

An attempt to restore Kazimierzowska goat

Żaneta Szymańska, Roman Niżnikowski, Marcin Świątek, Magdalena Ślęzak

*Warsaw University of Life Sciences – SGGW, Department of Animal Breeding and Production,
Sheep & Goat Breeding Division, Ciszewskiego 8, 02-786 Warszawa, Poland*

Goats have been raised in Poland all over the country for centuries especially by smallholder farmers. In 1930 the population of this species was estimated at 227,000 head and rose to 420,000 head just eight years later (Barowicz, 2011; Strzelec et al., 2009). Goats were farmed mostly for milk and secondarily, for meat. Smallholder farmers chose this species because its farming was cheaper compared with cows and it was characterized, among other things, by early sexual maturation, modest feed requirements and high resistance to harsh environmental conditions (Sikora, 2013; Szymańska et al., 2015). An interest in goat husbandry was stable till the 1960s. At that time, due to political reasons, mating stations started to be liquidated, nucleus herds were dissolved and goats were removed from the register of livestock species. These decisions resulted in a collapse of goat population. Consequently, in the 1970s, goat population declined to 104,000 head while in the 1980s to only 40,000 head and remained at that level for the next decade. The renewed interest in this species was seen at the turn of 1980s/1990s. It resulted from the search for an alternative source of protein for children allergic to specific proteins of cow milk. Political changes after 1989 and increased interest in organic food products additionally contributed to a rise in goat population (Bagnicka et al., 2004; Herman & Klocek, 1967; Wójtowski, 2013).

Goat breed structure began to change at the beginning of the 1970s. Domestic population was drastically reduced and redirected to dairy products.

For this reason, bucks of dairy breeds began to be imported from abroad (Kaba et al., 2004). Attempts to improve native breeds with

imported more productive goat breeds led to successive displacement of formerly numerous local breeds, like Carpathian, Sandomierska or Kazimierzowska breeds. The effects of those actions are still perceivable because these are Alpine and Saanen goats and improved domestic breeds: White Improved and Colored Improved goats that dominate in the present population. To date, the Carpathian goat breed was successfully restituted. These works were undertaken at the National Research Institute of Animal Production in Krakow-Balice in 2005 (Kaba et al., 2009; Szymańska et al., 2015).

Successful restoration of the Carpathian goats indicates that attempts to reconstitute the remaining local breeds can be successful. Local breeds (Carpathian, Sandomierska and Kazimierzowska) are representatives of all-purpose goats well adapted to environmental conditions of Poland, thus, their restitution should be targeted to agri-tourism farms, leisure facilities and landscape management (Jamroz & Nowicki, 1994; Herman & Klocek, 1967). Local goat breeds are a breeding heritage of Poland, therefore, they should be protected and cared for.

Breed characteristics

The Kazimierzowska goat was characterized by a very atypical, rare in Poland coat coloration, namely, the animals were black, uniformly colored, without variants. It has a long-haired and thick coat which visible downy undercoat. Eyes were golden-yellow which was a hallmark of this breed. The color of eyes and black coat made the Kazimierzowska goats unique. Both sexes were horned. Horns were strong bow-shaped, with tips slightly twisted outwards (Kopański, 1985; Ocetekiewicz, 1963).



Photo. 1. Head of present-day Kazimierzowska female goat



Photo 2. Head of present day Kazimierzowska goat buck



Photo 3. Present-day Kazimierzowska goat

The *Kazimierzowska* goats were of medium size. Their height at withers was ca. 60 cm and body weight ranged 40–50 kg. Like other local breeds, these goats originated from progeny of mixed-breed goats (Trybulski, 1923; Tyszka, 1994). Therefore, it can be expected that body structure of the *Kazimierzowska* goats was characteristic of mixed-breed goats. Chest: deep, well developed, front legs: proper, rump: sloping, steep, hind legs: often in cow-like or sabre posture (Folejewski, 1949; Ocetekiewicz, 1963).

