

Chick transportation

The transfer of chicks from the hatchery to the production farm is an process that normally doesn't get a lot of attention. Only when transportation times are extended, for instance when breeding stock is transported to other countries, transportation conditions are considered to be more critical.

Although there is not a lot of scientific information available about the influence of transportation on chick performance, both from an animal welfare and from a chick quality point of view we should strive for optimal conditions during transportation.

But what are optimal conditions? To answer that question we should first of all define what we want to achieve during transportation.

Temperature

Probably the most important aspect to control during chick transportation is temperature. If mortality during transportation occurs, it normally will be caused by excessive temperatures. Our goal should be to keep all birds on a body temperature of approximately 40°C (104°F). At this body temperature, birds seem to be most comfortable. If their body temperature is increased, they first of all will try to lose more heat by spreading out wings and feathers, but if that is not possible or not sufficient, they start to evaporate water by panting. If the temperature is too low, they will try to save heat by huddling, but if that is not effective enough 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 with it lose some moisture. This amount of moisture loss is limited to approximately 1-2 grams per 24 hours. That doesn't seem a lot, but of course 2 grams for a 40 gram chicken is still 5%, which means that the bird could experience some dehydration. However, digestion of the yolk also produces metabolic water, and 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. This becomes different when the birds are overheated. There most effective way of losing more heat is panting, which means they evaporate water for cooling by increased respiration. The moisture loss through panting can easily increase to 5 or sometimes even 10 grams per 24 hours, resulting in a significant reduction in body weight and serious dehydration. 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 also make it more difficult for the birds to use panting as a cooling mechanism. When the birds are at a comfortable temperature, the effect of relative humidity on moisture loss and therefore dehydration will be much less, as the birds will not lose a lot of moisture anyway.

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. This accelerates dehydration, as the increased temperature causes the birds to pant as well as the truck to bring in more cold and dry air.

Ventilation

During transportation, ventilation is needed to remove carbon dioxide and bring in oxygen. What we often see is that ventilation is also used to remove the heat from the birds. As said before, this means that in this situation panting birds will dehydrate more easily.

The amount of air needed for oxygen and carbon dioxide exchange is relatively limited. For 1000 day old chicks a ventilation rate of approximately 10-15 m³ per hour is enough to keep

oxygen and carbon dioxide under control. If ventilation is needed for cooling, this level can multiply very rapidly.

Transportation feed

Day old chicks have several grams of yolk residue, that serves as feed for approximately 4-5 days. Digesting of the this yolk provides the birds with energy but also with metabolic water. For extended transportation times (longer than 24 hours) often a few grams of additional feed is provided in the transport boxes. This helps the birds to already start the function of their digestive tract and arrive at the farm in an active condition. It's important that in this feed there is a certain percentage of water, as otherwise the birds cant digest it and most probably will not eat it.

Indicators for good chick transportation

One of the best indicators for adequate transportation is the level of noise that chicks make. If chicks are comfortable during transportation, they hardly make any noise. They lie down and only become active when doors are opened, lights switched on etc. Noise and movement often indicates that there is some stress for the birds, which is a reflection of non-optimal conditions.

Also weight loss is a good indicator, as it reflects how much panting the birds had to do to control their body temperature. Especially during long transportation times weighing a number of boxes before and after transport can be very informative. When weight loss is substantially more than 2 grams per bird per 24 hours, the transportation conditions should be reconsidered.

To conclude.

Although a direct relation between transportation conditions and technical performance of birds is difficult to give, optimal transportation is essential for animal welfare and chick quality. Especially the control of body temperature during transportation will lead to less transportation stress, less mortality and a better performance.