

Sandomierska goat: restoration attempt

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At the end of the 1990s, we witnessed a significant rise in the interest in goat raising. It was boosted by increasing consumer demand for food products with high nutritional and dietetic values. There are many evidences supporting health benefits of both goat milk and meat (Borys, 2001; Kycia & Krysiński, 2014).

Indigenous breeds earlier occurring in the area of Poland, namely the Carpathian goat, Kazimierzowska goat and Sandomierska goat, due to a lower yield, had to give way to more productive breeds imported mostly from Western European countries. Intensive selective breeding undertaken at that time aimed to improve traits related to milk production and technological quality. In order to achieve these goals, herds were established on the basis of imported purebred animals and displacement cross-breeding was encouraged as a method to breed a population of dairy goats. In parallel, mostly in order to improve economic production effects, a foreign meat breed was introduced to the domestic goat population. It was recommended to be used in commercial breeding as a component ameliorating meat traits of the native population. Due to these strategies, now some measures have to be implemented to protect or reconstitute indigenous breeds of animals.

At present goat population in mass farming in Poland was estimated at 80,000 head but only 0.18% of all animals is controlled for performance. Compared with 2013, the number of the goats controlled for performance was reduced by 25% which is disadvantageous from a breeding perspective. Currently, the goat population that was subjected to evaluation has the following structure: Boer goats (34.5%) are the dominating breed, and next are the goats of

white breeds: Carpathian (26.21%), White Improved (20.69%) and Saanen goats (8.97%) (PZO, 2014; PZO, 2016). The above data indicate that farmers are not interested in having their herds assessed.

With regard to the herd size, large regional differences can be observed. Well-organized bigger farms are located mostly in northern and western Poland. It is because of well-developed milk procurement and processing systems. Among companies involved in goat milk procurement and processing, and in distribution of goat milk products, „AGRO-DANMIS” Gramowscy Sp. j. and dairy Turek, one of the leaders on blue and fresh cheese market, have to be mentioned. In other regions of Poland, herds are smaller while milk is used for farmers’ own needs in household “dairies”.

An alternative way of making use of this species’ potential is related to employing goats in active environmental protection and in agritourism farms, where goats can greatly increase attractiveness of tourist offer. In our opinion, the proposed alternative is particularly advantageous and useful in relation to indigenous goat breeds. Return to the tradition of raising “old” goat breeds on such farms is well-founded. As concluded by Trybulski in his work from 1923 “*our country possesses a variety of local goats, which, however, do not constitute clearly defined breeds, but most often we can find mixed-breed animals which developed through random breeding.*” (Trybulski, 1923).

That author included: Pokucka, Podolska, Kazimierzowska, Sandomierska and Galicyjska goats in these groups. Based on archival data, we find that old native breeds were characterized by a very good adaptability to local environmental

conditions. The lactation period in indigenous goat breeds lasted usually 8 months while their daily milk yield ranged from 0.5 to 3 kg of milk (Trybulski, 1939).

Restitution of this group of animals is a very difficult task but it was successfully initiated by a research team from the National Research Institute of Animal Production in Krakow-Balice. They began a program aimed to reconstitute the Carpathian goat, a typical montane white-bodied breed. At present, 38 does are under evaluation for performance. In the course of restitution works, multidirectional studies have been carried out aimed to define, in the widest way, goat breed standards (Sikora & Kawęcka, 2014).

The Sandomierska goat originates from the area which at present encompasses the Lubelskie and Świętokrzyskie Voivodeships. It was raised in the area of the Vistula Lowland near the town of Sandomierz at the mouth of the San River into the Vistula. According to archival records, *“these goats were relatively big, with long hairs and dense under-coat, always horned”* (Trybulski, 1939). They had bow-shaped horns, pricked ears and quite a large beard. The Sandomierska goat was described as a white-bodied animal with grey, black or yellow-brown spots. These three colors could be present on the skin of one individual or animals could be white-bodied with tricolor spots. Milk production by these goats was comparable with that of the Carpathian goat. According to Ocetkiewicz (1963) it amounted to 400 kg with an estimated 5% fat content.

