

IMPACT OF FARM INDIVIDUAL ACTION PLANS ON LAMENESS PREVALENCE, PRODUCTIVITY AND WELFARE OF DAIRY CATTLE

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Orthopedic disorders causing lameness belong to the most common and economically most relevant production diseases of dairy cattle worldwide. Lameness has severe economic implications while causing a serious impact on animal welfare. Reasons for orthopedic disorders are multifactorial and can be divided in cow-, housing- and management-related risk factors. The aim of the study was to assess the impact of farm individual action plans on lameness prevalence, productivity and welfare of dairy cattle.

Five dairy farms in eastern Germany with high prevalence of lameness were visited between January 2017 and February 2019. The average number of milking cows per herd was 675, ranging from 257 to 1137 cows. All farms housed German Holstein cows as the predominant breed in freestall barns with cubicles and fed total mixed ration and used the herd management system *Herde*[®] (DSP Agrosoft GmbH, Ketzin, Germany). Regular hoof trimming was conducted at a minimum of twice per year and new cases of lame cows were treated at least once per week. The same veterinary hoof care professionals always visited farms. Information regarding animals, performance, housing, diet, management practices, biosecurity and claw health management were collected using direct observation of the cows and their environment, interview with the herd manager during the visit and analysing of herd data. Cows were evaluated for lameness using a 6-point locomotion scoring (LS) system (modified according to Starke et al., 2007), where 1 = regular locomotion, without lameness, 2 = imperfect locomotion, 3 = slight lame, 4 = moderately lame, 5 = severely lame and 6 = highly severely lame. Clinical case of lameness was indicated by a $LS \geq 3$. Furthermore body condition score (Edmonson et al., 1989), integument alterations (Lombard et al., 2010) and cleanliness (Reneau et al., 2005) of cows were assessed. Regarding the aims of the farm and the collected data, we developed an individual action plan together with the farms management, the herd manager and the farms external consultants and accompanied the implementation. Frequency, interval and topic of the following farm visits were adapted to the action plan.

Farms were visited between 2 and 24 times. At the first farm visit the farms were characterized by: average annual milk yield per cow and lactation of 9,779 kg (range from 8,387 kg to 11,542 kg), average life span production of 31,635 kg (17,631 kg to 54,908 kg), 31 % (20 % to 46 %) average culling rate and an average of 3 (2.4 to 4.6) lactations in herd until culling. The median lameness prevalence was 54 % (35 % to 80 %). The following conditions were considered when developing the farms individual action plans: efficiency, feasibility, sustainability and profitability. Optimizing herd health documentation, raising the knowledge level about claw health and intensifying the hoof trimming and treatment were the most common objectives. Possible effects of the action plan were steadily monitored. Resulting conclusions led to adjustments to the action plan. About six month after the first farm visit, the mean lameness prevalence decreased from 54 % to 32 % (15 % to 50 %). Annual milk yield per cow and lactation increased to 9825 kg (8,424 kg to 11,747 kg) and life span production increased to 32,616 kg (21,419 kg to 53,042 kg).

Using an in-depth analysis to assess and eliminate the farm-related risk factors for orthopedic disorders helps to develop an effective farm individual action plan. With consistent implementation, decreasing of lameness prevalence is possible. Hence, productivity and welfare of dairy cattle increase.

Keywords: DAIRY CATTLE, LAMENESS, GERMAN HOLSTEIN BREED, DAIRY FARMS