The *Kazimierzowska* goats, also known as *Kazimierska* goats (Jamroz & Nowicki, 1994), are representatives of all-purpose goats. Their milk production is ca. 300 kg per a lactation period lasting 250 days, milk contains 4–5% fat. Prolificacy amounted to 160%.

This breed belongs to local goat breeds which are characterized by exceptional hardiness. They are able to survive in primitive conditions and produce milk in spite of very poor feeding (Szymańska et al., 2015).

Attempts to restore the *Kazimierzowska* goat

The first animals of the *Kazimierzowska* breed were found in the Garwolin District ca. 60 km away from the Puławy District on the right bank of the Vistula River in 2014 and a year later in the Grójec District ca. 110 km away from the Puławy District. The goats from the Garwolin District were gathered in one location constituting the seat of the herd on a farm near Żelichów. At the initial stage of work the herd contained 2 bucks and 6 does. The next animals (a doe and a buck) were used to initiate the second herd with the seat in the Piaseczno District. The goats were mated in 2015 and first kids were obtained. Of the born kids, 2 females and 1 male were designated for further restoration works (Tab. 1).

In 2015 does were mated again with the selected buck. Thirteen kids were born of which 8 (7 female kids and 1 male kid) were qualified for further breeding whereas the remaining kids were culled. Currently, further breeding selection and search for other representatives of this breed are in progress.

Table 1. Numbers of animals in the Żelichów and Piaseczno flocks

Site of flock	Year of kidding	No. of kidded goats		No. of kids born		No. of kids reared	No. of qualified kids	
		total	first kidders	males	females		goats	bucks
Żelichów	2015	5	3	6	3	8	2	1
Żelichów	2016	7	2	3	9	12	7	1
Żelichów	2016	1	1	1	0	1	0	0

Materials and methods

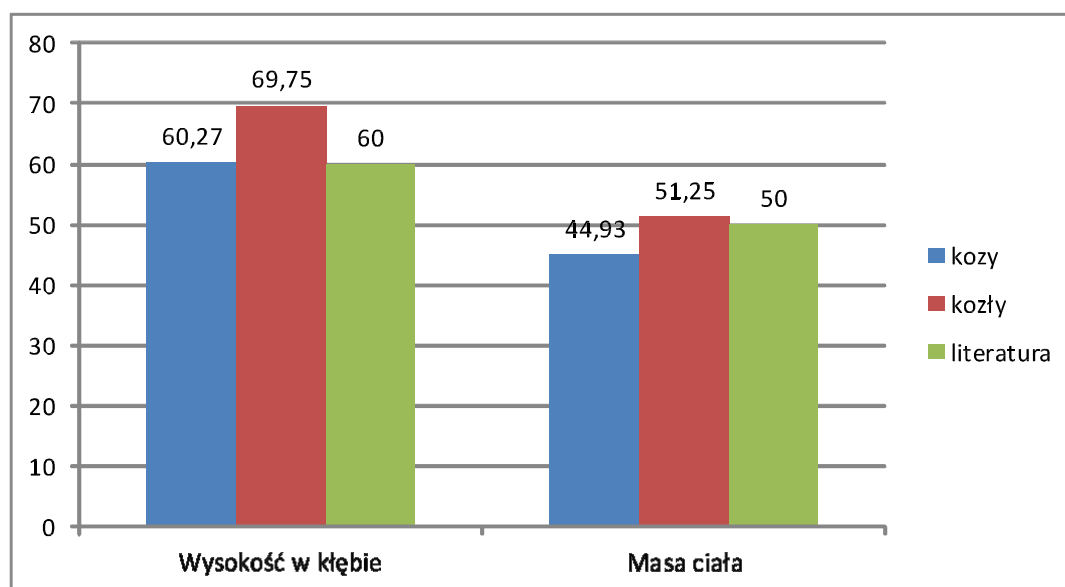
As a target, 14 goats of the *Kazimierzowska* type (11 does and 3 bucks) were qualified for the study. Animals were examined to determine conformity with the literature description. In addition, zoometric measurements were taken in order to define phenotypic details of the restored population. The following measurements were collected from all animals older than 12 months of age:

- height in withers,
- body weight,
- oblique body length,
- chest width,
- chest length,
- head length,
- head width,
- cannon circumference,
- cannon length,
- tail length.

