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TO THE CONSEQUENCES OF CLIMATE CHANGE



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## Evaluation of new incubation strategies to increase the sustainability of broiler production in the context of climate change

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### Abstract

In the past decades the genetic selection of fast-growing broilers has resulted in large improvements of growth and feed efficiency. However, this progress led to an increased sensitivity of broilers to their environment. Average global temperature is expected to increase with higher variability and higher environmental impacts. Thus, the challenge is to develop and evaluate new strategies and technologies to improve broiler robustness without reducing flock performances. Thermal manipulations during specific phases of embryonic development may be efficient to acclimate embryos to cooler or warmer temperatures. These strategies could improve the thermotolerance of broilers, in particular when they experience cold or heat stress in their early life or close to slaughter age. Cold acclimation may confer to chicks the robustness to cope with cool temperatures, while reducing energy use for heating. In the same way, heat acclimation of broilers could limit the mortality when ambient temperatures are higher. Therefore, production costs and greenhouse gas emissions from broiler production could be reduced and animal welfare improved. In that context, a large panel of indicators was chosen to evaluate the sustainability of these techniques according to its three pillars (environmental, social and economic). Results should provide an evaluation of these strategies as a tool to limit the negative impacts of different climatic environments on broiler performances. This approach combining experimental data and multicriteria analysis will be evaluated both in France with temperate climate and in Togo where average temperatures, relative humidity and sanitary pressure are higher.

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