

## FAT-TAILED SHEEP

### AFAR

**Synonyms.** Adal.

**Origins.** As for the Ethiopian Highland types, the Afar probably originates from very early importations from Arabia but the tail shape is different and these sheep carry no wool.

**Sub-types and races.** There is *very* little difference in this type from its northern limit in Eritrea to its southern one in Djibouti.

**Distribution.** Coastal strip, Danakil Depression, and Rift Valley in Ethiopia from 12°N to 6°N in the area where the Afar (Danakil) tribe is found. Northern part of Republic of Djibouti.

**Ecological zones.** Desert and coastal desert. Some extension has occurred westwards and upwards (to 1500 m) and into semi-arid zones in Ethiopia in recent years.

**Management systems.** Pastoral and, to a limited extent, agro-pastoral. In the pastoral systems management is identical to that of Afar goats (p.86) with *very* similar flock structures, females overwhelmingly predominant and ratio of breeding males to females of 1:42.

**Physical characteristics.** Small size. Weight: males 35 kg; females 24 kg. Head small, profile short and straight in females but slightly convex in males. The pads of fat on the nose and behind the poll are typical of fat-tailed sheep.

Hornless in both sexes. Ears short (10 cm) and pricked, but vestigial ears are common (about 80 per cent of all animals in Tigray). Toggles in 5 per cent of all animals.

Neck short, often with a pronounced dewlap. Chest shallow and narrow. Tail head higher than withers. Back short. Legs long in relation to body size and poorly fleshed. Tail shield-shaped descending to hocks, with short S-shaped, upturned tip Figure 79.



**Figure 79: Afar sheep in Kala graben on the Tigray Welo border in northern Ethiopia.**

Colour off-white to sandy. Coat of short stiff hair.

**Products.** Meat; (milk).

**Productivity.**

REPRODUCTION. *Lambing interval*: about 1 year in Tigray traditional system. *Litter size*: 1.03 at Melka Werer; estimated at 1.14 in Tigray traditional system. *Conception rate*: 90 per cent at Melka Werer research station.

GROWTH. *Birth weight*:  $2.40 \pm 0.6$  (s.e.) kg (n=219); males 2.54, females 2.26, singles 2.83, twins 2.07, linear increase with increasing age of dam from < 1 year to 3-4 years at Melka Werer research station. *Weight for age*: 3 months- $11.9 \pm 0.07$  (s.e.) kg (n=213) with similar environmental influences as at birth, 6 months- $16.8 \pm 0.52$  (s.e.) kg (n=204) and again with similar influences at Melka Werer; 3 months-11, 6-19, 12-23, 18-25, 24-26, 30-27, 36-28 kg for females only in Tigray traditional system. *Average daily gain*: birth-6 months - 92 g in Tigray traditional system; 3 (weaning)-6 months - 64 g at Melka Werer.

**Research.** Melka Werer Research Station, Institute of Agricultural Research, P.O.Box 2003, Addis Ababa, Ethiopia.

**References.** Wilson, 1975; Galal, Sebhatu & Getachew, 1977.

**ETHIOPIAN HIGHLAND**

**Synonyms.** Abyssinian.

**Origins.** These sheep are almost certainly descended from very ancient importations from Arabia across the narrow Bab-el-Mandeb Straits at the mouth of the Red Sea.

**Sub-types and races.** Nomenclature is confused and many types (tribal or locational) have been named. Menz (from the district of the same name in northern Shewa region Figure 80, Bonga, Horro, Welo and Arusi are examples. Early Italian classifications included Akele Guzai, Rashaidi and Tukur.



**Figure 80: Mixed hair and wool fleece on Menz type Ethiopian Highland sheep in Addis Ababa Distribution.** Highland areas of Ethiopia.

**Ecological zones.** Semi-arid to sub-humid areas in highland Ethiopia with weakly bimodal or unimodal rainfall regimes, usually above 1500 m.

