
Peculiar breed characters of Lithuanian indigenous coarsewooled sheep

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In 1995, a flock of indigenous coarsewooled sheep which were almost extinct was started at the Lithuanian Institute of Animal Science on the initiative of Prof. J. Šveistys. Currently, the flock numbers about 40 sheep which are studied for their biological and farming traits. The studies carried out in 1996–2001 have indicated that local coarsewooled sheep can exhibit estrus at any time of the year and lamb even twice a year (average fertility 1.4–1.9 lambs). The average weight of newborn lambs was 2.5–4.0 kg, at 20 days 5.0–7.0 kg, at 4 months (at weaning) 17.0–22.0 kg and at 12 months of age 34.0–40.0 kg. The weight of adult ewes was about 41.0–49.0 kg and that of breeding rams 45.0–55.0 kg. Each year the average wool clip per sheep was 2.5–3.5 kg of semicoarse white, grey, brown or black wool 21–31 cm long. In a 20-day lactation period, ewes produced about 17.0–24.0 kg of milk containing 6.2–9.4 % fat, 3.2–5.6% protein and 3.6–5.9 % sugar.

Key words: sheep, exterior, wool, reproduction

INTRODUCTION

At the end of the 19th – beginning of the 20th century, low-productive, late maturing, yet undemanding local coarsewooled sheep were bred in Lithuania. The clip per sheep was 1–1.5 kg of grey, white, brown and black wool. The sheep weighed approx. 30–40 kg and dropped 2 to 3 lambs. The distinctive features of these indigenous sheep were thin legs, often bare belly covered only with clothing hair, thick skin, narrow nose, broad forehead, various length of horns, short ears and tail of medium length. Already in 1935 it was planned to replace this breed by a more productive one, and since 1949 it has been forbidden to pair sheep with local coarsewooled rams [1–4].

In 1989, the first expedition was arranged to find as typical as possible local coarsewooled sheep throughout Lithuania with the aim of the breed conservation for future generations. Then, 30 ewes and 3 rams were found which, unfortunately, were sold to Germany. Only in 1995, a flock of local coarsewooled sheep was formed at the Lithuanian Institute of Animal Science on the initiative of Prof. J. Šveistys. Currently, the flock numbers about 40 animals. In 1999, the breed was recognized as pedigree. Several sheep are also housed at the Kaunas Zoo and Open Country Life Museum in Rumšiškės. The main purpose is to form a flock of unrelated

and typical local coarsewooled sheep for the conservation of their gene pool and to study the biological and farming qualities of the breed [5–7].

MATERIALS AND METHODS

The study was carried out at the Lithuanian Institute of Animal Science (LIAS) with local coarsewooled sheep (4 breeding rams, 12 ewes and their lambs). Sheep were mated all the year round, and their fertility was determined according to the litter size. Ewes used to lamb every 6 to 12 months. Milk productivity was determined by the weight of lambs at 20 days of age [8]. Milk samples were collected during the second week of lactation. The chemical composition of milk was analysed at the Analytical Laboratory of the LIAS by the routine methods [9, 10].

The weight of lambs was determined at birth, 20 days, 2 months, 4 months (weaning) and 12 months of age. The exterior of one-year-old lambs and adult sheep was evaluated by measuring 13 parts of the body and calculating 5 indexes of body measurements. Some body parts of sheep were measured with the tape-line, Lidtin's stick and Wilkens' compasses [3].

Sheep were clipped in spring and autumn. Wool was weighed individually for each sheep to within 0.1 kg and measured with the ruler to within 0.5 cm

on the side of the sheep at a hand-breadth from the shoulder-blade. The colour of wool sweat and wool density were evaluated visually, while wool thickness was assessed by the standards for wool thickness. The amount of wool sweat was determined with a Soxlet apparatus [8, 11].

The research data were processed biometrically and using statistical analysis.

RESULTS AND DISCUSSION

From the very start the sheep were evaluated for their exterior, weight, fertility, growth rate of lambs, yield and chemical composition of milk, amount and quality of wool. Body measurements and weight data for local coarsewooled sheep are presented in Table 1.

As can be seen from Table 1, local sheep are rather large in size, have a wide chest, long head and tail and horns of various length. The longest horns of a ram had 65 cm and those of ewes only 6 to 11 cm.

