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FARM ANIMAL DIVERSITY IN TURKEY

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Abstract:

Anatolia is similarly rich in fauna, with over 80.000 species; of them 21 species are considered as farm animals, They are cattle, sheep, goat, buffalo, horse, ass, mule, camel, pig, chicken, duck, turkey, goose, ostrich, quail, pigeon, dog, cat, honeybee, silkworm, rabbit

So far, no census at the base of breed characteristics has been carried out in Turkey. A database has been established depending on some surveys. Field observations shows that pure native breeds can hardly be found.

The effective factors on farm animal Biodiversity in Turkey are agricultural policy, human nutrition requirement, the choose of Farmer, changing market condition and social needs, changing environmental conditions, changing feeding system and new forage products, changing breeding systems, new threats diseases, agricultural chemicals and natural disasters

Animal Genetic Resources Conservation Project started in 1995 and 97 billion Turkish Liras has been allocated to date from the General Budget by the Ministry of Agriculture, in addition 27.000 US $ from the World Bank Project, Turkish Agricultural Research Project (TARP) has been allocated.

The studies on those domestic animal genetics' structure is being examined. In the framework of this project, 4 cattle, 3 sheep, 1 goat, 2 poultry, 1 buffalo 1 rabbit, 1 honey bee, 1 dog, 1 cat and 2 silkworm native breeds have been conserved by ex-situ at research institutes.

Regulations on "Native Domestic Animal Genetic Resources Working Group and Working Principles" came into force by the Ministerial Approval No: MKD-BMZ.1.03.98, and dated: 05. 01.1999.

Animal Breeding Law was enacted on 21 March, 2001. There is two article in this law, regarding Animal Biodiversity . One of them Registration of new breeds other Preservation of Animal Genetic Resources.

Keywords: Farm animal, diversity, Turkey, environment, conservation, indicators

1.Agriculture In The Broader Economic, Social And Environmental Context

Land Use

Turkey has 77.9 million ha of land. 26% of the land is covered by forests, %16 meadow and pasture areas and %35 is devoted to agriculture. 4.8 million ha of agricultural land considered as first class, 5.9 m ha second class, 6.2 m ha third class and 4.6 m ha fourth class.

In the 16.5% of the arable land irrigation is possible while in the reminder (83.5%) is dryland. 5 m ha of the land out of total 24 yearly used area is left for fellow for every year. On the other hand, 790.000 ha area is used for vegetable production. 1.4 m ha area is devoted to fruit production, 530.000 ha for vineyard and 600.000 olive trees.

In 9.9% of total arable land is devoted to pulse production, 7.8% to industrial crop production and 3% to other crops. (SIS 1999)

Number of Farms:

According to the results of 1991 Agricultural Count, the number of farm is 3.968.000 and average farm size is 5.9 Ha. % of the farms according to production is 72% crop and animal production, 24% crop production only and 3% animal husbandry only

Among the farms that involve in milk production, 84% has 1-4 animal, in 87% of the farms for meat production the number of animals change between 1-10, in sheep farming %72 of the farms has 1-50 animals.

Table 1: Number of Poultry farms

Capacity	*laying*	*broiler*
2500	947	1419
2500-5000	704	3500
5000-10000	627	1263
10000-25000	561	469
25000-50000	248	89
50000+	120	37

Farm Employment

8.6 million people out of total employed 21.1 people is in agriculture.

Farmer Age/gender distribution, Farmer Education

According to the results of 1998 population count, 50.38% of total population over 12 is woman and 49.62 is man. In rural areas 92.7% of woman and 63.6%of man are involved in agriculture.

Table 2. Distribution of population according to age groups

Age Groups	*Distribution %*
0-14	30.04
14-64	64.39
65+	5.57

Source: State Institute of statistics, 2000

Table 3. Educational Structure of over 12

		Woman Rural	*woman Urban*	*Man Rural*	*man Urban*	*Total*
Illiterate	%	28.6	17.5	8.9	3.9	14.2
Primary school	%	60.7	50.9	67.9	51.0	56.8
Secondary	%	5.9	11.4	11.7	17.4	12.0
High	%	4.2	15.1	9.5	19.0	12.5
Faculty	%	0.6	5.1	2.0	8.7	4.5

Source: State Institute of statistics, 1999

Table 4. Agricultural GDP: (At current producers' prices, in billions of TL)

Sector	1995	1998	1999	2000
GDP	7.762.456	52.224.945	77.415.272	124.982.454
Agricultural GDP	1.218.178	9.113.454	11.851.055	18.110.632

Source: SPO, June 2001

Table 5. Agricultural Output (2000)

