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**TECHNICAL BULLETIN No.22**  
***Proper slaughter and flaying of sheep and goats***



**ESGPIP**

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## FORWARD

This technical bulletin titled “*Proper slaughter and flaying of sheep and goats*” is the 22<sup>nd</sup> 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 Ethiopian sheep and goats in Ethiopia.

Sheep and goat skins are major export commodities that earn the country substantial amounts of foreign exchange. Ethiopia could get much more economic benefit from the export of skins had it not been for the damages at different stages of production that result in the rejection and downgrading. Most of the damages could be avoided with effort during the life of the animal and/or slaughter. This technical bulletin deals with the care of skins during slaughter that can substantially reduce damage and thus consequently increase incomes of the producer and the country at large.

Proper methods and procedures of trimming hooves of sheep and goats are presented in this bulletin. The information contained in this bulletin is useful for development agents to train farmers/pastoralists, butchers and other people who occasionally slaughter sheep and goats to exercise more care in the slaughter and flaying of sheep and goats.

Desta Hamito (Prof.),  
Chief of Party,  
ESGPIP  
May, 2009

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## Proper slaughter and flaying of sheep and goats

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### 1. Introduction

Sheep and goat skins are one of the most important foreign exchange earners to the Ethiopian economy. There is, however, substantial loss due to rejection and downgrading of sheep/goat skins. This has resulted in substantial losses to producers, traders, tanneries and also to the country's economy. Most people in Ethiopia slaughter sheep and goats in their backyards due to traditional norms and lack of legislation. Inadequate attention is paid to maintaining quality as a result of the by-product status accorded to skins. Farmers and butchers in rural areas get a very low price for the skins that are no incentive for proper handling and drying. Tanning of damaged skins require more chemicals and effort to repair them. This means extra cost and extra pollution. Estimates of the loss to the Ethiopian economy due to poor handling and other problems reach US \$ 14 million per year.

Care during slaughter and flaying of sheep/goats has a profound impact on the quality of skin produced and in the reduction of associated losses. Even though slaughter practices in Ethiopia differ according to local culture, customs and religious practices, the following general procedures of slaughter and flaying will help to substantially reduce the rate of defective skins produced.

### 2. Slaughter/flaying steps and proper care

#### 2.1. Stunning

Stunning is the practice of rendering animals unconscious just before slaughter. Proper stunning procedures reduce the chance of stained carcasses and blood splash. Currently, stunning is, generally, not practiced for sheep and goats in most abattoirs in Ethiopia. The following stunning options are available for use in abattoirs:

- Mechanical instrument like a sharp knife that traumatizes the brain so that the animal loses consciousness instantaneously can be used. The correct location of using the instrument for sheep and goats is shown in Figure 1.

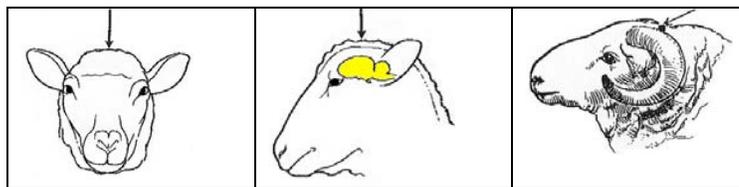


Figure 1. Correct positioning of stunning gun for sheep

- Electrical stunning: This method of stunning is well suited for sheep or goats. Electrical stunning induces electric shock or epileptic state in the brain. This state should last for long enough for bleeding to be carried out. Since the brain of sheep and goats is small, the electrodes should be accurately and firmly placed high up on the sides of the head. (Figure 2.)

The animal must be bled as soon as possible after stunning.



Figure 2. Tongs for electrical stunning of sheep or goats

## 2.2. Bleeding

Bleeding is best performed with the carcass hoisted by the hind legs while leaving the forelegs to kick in the usual reflex action (Figure 3). It is advisable to stun the animals prior to hoisting. For sheep and goats, some flayers prefer to complete most of the bleeding on the floor adjacent to a drain.



Figure 4. Bleeding on the ground

When sheep and goats possess long hair, much more care must be taken to avoid contamination with blood and dung, and bleeding on a definite slope is to be preferred. In either case, final bleeding is best carried out after suspension of the carcass.



