



6. SLAUGHTERING PRACTICES AND TECHNIQUES

6.1 Forms of Slaughter

Slaughter methods prevailing throughout the world are governed either by tradition, ritual or legislation depending upon the people and the country. In essence, the methods relate to the manner in which the animal is killed and bled and to some extent dressing and handling prior to use as food.

Ritualistic or religious slaughter often requires the animal to be in a state of consciousness at the time it is bled. This is characteristic of Jewish (Kosher), Sikh (Jhatka) and orthodox Islamic (or Halal) slaughters. Some cultures in Africa and Asia also slaughter animals in the conscious state although these do not necessarily carry ritualistic connotations.

Where a complete state of unconsciousness is rendered prior to bleeding the process is known as humane slaughtering. Under such practice, the state of unconsciousness and accompanying painlessness is effected either by mechanical, electrical or chemical means in a process called stunning. Stunning also renders the animals motionless thus eliminating excitement and possible cruelty.

6.2 The Humane Method and Conventional Techniques of Slaughter

Unless disallowed by rituals and established traditions, the humane method and associated techniques of slaughter are recommended for use as they allow for safer, more economic and hygienic operations and a desirable quality product. The following steps are crucial in the application of the method;

(a) Stunning

The modern mechanical method of stunning is by shooting, consisting of two forms:

- i. use of a captive bolt pistol which delivers a force (concussion) into the head of the animal to make it unconscious;
- ii. use of a penetrating free-bullet gun or firearm. Compression stunners with or without penetrating heads, using air (not cartridges) are also employed in immobilizing livestock.

An older method in which a knocking or striking hammer is wielded on the head of the animal is now disallowed in humane practices in some countries, but in extreme and needy cases the hammer can be used to stun small ruminants by a quick blow at the back of the neck.

Stunning by electricity is used widely on small animals especially pigs. The simplest mechanism consists of electrodes or probes built in the form of tongs with insulated handles and applied between the ear and eye of the animal for 1–4 secs. About 5–7 secs must elapse before the animal is bled. The level of voltage used for sheep and goats is between 60 and 70 volts/AC 50–60 cycles.

Chemical stunning is a term applied to the use of carbon dioxide in making animals immobile before bleeding. Like the electrical form, CO₂ stunning, though a costly method, is nevertheless used quite commonly on small livestock including sheep and goats. The animals are led individually or in pairs into a pit, tunnel or a compartment where CO₂ of 65–75 percent (optimum 70 percent) concentration is released for 60 secs. The animals quickly pass into an unconscious state, but are not suffocated. They are then removed and bled immediately.

It is re-emphasized that stunning only deadens consciousness. So life is still manifest including the pumping action of the heart by which blood is forced out of the body facilitating bleeding.

(b) Bleeding

Stunned animals must be positioned first for bleeding. A vertical or hanging position is achieved by shackling below the hock of one hind leg and hoisting the animal (head down) to a convenient height.

Alternatively, the animal can be placed horizontally on a concrete slab or a sturdy plastic pallet for bleeding.

The actual bleeding operation is made by sticking or inserting the sticking knife through the neck behind the jaw bone and below the first neck bone. The object is to sever the blood vessels of the neck and let out blood. If the sticking is made at a lower position than indicated the oesophagus might be cut and the viscera contaminated.

The bleeding should be as complete as possible, the usual time for sheep and goats being about 2 minutes. Insufficient bleeding and slow death could mean that the severance of the neck vessels is incomplete, or specifically that the arteries leading to the head have been missed, having only cut the veins during sticking. Practice and experience, however, perfect the technique.

Hoist bleeding is more hygienic and is recommended. It also facilitates collection of blood for further use.

(c) Skinning

In removing the skin of sheep and goats initial cutting of the skin is done around the leg to expose and loosen the tendon of the hock for use as a means of hanging the carcass. This process is called legging. A second step called pelting (after the term pelt normally applied to the skins of lambs and other wool or fur-bearing animals) involves the removal of the entire skin and preparation of the animal body for evisceration. Tropical sheep and goats have hair not wool on their bodies, thus the term skinning is more appropriate for them. Skinning, like stunning, can be done either in the horizontal or hanging position, the former being more suited to small slaughterhouses and the latter for larger premises with bigger orders and with facilities or equipment for railing the individual carcasses one after another.