Sheep of almost all breeds show estrus in autumn and drop lambs towards spring. However, Lithuanian local coarsewooled sheep may show estrus

and lamb at any time of the year. Therefore, in 1996–2001 four pedigree rams and 12 ewes with their progeny were used in the study to determine the reproductive performance of local sheep. In the above-mentioned period, our sheep lambed 52 times and produced 84 lambs.

In 1996–1998, the litter size of ewes was 1.9 lambs, and the sheep were mated only once a year, while in 1999–2001, 65% of all sheep lambed every 6 to 9 months and dropped on the average 1.4 lambs that were by 0.3 kg heavier than the progeny of ewes lambing every 10–12 months. More frequent lambing resulted in lambs with a higher growth rate (weight was by 0.6–3.0 kg higher at different age till 12 months) and more milk-productive dams (Table 2). On the other hand, frequently lambing sheep had more dead and miscarried embryos and their maintenance was more labour-consuming. Therefore, in order to benefit from frequent lambing, local sheep should have better care and lambing time should be planned with respect to farming conditions and the future use of the progeny.

The growth rate of lambs was highest in the first four weeks. The weight of lambs was mostly influenced by the milk production of the ewe. The chemical composition of milk is presented in Table 3. The contents of fat, protein, sugar and dry matter in the milk were very high.

Sheep were hand-sheared every spring. Wool characteristics are presented in Table 4. The predominant colour of wool is grey and the yolk is white or yellowish, and its content amounted to 6%. Each sheep produced annually on the average 2.5–3.5 kg of semicoarse wool 14–32 cm long and medium density (34.1–43.0 microns thick).

It has been for 3 years already that the sheep are clipped in spring and autumn. Single clipping of sheep resulted on average in 3.0 kg of grey, white, light-brown and black semicoarse felted wool 21.5 cm long. If sheep had double clipping, the total wool weight was the same (3.0 kg), but the wool was by 44% longer ($P < < 0.001$). The total length of spring and autumn wool amounted to 32 cm. Therefore, it is considered expedient to clip Lithuanian local coarsewooled sheep twice a year (in spring and autumn) and thus avoid felt daglog wool.

Table 1. Body conformation indices for Lithuanian local coarsewooled sheep

| Item | Group | | | |
|------------------------|-----------------|-----------------|------------------------------|-------------------------------------|
| | Rams (n = 3) | Ewes (n = 7) | Yearling lambs (n = 3) | Yearling female lambs (n = 4) |
| Weight of sheep, kg | 54.43 | 47.74 | 41.21 | 35.68 |
| Body measurements, cm: | | | | |
| height at withers | 66.50 | 61.86 | 62.50 | 57.75 |
| height at rump | 69.50 | 65.64 | 69.00 | 61.75 |
| chest depth | 31.50 | 28.86 | 29.00 | 23.25 |
| chest width | 20.50 | 19.50 | 19.00 | 16.00 |
| oblique body length | 68.00 | 63.57 | 63.50 | 60.75 |
| width at hips | 14.00 | 14.86 | 14.50 | 12.37 |
| forehead width | 11.00 | 11.43 | 11.25 | 9.13 |
| head length | 21.50 | 18.64 | 20.00 | 17.12 |
| horn length | 40.50 | 9.17 | 33.25 | 6.00 |
| ear length | 9.00 | 10.78 | 9.75 | 10.50 |
| chest girth | 91.00 | 92.57 | 84.50 | 77.50 |
| cannon bone girth | 9.00 | 8.50 | 8.25 | 7.37 |
| tail length | 26.50 | 24.50 | 22.50 | 22.12 |
| Index, %: | | | | |
| long-leggedness | 52.55 | 52.94 | 53.59 | 59.86 |
| extension | 102.41 | 103.56 | 101.60 | 105.16 |
| compactness | 133.95 | 146.35 | 132.94 | 127.65 |
| chest | 65.00 | 67.67 | 65.59 | 68.65 |
| massiveness | 136.98 | 151.48 | 135.06 | 134.09 |

Table 2. Weight of lambs (kg) at different age

| Item | Lambing frequency | |
|--|------------------------------|--------------------------------|
| | every 6 to 9 months (n = 19) | every 10 to 12 months (n = 20) |
| Fertility of lambing ewes, unit | 1.40 ± 0.13 | 1.92 ± 0.23 |
| Weight of newborn lamb | 3.19 ± 0.16 | 2.92 ± 0.11 |
| Milk production (kg) of ewes in 20 day-lactation | 18.72 ± 1.18 | 17.54 ± 1.01 |
| Weight of lamb at 20 days of age | 6.98 ± 0.33 | 6.39 ± 0.27 |
| Weight of lamb at 2 months of age | 14.13 ± 0.95 | 12.03 ± 0.75 |
| Weight of weaned lamb | 22.44 ± 0.85 | 19.46 ± 1.29 |
| Weight of lamb at 8–12 months of age | 38.63 ± 1.76 | 35.42 ± 1.67 |

