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Goat breeds of Ethiopia:

A guide for identification and utilization

ESGPIP

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FORWARD

This technical bulletin titled "*Goat breeds of Ethiopia: A guide for identification and utilization*" is the 27th in a series produced by the Ethiopia Sheep and Goat Productivity Improvement Program (ESGPIP). The ESGPIP is a USAID funded Project with the objective of improving the productivity of sheep and goats in Ethiopia.

Many different breeds of sheep and goat are found in different parts of Ethiopia. These breeds are characterized by varying physical, productive and reproductive features. Attempts have been made to characterize sheep and goat breeds of Ethiopia by different institutions and individuals. This technical bulletin attempts to assemble information on the goat breeds of Ethiopia and their characteristics. It provides guidelines for identification and utilization of these breeds.

The information contained in this bulletin is believed to be useful for development agents to train farmers/pastoralists and above all serve as a reference to the goat breeds and their specific characteristics as a basis for making decisions on their utilization.

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Goat breeds of Ethiopia:
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1. Introduction

Farm animal species (e.g., goat, sheep, cattle) are conventionally classified into breeds. A breed is a group of similar animals within a species. In the context of developing regions, the term breed has been defined as any recognizable interbreeding populations, groups or regional stocks in a livestock species. Classification of livestock resources into management units (i.e., breeds) facilitates rational management and utilization of the resources.

Goat breeds found in Ethiopia have been identified and classified based on their differences in physical characteristics and genetic make-up. In this technical bulletin, the goat breeds and their distinguishing physical characteristics, geographical distribution, and adaptive and productive characteristics are presented. A practical guideline for breed identification in the field by kebele development agents is provided. Finally, suggestions of what the kebele development agent can do to promote sustainable utilization of the goat genetic resources are presented.

2. Tools to identify and classify breeds

2.1. Physical characteristics

Breeds of farm animal species can be identified and classified based on physical characteristics. The physical characteristics include body color, size and shape of body parts, and presence or absence of body parts. Few physical features can be used to identify major groups of breeds. Many physical features have to be collected and analyzed to identify specific breeds within major groups.

2.2. Differences at the DNA level

Identification and classification of breeds based on physical characteristics can be supported by advanced tools. Advanced classification is based on differences between breeds in their genetic make-up. For this purpose, analysis of the genetic material called DNA is required. Such classification results in identification of genetically distinct breeds.

3. Goat breeds of Ethiopia

Based on differences in physical characteristics and genetic differences at the DNA level, four families and 12 breeds of goats have been identified in Ethiopia (Tesfaye, 2004; Farm Africa, 1996). A family is a group of breeds that are genetically more related and physically more similar than breeds outside the group. The families and breeds are named after their geographical location, the ethnic communities maintaining them, or based on some identifying physical features (Table 1).

It should be noted that some breeds are known by different local names in different localities. Breeds are also not bounded by political boundaries and the same breed can be present in different countries for example the Barka goat in Eritrea (known as Begayit in Ethiopia) and Nuer sheep in Sudan.

Table 1. Goat families and breeds of Ethiopia

Family name	Breed name	Other local names
Nubian family	Nubian	
Rift Valley family	Afar	Adal, Danakil
	Abergelle	
	Arsi-Bale	Gishe, Sidama
	Woito-Guji	Woyto, Guji, Konso.
Somali family	Hararghe Highland	
	Short-eared Somali	Denghier or Deghiyer
	Long-eared Somali	Large white Somali, Degheir, Digodi, Melebo
Small East African family	Central Highland	Brown goat
	Western Highland	
	Western Lowland	Gumz
	Keffa	

4. Geographical distribution of goat breeds

Geographical distribution of the goat breeds of Ethiopia is shown in Figure 1. This map of the breeds can also be used to identify the breed of a goat flock in Ethiopia.

