd size shows a positive increasing trend both for cattle and female cattle.

When compared with the EU Member States, it is obvious that Turkey’s cattle farm structures do not differ much from them. The rate of farms with 1-9 cattle holds the majority of the farms in EU member states, in particular the members of the last enlargement and Bulgaria, an acceding country. If the data from the Herdbook system is considered as comparable, it is obvious that the majority of Turkish cattle farms in the same year had been bigger than some of these countries, with a farm rate of 44.80% in the herd size class of 10-19 heads of cattle. Moreover, the rate of medium sized farms in Turkey had been 35.05% while the same figure had

been smaller in all the others. The figures for the farms bigger than 100 heads of cattle were bigger in Turkey (0.95%) than Latvia, Lithuania, Poland, Slovenia and Bulgaria. The trend of the distribution of registered farms in the Herdbook System in Turkey among 6 herd size classes is given in Figure 4.



**Figure 4.** Change in the share of different herd size classes of Herdbook farms by years (%).

Cooperative members began to be registered in the Herdbook system after 1998 with the increasing national support schemes towards breeding activities. However, these cooperative members have very small herds, mainly composed of 1-2 cows. In fact, there had been an ongoing special Social Aid Program for the very poor rural people which gave 2 pregnant heifers. This Social Aid Program created numerous, very small herds with the aim of organizing these herds in a cooperative. Therefore, the membership of cooperatives in the Herdbook system consists of many small farms registered under these cooperatives. The number of cooperative farms and cattle recorded in the Herdbook system has increased by 72 and 140 times during the past 6 years. On 01.08.2006, there were 13.849 cooperative farms with 63.172 female cattle in the Herdbook database. The average herd sizes for these farms show an increasing trend through the years, which may be caused by the new registers of bigger cooperative farms or the poor feedback of the data from these farms.

## Conclusions

The identification and registration of cattle by MARA started extensively in September 2001 and to date there are more than 2 million farms with 15.5 million cattle recorded in this system. The Herdbook system and the Turkvet database of MARA are two different databases with different scopes. However, there are problems regarding the updating of current data. Therefore, it could be said that the most important subject in the Turkish cattle sector is the lack of sufficient data. The lack of accurate information hinders policy-making for long periods. It could be assumed that reliable data sources will be developed in the near future. Even though the Herdbook

database has the most up-to-date information, it covers only 2% of the cattle farms but 50% of the processed milk and nearly 9% of the cattle population. However, it will never include the small farms, since improvement programs cannot be carried out efficiently with them. But, fortunately, there is an expectation for the increase of herd sizes throughout Turkey, which would be induced by the market. Though there are special supports provided to the newly established farms by the government, there is no policy tool being implemented to increase the herd sizes in the current ones. In addition, the government also encouraged the existence of very small farms until last year by distributing 1-2 pregnant heifers to the very poor rural people. Even though it may seem as a Social Development Aid, this had been an opposing policy tool to the overall purpose of enlargement of the herds. The program was changed last year to distribute 4 pregnant heifers per family, which could be considered as better than the previous. Regardless of these policy tools, the Herdbook farms are getting bigger every year and this is the result of ongoing breeding studies as well as the changing market demands.

The market for milk also influences greatly the development trends of cattle farms. Even though the ratio between milk and feed prices has been close to 1 for some years, the stability encouraged the breeders to improve their farms. If the price trend does not lose its stability and even reach a balanced market situation near a ratio of 1.5, the increasing average herd size could be very probable in the next coming years.

Another very important issue is the genotypic structure of cattle farms. The smallest farms are the ones on the eastern parts of Turkey working with resistant but low-yield native breeds. The structure changes from east to west towards more specialized and high-yield cattle herds working mostly with culture breeds, namely Holstein Friesian, in particular for milk production. However, the eastern parts of Turkey are more suitable for fattening cattle. The crossbreeds are increasing in number each year in Central Anatolia and it can be predicted that with the ongoing improvement program, the rate of high yield culture breed and crossbreeds would increase through west to east. Thus, the share of these two breeds in the total production of milk and meat would also increase (Akman et al. 2005).

