

EVALUATION OF THERMAL TRANSPORT OF DAY-OLD CHICKS

AValiação Térmica do Transporte de Pintos de Um Dia

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The combining factors during initial handling might affect the broiler growth during the last week. Other factors might be considered, such as: fasting time, distance between hatchery and farm, vibration level, road quality, travel time, type of boxes and controlling environment inside the lorry. The aim of this work was to assess the thermal profile of truck with different levels of box placement during day-old chickens transport. An experiment was conducted through monitoring of 11 transport loads, with maximum capacity of 630 day-old chickens boxes, totalizing 63,000 animals. The day-old chicken transport truck (approximately 8 × 2.50 m, 2.50 m high) was environmentally controlled, with three box stacks (left, right and center) spaced 0.7 m. Air temperature, wind speed and humidity were controlled by sensors and electronic panel located in the truck cab. The set points for thermal conditions were: temperature between 23 and 25°C and relative humidity between 60 and 70%. To characterize the environmental condition during transport, the following thermal variables were used: dry-bulb temperature, relative humidity and specific enthalpy, through data loggers (Onset, HOBO) programmed to record data at 10 minute intervals. Data was registered in two levels of the load (first rack and floor) where 17 data loggers were distributed throughout the truck. The experiment used a completely randomized design. Differences ($P < 0.05$) between the levels of box placement (first rack and floor) was observed for temperature (Table 1). Highest values of mean temperature were found on the floor (around 33°C). No interactions were observed specifically between box placement and average values of relative humidity and specific enthalpy ($P > 0.05$). Based on thermal variables (Table 1), the box positioning (floor and first rack) were recommended by the literature, which reports that broiler chicks during the first week should be under the condition of temperature in the range of 32 to 35°C. The microclimatic conditions of the environmentally controlled truck of day-old chickens were out of recommended values, which confirm a heterogeneous distribution of heat and moisture in environment. Regarding the box positioning, the mean values of thermal variables associated with thermal comfort of day-old chickens was found in the floor area. The most stressful environment for birds inside the truck was located in front and center of the truck.

Table 1. Average values of variables: temperature (T), relative humidity (RH) and specific enthalpy (h) compared to the levels of box positioning of day-old chick transport

Levels of chick box positioning	T (°C)	RH (%)	H (kJ/kg dry air)
First shelf	31.5 b	51.5 a	68.0 a
Floor	33.0 a	49.0 a	70.5 a
Test F	8.41*	0.69nm	2.46nm

In the same column, averages followed by the same letter do not differ among themselves to the probability level of 0.05 using Test F. NM: ns: non-significant, *: significant ($P < 0.05$).

Keywords: live load, poultry production, thermal comfort.

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