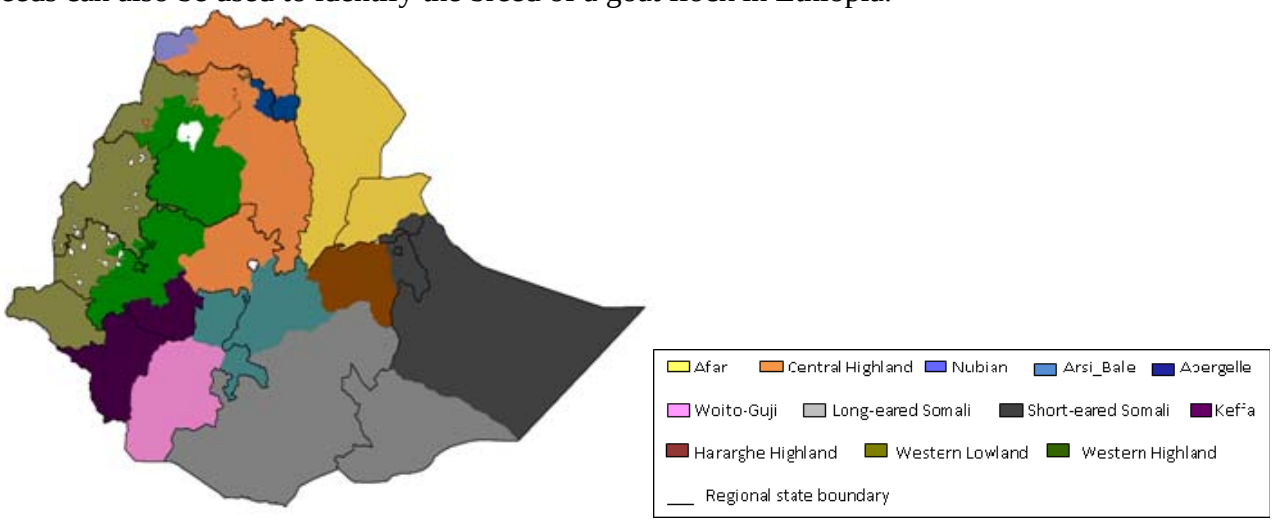

Figure 1. Geographical distribution of goat breeds of Ethiopia.
Source: based on Farm Africa (1996).

5. Distinguishing physical characteristics of goat breeds of Ethiopia

There are key identifying physical characteristics that distinguish a breed. It must be born in mind that a single physical characteristic may not distinguish a breed. A combination of characteristics is

required to differentiate one breed from another. The following are key characteristics one should observe or measure to identify the breed of a goat population in Ethiopia.

5.1. Coat color

Coat color is the simplest characteristic to look for when identifying the breed of a goat population since it is easily and quickly observed. Coat color of an animal could be plain (i.e., only one color) or patchy (i.e., patches of different colors on a major background color such as a black sheep with white patches).

Goat breeds in Ethiopia are not well developed and differentiated. As a result, individuals within a breed lack uniformity in color; resulting in a range of coat colors within a breed. Besides, most of coat colors are observed in almost all breeds. Difference between breeds in coat color is mainly in the proportion of the individuals with the different colors. That is, some colors are dominant in some breeds; for example white coat color is dominant in Somali goats. Therefore, coat color alone is not a good criterion to identify goat breeds but it can be an initial physical indicator.

5.2. Body size

Body size is found to be a key classifying physical characteristic of Ethiopian goat families and breeds. For instance, Western Highland goats can be classified as a large breed and Afar goats as a small breed. Body size refers to the height, length and width of the animal. Such measures of body size are called *linear body measurements* and include height at withers and chest girth. Linear body measurements are taken using a measuring tape. The reader is referred to ESGPIP Technical Bulletin No. 23 for the techniques of measuring body size. Body size measurements of Ethiopian goat breeds are given in Table 2.

Table 2. Height at withers and chest girth of goat breeds of Ethiopia (All measurements are made on adult does)

Breed	Height at withers (cm)	Chest girth (cm)
Nubian	70.1	74.3
Afar	60.9	67.4
Abergelle	65.0	71.2
Arsi-Bale	66.1	74.9
Woito-Guji	66.4	72.5
Hararghe Highland	62.5	72.8
Short-eared Somali	61.8	70.4
Long-eared Somali	69.4	74.4
Central Highland	67.9	74.1
Western Highland	70.8	75.8
Western Lowland	63.5	75.9
Keffa	66.7	72.2

5.3. Ear and horn

The ear as a classifying feature can be described in terms of size and orientation. For example, ear length is used to identify the two goat breeds (Short-eared Somali and Long-eared Somali) in the Somali goat family. Otherwise, the two breeds are very similar in most other characteristics.

The presence or absence of horns also differentiates breeds of goats. Furthermore, the size and shape of horns differ in different breeds. Horn and ear sizes of goat breeds of Ethiopia are presented in Table 3.

Table 3. Ear length and horn length of goat breeds of Ethiopia (All measurements made on adult does)

Breed	Ear length (cm)	Horn length (cm)
Nubian	20.1	14.6
Afar	12.3	17.4
Abergelle	12.7	19.6
Arsi-Bale	14.0	12.5
Woito-Guji	12.5	10.8
Hararghe Highland	13.0	13.1
Short-eared Somali	12.8	12.2
Long-eared Somali	14.6	9.0
Central Highland	13.1	13.7
Western Highland	14.7	12.8
Western Lowland	13.8	12.8
Keffa	13.0	11.6

5.4. Facial profile

Facial profile refers to the shape of the face when observed from the side. The profile could be straight, concave, or convex. The facial profile is called concave if the face is curved in, and convex if the face is curved out. Facial profile is another key classifying feature of Ethiopian goat breeds.

