

IMPACT of DAIRY COW WELFARE

on production lifetime and economic sustainability of a dairy farm

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Dairy cow welfare is a key determinant on both biological efficiency and economic viability in dairy farming systems. Welfare encompasses the physical health, comfort and psychological well-being of cows and it directly influences their productivity and longevity. The production lifetime of a dairy cow, defined as the number of productive years or lactations she remains in the herd – is closely linked to welfare conditions. In turn, production lifetime has major implications for the economic sustainability of a dairy farm. This article examines how welfare practices affect longevity and how it translates into financial outcomes.

Production lifetime refers to the duration a cow remains productive in the herd before being culled. Ideally cows should complete multiple lactations to maximise lifetime milk yield. However, poor welfare conditions often result in early culling, limiting productivity.

Some of the key welfare factors affecting longevity:

LAMENESS

Lameness, often caused by poor housing, inadequate flooring or insufficient hoof care is one of the leading causes of early culling. Lameness causes pain, reduced mobility and decreased feed intake, leading to lower production and reproductive performance. Surfaces on which cows need to stay and live are therefore always an important consideration. Hard or slippery flooring contributes significantly to lameness.

MASTITIS

Poor hygiene and improper milking practices increase the risk of mastitis. Recurrent infections reduce milk quality and yield and frequently result in premature removal from the herd. Clean and good environmental conditions reduce exposure to pathogens and lower the incidence of diseases such as mastitis. The milking parlour is a critical point of interaction between cows, humans and machinery. The way cows are handled during milking significantly affects their stress levels,

health and productivity. Calm and consistent handling is essential for minimising stress. Rough handling, loud noises, or unpredictable behaviour can cause fear and anxiety in cows, leading to reduced milk let down and increased risk of injury. Positive human-animal interactions improve ease of handling and overall welfare. Efficient parlour design ensures smooth cow movement with minimal waiting time. Poor design can add to stress and injuries. A consistent milking routine, including proper udder preparation and hygiene, is essential to preventing mastitis. Failure to follow correct procedures can result in infections, discomfort and long-term health problems

REPRODUCTIVE FAILURE

Stress, poor nutrition and health disorders negatively affect fertility. Cows that fail to conceive within an acceptable timeframe are often culled, shortening production life. In our South African conditions, heat stress has a big impact on feed intake, milk production and on cow fertility. Good ventilation is necessary to maintain air quality in housing and regulate temperatures. Proper airflow, shade and cooling systems help mitigate these effects and improve overall welfare.

Feeding and nutritional welfare

Nutrition is a cornerstone of dairy cow welfare, influencing health, reproduction and milk production. A proper monitoring system needs to be in place.

- » Is a balanced ration fed for different stages of lactation?
- » How long does the negative energy balance of the cows last and is ketosis prevented?
- » Are MUN, lactose and somatic cell count levels monitored to evaluate the ration, stress levels and infection levels of the cows?
- » Is heat detection monitoring in place and
- » Are the AI technicians properly trained?



Metabolic Disorders

Dairy cows require a balanced diet that provides adequate energy, protein, vitamins and minerals. Nutritional imbalances can lead to metabolic disorders such as ketosis, acidosis and milk fever which negatively impact health and productivity.

These disorders can have long-term impacts on health and productivity, contributing to early culling. How do you monitor your nutritional management. Cows should have sufficient access to feed to prevent competition and ensure uniform intake. Limited feeding space can result in dominant cows consuming more feed while subordinate cows receive less, leading to poor body condition and stress.

High quality feed supports optimal digestion and health. Contaminated or spoiled feed can introduce toxins and reduce intake, leading to illness, reproductive failure and decreased productivity of the cows.

Some of the areas that also impact cow welfare, is housing. Space allowance and stall design is important. Adequate space is essential for minimising competition and allowing cows to lie down, standing as well as for social interaction. Overstocking in camps and housing leads to increased aggression/competition, reduced resting time and higher stress levels. Properly designed stalls enable cows to lie down and rise comfortably, reducing the risk of injuries and lameness. Comfortable bedding encourages cows to lie down for longer periods, which is crucial for rumination and hoof health.

Economic sustainability refers to the ability of a dairy farm to maintain profitability over time while managing costs and resources effectively. Welfare plays a central role in achieving this goal.

- 1. Replacement costs:** Frequent culling due to poor welfare increases the need for replacement heifers. Raising or purchasing replacements is costly, involving feed, housing, labour and healthcare expenses. Extending the productive life of cows reduces these costs and allows for stricter selection on heifers and therefore genetic improvement of the next generation.
- 2. Milk production efficiency:** Healthy cows produce more milk over their lifetime. Good welfare ensures consistent production and allows cows to reach higher yields in later lactations, improving profitability.
- 3. Veterinary and treatment costs:** Poor welfare increases the incidence of disease, leading to higher veterinary expenses. Preventative measures, such as proper housing and nutrition, are more cost effective than treatment.
- 4. Reproductive efficiency:** Good welfare supports better reproductive performance, reducing calving intervals and increasing the number of productive lactations per cow.
- 5. Labour efficiency:** Well managed cows are easier to handle and require less intervention, reducing labour demands and improving farm efficiency.



There is a strong relationship between dairy cow welfare, production lifetime and economic sustainability, *i.e.*:

- » Improved welfare leads to better health and reduced stress
- » Better health increases longevity and productivity
- » Increased longevity improves lifetime milk yield
- » Higher productivity and lower cost enhance farm profitability

Farms that prioritise welfare benefit from reduced culling rates, improved efficiency and greater long-term sustainability.

In conclusion

Dairy cow welfare is a critical factor influencing both production lifetime and the economic sustainability of dairy farming systems. Proper housing, gentle handling in the milking parlour and effective feeding practices contribute to improved health, reduced disease and enhanced productivity. These factors collectively extend the productive life of cows, reduce replacement and vet costs and overall farm profitability and allows for application of higher selection intensities which will result in faster genetic progress. Therefore, investing in dairy cow welfare is not only an ethical responsibility but also a strategic economic decision that supports the resilience and success of dairy farms.

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