

THE NEGATIVE EFFECTS OF MECHANICAL VIBRATIONS ON TRANSPORT OF FERTILE EGGS

OS EFEITOS NEGATIVOS DAS VIBRAÇÕES MECÂNICAS NO TRANPORTE DE OVOS FERTILIZADOS

ANA CAROLINA DONOFRE¹, IRAN JOSÉ OLIVEIRA DA SILVA¹, AÉERICA CIRQUEIRA NAZARENO¹, IURI EMMANUEL DE PAULA FERREIRA²

¹Universidade de São Paulo (USP), Escola Superior de Agricultura “Luiz de Queiroz”, Núcleo de Pesquisa em Ambiente, Departamento de Engenharia de Biosistemas, Piracicaba, SP, Brazil.

²Universidade de São Paulo (USP), Escola Superior de Agricultura “Luiz de Queiroz”, Departamento de Ciências Exatas, Piracicaba, SP, Brazil.

*e-mail: acdonofre@usp.br

Mechanical vibrations resulted from transportation are mentioned to be a high hazardous issue of integrity and physiology found in biological systems. Fertile eggs that are transported from broiler farm to hatcheries are susceptible to harmful results, and it is still unknown all the possible effects in embryo development. Thus, the goal of this study was to evaluate the loss during hatching and in the quality of broiler chicks, after fertile eggs were exposed to simulated mechanical vibrations in different conditions. The experiment was developed in a commercial hatchery in Mogi-Mirim, São Paulo. Altogether, 1920 fertile eggs from Cobb-500 (31 to 34 weeks) were used. These eggs were exposed to vibrations during the transport in a mechanical simulator (Figure 1a). The assay was performed in a random modeling in blocks arranged in a factorial $2 \times 2 + 1$ with an additional treatment. The analyzed factors were determined by two vibration levels (lower with RSS 2.5 m/s^2 and higher with RSS 7.5 m/s^2), associated with two periods of exposition time (60 and 180 minutes). For the results, the answers from birth were analyzed using the hatching rate. The quality of broiler chicks obtained by the amount of first line chicks; and the total loss in the hatchery found in the summation of previous answers. Analyzes were done using a modeling of logistical regression, the effects of significance obtained by the Wald test and all procedures were performed using the statistical program R. The results showed that fertile eggs exposed to mechanical vibrations can increase birth loss and decrease the amount of first line chicks (Figures 1b and 1c). The treatment submitted higher vibration level (RSS 7.5 m/s^2) applied to longer time intervals (180 minutes) was different from the control in almost answers. Using the Wald test at significance of 5%, it was verified that the chance of having a hatched egg vibrated in the strongest treatment (RSS 7.5 m/s^2 and 180 minutes) was only 47% if in comparison to the control group. In terms of bird quality, it was verified a reduction in the amount of first line chicks in all treatments exposed to superior level vibration. Consequently, the total losses of the higher vibration treatments were 10% higher than the control, statistically different with the Wald test at the 5% significance level. Hence, it is possible to conclude that vibrations are capable of compromise incubation, resulting in huge financial loss for hatchery, if similar conditions happen to be the way they were simulated on this study.

Keywords: hatchability, poultry, road transport.