Slaughter of Sheep, pigs and poultry"

Dear Students, in to-day's lecture, we will discuss about "**Slaughter of Sheep, pigs and poultry"**

1. Introduction

Animal slaughter is the killing of non-human animals, usually referring to killing domestic animals. In general, the animals would be killed for food; however, they might also be slaughtered for other reasons such as being diseased and unsuitable for consumption. The animals most commonly slaughtered for food are cattle and buffalo sheep and lambs, goats ,pigs and ham, deer, hoursr, ,poultry (mainly chickens and ducks).

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1: TYPES OF SLAUGHTER PREMISES

Slaughter premises normally seen in developing countries are of three kinds:

a) Modern abattoirs,
b) Old slaughterhouses and slaughter slabs and
c) Makeshift premises.

a) Modern abattoirs

Modern abattoirs represent the most progressive and the ideal in conventional abattoir design, equipping and services. Often built and controlled by central governments with foreign technical assistance and management, these abattoirs are operated on industrial lines with a wide range of services featuring cold storage, processing, by product utilization and waste recycling activities.

b) Old slaughterhouses and slaughter slabs

The old slaughterhouses and slaughter slabs handle the bulk of public slaughters. These premises merely make facilities available for use by licensed butchers and traders for the slaughter of

livestock at stipulated fees, and in accordance with public health, inspection and marketing regulations. Slaughterhouses and slaughter slabs thus operate as service establishments under the management of municipal and local authorities, their field of activities often being limited to the larger towns and built-up areas.

c) Make shift premises

The third category of slaughter premises, the makeshift, for want of a better term, include all kinds of places such as converted buildings or rooms, shade of trees as well as open bare grounds that a butcher or a community may find convenient for the operation. Mostly private-owned and under no formal authority or licensing, these premises and their products are neither inspected, quantified nor subjected to trade and health regulations. Make shift slaughter premises are characteristic of village and rural locations.

2. Location and lay out

The ideal site for a slaughterhouse should be fairly airy, outside built up areas and possibly close to the coast, if such a location is available. Established townships if close to the premises could easily be the source of air-borne contaminants from households or industries. The area must be open, preferably on high ground, to keep drainage from stagnating in the surroundings. Alternatively, the area must be dry and not waterlogged or puddled as these could cause mosquito breeding. River, lake and lagoon sites must be avoided partly for the above reason, but chiefly to prevent livestock from drinking from them if polluted as well as to eliminate the temptation of discharging slaughter wastes into the waters, which could be drinking sources for humans. Finally, the site must be large enough to accommodate auxiliary slaughter functions or structures such as holding pens (kraals), an emergency slaughters lab and a byproducts plant. The immediate vicinity should be cleared of all bush, and roadways leading to and from the premises must be well laid out and paved.

3. Construction and facilities

Materials used in constructing and equipping the plant must be durable. Specifically they must be impervious to water, easy to clean and to sanitize, non-corroding and not attractive to insects or termites. The interior of all rooms and chambers should have ample lighting and ventilation. Of operational facilities needed, water is most important. The water must be colourless, odourless and free from organic matter. Hot as well as cold water is necessary.

4. Selecting animals for slaughter

Old animals of all species are normally slaughtered for food in most parts of the developing countries.

Criteria for selection

A few guidelines are however worth observing in selecting livestock for slaughter. These deal with the health condition and the physical quality characteristics of the animals.

a. The health aspect

The obvious mark of a healthy animal is a quick, smart appearance underlying which are keen, well-disposed body reflexes. Animals that are not fat or bulky, yet unable to move or walk must

be suspect of unsound condition.When resting, the animals must not be entirely motionless. Some movement or reaction must take place when disturbed. Also, animals in an advanced state of pregnancy must be spared from slaughtering, the reason being that their blood has large accumulations of harmful waste materials associated with the developing foetus which should not form part of food intended for human consumption.Ordinary signs of ill-health should not escape the attention of the individuals making selection. Abnormal conditions like a high breathing rate, high temperature and fever, a foamy or frothy mouth, diarrhoea and discharges of various sorts from the body are all evidence of a state of ill-health. Such animals must be separated from the rest of the stock and treated before being brought for slaughter.

b. The quality aspect

Maturity as a criterion for selection of livestock for slaughter in developing countries does not necessarily mean very old animals. A mature animal simply means a fully developed animal.

2: TRANSPORT, HANDLING AND CARE OF ANIMALS

Guidelines for trucking animals

Road transport featuring special trucks is probably the cheaper, commoner and more convenient means of conveying animals because it affords more direct links with production and marketing centre's than does rail or air.

Animal holding and care

1. Physically fit animals that are to be slaughtered within 24 hours must be conveyed direct to the lairage for rest.
2. Those waiting their turn are to be held in a kraal or pen.
3. During the resting period any excitement must be avoided.
4. Feed must be kept away from the animals at least during the last eight hours before slaughter.
5. Fresh clean water may be provided throughout the resting time.

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3: SLAUGHTERING PRACTICES AND TECHNIQUES

Forms of slaughter

Slaughter methods prevailing throughout the world are governed either by tradition, ritual or legislation depending upon the people and the country.

