

THE TURKISH GREY

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[GADDINI Andrea, (2020) La Grigia turca. *Eurocarni*, 3: 100-105]

<http://www.pubblicitaitalia.com/eurocarni/2020/3/18337.html>

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The Turkish grey (*Boz Irk* or *Boz Step*) is a bovine breed widespread in the European part of Turkey and in the westernmost areas of the Anatolian peninsula, in particular in Thrace, Marmara, northern and inner Aegean, and western Anatolia.

It's a double purpose breed, beef and dairy, but like many other grey steppe breeds, in the past it was a draught animal, and has been challenged by agricultural mechanization, by the introduction of more productive cosmopolitan breeds, by the reduction of pastures, converted into arable crops, and by the poor generational turnover on farms.

It is highly appreciated by breeders for its great resistance to harsh climatic conditions and for the skill to cope with feeding changes, exploiting in an effective way poor quality forages. It's a typical breed for extensive rearing, raised mainly or exclusively at pasture, with low environmental impact and limited use of resources by the breeder.

Origin

The prevailing opinion is that *Boz Irk* derives from the Bulgarian breed *Iskar* (*Sivo Iskarsko govedo*), so much so that the other names of the breed, *Pleven* and *Plevne Siđiri* come from the name of the Bulgarian city from which the breeding stock came. It should be stressed that *Pleven*, like all of Bulgaria, until 1878 belonged to the Ottoman Empire, predecessor of today's Turkey, and therefore livestock exchanges occurred more easily, in the absence of borders.

On the origin the FAO DAD-IS database reports two hypotheses: an introduction in 1864 from Hungary, or between 1890 and 1940 from *Pleven*.

Other names of the breed are *Boz step* (in Turkish "*steppe grey*"), *Thrace*, *Anatolian grey*, *Step Siđiri* ("*steppe cattle*").

It is interesting to remark that the spreading area of *Boz Irk* is geographically very close to those of other steppe grey breeds, such as the Bulgarian grey (*Balgarsko Sivo Govedo*), which includes the old *Iskar*, the Greek *Sykià* and the Romanian *Sura de stepă* (see map at page 92). The *Boz Irk* cattle also show a great morphological similarity with Bulgarian grey, but also with the Greek *Katerini* and the Italian *Podolica*.

A 2009 study (Pariset *et al.*), which compared the single nucleotide polymorphisms (SNP) of Turkish grey with *Maremmana*, *Hungarian Grey*, *Piedmontese* and *Marchigiana* breeds, showed, surprisingly, that each of the breeds is genetically distinct from the others, despite the remarkable morphological similarity between some of them.

Morphology

The body frame of this breed is robust, the chest is deep, the part of the rump next to the sacrum is rather narrow and the foretrunk is more massive, especially in males, so much so that the body, seen from the rear, has a triangular appearance. The back line is sloping from the withers towards the loins and slightly rises towards the tail joint; the rump height is bigger than withers height. The limbs are well structured and solid and are rather long compared to the trunk. Sexual dimorphism is notable for both size and proportions. The head is long, narrow, rectangular, with a straight profile and square forehead, the dewlap is more abundant in males. The horns are large, crescent shaped, directed outward and then forward and upward, with circular section, yellowish with black tips. The ears are large and ellipsoidal.

Coat

The coat shows many variations from light silver grey to dark ash grey, lighter in cows. Note that breeders do not appreciate exceedingly light-coloured animals. In the bulls a dark grey ring around the eyes (spectacles) is shown, the muzzle is also surrounded by a black ring and the inside of the ears is covered with black hair.

The neck, breast, chest, lower part of the shoulders and forelegs are darker than the rest of the body. The hooves are black and very resistant, the eyelashes are black and the skin is slate grey; the black colour of anal membranes is considered a sign of compliance with the breed standard. Calves at birth are fawn and turn grey around six months.

Size

The biometric measurements, from a study by Namık Kemal Üniversitesi of Tekirdağ, in the Marmara region, are shown in the following table:

