

# Inefficiencies in the hatchery: determining where the fault lies

Modern hatcheries that are tapping into science and technological advancements are consistently turning out better hatches than ever before. As the embryonic cycle is more closely explored and procedures are fine-tuned to optimise hatch results, new information is translated into more efficient machines and processes.

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Reduced hatch windows, increased chick size, reduced culls or second grades and an increase in sellable or placed chicks are all indicators that the enhanced efficiencies are having an impact. But what happens when a hatchery is under-performing?

When considering the huge potential of a hatchery, anything less than an ideal performance is not acceptable and may represent a potential loss of revenue.

Therefore, it is important to analyse the operation to determine if the shortfalls lie with the equipment or with the operation of the machines and to apply the proper procedures to tighten the production.

## Standards

Today's incubators are robust and reliable with massive machines capable of turning out 120,000, or more, chicks at a time. These machines are powerful, efficient and designed to perform for years.

Conventionally, if equipment is subjected to the appropriate conditions and maintained according to machine specifications, performance will be at or above the industry standard as established by the breeder companies.

Of course, we must understand that industry standards will vary from breed to breed and during entire hatching cycles.

In order to determine if a hatchery

is 'up to standard' or even above standard, there must be a yardstick for that 'standard'. Most suppliers of parent stock publish their own benchmarks and all standards seem to be very similar.

When a hatchery is not meeting those markers, it is essential to follow step by step procedures to identify the problem and implement the stages necessary to correct the issue or issues.

It is not surprising that, when a hatchery is having a problem, the machines are the first things to come under scrutiny. However, it is important to remember that machines are reactive and subject to the input and controls by which they are maintained and programmed. The performance of a machine reflects how effectively they are operated and understood.

Consultants with years of experience can assess and tweak machines to produce a better hatch, but still the day to day operations and measurements must be performed diligently and systematically. Since more and more pressure is being put on hatcheries to produce higher quality chicks at a lower cost, it can lead to overlooking the basic requirements of the incubators and hatchers. This is more prevalent in older multi-stage incubators and hatchers but can still be an issue with the newer single-stage equipment.

The other factor that is often held culpable for a hatchery under-performing is the condition of the egg pack. Ensuring that the egg pack is of the best quality from an established and consistent source can help to eliminate that potential threat and create a starting point for uncovering where the loss of productivity originates.

## Monitoring and then what?

Many hatcheries are very good at recording their hatches and monitoring the machines but only monitoring results does not solve a problem. That is just the beginning. Simply put, the results of monitoring indicate a problem but not necessarily a cause.



Jamesway's Hatchcom III electronic monitoring system.

For example, you may notice an increase in second grade chicks, but that is a long way from understanding the cause. All you have at that point is the final consequence. In fact, sometimes the identification of a major problem may be a long way from finding a very minor issue, such as a broken or missing gasket not allowing for a proper incubator seal.

Even after you have assessed a shortfall, identified an area for improvement, removed the impediment, and/or applied the corrective action, you still need to monitor and compare the results.

Optimisation of a hatchery is an undertaking that relies on constant monitoring and tweaking of systems until the most effective procedures are identified for each hatchery. Equipment alone cannot adjust for all the potential variables of each location without this attention.

## The issues behind substandard results

Most often this situation is a result of the operator not fully understanding or not adhering to the requirements of their equipment. Sometimes the underlying inefficiency of the hatchery is a lack of/or misunderstanding of incubation processes and conditions requirements. Every hatchery is slightly different and must be adjusted accordingly for varying factors such as location, altitude, ventilation, etc. Climate alone can create a huge difference in the performance of machines; consider a tropical location versus an arid desert site. Major fluctuations in

external humidity and temperatures may affect the internal settings.

Sometimes managers try to manipulate machines or controls to make up for improper inputs such as poor water quality or an erratic electrical supply. Garbage in, garbage out; poor quality input will always produce faulty output.

