



HAL
open science

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

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

► To cite this version:

Dzidzo Nyuiadzi, Bertrand Méda, Léonie Dusart, Cécile Berri, Angélique Travel, et al.. Effects of cold embryo acclimation for improving adaptive capacities in meat-type chicken. Symposium CERSA Poultry Production under ho and humid climate conditions, Jun 2017, Lome, Togo. hal-01604503

HAL Id: hal-01604503

<https://hal.science/hal-01604503v1>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - ShareAlike 4.0 International License



REPUBLIQUE TOGOLAISE
Travail-Liberté-Patrie



UNIVERSITE DE LOME

CENTRE D'EXCELLENCE REGIONAL
SUR LES SCIENCES AVIAIRES

SYMPOSIUM



POULTRY PRODUCTION UNDER HOT
AND HUMID CLIMATE CONDITIONS

LOME FROM 12TH TO 16TH JUNE 2017

PROGRAM
AND
SUMMARIES OF THE
COMMUNICATIONS

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^{1,2}, Méda Bertrand¹, Dusart Léonie³, Berri Cécile¹, Travel Angélique³, Guilloteau Laurence A.¹, Coustham Vincent¹, Wang Yufeng^{4,5}, Bouvarel Isabelle³, **Tona Jacob K.**², **Collin Anne**¹

¹URA, INRA, F-37380, Nouzilly, France

²CERSA, Université de Lomé, B.P. 1515, Lomé, Togo

³Institut Technique de l'Aviculture, F-37380, Nouzilly, France

⁴KU Leuven, Laboratory of Livestock Physiology, Department of Biosystems, Kasteelpark Arenberg 30, 3001 Leuven, Belgique

⁵NUTREX NV., Achterstenhoek 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.