Sector	*value*
Crops production value	14.500 billion of TL
Animal production value	4.900 billion of TL
Forestry production value	0.438 billion of TL
Fisheries production value	0.720 billion of TL

Source: State Institute of statistics, 2000

Table 6. Estimates of Support to Agricultural (TL bn)

	1997	**1998**	**1999**
Producer support estimate	1.555.825	3.698.662	5.000.783
General services Support estimate	398.439	933.666	1.762.340
Consumer Support estimate	-1.356.197	-3.273.671	-4.820.573
Total Support estimate	1.954.264	4.632.328	6.763.123

Source: OECD 2000

Farm Income

In the frame of Livestock production development decree, to promote forage crop production 30 % of the expenses Per hectare have been refunded.

Pasture found established as stated in pasture improvement Law no 4342. Using this found basin development project have been implemented.

Farmers using biological control factories, biological control equipment, like agriculture chemicals, pollinators are refunded as support bye the government as shown below;

Parasitoits, predators, pollinators	40 %
Biological preperats, atractans, repellents, solarisation matters	30 %
Natural chemicals	20 %

Agri-environmental expenditure

In the recent years, especially big farms started taking precaution to reduced environmental pollution arising due to agricultural practices

Agri-Environmental regulations

- 'The Pasture Improvement Law/4342' have brought into force in 1998.
- The regulation on prevention and use of agricultural land
- The regulation on health control of poultry hatchery and breed farm
- The procedure and principles on licence and inspection of animal bazaar
- The regulation that the procedure and principles on foundation, opening, working and inspection of meat and meat products enterprise

Expenditure on agri-environmental research

The project related to agricultural environment are in limited number. For agri-Environmental researches only public organisations put resources. Ministry of Agriculture and rural Affairs has spent 4 % of its annual budget to these projects

2.Farm Management And The Environment

Organic Farming

At the beginning of 1980 organic agriculture has begun with some products in Turkey. Variety and amount of organic product has increased rapidly after 1990.

Turkish ecological products amount approximately is 168.365 tons a year. There are 12.275 farmers who are involved ecological agriculture and 46.523 hectares farm land used for. 27.788 tons ecological product is exported to EU country in 1999.

After processing such as drying, withering and treatments ecological products become less harvest product so there is a great difference between exporting and production.

Even it has a great potential animal products are less than vegetable products.

It seems most ecological products are produced in Aegean Region generally variety of organic products are produced in all around of Turkey.

Organic farming products constitute of; 51 % dried fruits, 25 % field crops, 19 % fresh fruits, 3 % vegetables and 2 % 0thers

Biological Control

Important biological control activity and implementation in Turkey. In 1996 Research centre in Turkey 3 new, 25 ongoing totally 28 project have be implementing on biological control subject.

The main subject of those research are;

- Using egg parasites of sunnpest in biological control
- Investigation of natural enemies of corn worm and corn and using it to biological control
- Biological Control on potato insect
- Research an idendifing some entamopatogens enemies and using possibilities
- Research on microbial insectisit and using possibilities
- Research on antagonist microorgansm and using possibilities
- Biological Control on cucumber mildyo
- Biological Control on rot cancer disease
- Taxonomy of useful insects
- Side effect of insecticide on useful insect

Table 7. Fertiliser used

Type of Fertiliser	*quantity*
Total (tons)	10.985.321
21 % nitrogen	7.072.821
16-18 % phosphorous	3.751.150
48-52 % potash	161.350

Source: State Institute of statistics, 1999

Table 8. Fertilise use rate

1963-67	68-72	73-77	78-82	83-87	88-92	93-97
197%	85 %	54 %	17 %	13%	0.5 %	0 %

Source V. technical Congress 2000

In 1997 the use of fertiliser rate is zero. Its shows that it reached its limit.

Table 9. Pesticide Use and Risk

Pesticides	*Lt*	*Kg*
Insecticide	1.469.967	10.318.050
Fungicide	1.560.248	6.216.431
Herbicide	1.515. 209	5.442.663
Water Wash	63.677	3.508.256
PGR	975.081	363.523
Fumigant, nematoside	1.197.603	170.860
Akarisit	198.444	648.301

Source: Ministry of Agriculture and rural affairs 2000

Risks in using pesticides

- Useful insects die
- natural balance is broken
- new harmful insects is emerge
- As the agricultural chemical use increase, plant protection problems increase too.
- Pesticide residues on crops
- Environmental pollution

Animal Manure

58 % of the livestock manure is burned for heating, 29 % remains in field here and there, 10 % is used for agricultural purposes and finally 3 % is used for other purposes.