Table 2. Effect of age and sex on body dimensions and body weight of currently raised Kazimierzowska goats and bucks

Traits		Goats	Bucks	Effect of age	Effect of sex
Height at withers (cm)	LSM	60.27	69.75	NS	XX
	SE	1.33	3.75		
Oblique body length (cm)	LSM	67.20	73.25	NS	XX
	SE	1.10	2.59		
Chest width (cm)	LSM	19.63	20.00	NS	NS
	SE	0.81	0.58		
Chest depth (cm)	LSM	29.63	32.50	NS	NS
	SE	1.02	2.39		
Head length (cm)	LSM	19.63	22.13	NS	XX
	SE	0.43	1.09		
Head width (cm)	LSM	11.77	13.38	NS	XX
	SE	0.33	0.75		
Cannon circumference (cm)	LSM	6.87	7.25	NS	NS
	SE	0.73	2.45		
Cannon length (cm)	LSM	11.37	11.50	NS	NS
	SE	0.30	0.20		
Tail length (cm)	LSM	13.47	14.50	NS	NS
	SE	0.37	0.65		
Body weight (kg)	LSM	44.93	51.25	NS	NS
	SE	2.35	5.59		

LSM – least square means for the analysed traits, SE – standard error, NS – not significant, XX – statistically significant.



Wysokość w kłębie – Height at withers; Masa ciała – Body weight; kozy – female goats, kozły – goat bucks, literatura – literature.

Figure 1. Comparison of the results obtained with the literature data

Statistical significance of the obtained results was determined by a one-way ANOVA with the use of SPSS 22 software package. First, sex and then age were tested as factors. The obtained data were interpreted and presented in tables and figures. The effect of sex and age on the collected zoometric parameters of goats was established.

Results and discussion

The collected data were analyzed and mean body dimensions and weight of animals were calculated. In addition, the influence of age and sex on body dimensions and body weight was also determined. All results are shown in Tab. 2 and Fig. 1.

Tab. 2 presents the results of mean measurements for the herd which allow to obtain a more detailed characteristics of the breed than that known from literature. The obtained data characterize the present herd. Analysis of the effect of age did not show statistically significant differences between the traits under study. The second factor, i.e. sex had a highly statistically significant ($P < 0.01$) influence on four traits:

1. height at withers,
2. oblique body length,
3. head width,
4. head length.

The analysis confirmed literature data indicating distinct sexual dimorphism in these animals.

Fig. 1 presents a comparison of the chosen data characterizing phenotype of the currently raised goats and literature data. Both height at withers and body weight resembled those from the literature data which are available only for does while the values measured in bucks slightly exceed the above values.

Recapitulation and conclusions

Contemporary goats of the Kazimierzowska type found in 2014–2016 are characterized by appearance typical of progenitors of this breed. The obtained results

and appearance of goats are in conformity with descriptions of this breed reported by Ocetkiewicz, Kopaski and other authors. Works aimed to restore this breed were successful and progeny with proper phenotype was obtained. Horns, mostly black coat and golden-yellow eyes are the most characteristic traits possessed by all individuals participating in restoration of this local breed.

The analysis of factors affecting the studied zootechnical parameters of goats demonstrated a significant effect of sex on some measured parameters. This result confirms sexual dimorphism of the Kazimierzowska goats.

Bucks are larger than does and are characterized by a stronger body structure and bigger horns.

The obtained results indicate that the pool of mixed-breed goats in Poland contains goats with phenotypic traits of the Kazimierzowska breed. The result of selection works performed to date can be assessed as satisfactory. It indicates that by continuation of selective breeding, it will be possible to efficiently and permanently restore and reintroduce the population of our native Kazimierzowska goat into the goat population in Poland.

