Dairy MONTHLY

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Progress with sporidesmin characterisation

It is now certain that the fungus responsible for sporidesmin toxicity (facial eczema) in affected areas, and probably in all of South African livestock, is *Pseudopithomyces toxicarius*. This fungus produces the liver toxin sporidesmin A. Until recently, the fungus has been misidentified, but through analyses of 152 fungal strains from international collections and the generation of over 900 DNA sequences, the correct identity and presence of *P. toxicarius* in the Eastern Cape ryegrass-dominated pastures has been confirmed.

Concerns that the fungus might have been introduced via imported ryegrass seed were addressed by screening both local and imported seed samples from New Zealand and the Netherlands – and have since been ruled out.

Fieldwork across five dairy farms in the Humansdorp region between May 2023 and April 2024 showed the year-round presence of *P. toxicarius*, with spore concentrations peaking in summer. The fungus is most prevalent in perennial ryegrass pastures, especially in areas exposed to western and northern winds. Phylogenetic analysis further confirmed that all isolates belong to *P. toxicarius*.

Genetic studies revealed both vegetative and sexual mating types among the strains, indicating potential for sexual reproduction. Eastern Cape isolates are now being screened to confirm toxin gene presence. Isolates lacking the gene cluster may be selected for whole genome sequencing to better understand and detect potential non-toxigenic variants.

Additionally, genome sequencing of two South African *P. toxicarius* strains has been performed and compared with the New Zealand reference genomes. The gene editing work has been initiated to characterise the sporidesmin biosynthesis pathway.

This is a Milk SA project, executed by the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria. This report is a summary by Dr Heinz Meissner and the full article is available at *www.research.milksa.co.za/dairy-rd-in-south-africa/*

Profile of the international primary dairy sector

There are 10,1 million dairy farms worldwide, with over 63% of these in South Asia. Assuming an average household size of five, an estimated 505 million people live on dairy farms. Globally, the average dairy producer milks three cows, though significantly larger herd sizes are found in countries such as Saudi Arabia, South Africa, and New Zealand.

In South Africa, the average herd size in 2023 was 574. Following a peak of 125 million in 2013, the global number of dairy farms have since been declining at an average annual rate of 3% per year.

In 2023, 60% of all dairy animals were kept on household farms, 21% on family farms, and 19% on larger commercial farms. Household farms dominate in South Asia and Africa, while family farms are more common in Latin America, East Asia, and the European Union. Larger commercial farms are the primary model in Oceania, South Africa, and the United States.

This information from the International Farm Comparison Network (IFCN) appears in *Lacto Data*, a Milk SA publication at *www.milksa.co.za/lacto-data*

Milk SA establishes FMD work group

Due to the escalation of foot-and-mouth disease (FMD) in the past few months, Milk SA has established a FMD Work Group with a purpose to develop short-, medium- and long-term action plans, including protocols, to prevent and control FMD outbreaks in South Africa.

The work group will liaise and collaborate with all relevant institutions and individuals, including government, Onderstepoort Biological Products, Red Meat Industry Services, researchers, the Milk Producers' Organisation, and the South African Milk Processors' Organisation. Dr Mark Chimes, Milk SA's programme manager for animal health and welfare, will lead the work group.