The removal of manure in small scale herds where is no plant production and field for this constitutes a problem. The value of manure is not appreciated in Turkey properly

The results found in a research on comparison of modern farms and rural farms in terms of manure are as follows;

	Water %	Dry Matter %	SiO2 %	Organic Matter %	NH3 %	Organic N %	P2O2 %	K2O %
Modern Farm	82.96	17.04	10.08	84.15	0.10	1.65	1.35	1.77
Rural Farm	78.93	21.07	15.35	77.80	0.11	1.17	0.88	0.83

Table 10. Number of livestock by type and species

Type/species	*1990*	*1999*	*Milked 1999*	*Slaughtered 1999*
Cattle Culture	1.013.000	1.782.000	903.499	104.442
Cattle Cross-bred	3.670.000	4.826.000	2.424.629	343.352
Cattle Domestic	6.694.000	4.446.000	2.209.764	671.151
Cattle Total	11.377.000	11.054.000	5.537.892	1.118.945
Calves Culture				131.902
Calves cross-breed				507.760
Calves domestic				248.151
Calves Total				887.813
Buffaloes	371.000	165.000	79.973	22.491
Buffalo calves				5.749
Camels	2.000	1.350		33
Horses	513.000	309.000		
Asses	985.000	555.000		
Mules	202.000	125.000		
Pigs	12.000	3.400		3.1.98
Sheep culture	842.000	831.000	457.982	
Sheep domestic	39.711.000	29.425.000	16.015.358	
Sheep total	40.553.000	30.256.000	16.473.340	3.891.032
Lambs				3.213.821
Ordinary goats	9.698.000	7.284.000	3.843.219	1.059.274
Kids				195.976
Angora Goats	1.279.000	490.000	234.000	48.816
Kids				4.989
Chickens	96.676.000	239.747.937		
Turkeys	3.127.000	3.762.516		
Ducks	1.070.000	1.294.824		
Goose	1.389.000	1.670.824		

Source: State Institute of statistics, 1999

3.Farm Animal Diversity

Context

Turkey has been a long-standing agricultural country, growing many cultivated plants as well as raising livestock. As a result, a large portion of the country has now turned into degraded steppe due to unsustainable use of the Anatolian ecosystem for agriculture over the ages. A long history of agriculture has produced important field crops and races of animals, which have since been distributed around the world.

Animal genetic resources is a component of biological diversity and it is important in meeting the requirements of the people in food and agricultural fields. However, with rapid increase in population and economic impression give rise to an acceleration in transformation of the conventional agriculture, leading to the loss of biological diversity. In particular, extinction of farm animals affects the human life directly, and this case is of socio-economical importance as well as the ecological aspect.

Farm animal breeding is an economical process, and the main purpose is productivity and profitability. The objective of the genotype breeding studies is to obtain the genotypes which will provide the most beneficial production in expected future conditions. With the selection and cross-breeding studies in recent years for this purpose, and with the intensive animal importation, some genotypes have been lost and replaced by new genotypes.

It is not predictable, however, that to what extend these genotypes which are not economically important at present will be demanded in future. For all these reasons stated, farm animals have to be obviously protected in both ecological and economical terms. In farm animals, the motivations towards the productivity all the time weakens the adaptation to environmental conditions and diseases etc. Therefore the genotypes with high adaptation ability always have to be preserved.

Anatolia is similarly rich in fauna, with over 80.000 species; of them 21 species are considered as farm animals, They are cattle, sheep, goat, buffalo, horse, ass, mule, camel, pig, chicken, duck, turkey, goose, ostrich, quail, pigeon, dog, cat, honeybee, silkworm, rabbit

No census at the base of breed characteristics has been carried out in Turkey. A database has been established depending on some surveys. Field observations shows that pure native breeds can hardly be found.

All native cattle breeds whose exact breed is not known are counted under “Native Black” (Yerli Kara) and this kind of sheep breeds are counted under “White Karaman” (Akkaraman), native goat breeds are counted under “Hair Goat” (kıl) population.

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1. Registration of new breeds.
2. Preservation of Animal Genetic Resources.