5.5. Other important features

Besides the key features discussed, there are other important features that should be observed when identifying a goat breed in Ethiopia. Key identifying features and other important features of goat breeds of Ethiopia are shown in Table 4.

Table 4. Key distinguishing physical characteristics and other important physical features of goat breeds in Ethiopia

Name	Physical characteristics	
Nubian	**Key identifying features:** Tall (height at withers = 70.1 cm in females and 74.0 cm in males); markedly convex facial profile; long ears; hairy. **Other features:** 63% of the males have curved horns; 37% have straight horns; horns in males are pointed backwards; the main coat color is black (72%); with occasional white and red patches on a black background; ruff and beard are present; no wattles.	
Afar	**Key identifying features:** concave facial profile; narrow face; prick-eared; leggy; long, thin upward-pointing horns; patchy coat color. **Other features:** fine, short hair coat; variable colors - white 48%, light brown 25%, black 27%, and flecks and patches are also common; ruff is present in 67% of the goats; beard is present in 79% of males; wattles are relatively common (19%).	
Abergelle	**Key identifying features:** Stocky build; mostly reddish-brown color; males have magnificent spiral horns directed backwards. **Other features:** straight (44%) to concave (56%) facial profile; plain coat color (56%), with 33% patchy and 11% spotted; hair is short and smooth; ruffs and beards are present; wattles are almost entirely absent (94%).	
Arsi-Bale	**Key identifying features:** Medium-large size; often hairy; coat colors are mostly in a combined patchy pattern. **Other features**: predominantly straight facial profile (98%); males have curved (47%) and straight (41%) horns mainly pointing backwards (58%) with some pointed straight upwards (28%); polled goats were 6% in both sexes; ruffs occurred in 33% of males with beards on 92% males and 52% of females; wattles are present in 14% of males and 11% of females.	
Woyto-Guji	**Key identifying features:** coat colors are brown, black or red often marked with black or brown stripes along the back, on the underside or on the front of the legs; short, shiny, smooth coat; small head with mainly straight facial profile. **Other features**: medium-sized; straight horns (71% of the males), curved (26%), polled (3%); horns point backwards (75%), upward (21%) and laterally (2%); beard is present on 96% of all males, ruff present in 91% and wattles in 10%.	

Table 4. Cont'd…

Name	Physical characteristics	
Hararghe Highland	**Key identifying features:** Small; white, brown or black; commonly polled. **Other features**: straight (60%) or concave (40%) facial profile; horned goats have straight (32%) or curved horns (29%); short hair; colors are mainly plain (90%), 10% are spotted; beard present in 72% of males; no ruffs; wattles present in 14% of goats.	
Short-eared Somali	**Key identifying features:** Medium-sized (smaller than Long-eared Somali); mainly white coat; short smooth hair. **Other features**: straight facial profile; males bear straight horns (46%) or upward pointing (64%); females bear curved horns (50%) either pointing upwards (55%), backwards (27%) or laterally (12%); polled goats are found in 5% of males and 7% of females; low incidence (6%) of spiral horns; in both sexes; coat color white (76%), brown (9%), black (7%) and grey (7%) occasionally in spotted patterns (12%); no ruffs; beards present in 79% of males and 14% of females; wattles found in 5% of all goats.	
Long-eared Somali	**Key identifying features:** Large; white; short hair. **Other features**: predominantly straight face; horns are curved (41% in males, 46% in females), and pointed backwards in 38% of males and upwards in 48% females; 13% of horns in both sexes have a lateral orientation; polledness is 19% in males and 8% in females; color is plain white (92%), brown (4%), black (3%) and grey (1%); spotted coat pattern is observed in 21% of males; ruffs occur in 21% of males but never in females; beards in 66% of males and 7% of females; wattles in 6% of males and 3% of females.	
Central Highland	**Key identifying features:** Medium-sized; broad-faced; thick horns; reddish-brown color. **Other features**: facial profile straight (71%) or concave (29%); males are horned, 82% straight and pointed backwards, 13% curved and 5% spiral horns; coat type is short and smooth with 51% plain color, 42% patchy and 7% spotted; predominant color is red-brown (41%), the rest being black, white and grey; beard is present in 82%; ruff in 99%; and wattles in 6% of males.	