**Management systems.** Agro-pastoral to agricultural and urban. Sheep outnumber goats and are the commonest of all domestic herbivorous species in the highlands. In 4 peasant associations in Debre Berhan in northern Shewa, 80 per cent of families own sheep which account for 64.7 per cent of all livestock owned (outnumbering goats by a ratio of 58:1 and cattle by 3:1). Flock sizes are generally small to medium: 23.7 animals owned by 1.5 people in Debre Berhan with 66.7 per cent of flocks in single ownership and 21.7, 5.8, 4.2 and 1.6 per cent of flocks owned by 2, 3, 4, and 5 or more people. Flock structure: gene rally related to meat production with some influence of minor wool output: females 74.8 per cent (52.0 per cent breeding); males 25.2 per cent (5.0 per cent > 6 months and 2.8 per cent castrates).

In Ada district 24 per cent of families own 4.1 sheep (2.2 ewes, 1.3 lambs and 0.6 rams). Only 12 per cent of families own 3.3 goats. Flock structures are related mainly to meat production: breeding females > 1 year 52.5 per cent; adult males 13.9 per cent (13.0 per cent of these being castrates); lambs < 1 year 33.6 per cent.

**Physical characteristics.** Small size 60 cm. Weight: male 35 kg; Female 25-28 kg.

Head short and rather coarse with rather large eyes. Profile flat to slightly convex. Pads of fat behind poll and on face at sides of nostrils.

Horns: usually present in males, variable in length but generally short, ribbed and spiralled; usually absent in females. Ears short to medium length, horizontal or slightly pendulous; rudimentary and atrophied ears are common.

Neck short and thin. Dewlap sometimes present. Brisket rather prominent. Chest narrow and shallow. Back short but straight. Croup sloping. Legs long in proportion to body, exceptionally long in some types Figure 81. Tail variable in length and shape, even within a type Figure 82, but generally shorter than in many other fat-tailed types.



**Figure 81: Ethiopian Highland sheep near Debre Marcos, Gojam region**

Colour extremely variable: self or mixed colours predominate depending on type and region. Coat usually fairly long, up to 8 cm of mixed hair and wool, shorter and finer in some varieties. Wool cover on head and neck varies considerably.

**Products.** Meat; (wool).

**Productivity.**

REPRODUCTION. *First lambing*: generally rather delayed in relation to most African sheep; 4.2 per cent and 12.6 per cent of 876 Menz ewes with temporary incisors and with 1 pair of permanent incisors had lambed in Debre Berhan area in 1984; 13.7 months in limited sample (and probably "early lambing individuals") at Ada. *Lambing interval*: 350 days at Debre Berhan; 239 days at Ada.



*Multiple births*: generally uncommon but this trait, as well as others, differs within sub-types of the Ethiopian Highland sheep and among other Ethiopian breeds Table 43 ); 144 of 3412 parturitions in Debre Berhan traditional system; 24 per cent of 432 pregnant ewes in an abattoir study were carrying twin foetuses, possibly indicating high embryonic mortality under field conditions. *Litter size*: 1.04 in Debre Berhan; 1.30 in Ada (n=84 parturitions); 1.35 in small sample of Menz type on Debre Berhan station; 1.35 in Horro type. *Annual reproductive rate*: 1.03 at Debre Berhan; 1.98 at Ada. *Fertility* (=ewes conceived/ewes mated): 87 per cent for Horro type.

**Table 43 Production traits of Ethiopian sheep types under station management**

Trait	Sheep type			
	Ethiopian Highland		Afar	Blackhead Ogaden
	Menz	Horro		
Ewe performance				
litter size (n)	1.09	1.35	1.05	1.04
conception rate (%)	-	91.6	82.0	63.0
milk yield (litres)	-	17.8	23.6	-
4 year weight (kg)	29.5	38.0	30.6	31.7
Lamb weights (kg)				
birth	2.2	2.9	2.5	2.7
4 months	10.9	15.0	13.0	14.2
6 months	-	24.7	18.4	17.7
12 months	-	33.5	25.8	24.8

