Petersime's Poultry Performance Conference satisfies global audience

Petersime recently held their 2015 Poultry Performance Conference in Belgium and attendees came from all around the world. This article reports on several of the presentations and, in so doing, highlights the key take home messages.

First to speak was Prof Eddy Decuypere from the Katholieke Universiteit of Leuven in Belgium who spoke on 'Basic Principles of Incubation'.

He highlighted the following on incubation temperature manipulation:

- An increase or decrease of temperature during the first eight days of incubation may increase the incidence of tibial dyschondroplasia in broilers.
- Increasing incubation temperature to 39.5°C for 12 hours per day from day seven to 16 may increase the thermotolerance due to better vasomotor control later in life.
- Increasing temperature for 12 hours per day from day five to 12 of incubation may increase angiogenesis.
- Increasing incubation temperature between days 12 and 18 to 39.5°C influences myoblast proliferation and later affects muscle growth by hypertrophy.
- Thermal conditioning on the third day post hatch changes the thermoregulatory capacity in the later life of broilers.

When it comes to weight loss Prof Decuypere believes that:

- Weight loss must be controlled by managing air humidity.
- Within a batch of eggs there is considerable variation in egg shell porosity and, therefore, conductance.
- Egg shell porosity increases with breeder flock age.

Overall, and having discussed the various parameters that impact on successful incubation, Prof Decuypere concluded that:

- The increased size of incubators has increased the variability of conditions so that the tolerance zone within which measured variables may fluctuate without adverse effects has become more important.
- The physical variables which impact on incubation have optimum value that might well vary with the stage of embryonic development. New sensor developments will allow finer tuning and these variables should be regulated independently of each other.
- Incubation conditions should focus on chick quality as well as maximising hatchability and the optimisation of these conditions should be realised as a function of the starting material (the incubating egg) and the goal to be reached (hatchability and chick quality).

Egg condition	Total bacteria per egg	Coliforms per egg	Two week mortality (%)
Nest clean	600	123	0.9
Slightly soiled	20,000	904	2.3
Dirty	60,000	1,307	4.1

Table 1. Egg contamination and resulting broiler chick mortality.

Hatchery hygiene

Luc Ledoux from CID Lines then considered hatchery hygiene. This should focus on minimising micro-organism numbers, minimising cross contaminating clean areas from dirty areas, minimising cross contamination between batches of chicks and eggs and minimising the bacterial flora in the hatchery. Luc considered breeder farm hygiene as an important contributor to hatchery hygiene and stressed the importance of:

- The hygiene of nest boxes and belts.
- Clean water lines and sanitised water.
- Regular egg collections.
- Cleaning/disinfection of hands.
- Clean egg trays.
- A clean and disinfected egg storage room.
- Egg storage at 17°C.
- Clean and disinfected trucks.

He cited some interesting work by Joe Mauldin from the USA (Table 1).

After considering all the bacterial types associated with hatchery problems, Luc went on to consider what happens when hatchery sanitation declines. This includes an increased level of respiratory diseases, increased navel and yolk sac infections, bacterial conjunctivitis, high mortalities if the vaccine becomes contaminated and elevated first five days' mortality. Before concluding with a look at cleaning and sanitation programmes, Luc identified places that are often poorly cleaned and sanitised. These include windows, egg lifter heads, rails of sliding doors, transfer machines, sensor mountings, rubber strips on hatcher doors, plenum extraction fans, ducts, brushes, underneath belts and basket destackers.

Nan-Dirk Mulder from Rabobank then reflected on the global scene including the impact of recent avian influenza outbreaks, the impact of on-going low feed costs, the decline of wet markets in China, volatile exchange rates and how at a global level the industry needs to be heard.

Jason Cormick from Petersime highlighted

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Table 2. The balance at transfer between speed and number of operators.

Daily egg production	Line speed (k eggs per hour)	Time (hours)		Minimum number of staff required	Working hours	
		Production	Cleaning		Daily	Weekly
301,205	40	7.53	1	3	24	94
301,205	60	5.02	2	2	12	48
301,205	90	3.35	2	2	9	35

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some very basic issues that tend to be overlooked such as:

- Mating ratios.
- Not using cloths or wire wool.
- You can not fumigate dirt.
- Washing eggs is dangerous.
- If nest boxes are unserviceable hens lay on the floor.
- Minimise age difference of flocks supplying chicks into a house.
- Reduce egg temperature quickly.
- Avoid fluctuating temperatures during egg storage.
- Assuming (rather than checking).
- In egg storage, measure egg not wall temperature.
- Keep sensors away from humidity or temperature sources.
- Insulate cold water pipes to prevent condensation.
- Be aware of what is happening on your egg supply farms.

Roger Banwell, also from Petersime, then went on to consider SPIDES and showed various trial and field results which all demonstrated benefits from the heat treatment of eggs in storage in terms of improved hatchability.

Vincent Fevrier from ID Projects addressed the subject of hatchery automation and kicked off with the thought-provoking comment that a third of new hatcheries take six months to become efficient. When it comes to transfer he looked at three options of increasing automation (see Table 2) which, he claims, justify the case for automation. For candling he highlighted the following advantages:

- Automation at take off.
- Better hygiene of the hatchers.
- Improved waste management (clears not in hatcher waste).
- Improved hatchability and chick quality.
- Availability of additional data.

In ovo vaccination is not for everyone and Vincent's reasoning behind this statement is summarised in Table 3. ■

- Do you need vaccination?
- Is there a vaccine registered for in ovo use in your country?
- Do you get an acceptable return on Investment?

Associated risks

- Contamination reduces hatchability and causes problems in chicks. This can arise from poor needle sanitation, vaccine contamination at make up or in the hatchers.
- Substandard vaccination can reduce the number of chicks protected, as a consequence of using a deteriorated vaccine or from a machine problem.

Be ready for it!

- Follow recommendations of pre-installation survey.
- Need to have a dedicated operator who is capable of undertaking QC checks, understands the risks associated with the process and can solve problems with the machine.
- You need a purpose built vaccine preparation room.
- You need to be able to monitor hatches and undertake hatch breakouts

Return on investment calculation. Take into account:

- Cost of machine • Savings re staff and organisation
- Impact on line speed • Doses lost in eggs which do not hatch
- Potential decreased hatches in young and old flocks • Cost of cleaning chemicals

Table 3. In ovo vaccination – issues to consider.