i. Hoist Skinning

With the animal body in the hoist position, and the skinning knife in hand, legging is commenced at the back of the free (unsuspended) leg by removing the skin around the hock and working toward the toes (Fig. 3). This exposes the tendon on the back leg and the smooth joint just above the toe. The foot is cut off at this joint and the tendon loosened and hung on a hook to suspend the leg. The process is repeated for the other leg while the cuts are continued on the inside of both legs towards the naval region. The body skin is next removed. First an opening is made in the front legs, cutting toward the jaw and continuing over the brisket to the naval. Using the knife, the brisket is skinned, but from this stage on, the knife is normally not used further. This is to protect the "fell", a fine membrane occurring between the skin and the carcass which helps to improve the appearance of the carcass and reduce surface shrinkage. In place of the knife, therefore, skinning is accomplished by fisting or by use of the human fist, forced between the skin and the fell to remove the skin. Fisting also protects the skin from cuts and bruises which otherwise lower its value as a byproduct. The process of fisting begins from the brisket to the navel, then over the sides of the carcass, the rear legs and around the shoulders ending at the forelegs. The latter is skinned in the same manner as the hindleg with the foot being cut off at the breakjoint. To drop the skin off, a cut is made around the tail and bung and below the jaw with a knife. After this the tongue is removed, washed and placed on a hook and the head sectioned at the neck joint.

ii. Horizontal Skinning

The animal is placed on its back on a flat raised surface, such as a sturdy plastic pallet or a concrete slab. Cutting and fisting then begin at the forelegs, working toward the belly and sides of the animal, ending at the hindlegs. The tendon between the hock and the toes is exposed and loosened and the feet, bung and head cut at the designated points.

(d) Eviscerating

With the external structures, skin, feet and head, removed the next step is to cut open the animal body to dislodge the contents and produce the carcass. To avoid contamination of the carcass through accidental cuts or punctures of the stomach and intestines, simple but well-directed steps are followed. For this, it is important that the carcass remains or is placed in the hanging position.

The first step in evisceration is to cut around the tied bung or rectum and free it completely from all attachments and drop it in the pelvic cavity.

Using the saw or cleaver (Fig 2), the breastbone is cut or chopped along the midline up to its tip. Another cut is made from the cod or udder using the skinning knife down the midline into the breast cut. By practice, the pelvis (or lower part of the abdomen) is left uncut.

The body cavity is entered into to sever the ureter connections to the kidneys while the intestines are loosened up further, then the stomach and intestinal mass (also known as the paunch) are pushed slightly out of the midline opening. (In industrialized countries, the kidneys and spleen are often left in the sheep carcass.) At this stage, the liver is held out and severed of its connecting tissues then pulled out together with the freed contents of the abdominal cavity and dropped into a paunch truck. The gall-bladder is cut from the liver, taking care not to spill its bitter contents onto the carcass and spoil the taste of the meat.

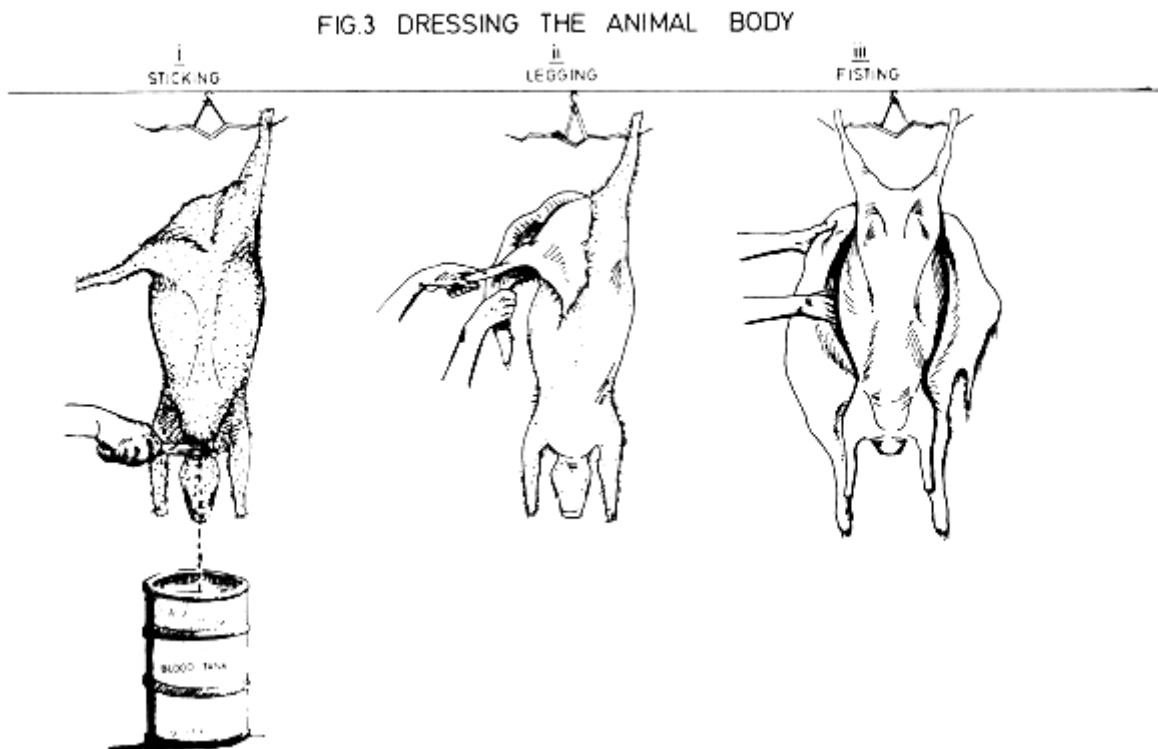
The final stage in evisceration is the removal of the contents of the chest cavity. By cutting the thin muscle sheet or diaphragm separating this cavity from the belly, the pluck (i.e. heart, lungs, trachea and oesophagus) can be pulled out as a unit. The foreshanks (i.e. the upper and lower arms) are fastened together using a tendon or a thick rubber band to plump the shoulders. The carcass is then washed and railed to the inspection bay.