GROWTH. *Birth weight*: 1.9-2.7 kg for Menz type; 2.9 kg for Horro type. *Weight for age*: 120 days (weaning)-12.3 to 16.1 kg for Menz; 3 months-

13.5, 6-18.5, 9-21.2, 12-23.4, 18-27.7, 24-31.2, 36-34.7, 48-33.3 kg at Ada; 6 months-14.7, 12-33.5 kg for Horro; males with 1 pair permanent incisors-27.2, 2 pairs-30.4, 3 pairs-33.8 kg; females 1 pair-22.7, 2 pairs-24.7; 3 pairs-25.6; 4 pairs-27.7 kg; mature castrates-39.6 kg. *Average daily gain:* birth-3 months - 124, 3-6 - 90, 6-9 - 70, 9-12 -59, 12-18 - 47, 18-24 - 40, 24-36 - 30, 36-48 - 21 g at Ada.

WOOL. *Yield:* 400-1000 g per clip, usually 2 clips per year in Menz type in traditional sector; 600 g in single annual clip at Debre Berhan station. *Fibre length:* cm with CV of 57.8 per cent. *Fibre diameter:* 26.8 um with CV of 64.8 per cent. Manufactured wool has strong admixture of hair and is spun in natural colours. Used mainly for blankets in local manufacture but "cottage" and more commercial industries make a wider range of products Figure 83



**Figure 83: "Cottage" and industrial products from naturally coloured wool of Ethiopian Highland sheep**

In 1980, 33 tonnes of wool were exported from Ethiopia but 55 tonnes of greasy wool and 396 tonnes of wool waste were imported in the same year, most of which was re-exported as 9650 knotted and HOC woven carpets.

MEAT. *Dressing percentage:* Horro type lambs 35-38 at 28-30 kg live weight and 40-43 at 38 kg. *Carcass proportions:* 45 per cent . hindquarters in both males and castrates.

SKINS. In 1985 a total of 5 549 640 sheepskins was exported from Ethiopia, comprising about 1.8 million raw and 3.7 million processed skins: in 1986 the figures were 6 289 023 total skins of which 1.1 million were raw and 5.2 million were processed. Goat and kid skin exports amounted to 4.3 and 4.9 million in the 2 years but the proportions of raw and processed skins were reversed when compared to sheep.

**Research.** Institute of Agricultural Research, P.O.Box 2003, Addis Ababa, Ethiopia. International Livestock Centre for Africa, P.O.Box 5689, Addis Ababa, Ethiopia.

**References.** Agyemang et al, 1985; Kassahun Awgichew & Getaneh Hailu, 1986; Mukasa-Mugerwa, Ephraim Bekele & Tadesse Tessema, 1986; Mukasa-Mugerwa & Tekelye Bekele, 1988; Demissie Tiyo, Kassahun Awgichew & Yohannes Gojjam, 1989; Kassahun Awgichew, Demissie Tiyo & Yohannes Gojjam, 1989; Sisay Lemma et al, 1989.

## RED MASAI

**Synonyms.** Masai.

**Origins.** Part of the East African long-fat-tailed group.

**Sub-types and races.** Principally owned by the Masai tribe but similar sheep are owned by many other tribes in Kenya (notably the Nandi, Busia and Bukusu), northern and central Tanzania (of which Gogo in central Tanzania is probably the best example) and the drier parts of Uganda (especially the Karamoja).

**Distribution.** Northern Tanzania (where there are probably more than elsewhere) and south-central Kenya.

**Ecological zones.** Semi-arid bimodal rainfall (600 mm) areas at altitudes mainly in the range of 500-1500 m.

**Management systems.** Pastoral and agro-pastoral. Usually kept in approximately equal numbers with goats in mixed flocks. Some owners keep only one species and there is some evidence that in recent years goats have survived drought conditions better than sheep and are beginning to predominate. Animals are usually herded by day and penned in thorn enclosures at night, suckling lambs separately from adults. Flock sizes are very variable but generally large: combined goat and sheep flocks average about 190 head. Flock structure: females 68.5 per cent; males 31.5 per cent, castrates are important in the flock as their fat is used to feed post-parturient women Table 44.

