

E-coli is an opportunist

By Ron Meijerhof

E-coli can be a major problem in day old chick production. If a serious e-coli infection occurs, the hatchability might not be that much influenced, but 3-4 days after placement the broiler farmer will see an increase in mortality, sometimes resulting in very high losses.

We know from experience that a high bacterial level coming with the eggs is a big risk in broiler production. Although good disinfection and sanitation of the eggs will help to reduce the problem, incubating second quality eggs like floor eggs and dirty nest eggs results in a high level of bacterial contamination and resulting problems with growth and mortality, as well as in more problems with absorption of the residual yolk.

But the cause for e-coli problems in the field is not always that clear. When we set dirty eggs or we have a problem with the hygiene in the machines or the hatchery we know we can expect problems, but sometimes serious e-coli problems also occur without a real clear cause.

E-coli will always be in our operation, no matter how well we clean the hatchery and machines, and no matter how clean the eggs are that we set. This is logical, as e-coli is a common bacteria that is present everywhere, also at low levels in our intestines and in the gut of the birds. But as long as we keep the e-coli on a relative low level, healthy chicks that didn't experience high levels of stress during the hatching process can deal with it. But sometimes we create conditions where the e-coli bacteria can grow more than we expect. This is especially the case if the ventilation in our hatchers is not optimal. E-coli is a type of bacteria that can grow well in poor air quality with high levels of carbon dioxide. As other bacteria have more problems with these difficult circumstances, the balance easily becomes shifted in favor of the e-coli. They will grow at the cost of the other bacteria, and as a result a high level of e-coli will occur, infecting the newly hatched chicks. As these chicks by themselves are stressed by the poor air quality, their resistance and strength will be low, and the infection will be a fact. As it takes the e-coli 4-5 days to grow enough in the chick to create a serious problem, we typically see the mortality in the field occurring 3-4 days after placement.

But not only poor air quality in the hatchery or a too limited ventilation can cause these problems. In most hatchers, the fresh air is distributed through the machine by the running of the fans. The fans are moving the air through the machines, and as a result there is not only movement of air around the hatcher baskets, but also an exchange of air through the inlet and outlet. However, if there is a negative pressure on the outlet side of the machine, air will be "sucked" out of the machine, and will not be "pushed" out by the fans. As air takes the way of the least resistance, this means that the air will make a shortcut from the inlet of the machine towards the outlet, and will not circulate adequately through the machine and refresh the air in all baskets in the way we expect it to happen. Creating a negative pressure on the outlet side of the machine and therefore "pulling" the air through the machine will force the air to take a shortcut, and as a result in some area's of the machine the chicks have to deal with very poor air quality and a limited air exchange. This will stress the birds, and as a result the e-coli bacteria can flourish and take over the natural healthy bacterial balance in the bird, resulting in an increased mortality due to navel-yolk sac infection 3-4 days after placement. And although the usual reaction will then be to look for problems in egg hygiene, hatchery hygiene, problems with disinfection, condensation of the eggs etc, this is not always the

reason for the problems. If there are no obvious problems to detect with bacterial contamination in the process, it is worthwhile to check the ventilation in the machines.