



**HAL**  
open science

## Combined strategies for adapting poultry production to climate change

Anne Collin, Vincent Coustham, Jacob Kokou Tona, Sophie Tesseraud, Sandrine Mignon-Grasteau, Sandrine Lagarrigue, Frédérique Pitel, Tatiana Zerjal

### ► To cite this version:

Anne Collin, Vincent Coustham, Jacob Kokou Tona, Sophie Tesseraud, Sandrine Mignon-Grasteau, et al.. Combined strategies for adapting poultry production to climate change. 26. World's Poultry Congress (WPC), WPSA, Aug 2022, Paris, France. pp.122-146. hal-04129464

**HAL Id: hal-04129464**

**<https://hal.inrae.fr/hal-04129464>**

Submitted on 15 Jun 2023

**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.



**Proceedings  
of Invited Lectures**

The French branch of WPSA is waiting for you

More informations at:  
**WPCPARIS2022.COM**



## Adapting poultry production to climate change

Combined strategies for adapting poultry production to climate change (A. Collin)

Anne COLLIN

**Authors:** A. Collin (1), V. Coustham (2), J.K. Tona (3), S. Tesseraud (1), S. Mignon-Grasteau (1), S. Lagarrigue (4), F. Pitel (5) and T. Zerjal (6)

(1) INRAE, Université de Tours, BOA, 37380 Nouzilly, France

(2) INRAE, Université de Pau & Pays de l'Adour, NuMeA, E2S UPPA, Aquapôle, 64310 Saint-Pée-sur-Nivelle, France.

(3) Centre d'Excellence Régional sur les Sciences Aviaires (CERSA), Université de Lomé, B.P. 1515, Lomé, Togo

(4) PEGASE, INRAE, INSTITUT AGRO, 35590 Saint-Gilles, France

(5) INRAE, INPT, ENVIT, Université de Toulouse, GenPhySE, 31326 Castanet-Tolosan, France

(6) INRAE, AgroParisTech, Université Paris-Saclay, GABI, 78350 Jouy-en-Josas, France

**Corresponding author:** [Anne.Collin@inrae.fr](mailto:Anne.Collin@inrae.fr)

**Abbreviated title:** Poultry production under climate change

### Summary

Poultry meat and eggs are the primary sources of animal protein for human food across the world and their production has increased rapidly in the past decades. However, the poultry production chains, as other livestock sectors, are vulnerable to climate change, particularly to the global warming and its direct and indirect consequences. To face the consequences of climate change, it is necessary to build-up adaptive strategies at the animal level, to increase resilience by improving bird genetics (inclusion of indicators for general resilience to environmental disturbances in breeding goals), physiology (thermoregulation, efficiency for meat and egg production) and health. It also requires finding solutions at the system production level to understand the shifts in the geographic ranges of diseases related to climate change and to introduce mitigation practices to reduce energy consumption and greenhouse gases emissions. These strategies have to take into account the growing social demand for ethical animal

productions in the One Health and One Welfare perspectives and to limit the competition between human and animals for food under climate change.

In this context, interdisciplinary research is needed. Projects focusing on genetics, technical methods (such as early thermal programming), engineering solutions, innovative nutrition and breeding strategies are being developed. They aim to improve poultry thermoregulatory abilities, housing facilities, the design of outdoor areas, and address the issue of water availability, feed efficiency, the use of suboptimal feed resources and by-products or newly available feedstuffs (insects, etc.). Some strategies favour circular economy and species associations for improving the feeding system efficiency, limiting parasite expansion, and decreasing the nutritional dependency to soya thus restricting the adverse effects of its production on deforestation and biodiversity. The present review provides some examples of levers of improvement and adaptive strategies to make poultry production systems more resilient in the context of climate change.

**Keywords:** heat tolerance, nutrition, genetics, epigenetics, sustainability, circular economy, biodiversity, One Welfare