Materials and methods

The idea to reconstitute the Sandomierska goat arose at the end of 2015 at the Chair of Small Ruminant Production and Agricultural Consultancy, University of Life Sciences in Lublin.

The initiative group included also a farmer from the Sandomierz region – Jarosław Sekuła. Currently, the herd is composed of 20 does and 5 bucks. Phenotype of these animals is in conformity with the above description of the Sandomierska goat. One buck originates from the Sandomierz region and in spite of its young age is treated as the herd’s progenitor.

At present the herd is raised at the agri-tourism farm called „Majątek Rutka” (“Rutka

Farm”) near Puchaczow in the area of Łęczynsko-Włodawskie Lake District, and is owned by Zbigniew Kołodziej, M.Sc. Eng. It is not without reason that acceptance of this farm owner for this project was sought because also other genetic resources conservation programs are carried out at this farm, namely Polish heath sheep, Uhruska sheep, white-backed cattle, Polish ponies, Biłgoraj goose. Herd conformation was estimated based on individual linear zoometric measurements with the use a stick, zoometric compass and measuring tape. Eight measurements were taken: height at withers, body length, rump length, heart girth, chest width and depth, barrel circumference and cannon bone circumference, broken down by age and sex.

The analyzed herd is registered at the Agency for Restructuring and Modernization of Agriculture and has the herd book with entries for all animals.

Results and discussion

The works attempting to reconstitute the Sandomierska goat began from determination of its age, color and conformation. Four categories of color were distinguished in the herd: brown-spotted, black-spotted, grey-spotted, tricolor (Fig. 1, 2, 3, 4). The figures drawn by J. Sekuła were of much help in preparation of an inventory of the animals based on this trait.

Conformational analysis draws attention to harmonious structure of the body which is covered by characteristic colored coat. All animals are horned and bearded, with the beards more abundant in bucks. The height in withers of adult does (more than 4 years of age) is 62.2 cm body length is 65.4 cm while chest depth is 29 cm.

Comparison of these measurements with data obtained for the presently raised Kazimierzowska goat shows slightly higher values for the Sandomierska goat. Adult Kazimierzowska does are lower by ca. 6 cm, their body is a little shorter and the chest shallower (Niznikowski et al., 2015).

The obtained results are confirmed by archival descriptions of these breeds where it was underlined that the Sandomierska goats were bigger with a stronger bone structure in comparison with other goats raised in Poland at that time, i.e. Kazimierzowska, Silesian and Carpathian goats (Trybulski, 1939).

The results of measurements of female kids (Tab. 1) younger than 18 months of age are similar to those reported by Pawlina et al. (1996), who investigated growth of kids of the White

Improved breed. Variability of the measured conformation traits between age groups of females results from natural developmental processes of animals.



Fig. 1. Brown-spotted goat (J. Sekuła)



Fig. 2. Black-spotted goat (J. Sekuła)

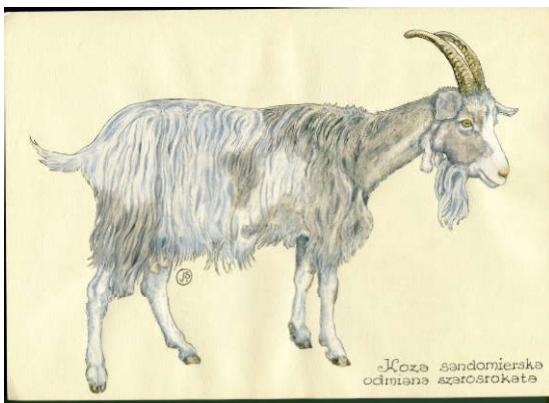


Fig. 3. Grey-spotted goat (J. Sekuła)



Fig. 4. Tricolour goat (J. Sekuła)

Bucks were also subjected to similar analysis. They were divided into two age groups (to 1.5 years of age – 4 head and more than 4 years – 1 head). The investigated bucks had a harmoniously built body. Mean height in withers, depending on age, ranged from 59 to 74 cm. Comparison of younger male kids with age-matched White Improved kids demonstrated similar

conformation traits in males of both breeds.

