
3.12 Less known and rare breeds

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(Belle-Ile) and R.K. Rastogi (Virgin Islands White Sheep))

Introduction

Some of the breeds presented in this section are only marginally prolific. However, the prolificacy of some individuals and strains, or the high litter size obtainable under good feeding and management, suggests that they should be included in this book. Some of the breeds presented have only local importance and limited distribution outside their place of origin. This section also features rare prolific breeds with only small populations and a risk of disappearance.

Belle-Ile Sheep

Belle-Ile is an island located south of Vannes in Brittany, France. Its traditional ovine population is believed to be the surviving progeny of an old population of south Brittany sheep called 'Race de Deux', i.e., Twin Breed (Malher and Denis, 1988). This breed is the result of a cross between the local population and a Dutch breed of sheep, called 'Flemish', which was introduced to the Vannes region in the middle of the 18th century. When the first description and characterization of the breed were completed in 1985, only a few small flocks (two to five ewes) existed. Since then, a flock of 50 ewes has been assembled at the Veterinary College of Nantes to study and evaluate the reproductive traits of these prolific sheep.

The sheep of Belle-Ile have a poor conformation. Mature weight of ewes averages 40 kg; shoulder height, 60 cm; and tail length, 32 cm. Cephalic profile is straight to slightly convex; ears are 12 cm long and horizontal. Coat colour is usually white, with tan specks on face and legs, or black. The black pattern is recessive to white. Some animals exhibit a black pattern with a grey area in the fleece and a white patch at the corner of the eye. The fleece covers the body and the neck up to the ears. A large variation exists among individuals in fleece texture. Some animals have long and hairy staples.

The average litter size in 132 litters of ewes 2 years old or older was reported at 2.26 (SD \pm 1.0) lambs born, with 37% born in triplet or larger litters. One ewe was reported to have produced 30 lambs in eight parturitions. At the Veterinary college, this ewe gave birth to seven lambs in her ninth parturition; two of her daughters produced 27 lambs in seven parturitions. Ovulation rate in 44 ewes with at least four

coelioscopies averaged 2.6 (SD = 1.1) (unpublished data from the Veterinary College).

The high prolificacy of Belle-Ile sheep is suspected to result from a major gene segregating in this population (unpublished data). In suspected homozygote, heterozygote and non-carriers, ovulation rate averaged 4.0, 2.4 and 1.6, and litter sizes averaged 2.7, 2.2 and 1.4, respectively.

Bluefaced Leicester

This breed evolved near Hexham in the county of Northumberland, England, in the early 1900s. Farmers in that region preferred darker coloured rams, with finer skin. Bluefaced Leicester were selected primarily to produce high-quality crossbred ewes from native hill breeds. These crossbred ewes referred to as 'Mules' are popular in the United Kingdom. Rams were also selected for general conformation and length, whereas ewes were selected for milking ability and prolificacy. By the 1930s the Bluefaced Leicester had developed into a distinct breed, popular throughout Tynedale, Weardale and east Cumbria, soon after becoming popular throughout the main sheep-farming areas of United Kingdom.

Bluefaced Leicester animals have broad muzzles, good teeth, a tendency towards a roman nose, bright alert eyes and long erect ears. The colour of the head skin is dark blue showing through white hair. The neck is long, set on broad shoulders. The body is long with a strong back. The hindquarters are broad and deep, the legs clean, well positioned and strong boned. The wool is tightly purled, fine and dense, opening cleanly to the skin. Average adult rams weigh approximately 115 kg, adult ewes 80 kg.

Ewe lambs mature early, and those born in March can be bred to lamb for the first time at 1 year of age. Prolificacy of ewes lambing at 1 year is approximately 1.4; that of those lambing at 2 years is approximately 2.0, and mature ewes usually average approximately 2.2 lambs. In well-managed flocks Bluefaced Leicester ewes are reported to average more than 2.5 lambs per ewe exposed. The breed also has the milking ability to rear these multiple births successfully. The wool from a Bluefaced Leicester is classed as demi-lustre and fine. These qualities of wool are also passed on to crossbred progeny of the Bluefaced Leicester.

The Mules that result from crossing Bluefaced Leicester rams with other breeds are characterized by their ability to produce and rear high-quality prime lambs when put to any terminal sire and they yield a very high percentage of reared lamb from a relatively low roughage intake (Cameron and Deeble, 1983; Cameron *et al.*, 1983; Mann *et al.*, 1984). The conversion of grass to meat makes the Mule a popular choice in the commercial sheep industry in the United Kingdom.

(Source: *British Sheep*, 8th edition, 1992, National Sheep Association, Malvern, England, pp. 24–25).

