Influence of chick transportation on performance

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he impact that the transport of chicks from the hatchery to the farm has on chick performance is often underestimated. Only when transportation times are extremely long are transport conditions critical, for example when breeding stock is transported to other countries.

There is not a lot of scientific information available about the influence of transportation on chick performance and animal welfare. One should provide optimal conditions during transportation, but what are optimal conditions? To answer that question we should first define what we want to achieve during transportation.

Temperature

The most important aspect to control during chick transportation is chick temperature. If mortality during transportation occurs, it is normally caused by excessive body temperatures. Our goal should be to keep the body temperature of all birds at approximately 40°C (104°F). At this body temperature, birds seem to be most comfortable. If their body temperature is increased, they will try to lose more heat by spreading out wings and feathers. If that is not possible or not sufficient, they start to evaporate water by panting.

If the environmental temperature is too low, they will try to save heat by huddling. If that is not effective, their body temperature will quickly drop and their metabolism will be impaired.

Dehydration

When a day old chick is comfortable, it will breathe through its nostrils and lose moisture. This moisture loss is limited to approximately I-2g per 24 hours. While this does not seem like a lot, 2g is still 5% for a 40g chicken.

This means that the bird could experience some dehydration during extended transportation.



The HatchTraveller from One-O-Four.

However, digestion of the yolk also produces metabolic water. This water is enough to keep the birds in balance. So, although they do lose some moisture and with it body weight, they do not dehydrate. They lose weight, but their water balance remains neutral.

When the birds

are overheated, the situation changes. The most effective way of losing excessive heat is panting. This means they evapo-



rate water for cooling

by increasing their respiration. The moisture loss through panting can easily increase to 5-10g per 24 hours. This causes significant reduction in body weight and serious dehydration.

If we compare the moisture loss with their body weight of approximately 40g, they lose as much as 10-15%, or even 25%, of their body weight in 24 hours. Even if this happens for only a few hours, it will have an influence on the birds.

Increasing the relative humidity during transportation will decrease the moisture loss of the chicks when they are overheated. However, by making it more difficult to

release the moisture, we make it more difficult for the birds to use

> panting as a cooling mechanism. We stop the dehydration by preventing the birds from

> > cooling

themselves.

This is okay if the birds are not overheated, but we take away the escape mechanism for the bird in situations where we do not control the climate properly.

When the birds are at a comfortable temperature and breathe through their nostrils, the effect of relative humidity is much less than at elevated temperatures. If the bird is not losing a lot of moisture anyway, a lower relative humidity will increase the moisture loss only marginally.

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So, when we are able to control the temperature and avoid overheating of the chicks, having a high relative humidity becomes less important.

Ventilation

During transportation, ventilation is needed to remove carbon dioxide and bring in oxygen. When trucks are not equipped with sufficient cooling capacity, ventilation is also used to remove heat.

The amount of air needed for oxygen and carbon dioxide exchange is relatively small.

For 1,000 day old chicks a ventilation rate of approximately 10-15m³ per hour is enough to keep oxygen and carbon dioxide under control. If ventilation is needed for cooling, this level can multiply very rapidly.

If the heat is removed from the truck by ventilation, we decrease the relative humidity because we replace warm, humid air coming from the birds by relatively cold and dry air. If we want to humidify the air by means of a sprayer, the risk of local cooling exists. Water from the sprayer will take energy from the chicks in the neighbourhood to evaporate.

The more we ventilate, the more we need to spray to maintain the humidity, which causes non-uniform temperature distribution. Therefore, sufficient cooling capacity is needed during transportation, especially if we want to transport large numbers of birds.

Transportation feed

Day old chicks have several grams of yolk residue that serves as feed for approximately 4-5 days. Digesting of the yolk provides the birds with energy but also with metabolic water.

For extended transportation times (longer than 24 hours) a few grams of additional feed is often provided in the transport boxes. This helps the birds to start the function of their digestive tract and arrive at the farm in an active condition.

It is important that in this feed there is a certain percentage of water, as otherwise the birds can not digest it and most probably will not eat it.

Indicators

One of the best indicators for adequate transportation is the level of noise that chicks make. If chicks are comfortable during transportation, they make very little noise. In the One-O-Four HatchTraveller chicks lie down and only become active when doors are opened or lights switched on. Noise and movement indicates that there is stress for the birds and is a reflection of non-optimal conditions. Weight loss is a good indicator of stress conditions. It reflects how much panting the birds had to do to control their body temperature.

Weighing a number of boxes before and after transport can be very informative, especially during long transportation times.

When weight loss is substantially more than 2g per bird per 24 hours, the transportation conditions should be evaluated.

Conclusions

After chicks are hatched, they need to be transported to the (production) houses. Good transport conditions are essential to deliver the best quality chicks.

As chicks can not regulate their own temperature during the first days of their life, perfect climate control during transport is the key factor for delivering non-stressed chicks.

If the body temperature during transport is controlled at 104°F, chicks use their energy in a more efficient way, preserving the optimum chick quality.

The HatchTraveller ensures an optimal start for the broiler chicks. It is equipped with an unique climate control that provides the optimal brooding environment for chicks in transport.