TABLE 11/a. Number of farm animal by species and breeds (1998)

Species	Breed	Not at risk	Endangered	Extinct	Number
Cattle	Yerli Kara		X		1.729.000
	Boz ırk		X		113.661
	Doğu Anadolu Kırmızısı		X		844.056
	Güney Anadolu Kırmızısı		X		101.994
	Kultak		X		*
	Zavot		X		*
	Çukurova			X	
	Kırım			X	
	Kıbrıs			X	
	Seferihisar			X	
	Diyarbakır			X	
	Eleşkirt			X	
	Karaisalı			X	
	Holstein Friesian				1.508.000
	Brown Swiss				603.000
	Simmental				153.000
	Jersey				237.000
	Cross-breed				3.274.000
	Karacabey esmeri				*
Buffalo	Anadolu		X		165.000

* Not available

TABLE 11/b. Number of farm animal by species and breeds (1998)

Species	Breed	Not at risk	Endangered	Extinct	Number
Sheep	Akkaraman	X			11.926.000
	Mor Karaman	X			8.141.000
	Kangal Akkaraman	X			*
	Güney Karaman		X		*
	Daglıc	X			1.761.000
	İvesi	X			1.633.000
	Karayaka	X			1.521.000
	Sakız		X		390.000
	Gökçeada		X		1.000
	Kıvırcık	X			1.735.000
	Ödemiş		X		*
	Hemşin		X		*
	Halkalı			X	
	Herik		X		*
	Tuj		X		*
	Karakaş		X		*
	Karakul				*
	Ramlıç				*
	Türkgeldi				*
	Acıpayam				*
	Malya				*
	Tahirova				94.000
	Çine çaparı		X		*
	Merinos				798.000
	Türk Merinos		X		*
	Norduz				*
Goat	Ankara		X		488.000
	Maltız		X		*
	Kilis	X			*
	Kıl	X			7.744.000
	Saanen				17.000
	Kafkas		X		*
	Norduz				*

- Not available

TABLE 11/c. Number of farm animal by species and breeds (1998)

Species	Breed	Not at risk	Endangered	Extinct	Number
Chicken	Denizli		X		*
	Gerze		X		*
	Çıplak Boyun		X		*
Duck	Domestic				1.294.000
	Pekin				*
	Muskovy				*
Turkey	Domestic				3.762.000
	American white				
Goose					1.670.000
Ostrich					*
Quail					*
Pigeon					*
Horse	Anadolu	X			309.000
	Uzunyayla		X		*
	Canik		X		*
	Hınıs		X		*
	Çukurova		X		*
	Midilli				*
	Arab				6.000
	İngiliz				6.000
	Haflinger				*
	Malakan			X	
Ass	Anadolu	X			555.000
Mule					125.000
Pig					3.400
Camel					1.350
Dog	Kangal		X		*
	Türk Tazısı		X		*
Cat	Van		X		*
	Ankara			X	
Rabbit	Ankara		X		*
	New Zelland	X			*
Silkworm	Bursa beyazı		X		*
	Hatay sarısı		X		*
HoneyBee	Kafkas				*
	Anadolu				*

* Not available

The Effective Factors On Farm Animal Diversity

- Agricultural policy
- Human nutrition requirement
- The choose of Farmer
- Changing market condition and societal needs
- Changing environmental conditions
- Changing feeding system and new forage products
- Changing breeding systems
- New threats diseases
- Agricultural chemicals
- Natural disasters

Justification For The Conservation Of Farm Animal Diversity

Conservation of animal genetic resources requires manpower, cost, and organisation capability. There are significant reasons, however, for the preservation of genetic resources. These are as follows:

- Native breeds are capable of continuing their productivity even if the development is slow, under poor conditions.
- Native breeds are content with little, that is they are capable of converting foodstuff of low value and the potential of the fields not convenient for plant production to meat, milk and power.
- Provision of the availability of genotype variation which will constitute the base of the breeding studies in future.
- Conservation of genetic resources means, at the same time, the preservation of the possibility of obtaining heterosis.
- Conservation of the present variation because of the uncertainty about future conditions regarding climate, shield, feed and hygiene.
- Right of the next generation on the present gene resources, therefore we have not got the right to alter this gene collection.
- The activities in preserving the genetic resources win the related countries respect and trust.

Table 12. The Conservation of Domestic Farm Animal Genetic Resources

Species	*Breed*	*İnsitu*	*Exsitü-İnvivo*	*Exsitu-İnvitro*
Cattle	Yerli Kara		X	X
	Boz ırk		X	X
	Doğu Anadolu Kırmızısı		X	X
	Güney Anadolu Kırmızısı		X	X
Buffalo	Anadolu		X	
Sheep	Sakız		X	
	İmroz		X	
	Turkish merino		X	
Goat	Ankara goats		X	
Chicken	Denizli		X	
	Gerze		X	
Dog	Kangal		X	
Cat	Van		X	
Rabbit	Ankara		X	
Silkworm	Hatay sarısı		X	
	Bursa beyazı		X	
Honeybee	Kafkas	X		

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