

# DAIRY 4.0: INNOVATIVE DIGITAL TECHNOLOGIES IN DAIRY CATTLE AS PATHWAY TO IMPROVED PRODUCTIVITY IN THE CONTEXT OF CLIMATE CHANGE

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## **Abstract**

*Climate change is one of the significant challenges that dairy farmers confront, leading to adverse effects on milk production, animal well-being, and economic revenues of a dairy farm. The rising global temperatures call for designing new approaches for mitigating consequences of heat stress. Emerging technologies within the sector's digital revolution provides solution strategies for the animal husbandry business, including the dairy farming through real-time monitoring, predictive analytics, and adaptive management strategies in order to enhance productivity, sustainability, and resilience in farms. This paper explores the applications, benefits, challenges, and potential of innovative digital technologies including precision livestock farming (PLF), Internet of Things (IoT) sensors, artificial intelligence (AI), big data analytics, and blockchain, in transforming modern dairy farming and mitigating heat stress.*

**Key words:** *Dairy 4.0, digital technologies, dairy cattle, climate change, precision livestock farming, sustainability, productivity, IoT, artificial intelligence*