**11.4 Cuts of Meat and Meat By-Products:**

**Slaughter Equipment**

Slaughtering equipment, particularly for smaller-scale operations, need not be elaborate and expensive. The amount of equipment will depend on the slaughtering procedures employed. If possible, all equipment should be made of stainless steel or plastic, be rust resistant and easily cleaned and sanitized. Equipment which does not get in contact with the meat (e.g. overhead rails, working platforms, knocking pen) is usually made of galvanized steel.

Basic equipment needed for the slaughtering operation:

* stunning gun, electrical head tongs or simple stunning equipment for direct blow
* knives:
sticking - 15 cm sharpened on both sides
skinning - 15 cm curved
* a sharpening steel
* oil or water sharpening stone
* scabbard and belt for holding knives
* meat saw - hand or electric and cleaver
* block and tackle or chain hoist strong enough to hold the weight of the animal to be slaughtered
* pritch, chocks or skinning rack (dressing cradle)
* a strong beam, tripod or track 2.4 to 3.4 m from floor
* spreader - gambrel or metal pipe
* several buckets
* working platforms
* scalding barrel or tank
* pot, barrel or system for boiling water
* bell scrapers
* solid scraping table or platform
* thermometer registering up to 70°C
* hog or hay hook
* torch or flame for singeing

The last seven items indicate additional equipment required when hogs are scalded and scraped rather than skinned.

Useful additional equipment:

* knocking pen
* bleeding hooks (for vertical bleeding)
* blood-catching trough
* wash trough (tripe) Sanitation of hands and tools:
* hand wash-basin
* implement sterilizers

**Treatment of Animals Prior to Slaughter**

Stress in its many forms, e.g. deprivation of water or food, rough handling, exhaustion due to transporting over long distances, mixing of animals reared separately resulting in fighting, is unacceptable from an animal welfare viewpoint and should also be avoided because of its deleterious effects on meat quality. The most serious consequence of stress is death which is not uncommon among pigs transported in poorly ventilated, overcrowded trucks in hot weather. From loading on the farm to the stunning pen animals must be treated kindly, and the equipment for livestock handling must be designed to facilitate humane treatment. Stress immediately prior to slaughter, such as fighting or rough handling in the pens, causes stored glycogen (sugar) to be released into the bloodstream. After slaughter this is broken down in the muscles producing lactic acid. This high level of acidity causes a partial breakdown of the muscle structure causing the meat to be pale, soft and exudative (PSE). This condition is mostly found in pigs.

**Beef**

The age to slaughter animals varies depending on many things. The highest quality beef comes from animals that are under 36 months of age. Old cows produce highly acceptable beef if properly fattened and processed. Depending on the calf and the feeding regime, calves are best slaughtered between three and 16 weeks of age.

Four essential points when cutting beef (or any other meat animal carcass) are:

* Cut across the grain of meat when possible.
* Use sharp knives and saws for speed and good workmanship.
* Keep the cutting table orderly and have a place for everything.
* Be clean and sanitary in all operations.

**Equipment Needed**

* solid cutting table, preferably made of non-corrosive material (stainless steel, aluminium or galvanized material) with hard plastic top. If wood has to be used instead of plastic only tight wooden tops/cutters should be used.
* oil or water sharpening stone
* sharpening steel
* knives
	+ boning - 20 cm straight
	+ steak - 30 cm curved
* meat saw - hand or electric
* totes, bins and meat trucks (plastic or other non-corrosive material)
* wrapping table
* paper or plastic foil/bags for meat wrapping
* tool holder
* metal mask/safety gloves
* boning aprons/safety aprons
* hand wash-basin
* knife sterilizer

**Quartering and grading Beef**

Part 1: <http://www.youtube.com/watch?v=mHOBGoYrXVQ&feature=player_detailpage>

Part 2: <http://www.youtube.com/watch?v=EsE_bjAe21w&feature=player_detailpage>

Part 3: <http://www.youtube.com/watch?v=j_p2iz9iq08&feature=player_detailpage>

Part 4: <http://www.youtube.com/watch?v=SjvuohFJPqI&feature=player_detailpage>

Part 5: <http://www.youtube.com/watch?v=mPok9DvEB-U&feature=player_detailpage>

Part 6: <http://www.youtube.com/watch?v=Y-6UAV8OVD4&feature=player_detailpage>

Additional Instructions

<http://www.fao.org/DOCREP/004/T0279E/T0279E05.htm>

Beef Retail Cuts

<http://www.howto-cooksteak.com/wp-content/uploads/2009/04/retail_beef_cuts1.jpg>

Interactive Cut Chart

<http://mistupid.com/food/butcher.htm>

**Beef By-Products**

Nearly 60% of a carcass is by-products. That means from 1,000 pound steer, 400 pounds is meat and 600 pounds is by-products. Beef by-products can be almost anything. From jello to baseballs, lipstick to cake mix additives. A complete list can be found in the link below.

Beef by-products

<http://dekalbfarmbureau.org/pdf/Beef%20By-Product%20Fact%20Sheet.pdf>

The Story of Beef by-products from OSU

<http://ansci.colostate.edu/outreach/yle/pdf_files/Beef8_beef_byproducts.pdf>

**Lamb**

Sheep and goats may be killed anytime after six weeks, but the more desirable age is from six to 12 months.

All lamb carcasses should be promptly chilled and kept at a low temperature (-2° to 2°C) until cut and utilized. Do not permit lamb carcasses to freeze within a day after slaughter or the meat may toughen. Lamb carcasses can be cut into retail cuts after they have been chilled for 24 to 48 hours.

