Infectious bronchitis – key points for controlling this disease

It is well acknowledged that infectious bronchitis can cause losses that are very costly. This is because of uneven growth, respiratory distress, high morbidity, secondary opportunistic respiratory infections (E. coli, avian metapneumovirus, H9N2 low pathogenic avian influenza virus, etc.) and related medication, egg drops, and/or kidney damage.

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According to the World Bank, it is ranked as the second most costly poultry disease, after the highly pathogenic avian influenza.

In broilers, infectious bronchitis reduces the daily weight gain, increases the feed conversion rate (FCR) and causes mortality and secondary infections that lead to a rise of the use of antibiotics. At processing plants, it increases the condemnation rates and reduces the efficiency of the process.

The sanitary condemnations will affect the operational viability not just because meat is lost from the carcase, but because it slows down the operation. The control of infectious bronchitis disease is essential to reduce the respiratory condemnations, and commonly drives to total condemnation of the carcase too.

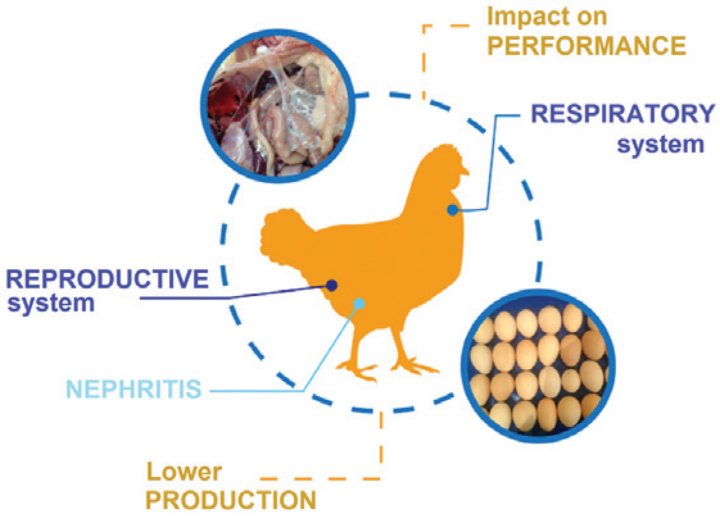
The meat market is an environment of intense competition and the commercialisation requirements: it increases the need to preserve and guarantee the credibility of the way the animals are slaughtered and the carcases are processed in slaughterhouses. It also increases the need to guarantee food safety, and at the same time presents a good economic result of operational viability.

The performance of industrial operations in slaughterhouses is impacted by the interaction of variables that depend on the characteristics of the raw material received, especially those related to the carcase yield. Slaughterhouse performance also depends on the health of the flocks, the proper use of the carcase during the operational procedures, the expectations of the consumers and the market requirements.

To obtain good results in industrial performance, even before the processing, we consider that the performance of animals in a flock depends on the variables related to genetics and nutrition. The performance of animals is also influenced by the uniformity of the flocks, as well as by the farming facilities.

Therefore, the interaction of the variables as animals, management, nutrition, facilities and ultimately sanitation status will determine the performance during industrial processing. It is characterised by the raw material received, considers the live weight received and flock uniformity, and even the total number of animals effectively available for slaughter and the processing conditions (carcase integrity and slaughter line speed).

The integrity of the carcases takes into account the sanitary conditions of the animals received. This is determined by the indicator of sanitary sentences criteria, expressed in condemned kg, in condemned animal units total or partially. There is still a need to distinguish between causes, and consider the causes of condemnation.



Impact of diseases in the processing results

Several diseases can impact the processing parameters as carcase yield and kg-processed/man/hour.

- **IB (Infectious bronchitis):** IBV infections can cause clinical signs in the poultry respiratory system, and the impact is well observed in the field and processing performance results.

It is important to note that subclinical infections will cause impact in parameters as condemnations, and mortality during transport from the farm to slaughterhouse.

- **IBD (Gumboro disease):** Gumboro disease protection is one of the bases for the immunity system for a broiler. This way, it will contribute to broiler health.