Boz Irk <i>measures and weights</i> <small>From: Soysal, 2009</small>	males			females		
	min	max	avg	min	max	avg
Withers height (cm)	122.0	130.0	126.0	103.0	136.0	117.98
Rump height (cm)	126.0	133.5	130.10	104.0	186.0	126.22
Trunk length (cm)	113.0	134.0	123.0	111.0	165.0	137.94
Chest girth (cm)	182.0	191.0	186.80	112.0	195.0	165.89
Chest height (cm)	66.0	73.0	68.80	53.0	72.0	62.66
Shin girth (cm)				13.0	28.0	17.01
Head length (cm)				35.0	56.0	45.38
Head height (cm)				18.0	27.0	20.23
Horn length (cm)				8.0	46.0	28.16
Horn circumference (cm)				10.0	24.0	15.35
Horns tips distance (cm)				11.0	21.0	12.43
Ear length (cm)				15.0	22.0	18.95
Ear width (cm)				9.5	17.0	13.99
Live weight at birth (kg)	13.0	37.0	24.04	13.0	29.0	22.37
Live weight at 6 months (kg)	112.0	196.0	158.32	81.0	145.0	117.0
Live weight at 12 months (kg)	160.0	370.0	291.99	140.0	190.0	167.0
Live weight at 24 months (kg)	224.0	410.0	307.0	210.0	290.0	252.0
Adult live weight (kg)	449.0	490.0	470.0	247.0	550.0	375.07

The best bulls reach the weight of 800-900 kilograms, but this can be seen as an exception.

The Kultak variety, with grey coat, derived from crossbreeding with the autochthonous black breed, has greater ease of fattening, the average withers height of cows is 110 cm and the average live weight is 220 kg. In 1990 the census was 20,000 heads and in 2003 the variety was considered endangered of extinction.

Production traits

The beginning of the females' reproductive activity is at 24-28 months, the first calving is on average at 33 months (interval 30-36 months). The birth rate is 86.54% and the calves' survival at 60 days is 99%. The productive lifespan is 15 years.

The cows are on heat in May and June and calvings are concentrated in March and April; cases of free martinism can occur. The calves are kept together with their dams for a period of 7-8 months until weaning, which occurs spontaneously. A 4-5 months dry period is provided for before calving.

Boz Irk are very resistant to sudden changes in their diet, they have a well-developed digestive tract, which allows to feed them a very poor diet, consisting mainly of straw, and have a good food conversion index.

Heifers and young bulls are kept together on pasture until the breeding stock is chosen. Boz Irk males are sold for slaughter at 24-30 months.

The meat is sold on local markets at higher prices than other breeds, thanks to its excellent taste. Average daily increase of 1,062 grams and average dressing percentage of 57.39% are reported, with an average carcass weight of 210 kg. In a fattening test the weight gain of a two-year-old male over a three-month period was 58.35 kg.

The cattle of the breed grow up slowly and lay yellow subcutaneous fat in relatively small quantities, and meat appears dark with poor marbling since most of the fat forms subcutaneous deposits and intestinal fat.

Milk production, usually intended for domestic consumption, is on average around 900 kg of 4% butterfat milk. In the best managed herds, the average production reaches 1,450 kg of milk with 4.25% butterfat. The current trend is to increase milk/meat productivity. Lactation length is on average 220.13 days, varying from 78 to 350 days, with an average production of 1,095.63 kg with a range of 157-2,965 kg and an average fat content of 3.93%, with a range of 2.5- 6.12%. Boz Irk is not linked to any typical traditional meat or dairy product.

In the past, the animals performed remarkably well in long-term draught work provided in unfavorable conditions, and were considered superior to all other Turkish draught breeds.

Census and widespread

According to French in 1966 the breed census was 2.5 million heads, which dropped to 930,000 in 1975, including crossbreeds. In 1990 there were 300,000 heads, in 2004 only 20,395 and in 2012 they dropped again to 14,000 of which 7,000 in reproduction, while the last datum of DAD IS is referred to 2013 with a census of 20,000 heads, of which 12,400 in reproduction (400 males and 12,000 females), in 200 farms. Therefore the breed should not currently be considered endangered.

According to a 2005 survey by the Turkish Ministry of Agriculture, in the framework of the national registration project with the application of ear tags, the Grey breed population in Thrace counted 5,301 animals, including crossbreeds, almost all (5,187 animals, equal 97%) in Enez district, Edirne province, in the area of the Evros river, which forms the border with Greece. The survey was preliminary for the creation of the Herd book, which has not been established at the moment. The other two provinces only had 114 head of cattle which represented 3% of the entire population of Boz Irk of Thrace.

In addition to the province of Edirne, small populations live in villages in the area of Bergama (ancient Pergamum) in the province of Izmir (Smyrna), in the province of Balıkesir and in the district of Mustafakemalpaşa, in the province of Bursa, both in the western part of the Anatolian peninsula, and of the Gelibolu (Gallipoli) district, Canakkale province, in the western mountain region of European Turkey.

According to Eurostat, 17,220,900 cattle were reared in Turkey as of 31 December 2018, a sharp increase in the last two years, while in 2018 252,870 heads were slaughtered for a total weight of 62,120 tons, with a marked decrease compared to 2015 and 2016.