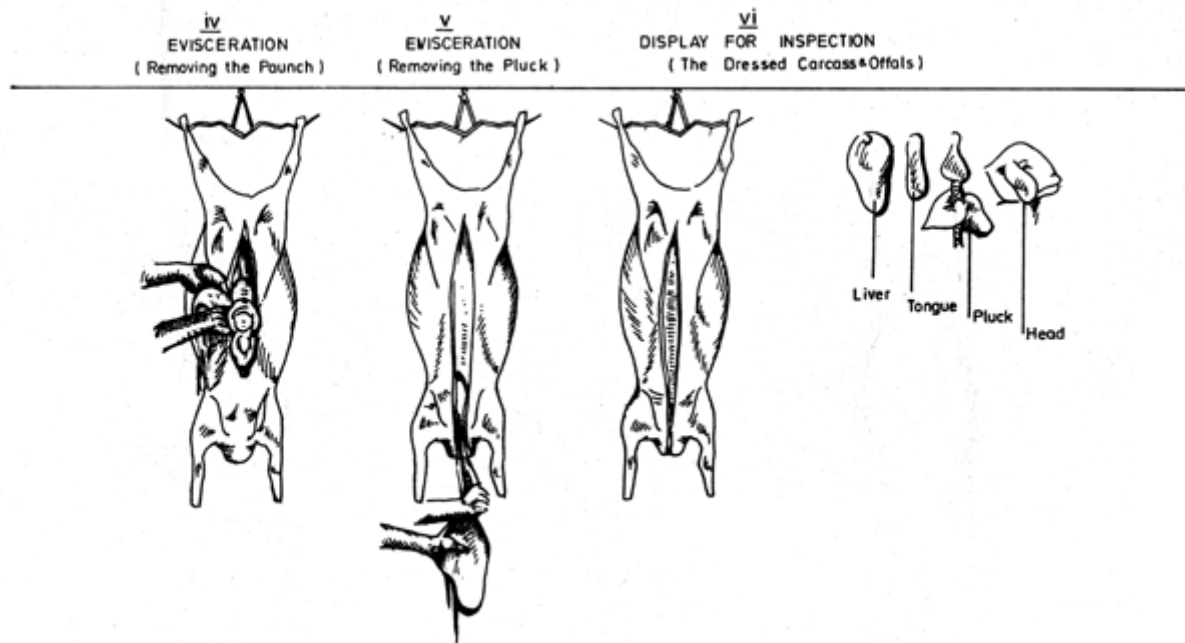
(e) Postmortem Inspection

Aside from the carcass, parts of the animal body which are assembled for inspection are the tongue, head, pluck, liver and paunch (Fig 3). The carcass is held still in the suspended position. However, the visceral organs including the head and tongue are placed on hooks in a separate bay while the stomach and intestines remain in the truck. Each carcass is identified with its set of organs for inspection.

Inspection is normally carried out by professional veterinarians but in some parts of the world trained public health inspectors are employed. Their duty is to examine the slaughter products for evidence of disease and abnormality and eliminate them from the public meat supply.