Table 4. Cont'd

Western Highland	**Key identifying features:** Tall; coarse hair; white and/or fawn color. **Other features:** concave facial profile (100%); coarse long coat (82%); 12% of the animals have hair on their thighs; color pattern is either plain (51%), patchy (42%), or spotted (7%); colors are white (42%) and fawn (42%), and combinations of these colors; polled (14%); horned goats have straight (76%) horns directed backwards (73%); ruff present in 99% of males; beard in 84% of males; wattles in 12% of the goats.	
Western Lowland	**Key identifying features:** Short, straight face, fawn or white patchy color. **Other features:** straight facial profile (100%); short smooth coat (81%) and coarser coat (16%); colors are white (42%), fawn (38%), black (9%) and grey (11%), occurring mainly in patches (73%). Most males have straight horns (85%) orientated backwards (77%); 12% of males are polled; ruff present in 96%, beard in 70% and wattle in 12% of males.	
Kaffa	**Key identifying features:** Small, red or black, short neck, short prick ears. **Other features:** straight facial profile 92%; most males (83%) have straight horns pointing backwards (80%), a small proportion (14%) have curved horns; low incidence of polledness (3%); most goats have a coarse (38%) to hairy (27%) coat type; some 16% have hair on the thighs; plain colors predominate (52%), with some patchy color patterns (45%); main colors are black (30%) or brown (31%); among males, 88% have beards, 97% have ruffs; wattles are present on 12% of all goats.	

(Source for most of the pictures: Farm Africa, 1996)

6. Productive characteristics and value to community

Traditional livestock breeds, unlike modern commercial breeds, play multiple roles. Some roles of indigenous goat breeds in Ethiopia (see Table 5) include:

- Being part of the cultural heritage of the communities keeping them
- Having a different and multiple value to the community
- Having special merit such as adaptation to its unique environment
- Having different production potentials such as twinning percentage and growth

Table 5. Value of goat breeds of Ethiopia to the communities maintaining them, their special merits, percent of does giving birth to twins and adult weight

		Production characteristics	
Breed	Value to the community/special merits	Twinning percentage	Weight (kg)

Afar	Extensively milked, delicacy (*bekel)*, blood as medicine, adapted to arid area	1.4	23.7
Abergelle	Milk and milk products, skin	1.3	28.4
Arsi-Bale	Extensively milked, adapted to cold area	18.0	30.4
Woito-Guji	Good meat		28.8
Hararghe Highland	Milk, skin	15.0	29.1
Short-eared Somali	Milk, adapted to arid area	2.5	27.8
Long-eared Somali	Extensively milked, adapted to arid area	3.0	31.8
Central Highland	Bati Genuine skin	17.0	30.1
Western Highland		38.0	33.0
Western Lowland	Extensively milked, adapted to arid area	44.0	33.9
Nubian			34.1
Keffa	Milk and blood	22.0	28.2

7. What can the Kebele Development Agent do?

7.1. Characterizing the kebele goat population

- Identify the goat breed in the kebele. Identification can be made by relating physical characteristics in the flock with the description in Table 4 in this bulletin. Identifying the breed in the kebele helps to utilize the breed information provided in this bulletin or elsewhere.
- Report unique varieties. The kebele goat population may not fall in any of the recognized breeds in Table 4 and could be an unidentified variety. The variety may have a special merit. Report to concerned institutions.
- Characterize the kebele goat to generate additional, area-specific information regarding the performance merits and demerits. The data to be collected may include body weights, kidding frequency, twinning frequency, mortality rate, and disease occurrence. This can be done by monitoring some flocks in the village.

7.2. Promoting sustainable utilization

What can be done at the kebele or district level to conserve the adapted indigenous goat breeds and still use them to improve farmers' livelihoods?

- Create awareness among farmers about the adaptive merits of their breed
- Teach farmers how to increase competitiveness of their goats by improving their genetic merits and the production environment.
- Teach farmers to base their improvement decisions on the merits and demerits of their breed utilizing the information provided in Table 5.
- Teach farmers to avoid indiscriminate crossing of the indigenous breeds with exotic breed.
- Teach farmers to adopt selective breeding as a sustainable improvement strategy. The KDA is referred to Technical Bulletin No 14 for a detailed practice of selection at the village level.
- Monitor flock structure, particularly the relative numbers of breeding females and males, in each breeding flock.
- Advise farmers on proper flock composition.

8. References

Farm-Africa. 1996. Goat types of Ethiopia and Eritrea. Physical discription and management systems. Published jointly by FARM-Africa, London, UK, and ILRI (International Livestock Research Institute), Nairobi, Kenya. 76pp.

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