SUCCESS STORY

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D4Dairy

Digitalisation, Data integration, Detection and Decision support in Dairying

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Project

Type of project: D4Dairy, 01.10.2018 – 30.09.2022, strategic, multi-firm


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BENCHMARKING FOR CLAW HEALTH AND LAMENESS IN AUSTRIAN DAIRY COWS

ANALYSIS OF IMPROVEMENT POTENTIALS FOR FARMS TO IMPROVE ANIMAL HEALTH AND MINIMIZE ECONOMIC LOSSES

Benchmarking is an assessment process that compares an individual entity (farm) to their peer group and the "best in class" in order to identify differences between the respective units, identify any weaknesses and improve existing processes. Benchmarking is already used to evaluate performance differences in cattle herd management and dairy cattle welfare.
In D4Dairy, a benchmarking system for lameness and claw health in Austrian dairy cows has now also been developed. The consideration of claw health at herd and animal level is of great interest for long-term breeding improvement. In addition, comparing claw health on one's own farm with farms with similar performance levels, similar cow numbers, and the same breed allows analysis of potential improvements for one's own farm.

A comprehensive overview on the subject of claw health is also provided by the online downloadable 'Claw Health Brochure', which D4Dairy helped to create: (https://d4dairy.com/de/news-details/d4dairy-wirkte-bei-erstellung-der-klauengesundheitsbroschuere-mit.html).

The data basis for the creation of the benchmarking system was the claw health data of cows from 512 Austrian dairy farms electronically documented by professional claw trimmers within the framework of the project 'Klauen-Q-Wohl' and the lameness and locomotion score data of 99 Austrian dairy farms

regularly collected by specially trained LKV employees within the framework of 'D4Dairy'.

To describe claw health, the mean, median, and 10-, 25-, 75-, and 90-percentiles of the incidence rate of lameness, the incidence rate of 13 specific claw lesions, and the annual culling rate due to claw and limb diseases were used as key performance indicators. Only validated data sets were used to calculate these key performance indicators. Particular emphasis is placed on findings that are always associated with pain for the cows, the so-called alarm lesions. The benchmarking shows that between the 10% of the best (10th percentile) and worst (90th percentile) farms, very clear differences can be seen and thus there is enormous potential for improvement. For example, alarm findings in the 10th percentile occur in only 6.3% of cows, while in the 90th percentile they are found in 62.2%. In the better 50% of farms, no cows need to be culled due to claw and limb disorders, while in the 90th percentile this is necessary in 24.4%. (Fig.1)

The benchmarking system for claw health developed within the project 'D4Dairy' was integrated into the already existing program 'LKV Herd Manager' in the transnational cattle data network (RDV), which enables a benchmarking of udder health, fertility and now also claw health on the farm. It is thus available to all participating farmers and can also support them in discussions with experts (consultants, veterinarians).

Fig.1: Benchmarking the incidence rate of claw lesions and the annual culling rate due to claw and limb disorders in cattle from 512 Austrian dairy herds for the year 2020.

Percentage of Cattle (%)	Code		Percentiles				
Key Performance Indicators		Mean	10th	25th	Median	75th	90th
'Alarm' lesions	ALARM	30.1	6.3	14.2	25.9	41.4	62.2
Claw horn lesions and claw deformations							
Thin sole	TS	0.7	0.0	0.0	0.0	0.0	0.0
Horn fissure	HF	2.6	0.0	0.0	0.0	4.2	8.5
Double sole	DS	8.1	0.0	0.0	4.7	10.3	18.5
Corkscrew claw	CC	8.3	0.0	0.0	2.9	9.6	25.9
Sole haemorrhage (diffuse/circumscribed)	SH	12.1	0.0	0.0	6.7	16.7	30.6
White line abscess	WLA	12.5	0.0	3.1	9.9	17.7	29.0
Ulcers (sole-, toe-, bulb-ulcers, toe necrosis)	UL	13.6	0.0	4.9	11.3	20.3	29.9
Concave dorsal wall (+other laminitis stages)	CD	18.1	0.0	4.9	12.9	26.8	41.4
Infectious and interdigital lesions							
Interdigital phlegmon	IP	0.8	0.0	0.0	0.0	0.0	3.0
Digital dermatitis	DD	33.2	5.4	9.5	25.4	52.2	75.7
Swelling of coronet/bulb	SW	1.9	0.0	0.0	0.0	0.0	4.9
Interdigital hyperplasia	IH	5.0	0.0	0.0	2.4	7.5	13.4
Heel horn erosion	HHE	11.0	0.0	0.0	1.4	10.9	37.8
Annual culling risk due to claw and limb disorders	ACR_{Claw}	8.5	0.0	0.0	0.0	13.3	24.4

The developed benchmarking for claw health and lameness can support the analysis of the improvement potential for the own farm, encourage farmers to make improvements and thus help to improve animal welfare and minimize economic losses due to lame cows.

Project coordination (Story)
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Project partners

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This success story was provided by the consortium leader and by the mentioned project partners for the purpose of being published on the FFG website. D4Dairy is a COMET-Project within the COMET – Competence Centers for Excellent Technologies Program and funded by BMK, BMDW, Vienna and Lower Austria. The COMET Program is managed by FFG. Further information on COMET: www.ffg.at/comet