In a sub-standard performing hatchery we must examine the incubation equipment, its supply and quality of airflow, heat, humidity, turning mechanisms and damper control. We must also ensure that the environmental conditions are optimal with an adequate and steady control of room temperature, room humidity and pressure.

In a hatchery that is performing according to the standards set by the parent stock supplier, we need to adhere to the following protocol; continue to supply all the outlined machine requirements, monitor and act on any discernable fluctuations in performance, and follow standard preventative maintenance programs to ensure the best results.

## Tools to help identify the underlying causes

Residue breakout is the most under-used tool for hatch and performance analysis. Many hatcheries have forgotten this basic management tool but most of the information you need to identify the major issues that can affect your production success are found within a proper examination of unhatched eggs and embryos. Tremendous amounts of information are thrown away every day.

Routine residue breakout can identify issues before they become a major problem, since you will be able to precisely pinpoint the day the embryo or unhatched chick died and its condition. Properly performed residue breakouts can identify if the problem is coming from the farm, or transportation, egg handling, incubators or hatchers. The analysis of the residue can supply information such as embryo mortality (early or late), whether the

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embryo was dead in the shell (DIS) or dead in the tray, the quality of the culled chicks, pips.

By identifying where and when the problem occurs and how it is being created, we can formulate and institute a corrective action plan.

Moisture loss is another tool that can be implemented to determine the effectiveness of the hatchery systems. Measurements establish the difference between egg weight and transfer weight. Once that is determined, since it is usually a machine issue, we can adjust the machine performance. It is important to monitor the subsequent hatches to ensure there is a resulting quality improvement.

All this information can then be compared to industry standards. Once the information is properly analysed the hatchery manager can determine where the actual problem resides. More importantly the manager can see how his operation compares to the industry standards.

### Hatchery monitoring tools

Normally the most overlooked management tool in the industry is electronic monitoring systems. In a Jamesway hatchery this is known as

the Hatchcom III. Our experts in the field have seen that most hatcheries have a version of this type of device.

They are often infrequently used save for a few functions such as the machine status or alarm screen, which are both used for the sole purpose of identifying problem machines in the event of an alarm.

When our experts visit hatcheries they have observed that most hatcheries still have someone physically check the machines every hour. This not only takes time but means that someone is constantly in and out of incubator and hatcher rooms.

Entry to these rooms should be limited so that there is no disruption of room pressures, temperatures and overall operations. Every time the door is opened is a potential threat to biosecurity.

Our experts have also observed that no one routinely checks what has been recorded by the monitoring systems, which is a waste of time and money.

All this information is automatically recorded and easily accessible. Not only does this save the time of someone physically going to individual machines, but there is no need to record on paper information that is later discarded or filed without ever being checked. With

Hatchcom III this information is gathered and saved for immediate access or accessed when convenient for the manager.

Also, this data can be automatically saved to file for historical reference. There is no need to depend on employees to record accurate data when, in most cases, it is already being recorded.

Other functions and benefits of hatchery monitoring systems include the ability to set and change profiles, produce detailed alarm and numeric reports, graph activities, manage set up screens and monitor screens, along with the obvious benefits of alarms and alarm call outs.

You can even access this data remotely, or program some controls. The uses and advantages of these systems are only now being fully examined and understood.

### The role of training

Most of the issues and problems of an underachieving hatchery lie at the feet of age old problems; training staff to recognise, analyse, solve issues, and failure to follow routine procedures.

Often the problems are due to a lack of understanding, incorrect inputs or operator error. Incubators

and hatchers that are well maintained and supplied with the recommended inputs will produce above standard results.

By training staff to understand the machines, analyse data and residue breakout, and identify when a machine is underperforming, the operations will run at the highest level.

### Conclusion

Good hatchery management comes down to five steps:

- Understand incubation and the embryo's basic requirements.
- Manage the inputs to meet those requirements.
- Compare the results to the industry standards.
- If they are sub-standard, then identify the problem using all the available tools.
- Proceed with corrective action.

There is no reason to be satisfied with a hatch that is below standard, and once you have achieved optimisation, you will be closer to a worry free hatchery. ■