On the other hand, adult bucks, like does, were characterized by higher values of the measured traits compared with the Kazimierzowska goat, which can confirm a stronger body structure of the Sandomierska goat of both sexes vs. the Kazimierzowska goat.

Table 1. Zoometric measurements of Sandomierska-phenotype goats gathered in Rutka farm (cm)

Measurement	Age categories		
	up to 18 (months/head)	from 2 to 4 years (head)	above 4 years (head)
Height at withers	54.3	59.3	62.2
Body length	53.7	59.7	65.4
Rump length	18.0	18.4	21.4
Heart girth	17.3	19.3	21.2
Chest width	18.3	18.2	19.8
Chest depth	22.7	26.6	29.0
Barrel circumference	74.3	82.6	83.8
Cannon bone circumference	7.7	7.9	8.4

Table 2. Zoometric measurements of Sandomierska-phenotype goat bucks gathered in Rutka farm (cm)

Measurement	Age categories	
	up to 18 months (head)	above 4 years (head)
Height at withers	59.5	74.0
Body length	53.5	78.8
Rump length	16.8	16.6
Heart girth	15.8	16.4
Chest width	13.3	19.8
Chest depth	24.2	34.0
Barrel circumference	75.0	78.2
Cannon bone circumference	9.0	9.0

Table 3. Indicators of Sandomierska-phenotype goats (%)

Indicator	Age categories				
	up to 18 months		from 2 to 4 years	above 4 years	
	goat ♀	buck ♂	goat ♀	goat ♀	buck ♂
Trunk length	98.9	90.1	100.7	105.1	105.4
Boyd depth	41.7	41.0	44.9	46.6	45.0
Long-leggedness	58.3	59.0	55.1	53.4	54.0

In order to present conformation, proportions and harmonious structure in more detail, conformation traits were also calculated as a percentage. Such data presentation allows for a fuller assessment of conformation traits than individual zoometric measurements.

Goats of both sexes younger than 18 months of age showed similar percentage values of the measured body depth and long-leggedness while percentage value of trunk length was higher in females than in males. This differences was caused by a greater height at withers in bucks with equal body length in both sexes.

The values of conformation traits change with age which reflects continuing growth of

animals and confirms the correct proportions in their body structure.

Conclusions

It can be concluded that the animals included in the restitution program are characterized by coat color specific for the indigenous Sandomierska goat. The goats are proportionally built and possess traits typical of this breed. Currently, the preparation of a full documentation necessary for recognition of our herd as a nest of the Sandomierska goat, is in progress. We hope that the restituted Sandomierska goat will be included in the group of animals benefiting from genetic resources conservation program.



Photo 1. Tricolour goat buck
(phot. A. Junkuszew)

Photo 2. Grey-spotted goat
(phot. A. Junkuszew)



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SANDOMIERSKA GOAT – RESTORATION ATTEMPT

Summary

An increasing interest of consumers in goat meat and milk products promoted crossbreeding management strategy of domestic stock of goats aiming at improvement of milk yield and quality in terms of its technological usability. The performed crossings altered the genetic structure of the indigenous populations and consequently led to dominance of foreign breeds over the native ones.

In late 2015, the research team from the Department of Small Ruminants Breeding and Agricultural Extension, the University of Life Sciences in Lublin took steps towards the restoration of the indigenous Sandomierz dairy goat originating from the Sandomierz land. Presently, a goat herd has been formed comprising 20 does and 5 bucks registered in the Agency for Restructuring and Modernization of Agriculture (ARMA). Within the herd of sires and dams, three age groups were set up (up to 18 months, 2–4 yrs, over 4 yrs) along with four color categories: brown-spotted, black-spotted, grey-spotted, tricolour. The zoometric measurements were performed and animal conformation assessed.

The goats have an appropriate coat color pattern typical of the indigenous Sandomierska goat. The parts of their body are in balanced proportion and the animals present the clearly defined breed characteristics. Currently, full documentation has been prepared essential to launch the procedures associated with the approval of the herd as a nest of the Sandomierska goat.

Key words: goats, endangered breeds, Sandomierska goat