

Paying back your incubators

By Ron Meijerhof

The effectiveness of a hatchery is often determined by the hatch results. As every unhatched chicken is a financial loss, investing in a good machine or a good process is often cost effective. However, hatchability should perhaps not always be the leading force for investments.

If our hatch of fertiles is low, we basically are killing embryo's by the environment we provide them. What we have to realize is that the other embryos in the same environment most probably didn't like the conditions as well. It didn't kill them, but as it was able to kill their neighbours, most likely they were not so happy with it as well. They survived it, but surviving the bad conditions is something else then having an optimal environment for growth and development.

Effects on the broilers

We know from research and practical experience that incubation can have a significant influence on broiler results. Research at Penn State university for instance showed that incubating eggs for the last 5 days at two degrees oF above or below the optimum altered the feed conversion with 5 to 7 points, when calculated for birds of the same weight. We see similar trends often in the field as well.

On a 2 kg broiler, this means that the birds needs 100 to 140 grams feed more to reach the same bodyweight. If we incubate 100.000 eggs in a machine that hatch for 80% and has a grow out mortality of 5%, it means that every hatch needs 7600 to 10640 kg of feed more to reach its body weight. As we fill up a machine about 17 times a year, this would mean roughly 130 to 180 metric tons of feed per year per machine.

How does this relates to hatchability?

If we loose 1% hatchability, so 1% more loss of fertiles, we loose per year 1% of 17x100.000 eggs in that machine. This means a loss of 17.000 potential day old chicks. This is a huge number of chicks, and worth paying efforts for. But how does the costs of loss of hatchability compares to the costs of loss of feed conversion?

Prices will differ from country to country and in time, but lets estimate that both a day old chick and a kg of feed costs 0.15 euro. If we loose 5 points of feed conversion, that will cost 130.000 kg of feed times 0.15 euro is 19.500 euro per machine per year, or $19.500/5 = 3.900$ euro per point of feed conversion. If we loose 1 percent of hatchability, we loose 2550 euro per machine per year. This means that a 1 point of feed conversion equals money wise roughly 1.5% hatchability.

How does this relates to the price of the machine?

There are big differences in prices between machines and between countries, both in purchasing and in running. But suppose a machine costs 0.40 euro per egg place, including all the bits and peaces that come with it. This will make a price of 40.000 euro for that 100.000 egg machine. Lets suppose we use a maintenance, depreciation and interest rate of 15%. That means that the machine costs us, apart of operating costs, about 6000 euro per year. 1% hatchability loss costs us 2550, so if we gain 2% hatchability, the machine already pays for itself. On the other hand, if we loose 2% hatchability, we have to get the machine almost for free, otherwise its too expensive! And its even worse for feed conversion. With an increase of 1.5 point of feed conversion for that machine, we already have to get if for free.

If we calculate pay-back times, a machine of 40.000 euro that gives us 5 points better feed conversion pays itself almost back in two years.

Hatchability or broiler results

In this example, only feed conversion and hatchability is used. Normally we see that if hatchability is bad, also chick quality and with it broiler performance is affected, in growth, mortality and feed conversion, and perhaps even in meat yield. It shows that especially broiler performance should be leading in this, but luckily enough they often go together.

Of course this article says nothing about good and bad machines and it makes a rough estimation on technical performance, but it shows that a bad machine can be very costly. If the results are even a little bit below optimum, the price of a machine hardly matters anymore. If the results are a bit more below optimum, you have to get rid of it as soon as possible, regardless of the price of new ones, because otherwise incubation becomes a very expensive hobby.