Precision livestock farming and the natural environment

Summary

The benefits of Precision Livestock Farming (PLF) methods are identified not only with reference to production indicators and economic outcomes, but also in terms of their environmental impact. PLF makes it possible to reduce nutrient losses and gaseous emissions and to mitigate climate change. Equipped with RFID tags, GPS transmitters, accelerometers and biosensors, livestock animals receive individual supervision and care to optimize fulfilment of their needs and thus improve their health and welfare. This is often done without human intervention, as management is taken over by IoT technologies that process information from Big Data and automatically modify their decisions using artificial intelligence (AI). Minimized expenditures and optimized production environment conditions result in a reduction in by-products. By-products are also subject to a wide range of precision technologies for storage, processing (bioeconomy), and final management, usually application as soil fertilizer. PLF can achieve up to a 100% reduction in gas emissions when appropriate technologies are used at various stages of production. PLF solutions often entail high investment outlays but significantly lower operating costs, which limits unit production costs. Many low-emission methods actually improve the profitability of farming by eliminating nutrient losses from feed or from natural fertilizers.

KEY WORDS: digital technology, automation, livestock farming, natural environment, climate