University of Mosul
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Lecture title: Broiler processing

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Summary: Supply ,Stunning, Slaughtering & Defeathering, Tenderness management, Evisceration, Chilling, Grading & bird allocation, Portioning, Deboning

Receiving and Hanging:

Birds are transported to the processing plant with the delivery scheduled so the poultry is processed on the day of receipt. Birds are not fed for one to four hours before slaughter to ensure their crops are empty for cleaner production. Live birds are delivered by truck from the supplier in cages where they are unloaded onto a dock area. The live bird holding areas are usually covered and have cooling fans to reduce bird weight loss and mortality during hot weather conditions

Birds are removed from the cages and then transported by conveyor to the live hang area inside the processing plant. The empty crates are returned to a wash area where they are cleaned and disinfected before leaving the facility.

Live bird handling:

Employees lift live poultry from the supply conveyer and hang the birds by their feet from a shackle conveyor. For the best poultry quality, the live birds should not be stressed prior to slaughter. Thus, noise and light are kept to a minimum in the hang room. Many processors use red lights in the hanging room so that employees can see but birds cannot.

Stunning:

Waterbath Stunning
High Frequency Stunning HDII
Controlled Atmosphere Stunning (decompressing)

Killing & Defeathering

Bleeding and Defeathering:

From the hang room, the birds are conveyed to the kill room.. A machine usually equipped with a circular saw blade then cuts the throats. Bleeding may take 1-3 minutes but must be complete to produce the desirable white or yellow skin color in the final dressed bird.

Killing:

The birds enter a hot water scald tank with troughs and flumes to keep them totally submerged. Scalding loosens the feathers and makes for easier plucking and fine feather removal.

Scalding:

temperatures and times vary from 45-57c and from 30 to 90 seconds. The higher temperatures require shorter scald times; however, elevated temperatures may result in removal of portions of the skin. Optimum conditions should be established for the type of bird being dressed. The FDA requires a minimum of 1.14 L of hot water be used per bird for feather removal; however, many processors use much more.

Tenderness management

Evisceration and Inspection:

The carcasses are removed from the kill line by cutting off the feet and rehanging on shackles in the evisceration line. A mechanical arm removes the internal organs of the bird. Each bird is inspected for signs of disease and the viscera from the body cavity is presented for inspection. The giblets (hearts, livers and gizzards) are removed and further processed. The remaining organs are sent to offal or waste. The giblets are trimmed and washed, packed in a giblet bag, and returned to the body cavity. The whole bird is removed from the conveyor, weighed and classified.

Washing & Chilling:

Birds passing inspection are thoroughly washed inside and out and then rapidly chilled at 0C to preserve quality and prevent spoilage. Chilling is performed with cold water or ice slush. The birds absorb small amounts of moisture and are sized and graded for quality. The requires of a chilled water flow rate of about 4.5L per bird.

Packaging:

No matter how a bird is packaged, it is almost always placed in a large cardboard box for shipping. Packaging is necessary to get the processed product from the plant to the consumer. The graded poultry is packaged fresh in boxes containing crushed ice. Birds must be kept below 2C and quickly transported to retail distributors since the product's shelf-life may be only a few days. Poultry is often frozen to prolong storage life.

The birds are vacuum-packed in low-moisture and low oxygen transmission bags or films, since the chicken fat is highly susceptible to microorganism growth.

Cutting and Deboning:

After a chicken has been eviscerated and cleaned, it is either prepared for packaging as a whole bird or sent through additional cutting and deboning steps. The cutting only prepares a bone-in product, while the cutting and deboning produce boneless cuts. In the cutting process, the wings and legs/thighs are removed from the carcass and the back is cut away from the breast. Bones are not removed. At this point parts can be packaged as a consumer product, bulk-packed for delivery to other processors, or shipped for further processing into a variety of products, including breaded or marinated goods.

Within-plant processing of cut-up parts generally involves creating a boneless product. Deboning involves cutting meat away from the bone with knives, and trimming and cleaning with bladed knives or scissors. The deboned parts are generally packaged as a fresh or flash-frozen consumer product.

Poultry processing produces by-products, such as carcasses, heads, intestines, feathers and blood, which are particularly rich in animal proteins and fat.

Rendering, a product line of Stork, supplies a full range of environmental-friendly products to process by-products into attractive and safe base materials.

Collection and transport of by-products
Processing of by-products
Waste water treatment

Collection & transport of by-products:

Slaughter offal is particularly rich in proteins and fat. Stork has a strategic alliance with Tremesa Rendering. Together they supply a complete range of systems for the rendering of feathers and slaughter offal, thus producing attractive base materials for other industries.

Rendering product range:

Air-cooled condensers Batch cookers Continuous cookers Continuous presses for animal fat extraction Feather presses
Rendering crushers for animal by-products Rendering pre-breakers

Waste water treatment:

various solutions for the treatment and purification of process and waste water, tailor-made to suit specific requirements and levels of pollution.