FIG.3 DRESSING THE ANIMAL BODY





There is no substitute for a trained individual, but if it becomes necessary a plant manager with public health training should be acquainted with critical cases of abnormality and deal with them expeditiously. Conditions of abnormality that should be viewed seriously to quote one U.S. Department of Agriculture Bulletin on the subject (Farmers Bulletin No. 2264 of 1977) are: "... congestion or inflammation of the lungs, intestines, kidneys, inner surface of the chest or abdominal cavity and numerous yellow or pearl-like growths scattered throughout the organs." Congestion is indicated by accumulation of blood in a part of the organ while inflammation may be signified by heavily swollen areas.

The bulletin however notes that "...bruises, minor injuries, parasites in the organs and enclosed abscesses and single tumors are frequently local conditions that can be easily removed", in which case the remaining material can be used as food. Nevertheless, expert advice must always be sought in doubtful cases.

(f) Special Measures

Carcasses and edible offal that are considered fit for human use are stamped as "INSPECTED" and/or "PASSED" prior to consignment to markets. Unfit materials or those found unwholesome are marked as "CONDEMNED" and destroyed.

In some countries, partially unfit materials are held as "RETAINED" for further examination when they are condemned if the condition is generalized, but when localized they are trimmed off and passed.

Similarly during ante-mortem inspection animals whose health condition is doubtful are removed from the regular lot as "SUSPECT", re-examined and either passed for slaughter or condemned as the case may be. Less serious cases are however slaughtered separately to enable useful parts of the animal to be salvaged.

It is a recommended practice to have separate facilities for holding condemned and retained meat as well as suspect animals. "EMERGENCY" slaughter facilities should be made available for handling suspect stock.

In large industrial plants, condemned meat is destroyed by incineration, although in the smaller slaughterhouses of some developing countries, the burial method serves as a cheaper alternative. Burial pits must be deep, and all material placed in them must be defaced or rendered inedible by use of charcoal dust or lime to prevent possible human (and incidentally dog or hyena) salvaging.

6.3 Traditional and Ritualistic Slaughter

These methods of slaughter differ from the humane practice and its associated techniques in the sense that by interpretation of the basic tenets governing them, the animals must be in a state of consciousness at the time they are bled. The bleeding must also be complete. This is mandatory in

the best-known of ritualistic slaughters, the Halal (Islamic), the Kosher (Jewish) and the Jhakta (Sikh) methods.

In most traditional slaughters, however, there are no fast rules, at least in Africa, hence some of the practices can be modified in the light of accepted conventions. It is quite probable that traditional slaughters represent the fundamental or orthodox practices which have prevailed in human societies throughout the ages and from which all others including the ritualistic and the humane of the present day have been derived.

(a) African Traditional Slaughter

The salient feature of African traditional slaughter is that the sheep or goat is first securely held on its back on the ground by two or three men while the mouth is grabbed tight and drawn backwards to stretch the neck. The slaughterer then cuts the throat transversely with a series of strokes half-way deep into the neck. Blood is allowed to drain off until the animal (still tightly held) is motionless or dies. The head is then severed off completely.

The next processes are skinning and evisceration which are not dissimilar to conventional methods, except that they are conducted on the ground with some randomness, especially where the workmen have no experience.

Skinning begins with severance of the feet, and together with the head, they are saved for further cleaning and use as food. In evisceration, the organs of the belly, intestines, stomach etc. are removed first, followed by the contents of the chest cavity.

Some societies do not skin their animals. Instead the animal body (together with the head and feet) is singed and scraped of the hair, then scrubbed with a sponge and water to remove residual char and hair. After this they are close-shaved, rewashed and eviscerated.

Singeing and scraping the skin in tropical sheep, for instance, is made easier by the fact that these animals have hair not wool. The process naturally increases carcass yield, and evokes flavours highly acceptable to the cultures that use this practice.

Traditional slaughtering is fairly common in the rural areas and villages of the developing world. Considering that large numbers of sheep and goats are slaughtered in these places, and that the practice is basically non-ritualistic, one would expect that traditional slaughters would, in time, provide a convenient basis for the modernization of slaughtering procedures in these countries.

(b) Islamic Slaughter (Halal)

Of all the ritualistic slaughters the Islamic or Halal method is the most widespread. Derived from the Koran, the law governing Halal slaughter stipulates that the name of Allah (or God) should be mentioned at the initiation of the operation, and that in the exercise of it, blood must flow out completely from the animal.