Cuts of Lamb

<http://www.osovo.com/diagram/cuts_of_lamb.gif>

Retail Lamb cuts

<http://rareearthfarms.com/wp-content/uploads/2010/10/retail-cuts-of-meat-04.jpg>

**Processing lamb:**

Part 1: <http://www.youtube.com/watch?v=7juoUnzlFv8&feature=player_detailpage>

Part 2: <http://www.youtube.com/watch?v=KiNSZSwxxgQ&feature=player_detailpage>

Part 3: <http://www.youtube.com/watch?v=xDAw3sa6A8w&feature=player_detailpage>

**Lamb By-Products**

Sheep and Goats produce numerous by-products. From tennis balls to chewing gum. The first link provides a more detailed list of products along with the part of the animal that these by-products are made from.

Sheep By-Products

<http://aitc.oregonstate.edu/resources/pdf/activity/sheep_by.pdf>

More...

<http://www.sheep101.info/products.html>

**Pork**

Hogs may be killed any time after they reach six weeks of age, but for the most profitable pork production may need to be fed for five to ten months.

Halving is done immediately after the animal has been dressed and every effort should be made to saw the carcass into equal sides through the centre of the backbone. The side to be cut should be laid on the cutting table with the inside up.

The primal cuts of pork are: ham, fore-end or forequarter, loin and belly.

Additional Resources

<http://www.virtualweberbullet.com/meatcharts_photos/porkcuts.pdf>

<http://www.virtualweberbullet.com/meatcharts_photos/pork.pdf>

Slaughtering a pig (very visual… caution)

<http://www.youtube.com/watch?v=7iS3LUE9P8g&feature=player_detailpage>

**Butchering a Pig:**

Part 1: <http://www.youtube.com/watch?v=XQrIR-RPAJU&feature=player_detailpage>

Part 2: <http://www.youtube.com/watch?v=Y_PbogtNrss&feature=player_detailpage>

Part 3: <http://www.youtube.com/watch?v=M3B8caNVVzQ&feature=player_detailpage>

Part 4: <http://www.youtube.com/watch?v=dV9rwD4rDRI&feature=player_detailpage>

Part 5: <http://www.youtube.com/watch?v=IdjsI1q7N6o&feature=player_detailpage>

Part 6: <http://www.youtube.com/watch?v=XcdrjPQJ5HE&feature=player_detailpage>

Part 7: <http://www.youtube.com/watch?v=lsmtbF22py4&feature=player_detailpage>

Part 8: <http://www.youtube.com/watch?v=gFWpUxANjGA&feature=player_detailpage>

Part 9: <http://www.youtube.com/watch?v=eT5sXgTNTCc&feature=player_detailpage>

Part 10: <http://www.youtube.com/watch?v=lMqro6dZ6E8&feature=player_detailpage>

Part 11: <http://www.youtube.com/watch?v=2tlnc5HppFI&feature=player_detailpage>

**Pork By-Products**

Pork is the most widely consumed meat in the world. People eat many different pork products, such as bacon, sausage, pork chops and ham. A 250-pound market hog yields about 150 pounds of pork.

Several valuable products or by-products, in addition to meat, come from swine. These include:

* + insulin for the regulation of diabetes
	+ valves for human heart surgery
	+ suede for shoes and clothing
	+ gelatin for many food and non-food uses

Swine by-products are also important parts of such products as:

* + water filters
	+ insulation
	+ rubber
	+ antifreeze
	+ certain plastics
	+ floor waxes
	+ crayons
	+ chalk
	+ adhesives
	+ fertilizer.

**Poultry**

Broilers must be off-feed prior to slaughter to reduce the risk of fecal contamination during processing and evisceration. Different research results confirm that the best gastrointestinal clean-out is achieved when broilers are kept off-feed for 8-12 hours before slaughter.

Poultry Cuts

<http://www.feedcousa.com/poultrymeatcuts.htm>

<http://www.tomfridaysmarket.com/Know%20Your%20Cuts%20of%20Poultry.html>

Cutting up Chicken Video

<http://www.youtube.com/watch?v=zW5BFvCmV7k&feature=player_detailpage>

**Poultry By-Products**

Bone and blood meals are made from poultry products which are used in feeds for various animals. Scrap chicken parts are also used in pet foods. There are even companies that use the skins from poultry to make leather.

<http://www.exoticleather.biz/chicken_leather.htm>

There are also a variety of value added products. Value added simply implies that the meat has undergone another step in the processing chain whether it has been seasoned or cut from breast into “chicken fingers.”

Tyson’s chicken products:

<http://www.tyson.com/Consumer/Products/Chicken/Default.aspx>

**Additional Resources**

All meat charts (Beef, pork, lamb and goat)

<http://www.virtualweberbullet.com/meatcharts.html>

Detailed Instructions on processing beef, pork, lamb and goat

<http://www.backwoodshome.com/articles/geissal23.html>

Instructions for all stages of processing

<http://www.fao.org/DOCREP/004/T0279E/T0279E01.htm>

**Kosher Slaughtering**

Due to religious preferences, many individuals and countries practice kosher slaughtering. Judaism promotes slaughtering by using a sharp knife with no nicks or unevenness as to not add difficulty or pain to the animal. The person performing the slaughter is called the shochet. They are to make a quick, deep stroke across the throat to kill the animal. This method is thought to be the most painless method by the Jews. All of the blood is to be removed from the animal and its organs as this will infect the kosher meat.

Obviously there is no painless method of slaughtering animals. Organizations such as PETA use this as their driving force for animal welfare and animal rights.