**Table 44 Sheep flock structure (per cent of 547 animals) on a Masai group ranch in south-central Kenya**

Age		Sex			Overall
Pairs permanent incisors	Months	Male		Female	
		Entire	Castrate		
0	<6	7.3	0.4	5.8	13.5
0	6-15	5.7	7.7	19.0	32.4
1	16-21	1.5	2.9	8.0	12.4
2	22-27	0.5	1.3	5.7	7.5
3	28-33	0.4	1.3	6.0	7.7
4	>33	0.7	1.8	23.9	26.5
Overall		16.1	15.4	68.5	100.0

**Physical characteristics.** Relatively large size 70 cm (male and castrate 72 cm; female 66 cm). Weight: male 41 kg; castrate 45 kg; female 32 kg.

Forehead broad and short, profile convex in males and straight in females. Pads of fat occur on the front of the face and behind the poll in males but are less common than in other fat-tailed types.

Horns often present in both sexes: 33 per cent in males and castrates combined but 59 per cent in entires and 22 per cent in castrates (?entire males selected with horns), up to 27 cm long, carried in a tight backward spiral; 10 per cent of females have horns. Ears medium length, 11-15 cm, semi-pendulous but short vestigial ears occur in 7 per cent of sheep and complete absence of external ears is occasionally seen. Toggles occur in about 15 per cent of both sexes, variable in position and size.

Neck short, often with a pronounced dewlap. Chest narrow and shallow. Brisket relatively well developed with dewlap carrying some fat. Withers not prominent ( $66 \pm 3.4$  (s.d.) cm (n=131) in females,  $72 \pm 4.6$  cm (n=4) in males,  $72 \pm 4.6$  cm (n=10) in mature castrates. Back short. Croup sloping. Legs short. Tail variable in length and shape but generally very fat in sheep in good condition.

Colour preferably red but extremely variable. Coat relatively long, up to 4 cm smooth coarse hair but legs and face carry only fine hair: a short undercoat of woolly fibres is present in this animal.

Haemoglobin polymorphism indicates some possible resistance to helminth infestations in this type.

**Products.** Meat; fat.

**Productivity.**

**REPRODUCTION.** *First lambing:*  $549 \pm 112.1$  (s.d.) days (n=37) on group ranch in south-central Kenya, considered to be very late in a traditional system and due to use of an apron to control breeding by male Figure 84 *Lambing interval:* 312 days (n=280) at Elangata Wuas group ranch in 1978-1981 but much longer in 1982 and 1983 on group ranches near Sultan Hamed; longer than usual intervals for traditional system due at least in part to control of mating by males. *Multiple births:* uncommon, about 5 per cent in traditional system; relatively uncommon (14 per cent) at 01 Magogo station in Kenya. *Litter size:* 1.05 (n=1009) at Elangata Wuas group ranch, increasing from 1.00 at first to 1.08 at fourth parity, declining thereafter. *Annual reproductive rate:* 1.22.



**Figure 84: Masai sheep at Elangata Wuas group ranch in south-central Kenya (note leather apron on male)**

**GROWTH.** *Birth weight:* 2.7 kg (n=271) at 01 Magogo. *Height for age:* 10 days-3.9, 30-6.1, 90-10.5, 150-13.7, 240-17.7, 365-22.6, 550-26.5 kg. *Average daily gain:* birth-150 days - 73, birth-365 - 54 g in Elangata Wuas traditional system; birth-117 days - 128 g at 01 Magogo. *Post-partum weights:* 30.6 kg; 27.8 kg at first and 32.6 kg at fourth and subsequent parities; also influenced by parturition type (single 28.5 kg, twin 32.6 kg), season of parturition and flock. *Mature weights:* females  $32.5 \pm 4.55$  (s.d.) kg (n=131) in range 21-47 kg; males  $40.6 \pm 7.53$  kg (n=4) in range 33-49 kg; castrates  $44.9 \pm 5.38$  kg (n=10) in range 38-53 kg.