Figure 3. Bleeding a sheep suspended on one leg by a shackle or by plastic rope

In the simplest case, the bleeding is done on the ground (Figure 4) on a cover of banana leaves, on a table or something similar. Then a rack with standard hooks or gambrels (hanger-like hooks) is used to keep the carcass in a vertical position off the ground for skinning and eviscerating. The branch of a tree may be sufficient for slaughtering on a farm premise.

The slaughter needs to be performed within 30 seconds. The knife must be properly sharpened to minimize pain during the cut. Excessive bending of the neck is unnecessary.

## 2.3. Ripping

- Ripping is the process of tearing the skin to start the skinning process. Figure 5 shows the proper ripping lines during slaughter of sheep and goats. The following are the steps in the ripping of sheep and goats to start the skinning process:
  - One long and straight incision from the jaw to the anus along the center line of the belly.
  - Four circular cuts around the shanks at the level of the knee and hock joint.

- Two cuts on the inside of the forelegs, knees to the breast bone.
- Two cuts on the back of each hock joint to a point mid-way between the anus and scrotum.



## 2.4. Flaying/Skinning

Flaying/skinning should be done within a few hours of the animal's death as the skin will peel off especially easily. Make sure the knives used are sharp. Proceed as follows:

Flaying/ skinning of sheep and goats can be started by making a small incision on the inside of one of the hind legs. The hind legs, including a small portion of the skin covering the abdomen and edges of the butt round the rump, can be flayed with a knife and fist while on the floor. The carcass should then be hoisted. Hoisting the animal makes it easy to use one's body weight to pull the skin off (Figure 7). It also assures that the meat will stay clean. The slaughtered animal can either be hanging from the neck or from the legs. Strong ropes should be used for the purpose.

To hang a sheep/goat by its back legs, find the large tendon that connects the lowest leg segment with the rest of the leg. Poke a hole in between that tendon and the leg bone. Use your fingers to feel the lump that is created by the double jointed bone. Then sever the lower leg at the lower of the two joints as shown in figure 6. Cut skin and tendons around the joint, and then snap it over your leg.

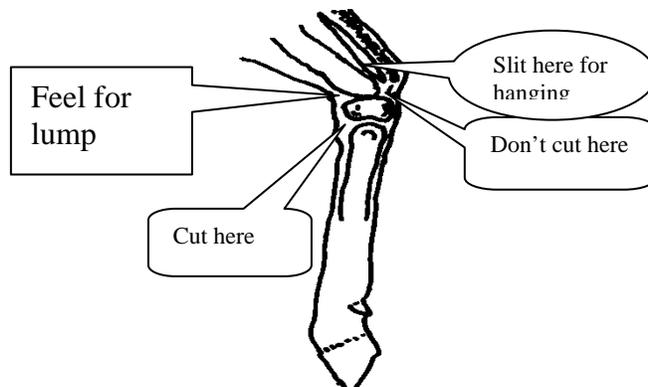
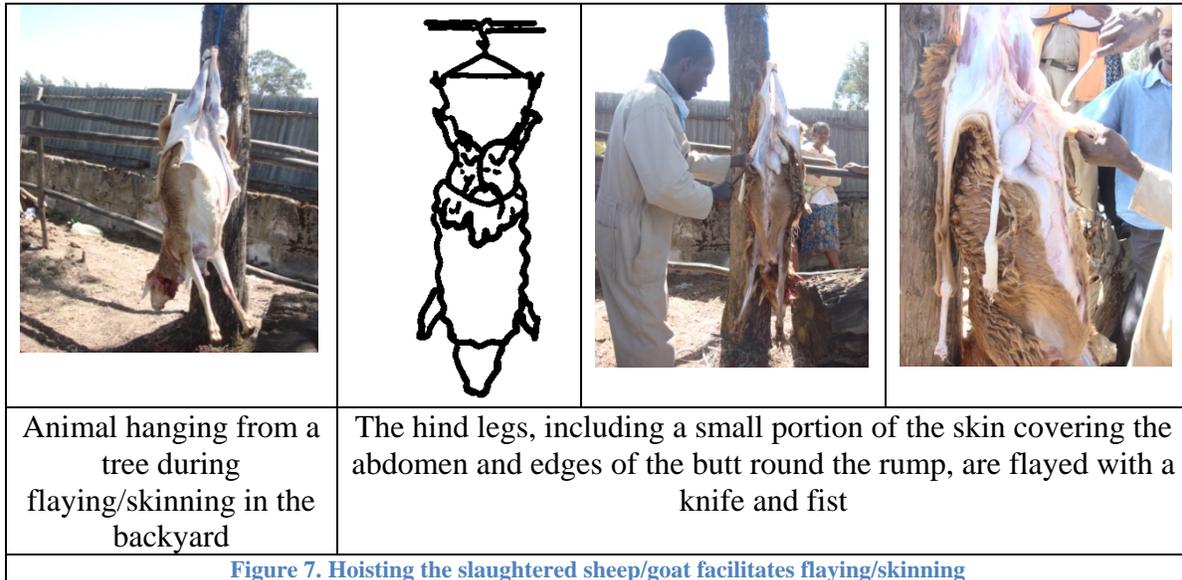


