Workshop on INTEGRATED FARM SYSTEMS

5 September 2025

The project is co-financed by the governments of Czechia, Hungary, Poland and Slovakia through Visegrad Grants from the International Visegrad Fund. The mission of the fund is to advance ideas for sustainable regional cooperation in Central Europe.

PROGRAMME – 5 September 2025 – UVMP in KOŠICE

8:40 – 9:00	Registration
9:00 – 9:15	Welcome and Introduction
9:15 – 10:15	"Use of software systems in the management of dairy cattle production farms", Ing. Miloš Martiška (Agromont Nitra s.r.o)
10:15 – 10:30	Coffee break
10:30 – 12:30	Excursion to a dairy farm with demonstration of the integrated farm system
13:00 – 14:00	Lunch
15:00	Arrival at UVMP

About the workshop

The Integrated Farm Systems workshop will present an innovative approach to managing cattle health through the use of artificial intelligence. It will focus on practical demonstrations of data collection and processing related to the occurrence of bacterial pathogens and their antimicrobial resistance in primary production. Participants will become familiar with an algorithmic module integrated into farm management systems, designed to improve diagnostics, enable targeted treatment, and reduce antibiotic consumption. The programme will include a lecture by an expert, a system presentation, and a field visit to a partner farm where the system will be demonstrated in practice. The workshop will provide a platform for expert discussion, exchange of experience among V4 partners, and support the implementation of sustainable solutions in cattle farming. The workshop is funded by the Visegrad Grant No. 22430046.

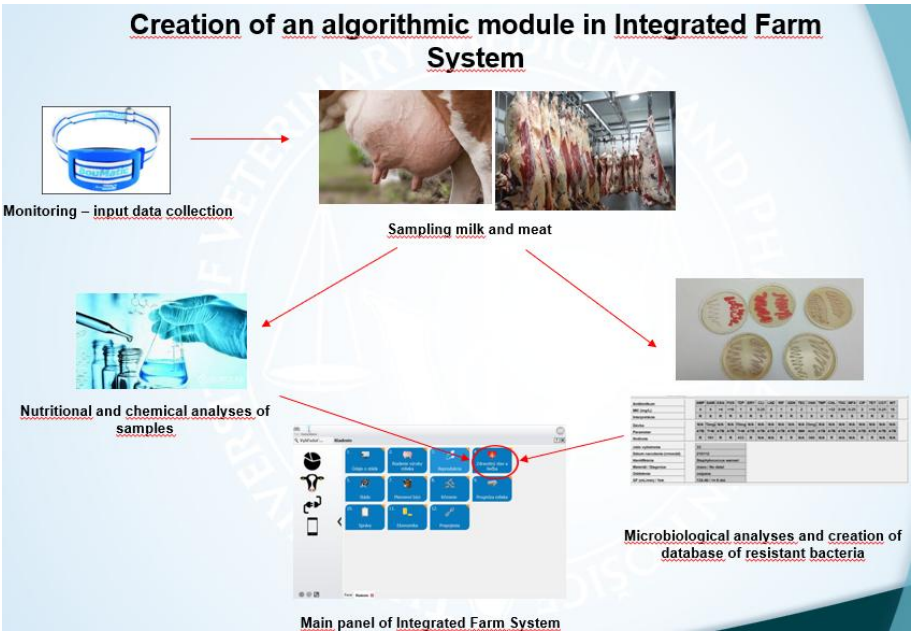
Project profile

Title	Control of antimicrobial resistance by the Integrated Farm System within "Farm to Fork" strategy
Project ID	Visegrad Grant No. 22430046
Implementation period	21/02/2025–20/08/2026
Coordinator	University of Veterinary Medicine and Pharmacy in Košice, Slovakia
Partner 1	Mendel University in Brno, Czech Republic
Partner 2	Warsaw University of Life Sciences, Poland

Workshop Objectives and Topics

In its "Farm to Fork" strategy, the European Union plans to reduce the consumption and sale of antibiotics for livestock by 50% by 2030, based on European Parliament resolution 2023/2703 of June 1, 2023. One of the solutions to reduce antibiotic consumption is the introduction of Integrated Farm Systems for control of antimicrobial resistance in primary production. In recent years, there has been an intensive introduction of artificial intelligence in all economic sectors with the aim of increasing the efficiency, quality and sustainability of production. Due to the diversity of animals and the enormous amount of data and parameters involved in an entire farm, monitoring the health status and productivity of dairy and beef cattle is extremely difficult. Even in this industry, however, it is possible to incorporate algorithmic models into breeding management. Technology suppliers are trying to integrate all processes into one system, which we call farm management. It mostly consists of a modular system that is used in the management of milking, feeding, automatic sorting of cows, health care, monitoring of movement, reproductive activity, rumination, animal weighing, etc. The system is designed in such a way that individual modules can be added gradually, according to the needs of the farm. The introduction of an algorithmic module aimed at collecting data on the occurrence of bacterial pathogens and antimicrobial resistance into farm systems will lead to better prediction and control of animal diseases and transmission of resistant pathogens.