SKINS. 1.25 to 1.65 million sheepskins per year entered the Kenya commercial marketing system in 1978-1984, compared to 1.59 to 2.61 million goatskins.

**Research.** Formerly at 01 Magogo by FAO Goat and Sheep Project and field studies by ILCA now discontinued.

**References.** Chemitei et al, 1975; Wilson, 1978; Preston & Allonby, 1979; Wilson, Peacock & Sayers, 1983; 1984; 1985; Wilson & Ole Maki, 1989.

## EAST AFRICAN BLACKHEADED

**Origins.** Part of the East African long-fat-tailed group.

**Sub-types and races.** Several different tribal varieties might be recognized.

**Distribution.** Southern Uganda and western Tanzania, particularly around Mbarara in Uganda, and west of Lake Victoria and south and east into Sukumaland in Tanzania.

**Ecological zones.** Semi-arid and sub-humid, mainly bimodal rainfall areas at low to medium altitudes.

**Management systems.** Agro-pastoral. Possibly as many as 500 000 sheep of this type would have been found in Tanzania during the 1950s.

**Physical characteristics.** Small size. Weight: female 25 kg.

Head generally finer than other fat-tailed types but fat pads present on nose and behind head.

Horns usually absent in both sexes: when present they are short or occur just as scurs. Ears short (5-8 cm) but pendulous, or vestigial.

Neck rather long. Chest somewhat pinched. Withers level with or lower than sacrum and may carry some fat. Back short and straight or dipped. Brisket well developed but dewlap usually not very prominent except in really fat animals. Legs long and poorly fleshed. Tail variable in shape, length and amount of fat deposit.

Colour similar to Blackhead Persian with black head and fore part of neck, remainder of body white or white with black spots or splotches. Selected for this pattern at Mbarara in Uganda during 1950s. Other colours do occur.

Coat short and coarse without wool undercover.

**Products.** Meat.

### Productivity

**REPRODUCTION.** *First lambing:* 532 ± 8.1 (s.e.) days (n=196) at Mbarara where ewes first put to ram at about 1 year. *Lambing interval:* 255 + 2.3 (s.e.) days (n=666), decreasing generally from 263 days at first interval to 232 days at ninth interval. *Multiple births:* fairly common at Mbarara, 82 per cent single, 18 per cent twin; apparently uncommon in traditional systems. *Lifetime production:* 7 lamb crops in 5-6 years at Mbarara.

**GROWTH.** *Birth weight:* 2.5 ± 0.02 (s.e.) kg (n=1531) at Mbarara; females lighter than males, lambs from first parity ewes lighter than all other parities, and twins lighter than singles. *Weight for age:* 2 months-10.1 ± 0.07 (s.e.) (n=1273), 5(weaning)-15.5 + 0.10 kg (n=1168) for male single lambs from multiparous ewes Table 45; 12 months-male single 24, female single 21, male twin 23, female twin 20 kg. *Average daily gain:* birth-2 months - singles 123 twins 95, 2-5(weaning) months - singles 59 twins 55, birth-5 months - singles 82 twins 73 g.

**Table 45 Weights (kg) of East African Blackhead lambs at Mbarara, Uganda**

Variable	Age		
	Birth	2 months	5 months
Multiparous ewe			
male single	2.55	10.09	15.5
female single	2.37	9.45	14.2
male twin	2.05	7.64	12.2
female twin	1.96	7.27	12.0
Primiparous ewe			
male single	2.28	9.04	13.7
female single	2.14	8.99	13.6

**Research.** Formerly at Department of Veterinary Services and Animal Husbandry, Mbarara, Uganda.

**References.** Sacker & Trail, 1966.