**Larger incubators**

When commencing expansion from small scale incubation into the larger multistage incubators, it is important to realise the increased risks of disease transmission this entails. When doubling the number of eggs incubated the risk of disease transmission increases by the square of the increase. So if we double the number say from 50 eggs to 100 eggs, there is 4 times more risk of disease problems. Double again from 100 to 200, increased by 4 times more, and double again to 400, increases by 4 times more. So the risk increases 64 times when we increase incubation from 50 to 400 eggs. So it is important to take measures to minimise the risk.

In days gone by, the use of formaldehyde fumigation was a standard practice. The potent nature of this method compensated for many poor practices regarding cleanliness of incubators, and minimised the disease transmission on the eggs because of feather dander and dust of multi stage incubation. This technique is now understood to be very dangerous for the users and also the ingredients are much harder to obtain. In recent times, mycoplasma and Marek's disease have increased as a result of the cross contamination in the incubator.

So alternative techniques are required to obtain similar risk minimisation to the old style fumigation.

The practices here also apply to smaller scale incubation, but are less critical in small scale.

1/ Egg collection. Remember 1 contaminated egg in an incubator of 400 eggs contaminates the lot. So select only clean eggs with good shell quality. Candle eggs to ensure no cracks and to ensure the shell looks uniform and strong. Eggs are best not washed but sanitised. A simple but effective process is to place freshly collected eggs into a plastic egg tray as used in the incubator, and sprayed with warm Virkon disinfectant. The tablet form of Virkon means 1 tablet in a 500ml hand pump spray will treat hundreds of eggs and maintain its disinfection for up to 1 month after mixing. As long as the mixture is pink it maintains its activity. Spray the eggs until the eggs are covered and allowed to air dry.

2/ Use a separate machine for incubation, called an incubator or setter, and another for the last 3 days, called a hatcher.

3/ Set eggs weekly into the incubator, moving the eggs down when the new eggs are placed in the incubator.

4/ Add a small amount of chlorine (like Nycex) into the incubator water to fumigate the incubator.

5/ Three days before hatch is due move the eggs into another incubator for the hatching process.

6/ After hatch, thoroughly clean the hatching machine removing all dust and dander, and hatch debris. Wash using detergent to lift any soil and stains. Vacuum vents. Sanitise using a suitable sanitiser (like Virkon or Nycex).

These measures mean that the main large incubator is kept clean and dirt free, and is easy to keep in prime condition. In addition, the conditions of the setter are ideal for the incubation of the eggs rather than the up and down of the variable conditions caused by the hatch process.

It also means that a low cost hatcher will take all the heavy wear and tear. It is far better to wear out a small low cost hatcher, then the expensive main setter.