Flemish Landrace

This breed is not related to other Landrace breeds; Flemish Landrace come from a region in Belgium where sheep of a similar type were raised. These sheep, which resemble milk breeds in conformation, are medium-sized, the ewe weighing about 75 kg. Conception rate for ewes mated in the autumn is high, ranging from 94 to 100% in yearlings and mature ewes, respectively (Bekedam, 1971). It is somewhat lower for ewes mated in the winter. Prolificacy is high, with ewes 1, 2 and 3 years and older averaging 1.67, 2.13 and 2.53 lambs, respectively. Average birth weight of lambs is approximately 4 kg. Ewes lamb easily and most do not need assistance at parturition; however, about 20% of the lambs born are lost before weaning. Ewes are good milkers; growth rate during the first 5 months of lambs suckled up to 90 days of age averages 290 g day^{-1} . The ewes have an extended breeding season; over 50% of those lambing in the spring will breed again within 7 weeks of parturition following an early weaning of their lambs.

Lambs slaughtered at 40 kg dress about 46%. Meat-to-bone ratio in legs and shoulder is 2.9:1 compare with 3.9:1 for Texel lambs (Bekedam, 1971).

Galician

This rustic breed is found in Galicia in northwest Spain and is well adapted for living in wet conditions. It is also called Mariñana. The breed includes descendants from Iberian sheep and many other breeds depending on the zone or region. Merino, Castellana and Lacha are among the breeds that may have contributed to the Galician, hence the lack of uniformity of the breed. The population in 1978 was approximately 140,000. The animals are raised on smallholdings, consisting of two to eight sheep, usually together with dairy cattle, with which they share pastures and housing. Very few large flocks of 100–200 ewes exist.

Galician sheep are small with a straight facial profile. The head is small and males sometimes have horns. The ears are medium-sized and project sideways. The forehead is broad; the neck medium-sized and the body straight. The hindquarters are short and slope downward. The udder is well-developed and the legs fine-boned. Females weigh 30–40 kg, and males 40–50 kg. Wool production is approximately 2–3 kg for males and 1.5–2 kg for females. The wool is white, medium in density, and covers the entire body. The fibres range in thickness between 24 and 28 μm and are often medullated. The animals vary greatly in fleece and fibre characteristics (Valls Ortiz, 1979).

Ewes lamb for the first time between 15 and 17 months of age, lambing interval is approximately 7 months and longevity approximately 10 years. Fertility is high; lambing twins is the norm and triplets are frequent. Average litter size is approximately 1.8 lambs; in well-managed

flocks, however, prolificacy can reach 2.85. Galician ewes can lamb year round but the highest concentration is between November and March.

Galician sheep are raised for meat, their wool having little value. Lambs are slaughtered before 2 months of age when they weigh 10–12 kg; meat from adult animals is not well accepted by consumers. Dressing percentage is about 50%. Females produce enough milk for their young. They have good maternal instinct and are able to raise multiple lambs without difficulty. Postnatal mortality is low, because newborn lambs are viable at birth (Muñoz and Tejon, 1980).

Garole

These 'microsheep' are found in Sundarbans, an area of West Bengal, India, south of Calcutta, and extending eastwards into Bangladesh. Their population is about 50,000, raised in small flocks of fewer than ten adult ewes. Garole sheep graze year round along field boundaries and on the verges of roads. The area is humid; it rains every month of the year but mostly between May and October, with a total accumulation of between 3000 and 4500 mm per year. In April and May maximum temperature averages 36°C, and in December and January minimum temperature averages 13°C (Ghalsasi *et al.*, 1994).

Garole sheep are very small, weighing 0.6–0.9 kg at birth, 6–7 kg at 6 months and 10–14 kg at maturity. Adult sheep are 45–50 cm long (from shoulder to pin bones), 44–50 cm high (at withers) and have a chest circumference (heart girth) of 56–61 cm. Males are usually horned and females polled. Ewes lamb for the first time at 11–13 months of age and can breed year round with no specific breeding season. Ninety-one per cent of the ewes produce multiple births, of which 65, 21 and 5% are twins, triplets and quadruplets, respectively. Average litter size is 2.23 lambs. Garole sheep are raised solely for meat and never shorn or milked. Wool is coarse, with mostly medullated fibres (Ghalsasi *et al.*, 1994).

Researchers have speculated that ancestors of this prolific breed were imported into Australia from Calcutta in 1792 and 1793. These animals may have contributed prolificacy to the Booroola Merino sheep of Australia (Turner, 1983)

Imeritian

The Imeritian breed native to Abkhasia and Ajaria in the Republic of Georgia belongs to the Caucasian Fat-tailed type. The animals are small, the body weight of ewes averaging 29 kg at 18 months and that of older ewes, 30 kg. The ewes are early maturing and can lamb for the first time at 12 months of age. They also have an extended breeding season and can lamb every 6–8 months.