Islamic practices thus permit animals that are alive only and fully conscious to be slaughtered, as through this complete bleeding can be assured. Among some sects, orientation of the operation toward Mecca, the Holy City of Islam, is demanded in symbolic reinforcement of the reference to Allah.

In strict Halal practice, stunning is ruled out since technically it puts the animal in a state of unconsciousness before bleeding. nevertheless some Islamic communities accept electrical stunning as cattle, for instance, are known to recover from this application and lead normal lives - an indication that they still remain alive after stunning. Other Islamic groups in parts of Africa and Asia employ the hammer method of stunning.

Slaughters are quickly done - the animal being cast down by a shackling manoeuvre, laid on its back while the neck vessels and passages (oesophagus and trachea) are severed by a single slash of a sharp knife. Bleeding proceeds to completion, as blood is abhorred in diets. (Among domestic stock only cattle, sheep and goats are utilized by Islam as food. Pigs are completely banned and operations involving them are not permitted near those of the accepted species.)

These then constitute the main requirements of Halal slaughter. Generally, Islamic slaughters are acceptable to the adherents of other faiths including Christians and some Hindus. However, the reverse is not true for Islamic adherents: that is to say, they do not accept slaughters from members of other religions. Therefore, in some countries in Asia and Africa, a convenient arrangement is to

delegate public slaughters to Islamic butchers. For this reason, the range of commercial ruminant operations from procurement of stock (at farm gate) to butchering and marketing is by convention done by members of the Islamic faith.

(c) Jewish Slaughter (Kosher)

“Kosher” is the term applied to the procedures and techniques of slaughter as well as the products derived therefrom under the Jewish faith, if done according to the laws of the religion. In the Hebrew language, Kosher means fit to be used as food.

The laws of Kosher date back to Moses and affect the species of animals used as food. Like the Islamic religion, these include cattle, sheep and goats among domestic livestock with the exclusion of pigs. The basis of the selection of these species is enunciated in the Talmud, as well as relevant passages of the Bible (Deuteronomy 14: 4–5 and Leviticus 11: 1–8).

Other regulations governing Kosher slaughter are derived from Hebrew traditions referred to as Shehitah. Under these the animals are to be fully conscious, killed and bled thoroughly by one clean stroke of the knife. Animals are however hoisted and shackled first. A 16-inch (40.6 cm) razor-sharp steel knife called the chalaf is stuck into the throat by a trained slaughterer, the shohet, in an operation in which the animal is killed and bled at the same time. Skinning is made from the chest down to the level of the belly, and the chest is cut open first for inspection and later evisceration.

Specified organs of the viscera, lungs, stomach and blood vessels, are examined by an inspector called the bodeck for abnormalities, ruptures and foreign matter. Carcasses that are fit (ritualistically speaking) are passed by the bodeck with a mark on the chest. Condemned ones receive the symbol (+). In some industrialized countries Kosher carcasses meant for public use are re-inspected in the conventional manner by the government authority and passed or rejected depending upon their condition.

By Jewish tradition, only the forequarters or foresaddles of ruminants are utilized as food as these have relatively larger blood vessels which can be seen with ease and removed. The meat is ready for food thereafter. If however storage is desired, the period allowed is 72 hours. Beyond this the carcass becomes trefah or unfit for use as food. The ritual of begissing or washing after the stipulated 72 hours eliminates trefah, and extension of washing after further 72 hour periods is allowed. For carcasses being held under prolonged storage such as export consignments from say South America to Israel, the trefah rule is modified to allow washing before storage and re-washing thereafter regardless of the holding or consignment time.

Kosher slaughters are predominant in Israel and in cities with large Jewish populations such as New York, London and Paris. Although there may be pockets of Kosher practices elsewhere, these slaughters do not occur to a significant extent in developing countries because of the relative absence of Judaism in these places.

(d) Sikh Slaughter (Jhakta)

Although it is the least applied globally of the major religious slaughters, Jhakta is of interest as it represents an extreme departure from known practices.

The method is practised mainly under Sikhism, a religious creed which is an offshoot of Hinduism centred in the Punjab, India. Some other Hindu communities also practise it. In all, Jhakta adherents throughout the world do not exceed 10 million.

The main feature of the method is that it is an instant decapitation process limited only to sheep and goats. (Cattle are regarded as sacred by Sikhs and Hindus and are therefore not eaten.)

In the exercise of Jhakta, the head of the animal is held securely or fastened to a rigid pole or object, and with the hindlegs stretched by hand on the other side, the head is chopped off with a heavy sharp cutlass in a single stroke. After this, the animal body is dressed for use.