Table 3. Chemical composition (%) of local coarsewooled sheep milk

| Item | Lambing frequency | |
|------------|-----------------------------|-------------------------------|
| | every 6 to 9 months (n = 7) | every 10 to 12 months (n = 5) |
| Dry matter | 19.27 ± 1.23 | 21.00 ± 0.91 |
| Fat | 8.30 ± 0.45 | 7.91 ± 0.73 |
| Protein | 4.96 ± 0.33 | 4.32 ± 0.49 |
| Ash | 1.13 ± 0.05 | 1.17 ± 0.09 |
| Calcium | 0.151 ± 0.017 | 0.183 ± 0.018 |
| Phosphorus | 0.130 ± 0.015 | 0.154 ± 0.017 |
| Sugar | 4.64 ± 0.11 | 4.98 ± 0.39 |

Table 4. Quantitative and qualitative characteristics of wool of local coarsewooled sheep

| Item | Group | | | |
|-------------------------|--------------|---------------|------------------------|-------------------------------|
| | Rams (n = 3) | Ewes (n = 11) | Yearling lambs (n = 3) | Yearling female lambs (n = 7) |
| Wool clip, kg | 3.40 | 3.14 | 3.05 | 2.65 |
| Wool length, cm | 23.50 | 22.14 | 20.25 | 18.75 |
| Wool thickness, microns | 43.10 | 42.00 | 42.60 | 40.20 |
| Yolk content, %: | | | | |
| on the back | 5.33 | 4.70 | 5.96 | 4.07 |
| on the sides | 7.03 | 7.49 | 6.69 | 5.64 |
| Dry matter content, %: | | | | |
| on the back | 83.14 | 83.53 | 84.97 | 83.77 |
| on the sides | 82.40 | 82.66 | 84.21 | 82.32 |

CONCLUSIONS

1. Currently conserved Lithuanian local coarsewooled sheep are larger in size and produce more and thinner wool in comparison with the aboriginal sheep.

2. In spite of the fact that nowadays sheep are more productive and earlier maturing, they remained disease resistant and undemanding, and also retained the appearance characteristic of local sheep (horns of various length, grey, white, light-brown and black wool, narrow nose, wide forehead and fairly short ears) and non-seasonal estrus.

3. These exotic animals could be used for landscape enlivening in national parks, farmsteads engaged in country tourism and other places visited by people, and also for production of undyed wool of various colours.

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LIETUVOS VIETINIŲ ŠIURKŠČIAVILNIŲ VEISLĖS AVIŲ IŠSKIRTINIAI POŽYMIAI

S a n t r a u k a

1995 m. prof. J. Šveiščio iniciatyva Lietuvos gyvulininkystės institute pradėta formuoti jau beveik išnykusių vietinių

šiuurkščiaivilnių avių banda. Šiuo metu čia laikoma apie 40 avių ir tiriamos jų biologinės ir ūkinės savybės. 1996–2001 m. atliktais tyrimais nustatyta, jog mūsų vietinės avys gali rujanoti bet kuriuo metų laiku ir vesti jaunikius net 2 kartus per metus (vidutinis vislumas – 1,4–1,9 ėriuko). Atvestas ėriukas sveria vidutiniškai 2,5–4,0 kg, 20 dienų amžiaus – 5,0–7,0 kg, 4 mėn. (nujanant) – 17,0–22,0 kg ir vienerių

metų – 34,0–40,0 kg. Tuo tarpu suaugusi avis sveria 41,0–49,0 kg, o veislinis avinas – 45,0–55,0 kg. Kasmet prikirpime po 2,5–3,5 kg 21–31 cm ilgio pusiau šiuurkščios baltos, pilkos, rusvos ir juodos vilnos. Per 20 d. laktaciją ėriavedė davė 17,0–24,0 kg pieno, kuriame buvo 6,2–9,4 % riebalų, 3,2–5,6 % baltymų ir 3,6–5,9 % cukraus.

Raktažodžiai: avys, eksterjeras, vilna, reprodukcija