Health Surveillance in the Modern Hatchery: From Information to Informed Decisions

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Maintaining high standards of chick health has become increasingly complex as poultry production systems continue to evolve. Advances in genetics, incubation technology and disease prevention have improved hatchery performance, while increasing expectations around biosecurity, antimicrobial stewardship and production efficiency have reinforced the need for robust health management programmes.

Vaccination remains a cornerstone of disease prevention, but its success depends on more than the vaccine itself. Detecting potential problems early and understanding the factors influencing flock health are equally important. Health surveillance has therefore become an integral part of modern hatchery management.

Rather than simply investigating disease after clinical signs appear, surveillance involves the routine collection and interpretation of information from across the production chain.

By recognising subtle changes in hatchery performance before they develop into more significant challenges, hatcheries are better placed to implement timely corrective action, refine management practices and support the production of healthy, high-quality chicks.

Surveillance as a proactive management tool

Traditionally, health investigations have often been triggered by obvious production problems such as declining hatchability, increased embryo mortality or poor chick quality. While investigating these issues remains essential, effective health surveillance is based on identifying gradual changes before they have a measurable impact on performance.

At its core, surveillance is the systematic monitoring of key performance indicators to establish what represents normal performance and recognise when meaningful deviations occur. Rather than focusing on isolated results, it considers trends over time, allowing hatchery managers to distinguish between normal biological variation and changes that require further investigation.

Consistency is fundamental. Standardised methods for recording hatchability, chick quality, embryo mortality and sanitation outcomes provide reliable information that can be compared between breeder flocks, hatchery batches and production cycles. Equally important is collaboration between hatchery personnel, veterinarians, laboratory specialists and production teams. Each contributes valuable observations that help build a more complete understanding of flock health than any single measurement can provide.

Looking beyond laboratory testing

Although laboratory diagnostics remain an important component of disease investigation, they represent only one part of an effective surveillance programme. Modern surveillance combines information from multiple sources, recognising that changes in hatchery performance are often influenced by a combination of biological, environmental and management factors.

Routine hatchery records provide an important foundation. Hatchability, fertility, hatch window, chick yield and embryo mortality patterns can all provide early indications that further investigation may be required. Breakout analysis of unhatched eggs, for example, can help identify the stage at which embryonic losses occurred and may reveal trends associated with breeder flock performance, egg handling, incubation practices or potential infectious challenges. While a single hatch may not provide definitive answers, monitoring results over time often reveals meaningful patterns.

Chick quality assessments are equally valuable. Characteristics such as navel quality, yolk sac absorption, hydration, activity, uniformity and the incidence of abnormalities provide immediate feedback on

Continued on page 19 ▷

▷ *Continued from page 17*

both embryonic development and hatchery management. When assessed using consistent scoring systems, these observations can highlight gradual changes before they become evident through reduced on-farm performance.

Environmental monitoring also contributes to a comprehensive surveillance programme. Sampling hatchery surfaces, equipment, water systems or ventilation components can help verify the effectiveness of cleaning and disinfection procedures and identify potential sources of contamination. Rather than replacing established biosecurity measures, environmental monitoring provides objective evidence that hygiene protocols are working as intended.

Feedback from broiler or layer farms is another valuable, yet sometimes underutilised, source of information. First-week mortality, chick liveability, flock uniformity and early health observations provide an important indication of how chicks have performed after placement. When routinely shared with hatchery managers, this information strengthens the link between hatchery performance and subsequent flock outcomes.



Making better use of hatchery data

Modern hatcheries generate considerable amounts of information throughout the production process. From breeder flock records and egg storage times to incubation parameters, hatchability figures and chick quality scores, data are available from almost every stage of production. The challenge is rarely collecting information, but interpreting it effectively.

Individual performance indicators often provide only part of the picture. A slight reduction in hatchability or an increase in cull chicks may appear insignificant when viewed alone. However, when these observations coincide with changes in embryo mortality patterns, breakout analysis or farm performance, they may indicate an emerging issue requiring attention.

Trend analysis is particularly valuable in distinguishing normal biological variation from developing problems. Comparing results between breeder flock ages, seasonal production periods and successive hatches enables hatcheries to identify gradual changes before they significantly affect productivity. Historical benchmarking also provides an objective way of assessing whether management changes have resulted in measurable improvements. The greatest value is achieved when information is integrated across the production chain. Breeder flock health, egg quality, hatchery observations and farm performance should not be considered independently. Linking these sources of information provides greater confidence when identifying the root causes of performance changes and supports more informed management decisions.

From information to action

The purpose of health surveillance is not simply to collect data, but to use information to improve hatchery performance. Surveillance should support practical decision-making, allowing managers to identify opportunities for improvement before production or bird health is significantly affected.

In many situations, surveillance leads to incremental refinements rather than major interventions. A gradual increase in late embryo mortality may prompt a review of egg storage procedures or incubation settings, while recurring chick quality observations could lead to adjustments in handling procedures or hatchery workflows. Environmental monitoring may identify opportunities to improve sanitation programmes, while farm feedback may reveal seasonal trends requiring closer investigation.

Surveillance also provides an objective method of evaluating management changes. Following adjustments to standard operating procedures, equipment maintenance or hygiene protocols, continued monitoring enables hatcheries to determine whether performance has improved or whether further investigation is required. In this way, surveillance becomes an essential component of continuous improvement rather than simply a tool for investigating disease outbreaks.

Conclusion

As hatchery operations continue to evolve, health surveillance is becoming an increasingly important component of flock management. While vaccination, biosecurity and good husbandry remain fundamental to disease prevention, surveillance provides the evidence needed to assess whether these measures are achieving their intended outcomes and where further improvements may be made.

Ultimately, the value of surveillance lies not in the amount of data collected, but in the ability to interpret information and translate it into practical management decisions.

By integrating routine observations, production records, laboratory findings and farm feedback, hatcheries can move beyond simply responding to health challenges and towards anticipating them. In an industry where relatively small changes can have significant consequences, a proactive approach to health surveillance will remain an important contributor to producing healthy, high-quality chicks and supporting long-term hatchery performance. ■