It can be expected that uniqueness of the Kazimierzowska goat will be confirmed after completion of the cycle of research on comparison of the existing herds of the Kazimierzowska goats with traditional breeds occurring in the goat population in Poland.



Literatura

- Bagnicka E., Słoniewski K., Łukaszewicz M. (2004). Genetyczne doskonalenie kóz mlecznych. *Pr. Mat. Zoot.*, 10: 5–16.
- Barowicz T. (2011). Koźlecina na stół! *Hod. Bydła*, 4: 11–20.
- Folejewski W. (1949). Znaczenie i perspektywy rozwoju hodowli kóz w Polsce. *Spółdz. Wyd. Czytelnik*, Lublin, ss. 165–167.
- Herman W., Klocek F. (red.) (1967). *Zootechnika*. Tom 3. PWRiL, Warszawa.
- Jamroz D., Nowicki B. (1994). *Kozy: chów i hodowla*. Wyd. Nauk. PWN, Warszawa, ss. 28–29.
- Kaba J., Bagnicka E. (2009). *Kozy w Polsce – chów, hodowla i użytkowanie*. *Życie Wet.*, 84 (3): 215–216.
- Kaba J., Nowicki M., Papierska D., Witkowski L. (2004). Book of Abstracts of the 8th Int. Conf. on Goats, South Africa, 4–9.07.2004, p. 87.
- Kopański R. (1985). *Chów kóz*. PWRiL, Warszawa, ss. 4–35. Ocetkiewicz J. (1963). *Chów kóz*. PWRiL, Warszawa, s. 13.
- Sikora J. (2013). Charakterystyka użytkowości mięsnej i jakości mięsa kozy karpackiej, objętej Programem zasobów genetycznych, na tle innych ras kóz hodowanych w kraju. *IZ PIB*, Kraków, ss. 7–10.
- Strzelec E., Niżnikowski R. (2009). Pochodzenie, znaczenie hodowlane oraz charakterystyka populacji kóz na świecie i w Polsce. *Prz. Hod.*, 4: 7–12.
- Szymańska Ż., Niżnikowski R., Głuchowski Ł., Ślęzak M., Majdański S. (2015). Kozy kazimierzowskie – braku-
jące ogniwo w strukturze rasowej. *Por. Rol. – Polski Żywiec*, 6 (559), IV, s. 10.
- Trybalski M. (1923). *Kozy (rasy i hodowla)*, Księgarnia Rolnicza, Warszawa, ss. 6–7, 14–15. Tyszka Z.J. (1994). *Poradnik chowu*. PWRiL, Warszawa, ss. 23–25.
- Wójtowski J. (red.) (2013). *Hodowla, chów i użytkowanie kóz*. Wyd. UP, Poznań.

AN ATTEMPT TO RESTORE KAZIMIERZOWSKA GOAT

Summary

Goat husbandry and breeding has a long tradition in Poland. Farmed for centuries all over the country, they were especially popular in small farms. In 1938 the national population of goats was 420,000, but after World War II it gradually decreased to reach only 40,000 in the 1980s. The early 1970s saw a change in the breed structure as dairy goat bucks were imported from abroad and production intensified. The currently dominant breeds (Alpine, Saanen, and the improved domestic breeds: White Improved and Fawn Improved) had displaced the once numerous local breeds of Karpacka, Kazimierzowska and Sandomierska. Local breeds represent primitive goats and are adapted to Poland's environment. They are characterized by exceptional hardiness and resistance. The indigenous breeds of goats are part of the Polish breeding heritage.

An attempt to restore the Kazimierzowska goat was begun in 2014, when several goats meeting the breed description were found in the area of Żelechów (Garwolin County). More animals were found and crossed with one another. In 2015, the second flock of horned goats with black coat colour and characteristic golden yellow iris was established. The animals found and born in 2014–2016 were measured and evaluated for phenotypic traits. The zoometric measurements were subjected to statistical analysis. Because the results were promising, it was decided to continue work on restoration of the breed.

Key words: goats, breed restoration, Kazimierzowska goat

Phot.: Ż. Szymańska