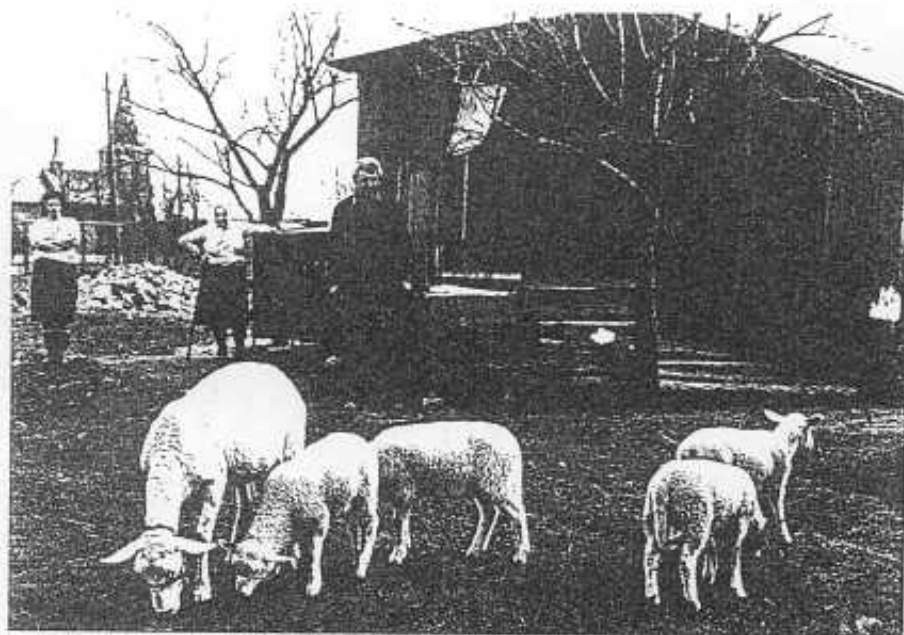
Litter size averages two lambs. In the first 30 days of lactation the

daily milk yield of ewes with single, twin and triplet lambs averages 0.5, 0.6 and 0.7 kg, decreasing to 0.3 kg in all three groups for days 61-90. Annual fleece weight averages 1.35 kg in lambs, 1.48 kg in ewes and 2.08 kg in rams (Rcheulishvili and Mushkudiani, 1985).

Olkuska

Olkuska is a long-wool breed originating in the Olkusz region not far from Krakow, Poland. These sheep resulted from crossing local long-wool Polish sheep with Pomeranian, Friesian and Holstein sheep at the beginning of the 20th century. As a result of intensive crossing with other breeds, the population of these sheep has declined drastically from almost 10,000 in 1960 to no more than 200 in 1986 (Grabowski *et al.*, 1987). Olkuska sheep are found currently in small numbers (one to five ewes) on small private farms. Recently, agricultural colleges established flocks to characterize, study and conserve the breed.

Olkuska are white sheep with a long trunk and good body conformation. Average mature body weight is about 100 kg for rams and 60-70 kg for ewes. Ewes are good milkers and show excellent mothering abilities, to the extent that they sometimes raise litters of five or six lambs without losses. Olkuska lambs are usually mated for the first time at 10 months of age. The Olkuska sheep are prolific with fecundity rate of over 190 lambs



Olkuska.

per 100 ewes. Triplets and quadruplets are frequent and larger litters of five and six are not rare. One ewe was reported to have given 31 lambs in nine parturitions. The use of lamb pelts in the fur industry is believed to have stimulated selection for high litter size. Olkuska rams were crossed intensively with Polish Merino, and the resulting F_1 ewes showed increased prolificacy, 1.30–1.77 (Grabowski *et al.*, 1987). The ovulation rate of F_1 Olkuska–Polish Merino ewes, 1, 2 and 3 years of age averaged 2.20, 1.95 and 1.74, compared with 1.15 and 1.06 for young and adult pure Polish Merino ewes, respectively (Martyniuk, 1988).

Animals are usually shorn twice per year. Yearly greasy fleece production is about 5–6 kg for males and 4–4.5 kg for females, with clean yield of 56–64%. The wool of Olkuska sheep is white, lustrous and soft. The semi-open fleece has the quality of 50–56's. Head and feet are sparsely covered with wool.

The high prolificacy of the Olkuska may result from a major gene. Ovulation rate and litter size of suspected carriers of the gene had 1.04 more ovulations and 0.60 more lambs than the non-carriers (Radomska *et al.*, 1988). These estimates are remarkably consistent with those in breeds with confirmed presence of a major gene (Martyniuk and Radomska, 1990; Knothe and Wierzchos, 1992). A repeatability of 0.45 ± 0.03 estimated for litter size, may indicate the segregation of a major gene (A. Knothe and W. Grabowski, 1990, personal communication).

