# FROM TRADITION TO TECHNOLOGY: HARNESSING PRECISION LIVESTOCK FARMING FOR ADVANCING RURAL ECONOMIES IN DEVELOPING COUNTRIES

**Gheorghe-Irimia Raluca-Aniela, <u>Tăpăloagă Dana</u>, Șonea Cosmin,
Ilie Lucian-Ionel, Tăpăloagă Paul-Rodian**
*University of Agronomic Sciences and Veterinary Medicine, Bucharest, Romania*
E-mail: drtapaloaga@yahoo.com

Rural economies in developing countries have long relied on traditional agricultural practices that, while steeped in tradition, often prove to be resource-intensive and less efficient. This inefficiency becomes particularly problematic as these regions grapple with the challenges of meeting the demands of a rapidly expanding global population. The urgency to find sustainable and efficient solutions for livestock farming in these areas cannot be overstated. Precision livestock farming (PLF) emerges as a revolutionary approach that holds the potential to redefine the livestock sector, utilizing modern technology to enhance animal management, health, and overall productivity. In essence, PLF is an innovative concept that draws from principles and technologies rooted in process engineering and information technology. Developing countries face a unique set of challenges, including the escalating demand for meat and dairy products as income levels rise and urbanization progresses. However, this heightened livestock production can exacerbate environmental issues, contributing to pollution and climate change. Precision livestock farming emerges as a viable strategy to efficiently utilize natural resources and mitigate environmental impacts by optimizing production systems and minimizing waste. Furthermore, the real-time data provided by PLF enables farmers to swiftly identify and address issues affecting animal welfare, thus raising standards in this regard. Additionally, PLF can optimize feed management, reducing costs and further mitigating environmental impacts. It is essential to acknowledge that as promising as PLF may be, it also comes with ethical considerations that demand careful attention. Animal welfare experts and policymakers have raised legitimate concerns about the potential risks and challenges associated with PLF technologies.

In conclusion, precision livestock farming presents a promising avenue for improving livestock management in developing countries. By harnessing the capabilities of sensors and data analysis, PLF equips farmers with the tools to make informed decisions, optimize production systems, and enhance animal welfare. Nevertheless, the ethical dimensions of PLF adoption and the need to ensure equitable access to technology remain essential considerations in the pursuit of sustainable and efficient livestock farming practices in developing nations.

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