It was observed in several poultry operations that the disease can impact especially on broiler flock uniformity and its operational performance in the speed at the slaughterhouse.

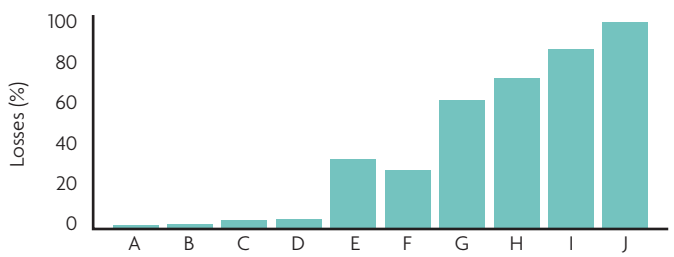
The carcase and breast yield and the lower contamination of the final product was appointed during field research.

The costs of slaughter plays a special role in the operational performance and in the industry's competitiveness. Considering that, some key points are key:

- **Poultry uniformity in the flocks:** When the broilers are affected by diseases such as IB (Infectious bronchitis) or IBD (Gumboro disease) the flock will not perform to its full

Continued on page 27

Fig. 1. Losses due to top 10 diseases in poultry (2006-2009). Source: World Livestock Disease Atlas – A quanatitive analysis of global animal health. The World Bank, November 2011. LSU: Livestock Unit.



A: Duck virus hepatitis
B: Fowl typhoid
C: Fowl cholera
D: Pullorum disease
E: Mycoplasmosis
F: Infectious bursal disease
G: Newcastle disease
H: LPAI
I: Avian infectious bronchitis
J: HPAI

Continued from page 25
potential. Individuals will be affected at different levels, generating uneven growth, as appointed during field research, published during PSA, 2021.

The carcase uniformity loss impacts the slaughter line balance, causing a speed reduction on the slaughter line. As a consequence of this, processing costs and the cost of the final product are increased.

● **Carcase uniformity and cuts weight:**
Due the extreme variation of the broilers' weight, it will lead to a larger variation between the predicted carcase weight (planned to cover the commercial needs) and the real product obtained, available for the market.

If there are variations in the final weight of the chicken meat, and if the required carcase weight or cuts are out of the market standard, it will damage the credibility of the brand on the market.

● **Carcase yield:**
In combination with the weight of the cuts that will be impacted by the uniformity, non-uniform carcases impact on the industry yields due to the deboning equipment not being effectively adjusted. The faster the speed of the deboning line, the more imperfect the carcase cuts are, and the yield will be reduced.

Table 1. [1]Additional difference from protected flocks (vaccinated against Massachusetts strains + Variant strain) and unprotected (vaccinated only with Massachusetts strains).

Parameter evaluated	Productive gain[1] (%)	Economic gain each 1,000 poultry (USD$)
Reduction airsaculitis partial	0.01-2.55	4.31-22.24
Reduction airsaculitis total	0.02-0.31	0.67-5.97
Reduction colibacilosis	0.01-1.88	6.46-37.08
Reduction faecal contamination	0.80-1.15	4.31-6.19
Reduction cachetics poultry	0.15-0.67	0.96-4.31
Total	0.99-6.56	16.71-75.79

These parameters as condemnations and flock uniformity will influence the productivity of the processing plant, as well as the slaughter line speed, and will directly impact the profitability of the operation.

The key is to remember that the transformation process in the plant can be optimised continuously. This can happen as long as there is regularity in these processes of collection and analysis of data, in the discussion and interpretation of performance indicators, as well as establishing feasible goals of be targeted.

To maintain the link between flock information and client requirements, contributions are needed to improve the operational performance in the slaughterhouse.

Conclusions

Infectious bronchitis can induce losses along the poultry production chain, in the field and in the processing at the slaughterhouse. Keeping track of the diseases, such as IB, will be key to maintain the profitability of the operation, considering the live weight and flock uniformity. ■

References are available from the author on request