Figure 6. How to prepare hind legs for hanging

Skinning is a straight forward activity if one follows the body's built in guidelines. This is because the skin and muscle tissue are naturally separated from one another by protective membranes. The skin easily separates from the meat along these membranes when you pull it. After getting a clean start, there is little risk of tearing the skin or the meat. Sometimes, the belly skin is removed using a knife leaving the surface of the carcass with close serrated scores.



When you use a knife to slice the skin from the animal you inevitably violate these layers and make the whole job harder. Once you cut into the meat, you are no longer working with the natural division between meat and skin. You usually end up removing large chunks of meat, as well as putting cuts and holes in the skin. These cuts (also called scores) and holes open up and enlarge easily, increasing the amount of work at every stage of the tanning process later on. There are absolutely no advantages to knifing a skin off. It is not faster! Thus, it often requires the butcher to punch his fist forcefully between the skin and the carcass surface to detach the skin referred to as fisting (Figure 8). Fisting is hygienically critical. The butcher must take care to frequently wash his hands and arms and not touch the dirty outside of the animal's skin while removing the skin this way.

An alternative to fisting is the use of compressed air. If facilities are available, a compressed air pipe is introduced between the skin and carcass surface and the air pressure gradually detaches the skin. The air must pass through a filter in order to reduce the micro-organisms present in the air, which otherwise can constitute a source of contamination. Blowing air into the cut in the hind leg is a traditional practice in many areas when the skin, usually goat skin, is required as a water bag.



Figure 8. Removing the skin by fisting

A knife should not be used in the final phase. The flayer uses his weight with downward pressure to remove the skin especially from the tail area, the neck and forelegs.

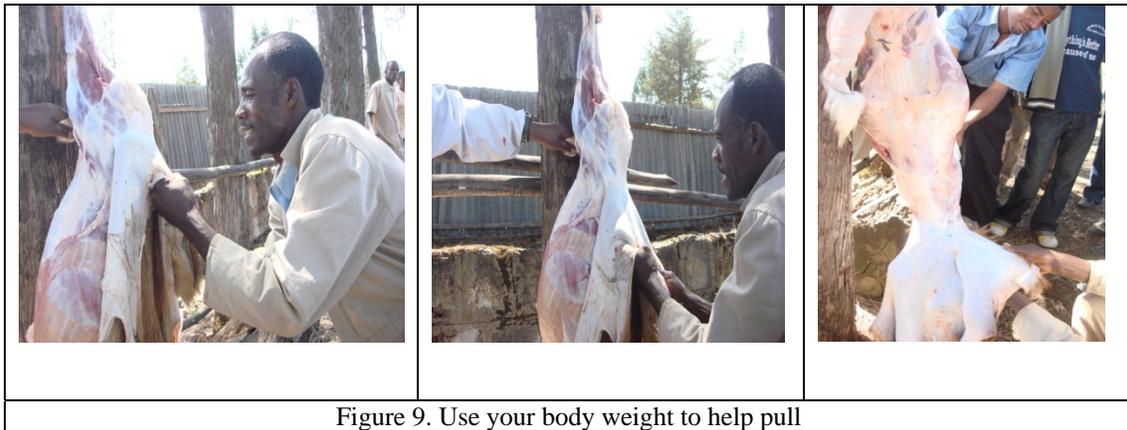


Figure 9. Use your body weight to help pull

After the skin is separated, remove any meat and/or fat from the skin. Wash flesh side if contaminated with blood and/or gut contents. Then immediately cure with common salt or by air drying to prevent putrefaction.

