

# Pre-processing management of broilers on the farm

Poultry is the fastest growing sector in the animal protein (meat) industry and one of the most widely consumed meats in the world. The increase in demand, along with population growth, increasing disposable income and consumer choices, has made it more important than ever for producers to take a closer look at any issues that may arise on the broiler farm, during transport, and at the processing plant.

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Pre-processing preparation of broilers on the farm is a key step in achieving good yield at the processing plant. Looking at this from an economic standpoint, the processing plant is truly the profit centre in an integrated poultry company and injuries to the birds on farm which effect carcass quality may result in profit losses.

The purpose of this article is to emphasise the importance of correctly addressing issues which may arise on the broiler farm or during transport, but become evident in the final product at the processing plant. Reducing issues during catching, crating and loading on the broiler farm, as well as transport from the farm to the processing plant, helps guarantee the most profitability for the producer.

## Feed withdrawal

Good communication with the processing plant will allow farm managers to plan their feed withdrawals depending on the scheduled processing plan and the amount of time needed for catching. Scheduling feed withdrawal time should be done so that broilers arrive at the processing plant between 8-12 hours after the removal of feed.

This allows sufficient time for birds to empty their gut, decreasing the likelihood of faecal material contaminating the carcasses. If held longer than 12 hours, the bird's intestinal lining may become

affected, increasing contamination rates and reducing carcass yield. Although feed will be removed, water should be available continuously until catching.

A good method to use for calculating total feed withdrawal time is the formula shown in Table 1.

The feed withdrawal process should complement the normal flock eating pattern, and consider bird welfare at all times. Prior to catching, birds must have sufficient time to clean up feed in the feeders and empty the contents of the GIT (gastro-intestinal tract) without any excessive pre-processing body weight loss.

Routine monitoring of birds on the farm (for pre-processing weight loss) and at the processing plant (weight loss, crop fill, or faecal contamination) will help to ensure that the on-farm feed withdrawal program is working effectively.

## Catching and crating

Light intensity and ventilation during catching should be monitored to ensure that broilers are comfortable during catching and crating.

Light intensity should be reduced to a minimum and any sudden increases in light intensity should be avoided. If catching is conducted during daylight hours, using curtains over the main doors will help to minimise light intensity in the house.

Ventilation must be controlled and adjusted carefully to avoid heat discomfort and birds should be monitored for signs of over-heating (panting).

The most important factor when catching and crating broilers for processing is the welfare of the birds. All birds must be handled in a



Examples of carcass bruising and broken bones that can occur during catching and crating.

calm and correct way at all times and the catching crew should be experienced and appropriately trained, so that they are able to handle the birds with the care that is necessary for their purpose, age, and sex.

Most broilers worldwide are caught and loaded into crates or modules either manually (by hand) or mechanically. For manual catching, birds should be caught carefully and held by both shanks or by the breast with both hands. If more than one bird at a time is being carried to the crate/module, care must be taken to ensure that they are carried comfortably and that the distance they are carried (from point of catch to the crate) is kept to a minimum. The size of the crate/module and the number of

birds it can hold are dependent on the size (market weight) of the birds at the time of processing; however, local legislation and regulations should be adhered to at all times.

Mechanical catching is a good alternative to manual catching when properly managed according to manufacturer recommendations and conducted by appropriately trained personnel. Mechanical catching is better suited to houses which are wider and free from internal obstructions. During catching, it is essential to minimise bruising by using correct catching and crating procedures. Bruising and broken bones (Fig. 1) will impact welfare and result in carcass downgrading at the processing plant and yield loss to the producer.

It is estimated that up to 90% of carcass bruises occur in the period of 12-24 hours before processing, with the most frequently bruised parts being the breast, wings, and legs. By analysing the colour of bruising at the processing plant, it is possible to determine their age and at what point during the process they occurred (Table 2). This is a useful means of establishing where

*Continued on page 17*

Table 1. Formula for calculating total feed withdrawal time.

Feed withdrawal period	=	Time in house without feed
		+ Catching time
		+ Transport time
		+ Holding time (lairage)



**Shielding birds from the cold during transport.**



**Examples of environmentally controlled bird holding areas.**

*Continued from page 15*  
issues exist and if additional training may be required.

It is often difficult to assess injuries that occur during catching and crating until the birds have arrived at the plant and gone through the initial stages of processing. To help ensure that injuries do not occur, strict guidelines should be adhered to by everyone involved in the catching process including farm managers, catching supervisors, and processors.

**Transport to the plant**

Incorrect transport practices do not only affect the live bird, but may

affect meat quality as well. By its nature, transport alters both the metabolism and physiological state of the bird, which may produce undesirable changes in meat quality.

Along with catching and crating, transport must be performed carefully so as not to cause bruising, broken bones, stress or mortality. These factors will impact upon the birds and lead to downgrades or condemnations in the plant resulting in loss of product and profit.

Controlling the micro-climate (i.e. temperature and humidity birds are exposed to within the transport vehicle containers) is extremely important in reducing the level of thermal discomfort.

This is accomplished by either

facilitating better airflow among the birds (warm climates) and/or controlling the wind-chill by the use of covers (cold climates).

In particular, during longer journey times, it is important to transport the birds carefully so as to avoid breast bruising.

To help prevent the incidence of bruising, it is important to plan the transportation route from the farm to the plant via roads with mostly even surfaces and to avoid extension of the transport time if it is not necessary. The transport route must be planned in advance, and the transportation schedule adhered to.

controlled holding areas with fans and foggers that allow cool air to circulate around the crates, cooling the birds). This is especially helpful during the summer months (in the northern hemisphere) when temperatures are the hottest.

During the colder months, it is recommended to use a covering (tarpaulin) to help shield the birds from the cold (wind chill) but still allow air to flow between the crates.

**Conclusions**

Pre-processing broiler management can have a significant impact on bird welfare, carcass quality, and profitability. It is important to understand, monitor, and review all procedures regularly to ensure that they remain efficient while maintaining bird welfare.

By doing so, it is possible to achieve a successful transition from the farm to the processing plant while minimising carcass downgrades and maximising bird welfare and producer profit. ■

This information is based on articles written for Aviagen by Dr Sarge Bilgili – *Addressing Carcass Quality Issues at the Processing Plant* (2016), and Dr Rafael Monleon – *Pre-processing Handling in Broilers* (2012). References are available on request

**Table 2. Changes in bruise colour with time (based on original work by Hamdy et al, 1961).**

Time	Colour
Minutes	Red
12 hours	Dark red-purple
24 hours	Light green-purple
36 hours	Yellow, green-purple
48 hours	Orange
72 hours	Yellow-orange
96 hours	Slight yellow
120 hours	Normal colour

**Receiving at the plant**

Once birds have arrived at the plant there will most likely be a certain amount of time that they will have to wait before being unloaded onto the receiving dock.

Depending on the season of the year and the amount of time travelled, this can pose potential problems for the birds. The longer birds are held, the greater the risk for skin scratches and lesions which may cause downgrading at processing.

It is recommended that broilers only have to spend a short time being held on the truck once they arrive at the plant (two hours or less is preferred).

Some processing plants are equipped with environmentally