


**Digitalisation, Data integration,
Detection and Decision support
in Dairying**

Programme: COMET – Competence
Centers for Excellent Technologies

Programme line: COMET-Project

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FROM FEED TO MICROBES AND FURTHER TO THE COW: TRACKING AND TACKLING THE EMERGING RISKS OF MYCOTOXIN CONTAMINATION IN AUSTRIAN DAIRY FARMS

RESEARCHERS OF SUBPROJECT 2.5 TOOK A DEEP DIVE INTO BOTH THE OCCURRENCE AS WELL AS THE POSSIBLE IMPACT OF MYCOTOXINS.

While Mycotoxins are frequently overlooked as a possible source of problems for dairy farms, subproject 2.5 “Mycotoxin Detection and Implications for Dairy Performance – Screening mycotoxin contamination in feeds as a causal agent of infertility and poor health in dairy cattle,” helped shedding light on both the occurrence of mycotoxins in several different feed matrices including even pastures but also helped advance the understanding of possible negative interactions of common mycotoxins and important lactate utilizing microorganism in the rumen of dairy cows.

The subproject was divided into two main areas, corresponding to one PhD project each and was coordinated in close cooperation between the University of Veterinary Medicine Vienna and DSM.

The first focus was occurrence as well as on-farm implications of different classes of mycotoxins. Using the most in-depth multi mycotoxin analysis available, which included analysis of secondary plant metabolites such as phytoestrogens as well as residues of veterinary drugs and pesticides and combining these findings with both dietary, climatic, management and health factors on the participating

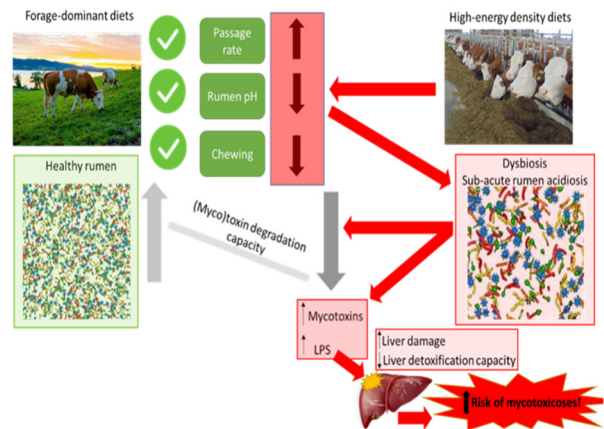
SUCCESS STORY

farms, the findings and corresponding peer reviewed publications were novel as such in depth analysis did not exist before for the Austrian Dairy sector. Additionally, our results suggested possible negative repercussions of *Fusarium* mycotoxins on udder health (increased SCC) and fertility (longer calving interval) and will help researchers as well as practitioners in the future to understand better the impact mycotoxins can have in dairy cattle.

The second area of focus was taking an even deeper look into the possible effects of mycotoxins and their interaction with a common metabolic disorder such as sub-acute ruminal acidosis (SARA). For this a rumen simulating technique (RUSITEC) was used to simulate both the exposure of common mycotoxins in presence or absence of SARA conditions. Results show that not only the mycotoxin transformation itself is hindered by the lowered pH conditions but also that the natural coping measure to high grain diets, the growth of lactate-consuming, beneficial bacteria called *Megashaera elsdenii* is negatively impacted by the very common mycotoxin deoxynivalenol (DON).

Impact and effects

The subproject did create not only awareness for the topic of mycotoxins in dairy nutrition, but also provided the scientific community as well as dairy farmers a novel understanding of the possible negative impacts of mycotoxins on both the rumen microbiota and the host animal.



Mycotoxin risk in high-yielding cows
 ©Felipe Penagos-Tabares, Vetmeduni

Project coordination (Story)

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Project partners



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