Traceability – an increasingly important part of modern poultry production

The traceability of poultry and poultry products such as meat and eggs is now an essential marketing requirement that is needed to satisfy ever more demanding consumer expectations with regards to the foods they consume. Initially, traceability focused on food safety but now it encompasses an ever increasing list of consumer requirements that include GMO freedom, the farming and welfare of the flock of origin, ethical production, halal production and processing and not using antibiotic growth enhancers to name but some.

For all of these, robust traceability is an essential pre-requisite and is required for customer and consumer confidence in the meat and eggs we produce. Fortunately, the high degree of integration in many poultry companies facilitates the management and auditing of traceability.

However, freezing of products and modern techniques that extend shelf-life of product extend the time base over which the traceability applies.

Origins of traceability

Traceability came of age with the advent of BSE (bovine spongiform encephalopathy) and its association with Creutzfeldt-Jakob disease or CJD in man which required all beef to be traceable back to safe farms.

Nowadays, traceability extends past the farm of origin to the breeder farms and hatchery that supplied the day old chicks and the feed mill and feed ingredients associated with the feed the birds consumed.

This was vividly highlighted recently with the German dioxin crisis in which contaminated fat got into various swine and poultry feeds. As a consequence of good traceability bakery products baked with eggs that could have been contaminated with dioxins were promptly removed from supermarket shelves.

Good traceability enables us to narrow down the quantities of potentially affected product because it can accurately identify them. Conversely, poor traceability often results in much more product having to be withdrawn than is needed. Thus, good traceability can minimise the size of a product withdrawal and the costs associated with such a withdrawal. A whole host of stakeholders are introducing traceability requirements including trading partners, individual countries as well as individual customers such as supermarkets. Unfortunately, the supermarkets do not always introduce requirements for supplier or customer/consumer benefit – sometimes they are introduced to give the supermarket a perceived marketing advantage in the eyes of the consumer.

- The scope of application of the traceability system
- A detailed description of the system
- The integration of the system to the systems of suppliers and customers
- Formal communications systems with suppliers, customers, regulatory bodies and others
- The description of identification devices or mechanisms used
- A description of procedures and all the steps for product recall
- The frequency of traceability exercises for traceforward, traceback and recall
- Procedures for reviewing and updating the system

Table 1. Basics of a traceability system.

If we are not careful, consumers will expect things from us that they do not really understand and which are impractical and unrealistic to deliver. Their delivery incurs costs, yet consumers do not usually expect to pay for these; they expect them as the norm.

Food safety issues over the last couple of decades such as Salmonella enteritidis, S. typhimurium, campylobacter, bird flu and chemical/antibiotic residues hastened the implementation of food traceability systems.

In the case of hatching eggs and day old chicks minimum traceability is the ability to identify breeder farm(s) of origin and in the case of poultry meat and table eggs it is the ability to identify the farm(s) of origin.

A key facet of this is to ensure that nowhere down the production chain could some eggs or birds or product accidentally get into the wrong place.

In the early days of traceability, this often occurred by topping up a setter with a few eggs from another breeder flock, topping up a chick placement with a few day olds from another source or an order for meat or table eggs was topped up with some meat or eggs from stock which came from another source. Hopefully, now that everyone understands traceability these basic errors are much less frequent.

At the agricultural level a key requisite to traceability is comprehensive documentation and this needs to be applied to all stages of the production chain including feed mills, breeder farms, hatcheries, commercial farms and transportation.

To test the thoroughness of your traceability why not select a batch of birds processed at your processing plant and give management no more than a couple of hours to provide you with their total history or traceability including feed and ingredients used, medications, vaccinations and breeder flock of origin.

With a good traceability system that has been computerised this should be easy to achieve. If this can not be done your traceability system is inadequate.

Perception of risk

The irony is that as we are introducing ever more robust traceability systems our food is probably the safest it has ever been. Risks can be divided into voluntary and involuntary risks. Voluntary risks such as smoking or drinking alcohol tend to be ignored, yet consumption of food is seen as an involuntary risk and many would argue that, as such, its perceived risks are disproportionately magnified.

Most deaths arise from voluntary risks so some would argue if consumers can not protect themselves from voluntary risks why should we protect them from involuntary risks? This may be tongue in cheek, but it brings us to an interesting thought – should a human life be given a financial value so we can undertake cost:benefit analyses on intervention strategies for involuntary risks?

In reality, consumers are wanting more and more to be done, but are less likely to pay for it because they see safe food as the norm and their right!

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Any traceability system can be defined in terms of its extension, depth and precision where extension is the amount of information recorded by the system, the depth is the extent to which the system can trace backwards or forwards and the precision is the extent to which the system can ensure the movements or particular characteristics of a food product.

The unit of analysis can range from individual birds, which is probably excessive, to containers, trucks or day of production.

Generally, the larger the unit of analysis, the lower the precision in isolating security or quality issues.

The extension, depth and precision of the traceability system is known as the Logical Traceability Model or LTM and the extent to which the system takes advantage of modern technologies and communications technologies is the degree of technological modernisation or DTM. Thus, a traceability system can be defined in terms of the sum of LTM and DTM.

The choice of which traceability system to install will be based on what has to be measured and controlled, legal requirements, customer requirements and the company's requirements.

When it comes to the processing plant traceability is strengthened if defined temporal gaps occur between batches/lots of production. This is especially the case with spin chillers which, if we are not careful, will be a point at which batches/lots can become mixed. However, this may have an unacceptable cost associated with the resulting pause in production. Thus, the slaughter house may define a lot or batch of production for traceability purposes as a day's production.

To some extent this can be minimised if products carry labels that say when specific tasks were carried out – this information may be in the bar code.

A traceability system and how it is operated must be adequately documented. Documentation needs to at least consider the items detailed in Table 1. The minimum record requirements for incoming goods are shown in Table 2.

When it comes to internal traceability a farm, for example, must have records for the items detailed in Table 3.

Obviously staff and management are key to the success of any traceability system and these must be adequately informed and trained and personnel must be able to demonstrate their competence with regards to the correct operation of the traceability system. ■

- Raw materials used
- Names and addresses of suppliers of raw materials
- Lots received
- Date of receipt
- Respective waybills

Table 2. Minimum records.

Table 3. Minimum records for a farm.

- Internal audits of the traceability system
- Training activities related to the traceability system
- Inventory records for birds and eggs
- Breeding management
- Visitor declarations and where they visit
- Maintenance activities
- Clean up and sanitisation activities
- Pest control and bait locations
- Veterinary and regulatory visits
- Post mortems and laboratory tests
- Records from slaughterhouse of losses incurred
- Drug and vaccine usage
- Control records for non-compliant products
- Inventory for drugs and medicated feeds
- Production records
- Feed management
- Veterinary prescriptions
- Details of fasting prior to slaughter
- Residue management and disposal
- Corrective actions