PREVENTION AT HERD LEVEL IS KEY

While treatment for lameness is an individual cow issue, prevention of mobility issues and compromised foot health is predominantly a herd level concern.

Herd level actions taken to reduce the incidence of lameness will have a significant impact in reducing individual cow problems. For this reason, herd level approaches are important part of improving foot health over the long term. The 2024 Stride National Dairy Mobility Survey highlighted some key areas where herd level improvements could be seen on many dairy units.

BREEDING FOR BETTER MOBILITY

Breeding has long been identified as playing a significant role in improving mobility and foot health, with indices for many attributes of legs and feet being available for many years. The Stride survey confirmed that mobility continues to be a recognized breeding objective.

32% of respondents said they always consider legs, feet and locomotion traits when selecting sires while 33% said they often include them. However, other traits such as £PLI and milk constituents are often prioritized.

The survey showed less attention was paid to female selection with fewer than 30% of respondents genomically testing the herd, despite the data it can provide to underpin better legs and feet.

Research from the University of Liverpool, SRUC, and the Royal Veterinary College has revealed that lameness, particularly sole ulcers and sole hemorrhage, has a significant genetic component. This means you can breed cows that are naturally more resistant to these conditions.

What Genetics Can Do:

- **Reduce Lameness Incidence:** Genetic selection can significantly decrease the occurrence of lameness. Research shows a 32% reduction in the odds of sole ulcers for every one-point increase in the AHDB Lameness Advantage (LA) index.
- **Enhance Inate Resistance:** Some cows are naturally more resilient to lameness-causing factors. Genetic testing helps identify these animals for breeding.
- **Provide more accurate information:** The Lameness Advantage (LA) Index is a powerful tool for selecting sires that will produce daughters with improved lameness resistance.
- **Breed for mobility and profitability:** A balanced approach considering other key traits like milk production and fertility is essential for overall herd improvement. £PLI (Profitable Lifetime Index), includes Lameness Advantage.

GENOMIC TESTING – A TOOL TO REDUCE LAMENESS

Genomic testing reveals specific genetic information that can be used to make informed decisions about breeding, health management, and more. It will identify the best animals to breed for replacements and inform the selection of sires to mate with making it an efficient way of increasing overall profitability.

- **Identify Genetic Predisposition:** Genomic tests pinpoint specific genes and genetic markers associated with increased susceptibility to lameness, allowing you to identify at-risk animals before they develop problems.
- **Targeted Breeding Decisions:** Knowing which animals are genetically predisposed to lameness empowers you to make informed breeding decisions. You can select breeding stock with favorable genetic profiles, reducing the prevalence of lameness-causing genes in future generations.
- **Accelerated Genetic Progress:** Genomic information allows for more accurate selection of breeding animals compared to traditional methods. This accelerates genetic progress towards lameness resistance.
- **Early Intervention:** Genomic testing can identify animals at high risk of lameness early in life. This allows breeding selection to be made even before clinic signs appear.
- **Reduced Economic Losses:** Including veterinary treatment, lost milk production, and premature culling, leading to improved farm profitability.
- **Enhanced Animal Welfare:** Reducing lameness improves the overall well-being of your herd, as lameness is a painful and debilitating condition.

THE MODEL TO USE GENETICS TO IMPROVE MOBILITY

Adopting a structured approach to Measure: Manage: Monitor can provide a robust framework to improve mobility and foot health through breeding.

MEASURE

GETTING THE PICTURE OF WHERE YOU ARE AND THE OPPORTUNITIES FOR IMPROVEMENT

GENOMIC TESTING

To assess their genetic predisposition to lameness.

IDENTIFY AT-RISK ANIMALS

Pinpoint individual animals carrying genetic variants that increase their risk of developing lameness.

DATA COLLECTION

Maintain records of genomic test results and link them to individual animal performance and health data.

MANAGE

MAKING CHANGE HAPPEN

COLLABORATE WITH YOUR GENOMIC ADVISOR/VET

Utilize genomic information to make informed breeding decisions for lameness resistance.

ACCELERATED GENETIC PROGRESS

Select animals with superior genetics for lameness resistance, leading to faster and more effective genetic improvement.

TARGETED MANAGEMENT FOR AT-RISK ANIMALS

Implement proactive management strategies for animals identified as genetically predisposed to lameness, such as preventative hoof care.

MONITOR

KEEPING TRACK OF PROGRESS

GENETIC TREND ANALYSIS

Monitor the genetic trends in your herd related to lameness over generations. Track changes in the frequency of favorable and unfavorable genetic markers.

LAMENESS INCIDENCE

Track the actual incidence of lameness in your herd over time. Correlate this data with the genomic information to assess the effectiveness of your breeding choices.

REFINE STRATEGIES

: Continuously analyze the data and refine genomic management strategies. Adapt breeding and culling decisions as needed to maximize genetic progress.

FOCUS ON TRANSITION

The Stride survey highlighted that dry and transition cows are often seen as a lower priority than milking cows when mobility is considered. However, they deserve just as close attention.

The transition period is a critical stage in the productive cycle of dairy cows. Around calving there are anatomical changes in the hoof that can predispose cows to mobility issues.

And cows which transition poorly are at greater risk of developing hoof lesions later in lactation.

Many incidences of poor mobility or compromised foot health in the first ten weeks of lactation will have its origins in the transition period so use records to understand the extent of the problem.