Breeding

The natural environment of Boz Irk is forest land, wet and rough terrains and swampy places. In these areas it survives and reproduces without human intervention.

The animals have an aggressive and irritable character, and consequently handling by expert herdsman is required. The interaction between the members of the herd is very strong, and any attempt to interfere with the group gives rise to a defensive action, such as gathering in a circle.

These cattle have great ability to acclimatize and, thanks to a very efficient immune system, are resistant to diseases and external parasites with rapid recovery from infections.

Cows have a strong maternal attitude, with great calving ease, without man's assistance, and ability to protect calves from predators and climatic adversities. Cows cannot be milked if the calf is not in sight.

The rearing methods of this breed are different in small family-run farms compared to the large ones. Small breeders often have only 1 or 2 animals, housed in stables in winter, with scarce concentrate supplements, and taken to common pastures from late spring to late autumn in collective herds, kept by one breeder in turn. In this type of breeding the cattle are also milked in the morning and in the evening.

The work is provided by the family and, in case of need for additional manpower, for particular operations such as vaccinations or for the separation of the heads to be sold, they seek help from neighbouring farmers.

In the past, the small breeders of Boz Irk had to cross their cattle with Brown Swiss or Holstein in order to get higher milk production or with foreign beef breeds to improve carcass weight. In 2005 a regulation on *in situ* conservation and state support programs for animal genetic resources stopped this practice.

Large and medium-sized herds are run by relatively young breeders, with an average age of 46, and the purpose is meat production. The average size of a herd is 57.88 head. The livestock is kept on pasture all year round, with of straw, hay and evergreen oak leaves supplements, and more rarely with concentrates (up to 2 kg/head), and can benefit from simple fenced shelters of reeds and marsh plants, called "*saya*". The same shelters are used for fattening, near the villages or by the owner's house, on groups of 15 heads on average. Baskets of branches or the rear tires of tractors are used as troughs.

The province of Edirne, the main breeding site of Boz Irk, is also the most important rice-growing region in Turkey, and therefore the rearing of this breed widely uses stubble and rice by-products. Rock salt is given as the only mineral supplement, but according to some breeders, supplementation is not needed because the rice stubble provides enough minerals.

Breeders keep breeding Boz Irk cattle despite its low productivity, because the breeding system is the only one they know and that they learned from their forefathers, but also for the extremely low breeding costs, both for feeding, both for the facilities and for the high skill to adapt to the harsh environmental conditions of the region.

The pastures

Like many other rustic breeds, also the Boz Irk, with its great grazing skill, was challenged by changes in agriculture in the regions where it was reared.

In Turkey, the natural pastures decreased at the end of the First World War from 44 million hectares, which fed 20 million head of cattle, to 14.6 million in 2016, due to the conversion to arable land. Also the number of heads drastically decreased, but in a less marked way, causing an overload of livestock on the pastures, four times the sustainable load.

The quality of the remaining pastures also impaired, with only 10-20% of the species desirable for livestock out of the total and a vegetation cover of the pastures from 10 to 50%. The pastures still supply 69% of the need for crude protein, 62% of carbohydrates, and 33% of the fiber.

In 1998 a law established rules against overgrazing and for sustainable use of pastures, who were allotted by the Ministry of Agriculture to local authorities, and from these to farmers, with a system of title deeds.

Conservation

A first *in vivo* conservation program was funded in 1995 on a single herd, on 47 males and 136 females, with *ex situ* conservation of a small population at the farm of the Sheep Research Station of the Directorate General for Agricultural Research in the Bandırma district, with a contribution of € 150 per head paid for 200 cattle.

In 2003 the breed was considered endangered and from 2005 to 2011 an *in situ* conservation program was funded, in the district of Enez, in the province of Edirne, on 16 males and 84 females, by the Sheep Research Station.

In 2011, an *in situ* conservation program was funded, with a contribution of € 150/head in the provinces of Bursa, Balıkesir and Edirne, on 4 herds, with 80 males and 520 females, again managed by the Sheep Research Station.

Also in 2011, the Central Livestock Research Institute launched a cryopreservation program, with 300 embryos from 50 donors, collected by the Sheep Research Station. In 2012, 896 semen samples, 54 somatic cell samples and 33 embryos were collected.

The Uludağ Üniversitesi di Bursa, 150 km from Istanbul, with the team of prof. Hakan Sağırkaya, undertook a cattle cloning program in 2009 that led to the production of 15 Turkish grey cattle.

Acknowledgments

Warm thanks to Professor M. İhsan Soysal for the precious help given.

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