Teeswater

Teeswater is a breed indigenous to Teesdale (Co Durham, England). The earliest known mention of the breed was in 1798. Until the 1920s, Teeswater were considered to be rare, but as a result of their remarkable crossing qualities, pure Teeswater sheep and their half-bred crosses, are found throughout the United Kingdom.

Teeswater is a large hornless breed, carrying a fine, long-stapled, natural white lustre, kemp-free fleece. It has an off-white face which may also be greyish-blue, with dark brown markings around the eyes and nose. Mature ewes weigh 80 kg and mature rams 100 kg. Teeswater sheep are renowned for their longevity, for having a sound mouth, and for their ability to transmit these traits to their progeny. Teeswater has been bred to produce rams for crossing with ewes of other Hill breeds. Ewe lambs resulting from such crosses, called Mashams are widely used for their great potential as good milkers, and excellent mothers, and for their ability to rear two lambs under varying conditions. When crossed with rams from Down breeds, Masham ewes produce lambs of exceptional carcass quality. Because of an increase in consumer preference for lean meat, Teeswater rams are increasingly being used with great success as terminal sires.

The number of lambs born averages 1.0 for yearlings, 2.0 for 2-year-olds, and 2.5 for mature ewes. Single lambs weigh 7 kg at birth whereas

twins average 6 kg. Lambs slaughtered at 20 weeks of age produce 21 kg of dressed carcass. Lambs can achieve heavier weights and still retain their leanness

(Source: *British Sheep*, 8th edition, 1992, National Sheep Association, Malvern, England, pp. 128-129).

Virgin Islands White Sheep

This breed of hair sheep was developed on the US Virgin Island of St Croix from West African stock, with a possible influence of some Wiltshire Horn. Their population around the world may be almost 14,000. About 10,000 are concentrated on the US and British Virgin Islands. The rest are distributed in the wider Caribbean, South America, the United States, Malaysia and Indonesia. Their export from St Croix to the US mainland in the 1960s formed the basis for the development of the Katahdin breed. A second export in 1975 to Logan, Utah, formed the basis of the pure white St Croix breed.

Typical Virgin Islands White sheep are pure white, medium-sized, and polled in both sexes. Some sheep are solid tan, brown, black or tricolour (brown and white with black belly pattern). Occasionally, wool may be seen on the back or hindquarters, presumably as a result of crossing with Suffolk in the past 20 years. Medium-length ears are carried horizontally. The tail reaches down to the hocks. Adult males have a well-developed mane and a slightly convex facial profile.

Most sheep are either tethered or managed extensively in small flocks on poor pastures. A few larger and better managed flocks graze on improved pastures and may receive grain supplements. The animals are corralled at night for protection.

The parasitic gastroenteritis in hair sheep on St Croix is a major health problem and the main cause of morbidity in adults and mortality in lambs. *Haemonchus contortus* and *Trichostrongylus colubriformis* were the most important nematodes; infestation by the former worm was more significant during the rainy season, whereas that by the latter was more significant during the cool period of the year. Reports from the United States indicate that St Croix sheep exhibited some level of resistance to reinfection with *D. contortus* larvae and to infection with *Fasciola hepatica*. Nonetheless, drenching at regular intervals is a normal practice on the island of St Croix.

On St Croix, ewe lambs became fertile at 7-9 months of age and ram lambs a little earlier. Age at first lambing was about 18 months; ewes have the genetic potential to lamb every 6-8 months given proper management and nutrition. However, ewes may show seasonal anoestrus during spring under a temperate environment. Ovulation rate was almost 2.0 in Logan as well as on St Croix, thus indicating little effect of day-length variability. Average litter size varied between 1.4 and 2.0. Multiple births occurred with a frequency of 50-70%. Lamb mortality can reach up to 25%

during the rainy season. In general, the reproductive performance of Virgin Islands White sheep is similar or slightly inferior to that of Barbados Blackbelly to which they are closely related.

Virgin Islands White sheep, managed under standardized drylot conditions in confinement on St Croix and at Logan did not differ in fertility, prolificacy, lamb survival and frequency of multiple births; however, ewe body weight and lamb growth was less and age at puberty was lower under Logan's temperate environment. In ram lambs, scrotal circumference and semen characteristics at puberty were similar in the two locations and environments. Lambs averaged 2.9 kg at birth, 12.0 kg at weaning (9 weeks), with a preweaning average daily gain of 154 g. They can be marketed with satisfactory finish at approximately 40–45 kg. Carcass conformation is slightly superior to Barbados Blackbelly.

Virgin Islands White sheep have displayed excellent adaptation to the severe and variable climate of Utah, growing a heavy mixed coat of wool and hair during winter to be shed in the spring.

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