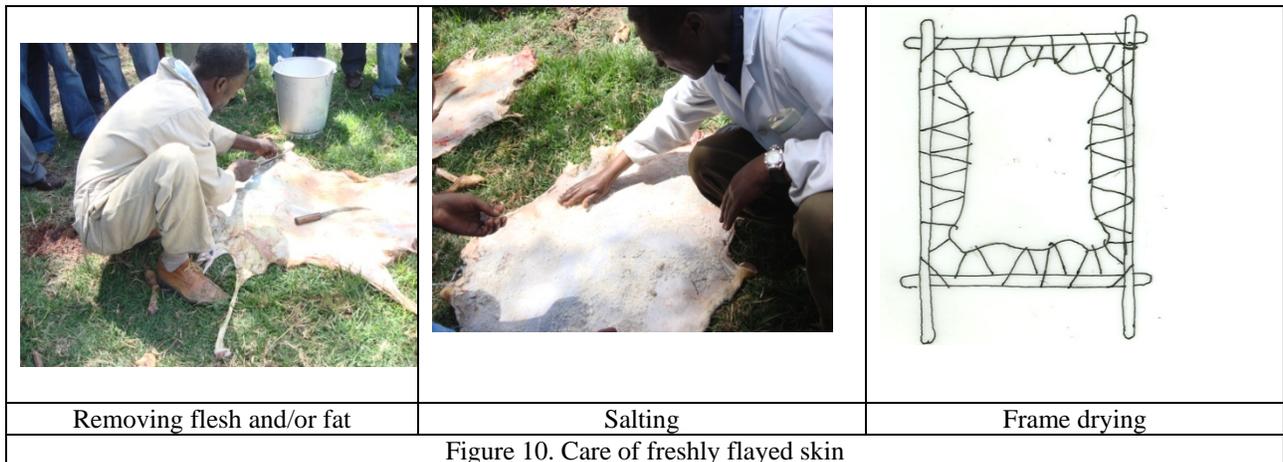


Figure 10. Care of freshly flayed skin

### 3. Glossary

**Abattoir:** A slaughterhouse having proper facilities for all aspects of slaughter with the necessary equipment for proper handling of meat, skins and other animal by-products in an appropriate manner.

**Correct pattern:** A standard pattern for a flayed skin when laid out flat, which is adopted by the trade, and which enables the tanner to cut maximum area of good leather from a hide/skin.

**Curing:** The treatment of skins with common salt or by air drying to prevent putrefaction.

**Defatting:** The removal of unwanted fatty (adipose) tissue from the flesh side of a fresh skin during fleshing.

**Flay cuts:** Damage caused by careless use of a knife during flaying, sometimes cutting through the skin.

**Flaying (skinning):** The removal of a skin from a carcass.

**Flaying knife:** The knife used to sever the subcutaneous tissues when removing the skin from the carcass.

**Flesh side:** The inner side of a skin next to the body of an animal in life.

**Fleshing:** The removal of the residual connective and adipose tissues from the flesh side of a skin after flaying.

**Gouges:** Knife damage to the skin during flaying, taking out scooped portions of the corium.

**Grain layer:** The top portion of the dermis.

**Pattern:** The pattern of skin when laid out flat.

**Putrefaction:** Bacterial and enzymatic breakdown, rotting.

**Ripping:** Opening of a skin on a carcass, following an accepted pattern of cutting, before flaying.

**Ripping knife:** Knife designed to make the opening cuts on a skin before flaying. It can also be used for slaughtering, bleeding and other operations. N.B: Is similar to a flaying knife but has a straighter cutting edge.

**Scores:** Knife damage to skins during flaying by cuts that do not fully penetrate through the skin.

**Trimming:** Removal of unwanted portion of a skin.