



## Effects of cold embryo acclimation for improving adaptive capacities in meat-type chicken

Dzidzo Nyuiadzi, Bertrand Méda, Léonie Dusart, Cécile Berri, Angélique Travel, Laurence L.A. Guilloteau, Vincent Coustham, Yufeng Wang, Isabelle Bouvarel, Jacob Kokou Tona, et al.

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# SYMPOSIUM



## POULTRY PRODUCTION UNDER HOT AND HUMID CLIMATE CONDITIONS

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PROGRAM  
AND  
SUMMARIES OF THE  
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before laying started. The trials will continue to know the adaptability of these strains in real environment with breeders.

**Key Words:** Growth / reproduction, ISA-Brown, Sasso, family poultry.

## R2- EFFECTS OF COLD EMBRYO ACCLIMATION FOR IMPROVING ADAPTIVE CAPACITIES IN MEAT-TYPE CHICKEN

Nyuiadzi Dzidzo<sup>1,2</sup>, Méda Bertrand<sup>1</sup>, Dusart Léonie<sup>3</sup>, Berri Cécile<sup>1</sup>, Travel Angélique<sup>3</sup>, Guilloteau Laurence A.<sup>1</sup>, Coustham Vincent<sup>1</sup>, Wang Yufeng<sup>4,5</sup>, Bouvarel Isabelle<sup>3</sup>, Tona Jacob K.<sup>2</sup>, Collin Anne<sup>1</sup>

<sup>1</sup>URA, INRA, F-37380, Nouzilly, France

<sup>2</sup>CERSA, Université de Lomé, B.P. 1515, Lomé, Togo

<sup>3</sup>Institut Technique de l'Aviculture, F-37380, Nouzilly, France

<sup>4</sup>KU Leuven, Laboratory of Livestock Physiology, Department of Biosystems, Kasteelpark Arenberg 30, 3001 Leuven, Belgique

<sup>5</sup>NUTREX NV., Achterstehoek 5, 2275 Lille, Belgique

It is possible to improve poultry adaptability to variations in ambient temperature by changing egg incubation conditions. Our goal is to improve broiler adaptation to cold environment and achieve a multi-level evaluation of the cold incubation technique in different subsequent starting conditions.

In a first 21-day study in cages, we identified the experimental conditions favouring robustness and hatchability without reducing performance. The incubation conditions tested were a **Control Incubation (CI)** at constant temperature, incubation with two brief exposures to 15°C at the end of incubation (**Cold Incubation1, CI1**) or incubation with cyclic declines by 1°C from day 10 to 18 of incubation (**Cold Incubation2, CI2**). Chickens were then exposed to standard rearing conditions (**Control Rearing, CR**) or to day/night variations in room temperature (**Cold Rearing1, CR1**), or to continuously cooler ambient temperatures requiring adaptation (**Cold Rearing2, CR2**).

A second experiment crossing incubations **CI** and **CI1** and rearing conditions **CR** and **CR2** was then conducted in floor pens until 40 days of age. In our conditions, the "cold" incubation techniques did not penalize hatchability of eggs. In cages, in females only, the **CI2** incubation treatment degraded feed efficiency while **CI1** did not alter growth. Our experiments suggest positive effects of cold incubation and cold rearing on performance in males but show negative interactions between both thermal treatments on a parameter of animal welfare and on a meat quality defect. Postnatal cooler rearing could be interesting to limit environmental impact if litter moisture is well controlled through ventilation.

This multicriterion analysis will be completed to evaluate these perinatal techniques according to the three pillars of sustainability, including economic, social and environmental impacts.