

PROCESSING BROILERS

North Carolina will produce over 775 million broilers this year. They will be produced by vertically integrated companies that use contract growers. The companies that produce broilers in North Carolina include Tyson Foods, Perdue, Goldkist, Mountaire, Townsend, Case Foods, Wayne Poultry, Pilgrims and Nash Johnson & Sons. Vertically integrated companies are involved in genetic development, hatcheries, feed milling, processing and the further processing as well as the cooking of some of their production.

Companies attempt to contract the production of broilers within a 50 to 60 mile radius of the plant. This concept has several advantages including lower transportation costs, less shrinkage of weight and fewer (DOA's) dead on arrival at the plant. Companies sample birds from each flock for a fat analysis prior to slaughter to screen for contaminants such as pesticides and other agricultural chemicals as part of their food safety program.

When flocks are scheduled to go to slaughter feed is removed eight hours before pick-up at the farm accomplishing two things. Feed removal strengthens the gut which lowers the chance of it breaking and contaminating the body cavity. Also, feed fed to the broilers would not be utilized for growth so it would be wasted.

The USDA is responsible for Inspection of Poultry moving in interstate commerce and has since the Enactment of the Poultry Products Inspection Act of 1957. This act mandates that of Veterinarian of the USDA be present in each processing plant each shift that is processing birds. The veterinarian is to see that the poultry are healthy and processed under sanitary guidelines to ensure that consumers have available wholesome products. USDA offers a grading service to processing plants as well but it is a voluntary program and plants are charged an hourly fee for the service. Inspection; however, is mandatory and paid with tax dollars.

In recent years USDA has initiated a program to shift more of the sanitation monitoring to the processor through a HACCP (Hazards Analysis Critical Control Points) system. This system allows a processor to identify critical points that are monitored every couple hours and when they are identified as getting out of limits corrective action is started. If they are not back within set limits by the next sampling time you must stop processing until the problem is corrected. This program will eventually include the hatcheries, feed mills and even extend to the contract farms to promote food safety at all levels.

Broilers are caught at the farms and placed in a caged system similar to poultry crates with 15 - 20 birds per compartment and thirty compartments in a unit that is loaded with a forklift. Depending on the time of year and size of the broilers a semi-load of broilers holds 5,500 - 7,000 birds. This means there are 4 to 5 semi-loads in a modern house that is 500 feet long, or about a load per 100 - 125 feet of house length. After the trucks are loaded they go to the processing plant and the birds are immediately weighed and then moved to the holding sheds where fans move air through the broilers to prevent heat build-up as they wait to be unloaded.

The containers of broilers are unloaded and the broilers move into the plant on a moving belt into the hanging room. In the hanging room broilers are hung by their feet on the shackles as they move to the kill room.

In the U.S., broiler processors use a low voltage electrical stun that makes the bird unconscious after it touches an electrical wire, a salt water mist aids in making good contact. The method of killing broilers used in the US is called a “Modified Kosher Kill”. This method utilizes a whirling circular blade to cut the throat of the unconscious broiler severing the jugular vein and the carotid arteries to allow for rapid bleeding. The blood from the broilers is allowed to clot and collected to render to recycle it as a feed ingredient in poultry by-product meal. The broilers next enter the scald water for 90 to 120 seconds to loosen the feathers for removal. The water temperature is run in most plants at a temperature of 118 to 130 degrees Fahrenheit which is a sub-scald. Older chickens and turkeys require hotter water to loosen the feathers.

The feathers are removed by rapidly revolving rubber fingers on the picker heads, the broilers are constantly rinsed with cold water as they are picked. The broilers then go through a hock cutter and are transferred to be eviscerated and the giblets (liver, heart and gizzard) are saved from the viscera. It takes about 15 minutes from the time broilers enter the plant until they are eviscerated and rinsed with (TSP) trisodium phosphate an antibacterial agent.

When the broilers finish being eviscerated the carcass temperature is around 90 degrees Fahrenheit. The carcasses are then rotated through the chiller to remove carcass heat to prevent spoilage of the meat. The chiller water is allowed to have up to 3 parts per million of chlorine added as an anti-bacterial. USDA requires that carcasses leaving the chiller have a temperature of 35 degrees Fahrenheit or less. The time required to go through the chiller varies from 45 to 75 minutes in most plants depending on the size of the carcasses, speed of the chiller drive and the amount of ice added to the chill water. Most plants use about 6 gallons of water per broiler processed.

Kill lines in a process plant can kill up to 9,000 broilers per hour and several plants in NC operate 3 kill lines simultaneously killing over 25,000 broilers per hour, sixteen hours per day.

The capacity of broiler processing plants in NC varies from 180,000 to 425,000 broilers per day. These plants have from 600 to 2,100 employees depending on the amount of further processing that is done to the carcasses.

All processing plants are moving towards complete further processing such as cut-up, deboning, marinating and even cooking products. Companies are further processing for two major reasons, adding value to the product and convenience for the customer.