There is an increasing number of big private investment herds in Turkey. Even though the efficiency of these farms could be a point to discuss, these farms also open the marketing channels of the regions they are located in, and this may encourage the local farms to develop faster than expected. Indeed, the smaller herds, in particular the ones located in the eastern and central parts of Turkey, sometimes may have better access to the local markets. However, animal health and food safety issues are still not very well organized in Turkey. These smaller farms may have access to the market at the moment, but with the increasing awareness of the public on health issues this will not last long. The EU harmonization process, strict regulations concerning public health and food safety, together with quality controls, will most probably prohibit the sales of uncontrolled milk in the near future. In fact, a controlled milk market would accelerate the development of small farms into medium sized ones. Besides, the purchasers would have to take into consideration the quality and hygiene of the milk and perhaps they will be forced by the liberal market rules to pay different prices according to these criteria. Competition is getting tougher each year, both in the national and international level. Apart from the production, the milk producers could also feel obliged to have efficiently working cooperatives or be organized in different ways in order to have negotiating power. Since the cattle products market is not organized by the Government, producers will try to stabilize the prices either by negotiating as a whole with the powerful dairy industry or by entering the dairy market themselves.

It seems that in the coming years it will be more difficult for the smallest farms to survive, while the medium sized and big farms could continue their production in the most efficient and

economic way. This probability should be taken seriously into consideration by the governments, since the decreasing number of cattle farms could increase the emigration of this rural population towards the big cities.

Actually, the share of cattle in produced animal proteins is nearly the half. This share could be expected to increase to 60% in the coming years because of the increasing milk production. Since the average milk yield is considered to be nearly 2000 kg and carcass weight 200 kg, which are rather low, the realization of this assumption is very much probable. Theoretically, it is possible to increase the milk yield by 3-4 times and the carcass weight by 50%.

Briefly, it is presumed that while meat will maintain its actual importance, milk will become more important in the future as a means of production of animal proteins (Akman et al. 2005). But the increase in milk yield could cause another crucial problem to arise, that is a decrease in meat production. Therefore, efforts should be made to increase the milking cow numbers, as well as the milk yield, to avoid this possibility.

## References

- Akman, N., Özkütük, K., Kumlu, S. & Yener, S.M., 2000. Türkiye’de Sığır Yetiştiriciliği ve Sığır Yetiştiriciliğinin Geleceği, Türkiye Ziraat Mühendisliği 5. Teknik Kongresi, Volume 2 (38): 741-764.
- Akman, N., Tuncel, E., Yener, M., Kumlu, S., Özkütük, K., Tüzemen, N., Yanar, M., Koç, A., Şahin, O. & Kaya, Ç.Y., 2005. Türkiye’de Sığır Yetiştiriciliği, Türkiye Ziraat Mühendisliği 6. Teknik Kongresi, Volume 2: 687-706.
- Anonymous, 1993. 1991 General Agricultural Census Results of Village Information Survey, State Institute of Statistics Publication, Ankara, Turkey, 116 pp.
- Anonymous, 1997. The Summary of Agricultural Statistics 1996, Turkish Statistical Institute Publication, Ankara, Turkey, 49 pp.
- Anonymous, 2001. Hayvancılık Özel İhtisas Komisyonu Raporu, In: Sekizinci Beş Yıllık Kalkınma Planı, State Planning Organization Publication, Ankara, Turkey, p 134–162.
- Anonymous, 2003. Agricultural Structure; Production, Price, Value, 2003 State Institute of Statistics Publication, Ankara, Turkey, 546 pp.
- Anonymous, 2005. Turkey’s Statistical Year Book 2005, Turkish Statistical Institute Publication, Ankara, Turkey, 399 pp.
- Anonymous, 2006. Hayvancılık Özel İhtisas Komisyonu Raporu, Dokuzuncu Kalkınma Planı (2007-2013), State Planning Organization Publication, Ankara, Turkey, 123 pp.
- CBRT, 1995. Website. <http://tcmbf40.tcmb.gov.tr/> . Last accessed July 2006.
- EAAP, 2006. Website. <http://www.tiho-hannover.de/einricht/zucht/eaap/breedlst/540total.htm>. Last accessed July 2006.
- European Commission, 2005. Website. <http://ec.europa.eu/agriculture/> . Last accessed June 2006.
- FAO, 2006. Website. <http://faostat.fao.org/>. Last accessed July 2006.
- Kaya, Ç.Y. & Akman, N., 2004. Prospects of quota and Farm Management in Turkey, In: Farm Management and Extension Needs in Central and Eastern European Countries under the EU Milk Quota, A. Kuipers, M. Klopčic & A.Svitojus (editors), Wageningen Academic Publishers, Wageningen, The Netherlands, p 205-215.
- MARA, 2005. Website. <http://www.tarim.gov.tr/> . Last accessed July 2006
- Turkstat, 2005. Website. <http://www.tuik.gov.tr/> . Last accessed July 2006.