The outputs and results of data processing on pathogens isolated from milk samples, meat swabs, the farm environment and primary production products, and the data about their antimicrobial resistance in the proposed integrated system will in practice function as signals for timely and targeted therapy of production animals.



The obtained information and clear data will help to improve animal health, production and milk quality, leading to positive development of the economy and reduced consumption of antibiotics.

Maintaining good health in animals raised for commercial milk and meat production is influenced by numerous external and internal factors. Herd management has proved to be a critical component on production farms that consistently achieve high yields. Beef and dairy producers must successfully manage several key factors, including nutrition, housing, reproduction, animal welfare, and milking. In addition to these core aspects, all production farms must also deal with challenges related to weather, logistics, transportation, and operational costs. The synchronization of these factors can be difficult, and their imbalance often leads to deteriorating health and welfare of production animals, ultimately resulting in reduced quality milk production. This, in turn, leads to increased costs—particularly related to the treatment of mastitis in dairy cows—and significant economic losses for producers.

Mastitis, an inflammation of the mammary gland, is among the most common, problematic, and economically burdensome diseases in dairy cattle worldwide. Its progression and consequences negatively impact both herd health and welfare, while also causing unwanted increases in expenses associated with veterinary treatment, changes in herd management, and a decline in milk quality. Primary milk producers are closely linked with other sectors of the food industry and dairy product manufacturers; thus, mastitis indirectly affects their profitability and economic performance as well.

In recent years, artificial intelligence (AI) has been increasingly integrated across all sectors of the economy. The goal of AI adoption is to enhance the efficiency, safety, and sustainability of economies worldwide. Beef and dairy producers are no exception—in fact, they are increasingly embracing these technologies. Innovations in digital and monitoring technologies, incorporating machine learning elements through AI, are introducing new trends in the monitoring of animal health, welfare, and milk production. These systems, capable of recording and analysing vast amounts of data, provide farmers with time- and cost-efficient tools that improve disease prediction and control, as well as ensure stable production outputs.

Based on these premises, the workshop focuses on dairy herd management through the analysis of milk performance parameters in relation to the occurrence of resistant pathogens, and their integration into an algorithmic module alongside standard diagnostic approaches and health monitoring systems. This module will be incorporated into farm management systems as a foundation for the subsequent production of safe and healthy food.

Integrated Farm System

Due to the diversity of animals and the huge amount of data and parameters of the entire farm, monitoring the health status and productivity of farm animals is extremely challenging. Artificial intelligence technology providers are trying to integrate all processes in agriculture into one system, which we call farm management. It mostly consists of a modular system that is used in the management of milking, feeding, automatic animal sorting, health care, movement monitoring, reproductive activity, rumination, animal weighing, etc. The system is designed so that individual modules can be supplemented gradually, according to the needs of the farm. By introducing an algorithmic module into these systems, aimed at collecting data on the occurrence of bacterial pathogens and their antimicrobial resistance in practice, which will be part of the breeding systems, it will contribute to more effective treatment and reduce the consumption of antibiotics, which will lead to a reduction of antimicrobial resistance also in primary products, such as milk and meat. According to the Commission Implementing Decision (2020/1729) and the European Parliament resolution (2023/2703), systematic monitoring of antimicrobial resistance in cattle is carried out every two years in the EU and V4 countries (the next deadline is 2025). It is the integrated breeding system that can help state control authorities of food supervision monitor this resistance in cattle.

Scientific goals of the project and workshop

The project includes measures for the diagnosis of pathogens from milk, meat, farm environment, and food chain with the detection of virulence factors, which are an important part of maintaining the health of the farm animals in terms of effective treatment and reducing the risk of resistant bacteria. The project and workshop tackle the current problems of management in dairy and beef cattle farms located in V4 regions and are focused on individual areas related to the diagnosis of pathogens, their elimination, the effectiveness of treatment and the use of antibiotics. By introducing an integrated farm system, breeders will get an immediate overview of the health status of beef and dairy cows, the effectiveness of treatment and hygiene measures, as well as the occurrence of resistant pathogens.







Mendel University in Brno