Assessing alternative hatching egg disinfectants

Hatching eggs need to have the shell surface disinfected at some point between the farm and the hatchery.

This is good practice and often a legal requirement. Traditionally this was done using formaldehyde gas, but there are increasingly stringent regulations making its use on farms and in the hatchery more difficult.

Formaldehyde is a difficult disinfectant to replace. It is very effective against a wide range of micro-organisms; it forms a dry gas so does not wet the egg surface; and it is harmless to the paused embryo in the fertile hatching egg. It is also cheap. However, a variety of alternative disinfectants are being suggested.

Any alternative product needs to give a satisfactory kill rate of the micro-organisms on the shell surface, ideally without wetting the egg shell. It needs to be gentle enough not to damage the cuticle covering the egg shell – with no cuticle left the eggs are more open to internal contamination after treatment – and it needs to be safe for the embryo inside the egg.

When offered an alternative hatching egg treatment, always ask questions. What is the active ingredient? How is the treatment delivered? Does it need to be dissolved in water? What percentage of the micro-organisms on the egg shell will it kill? Most suppliers will be able to answer all these questions, but may have more trouble with the most important one. "This product kills bacteria on the egg shell – can you prove to me that it won't kill the embryo inside the egg shell?"

To be confident that the chemical, or the method of application, will support good hatchability, you need to see trial results (or run your own).

When you start to think about existing differences between flocks, between egg collections through the day, egg storage conditions and even individual incubators, it is obvious that the trials will need to be carefully designed, will need to take account of a lot of variables and should use a lot of eggs. As a starting point, trials should include eggs from young, prime and old flocks – old flocks are probably the most vulnerable to mistreatment of any kind. Trials should be repeated, and they should be designed to equalize the hatch potential of the eggs going into each treatment. Always have a control treatment, where eggs are given your current standard treatment. To set up this sort of trial you could:

- **Put alternate setter trays from every collection into treatments A or B as they are packed.**
- **Or compare eggs packed Monday, Wednesday and Friday with those packed Tuesday, Thursday and Saturday.**
- **Or even compare whole houses, but switch the treatments at intervals so each house is its own control.**

Aim to use at least 2,000 eggs per treatment per run, and to repeat each comparison at least 10 times over a range of flock ages. Without this sort of careful comparison, you will never really know whether the treatment is giving you results that you expect, has made things worse or (very rarely) given better hatch or chick quality.

Figure 1 *A fumigation cabinet.*