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.

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 animal's motionless thus eliminating excitement and possible cruelty.

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. Restraint devices

It is very important that slaughter animals should be properly restrained before stunning or bleeding. This is to ensure stability of the animal so that the stunning operation can be carried out accurately and properly. Different types of restraints are appropriate for different species:

Cattle

A stunning box is the most common method of restraining cattle. The size of the box should be just wide enough to prevent the animal from turning around, and so be difficult to stun. The floor of the box should be non-slip. A simple neck crush used by farmers to restrain cattle for weighing is suitable for small-scale operations. Restraining tame cattle outside the stunning box by securing the head in a halter and then pulling the rope through a metal ring in a concrete floor is effective. It is recommended that the operator should be positioned behind protective steel bars.

Sheep/goats
A properly constructed metal stunning box is appropriate. However, they can be restrained manually quite satisfactorily.
Pigs
A stunning box is suitable for pigs. Putting a few pigs in a small room is suitable but only for electrical stunning. On no account should pigs be restrained manually.
Poultry
Chickens are shackled by their legs onto a conveyor line. This must be done gently to avoid injury and stress.

4: STUNNING

It is desirable to render an animal unconscious before it is slaughtered in order to eliminate pain, discomfort and stress from the procedure. Most developed and many developing countries have legislation that requires pre-slaughter stunning, with the exception of authorized ritual slaughter like kosher or halal. There are three main technologies used to effect stunning-percussion, electrical and gas.

i. Percussion stunning

This method produces a physical shock to the brain. The modern mechanical method of percussion stunning is by shooting, consisting of two forms:

- Use of a captive bolt pistol which delivers a force (concussion) into the head of the animal to make it unconscious;
- 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.

In older method knocking or striking hammer is wielded on the head is being done.

ii. Electrical stunning

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.

iii. Carbon dioxide gas stunning

Chemical stunning is a term applied to the use of carbon dioxide in making animals immobile before bleeding. The animals are led individually or in pairs into a pit, tunnel or a compartment where co_2 of 65–75 percent (optimum 70 percent) concentration is released for 60 sec. The animals quickly pass into an unconscious state, but are not suffocated. They are then removed and bled immediately.

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 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.

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, the breastbone is cut or chopped along the midline up to its tip. 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 can be pulled out as a unit. The carcass is then washed and railed to the inspection bay.

e. Postmortem 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.

1. 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.

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.

5: PRINCIPLES OF SLAUGHTER HYGIENE

There are three basic criteria upon which hygienic measures in slaughterhouse organization and operations rest. These are the need to:

a. Eliminate the risk of bacterial infection and food poisoning with meat as the vehicle of transmission;
b. Prevent spoilage or putrefaction and thereby enhance the keeping quality and safety of meat;
c. Secure meat of good eating quality, appearance and aesthetic value through proper handling.

a. Sanitation

Sanitation is focused on the establishment and maintenance of healthy environmental and appropriate physical conditions congenial to the attainment of a wholesome product.

In this connection, the scope of sanitation may be identified broadly with structures and facilities, i.e. the premises, installation and equipment, that is their disposition and maintenance. Additionally, sanitation covers specific slaughter operations that are likely to cause contamination, e.g. offal cleaning, waste disposal and infestation by pests, etc.

b. Cleaning operations

Large quantities of clean water are required in the cleaning of floors, walls, equipment and tools. The operation should begin with removal of solid waste such as meat and fat trimmings, bone chips, blood clots and so on by brushing them off the floor. For scrubbing of tables, working surfaces and tools, hard fiber brushes and detergents are recommended. Liquid detergents are more useful than ordinary soaps. Knives must be sharpened and sterilized or boiled in water.

c. Waste disposal

Large slaughterhouse

The wastes from a large slaughterhouse are a heavy polluter of any recipient. The waste water from a meat plant should be allowed into a municipal drainage system without previous thorough treatment in a waste water treatment plant.

In the slaughter premises, the general principle regarding waste disposal is that initially, the solids and sweepings from operational waste must be removed from the liquid. Secondly, the operational liquid must be separated from the conventional drainage, namely that of toilets and

bathrooms. The two lines should be kept apart within the premises well to the outside before being joined together.

Rural slaughter premises

These premises pose a problem as investment in waste treatment plants is too high in comparison with the low work load. Far easier and safer is to bury all solid and semi-solid waste along with manure in pits to make compost. Blood should, however, be collected separately and dried into blood meal.

Conclusion:

In general, the animals would be killed for food; however, they might also be slaughtered for other reasons such as being diseased and unsuitable for consumption. Selecting animals for slaughter is also important, ie their health and age is very important factors. Postmortem 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. Additionally, sanitation covers specific slaughter operations that are likely to cause contamination, e.g. offal cleaning, waste disposal and infestation by pests, etc. Prevent spoilage or putrefaction and thereby enhance the keeping quality and safety of meat . So that we can eliminate the risk of bacterial infection and food poisoning with meat as the vehicle of transmission. The wastes from a large slaughterhouse are a heavy polluter; blood should, however, be collected separately and dried into blood meal.