If cows are going to transition well, they need to be sound on their feet. Once cows go even slightly lame, they can be a substantial cascade into problems largely linked to dry matter intakes (DMI). Reduced DMI during the dry and transition periods and will tend to lose excessive weight in early lactation and is a key characteristic of cows that will go on to have an increased incidence of transition diseases.

If cows are kept sound on their feet they will eat more, lie comfortably for longer encouraging rumination, produce more milk and have better reproductive success. The return on investment in lameness prevention in the transition period can be considerable.

REDUCING TRANSITION PERIOD LAMENESS

Prevention is central to any strategy to reduce lameness issue in transitioning cows. Improving transition cow mobility begins in the previous lactation and the primary goal is to ensure all cows are sound on their feet when they are dried off. This can only be achieved by focussing on identifying cows with mobility score 2+ at least one month before drying off so they can be enrolled on an intensive treatment therapy.

All cows should receive a routine functional trim at the point of drying off. Only trim heifers before calving if you have previously had lameness problems in the early part of the first lactation.

There are many factors that can contribute to reduce mobility and compromised foot health in transitioning cows so use the checklist to score your system and identify improvement opportunities. It is likely there will be a number of small changes than can add up to make a big difference.

	YES	NO
Do you ensure no lame cows enter the transition accommodation?		
Do dry and transition cows have 75cm of feed space each?		
Do you provide at least 10-12m^2 per cow of lying space or one deep bedded cubicle per cow?		
Do you have two or fewer group changes during the dry period?		
Do you avoid moving cows to the maternity pen between seven and two days before the due date?		
Do you provide a quiet, undisturbed place to calve?		
Do you keep dry cows cool in summer with adequate ventilation?		
Do you control energy and potassium intakes using processed straw?		
Do you ensure the diet supplies the correct balance of micro and macro minerals?		
Are dry cows footbathed?		
Are fresh cow checks well organized and effective at identifying cows needing intervention?		

Every question answered no represents an opportunity to improve the management of mobility.

FEED FOR STRONGER HOOVES

Strong, robust hoof horn is essential to help cows remain sound on their feet. Ensuring cows develop high quality horn is a major way to maintain foot health and reduce the incidence of poor mobility. Hoof horn requires continuous renewal to uphold its functionality and well-being and nutrition plays a key role in achieving this. The diagram illustrates the pivotal role of both macro and micro-minerals in the growth and development of horn.

Both short-term and prolonged deficiencies in nutrients can have a significant impact on the quality and health of horn tissue. Under normal circumstances, horn tissue typically grows at approximately 5mm per month, but if cows are in negative energy balance horn growth slows to a near standstill.

Metabolic diseases will also affect horn quality. Any metabolic disease will increase inflammation which will increase the risk of foot lesions.

From a nutritional standpoint, it's essential to ensure cows do not enter the dry-off phase in too high body condition.

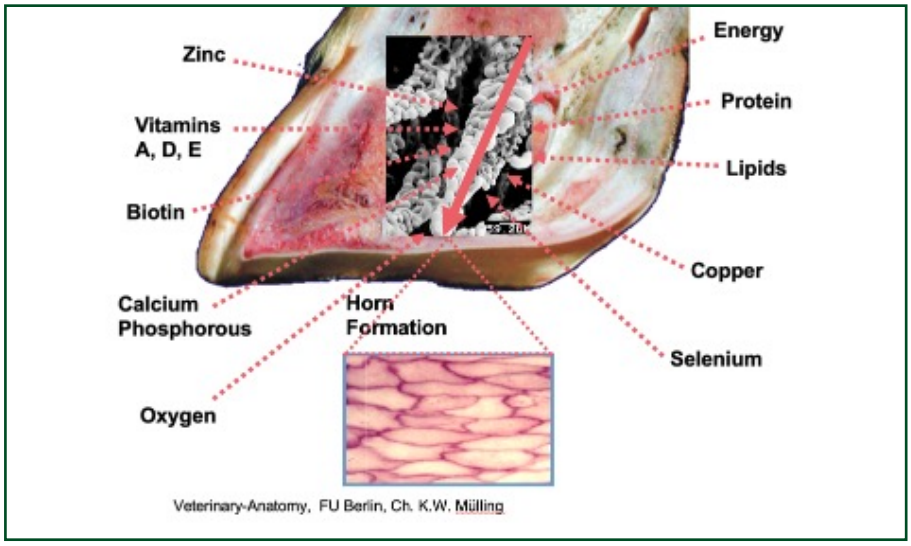
Equally crucial is maintaining a stable BCS throughout the dry period and into early lactation.

Zinc, Copper, Biotin and Manganese play an important role in maintaining the structural integrity of horn tissue and the Stride survey showed the addition of zinc and biotin in particular is adopted by nearly 40% of respondents.

The availability of these trace minerals during the post-fresh period is particularly important. It is also essential to ensure adequate mineral supplementation in the dry period as this offers an opportunity for healing and recuperation from the preceding lactation.

Ensuring diets are formulated containing sufficient levels of highly bioavailable minerals will help improve hoof quality and maintain better mobility.

Figure 3. *Nutrients which are critical for the growth health and maintenance of hooves*



TOP TIPS

1 Use genomic testing to select the best replacements to accelerate gains from breeding for good mobility and foot health

2 Make transition cow management a priority, ensuring cows enter the transition period with sound feet and calve down in optimum body condition.

3 Ensure all rations are balanced and contain adequate supplies of the key nutrients and minerals using highly available sources, to build robust horn health.

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In association with cowmanagement

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