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In this Issue...

Don't Let Feed Shrinkage Impact Your Bottom-Line!

*NEW Employee Highlight: Meet Kristin Thompson

Lameness: Nutrition, Hoof Integrity and Prevention

VitaLac Dairy Premix



Don't Let Feed Shrinkage Impact Your Bottom-Line!

Written by: Kristin Thompson, Ruminant Nutritionist, MSc., PAg

When evaluating the influencers of profitability on dairy farms, feed costs

are often at the top of the list for large expenditures. However, when evaluating feed costs, it is also important to not overlook feed losses, which are often termed "shrink". This can be described as the portion of feed that is purchased or harvested but not fed to the animals. In other words, this is the percentage of feed that costs you money without actually being consumed by the animal, improving your farm performance or profits. The amount of feed shrinkage is going to vary depending on the farm, with the typical range being 10-20% of total feed. However, it can be much higher if not properly managed!

To monitor feed shrinkage on your operation, you need to be able to calculate the difference between what is harvested and/or purchased and what is physically delivered to the cows. For example: if you receive a 10 tonne load of purchased supplement and feed at a rate of 4kg per head per day to 80 cows, that load of feed should last you approximately 31 days. However, if this feed is only lasting 28 days, you are looking at a feed shrinkage of 10%. When evaluated on a financial basis and assuming feed cost per cow per day for the purchased supplement is \$2.4, you are looking at a feed shrink cost of up to \$0.24 per cow per day. Over a one-year period, this adds up to a loss

of \$87.60 per cow per year or \$7,008.00 annually for 80 cows. Remember, this loss is from the purchased supplement alone and does not account for any shrink from other feed ingredients included in the daily diet!

The source of feed shrinkage will vary and can be the result of multiple factors such as pests, weather conditions (wind, rain), poor storage, undesired fermentation, feed refusals or inaccurate scales. Although some feed shrinkage is unavoidable, it is important to recognize areas of potential loss and take steps to minimize it:

- Harvest conditions, as well as equipment performance will impact feed losses in the field. Equipment failure can lead to losses by leaving forage in the field or improper loading into the silage wagons from the chopper. Ensure you have equipment ready and harvest the crop at the right moisture to prevent dry matter losses. If the forage is not harvested at the correct moisture, this will cause undesired fermentation (too wet) or packing difficulties (too dry) during storage, leading to reduced feed quality and quantity.
- Ensure silage is properly packed and covered to reduce storage associated losses along with preventing damage from birds and rodents. Air

removal favors anaerobic fermentation and conservation, avoiding dry matter and nutrient loss by undesired fermentation (i.e. yeast or clostridia) and effluent leaching.

- Manage the face of ensiled forages stored in bunkers or ag bags to minimize the losses during feed out. Remember, the key is limiting exposure to oxygen, which can be as simple as using a facer to keep the face of the silage smooth.
- Evaluate storage and loading locations of commodities or purchased supplements and rations. Important losses occur when feeds are stored in commodity sheds that are affected by wind or rain. Ensure that your bins, storage containers and augers are kept clean, properly ventilated, with no water condensation in between corners to avoid feed accumulation and spoilage.
- TMR mixer audits are essential to ensure they are working properly. Any variance in the scale of the mixer has a significant impact on the ration fed. If the scale is incorrect and you end up feeding more ensiled forages, it will significantly impact your inventory and lead to feed shortages.
- Feed bunk management is the last frontier for preventing feed shrinkage. Maintaining appropriate feed push-up helps to ensure the cows are consuming the feed that has been delivered, which in turn promotes milk production. The amount of left-over feed needs to be monitored, with the typical recommendation being 2-3% weigh back.
- It is also important to remember to regularly monitor the dry matter of forages to prevent overfeeding, potential refusals, and feed losses at the bunk!

Remember, it is important to manage and control feed shrink in all the stages of the feed production cycle, from harvest to storage and from purchase to the feed bunk. Our Team of Ruminant Technical Representatives are ready to discuss the possible strategies to control feed shrinkage, protect your inventories and use them to increase the performance and profitability of your operation.

Meet: Kristin Thompson! Ruminant Nutritionist



I grew up in rural Saskatchewan on a mixed farm operation, where we raised an assortment of livestock and poultry species. Growing up on a farm and through the 4-H program instilled a deep love for agriculture and drove me to pursue the tremendous opportunities that this industry has to offer.

I attended the University of Saskatchewan where I obtained my Bachelor of Science in Agriculture, specializing in Animal Science and later a Masters Degree in Ruminant Nutrition and Genetics. I had the opportunity to work with a livestock genetics company in the Saskatchewan prior to starting with New-Life Mills in 2015.

When not working, I can be found on the farm where I live with my husband, two children, dogs, cats and horses. We are currently cultivating our own farm vision and look forward to having our children grow up in this industry.

One of the main reasons I love working in agriculture is the people. I can't think of any other industry where I would rather spend my career. People in agriculture are some of the most hard-working, innovative and entrepreneurial individuals in the world, and I appreciate learning from everyone that I meet.

Lameness: Nutrition, Hoof Integrity and Prevention

Written by: Sylvia Borucki, Ruminant Nutritionist, PhD

Based on a study performed in Canada, the prevalence of lameness

in dairy cattle was estimated to range between 20 and 35%. Lameness has demonstrated negative impacts on milk yield and reproduction, mainly associated with standing discomfort and hoof-pain, which results in increased lying time and reduced visits to the feed bunk. Therefore, directly or indirectly, lameness reduces the longevity of our dairy cows, which in turn impacts culling rates leading to an increase in the number of replacements needed and the associated costs.

The most common lesion found is digital dermatitis, an infectious hoof lesion that typically affects the skin at the base of the heel. It is highly contagious, and the causing bacteria thrives in damp and dirty conditions making it difficult to prevent in most dairy barns. Conditions in the barn like flooring, slipperiness, and cleanliness, together with type of stall and bedding have been found to determine the incidence of lameness. Management differences in footbath frequency and trimming protocol between farms, also impacts the incidence rate of lameness and lesions therefore, showing the importance of preventive measures.

Along with barn management protocols to improve cow comfort, nutrition is a key factor in the prevention of lameness. Dietary nutrients affect the quality and growth of the hoof horn, and the associated prevalence of hoof diseases. The strength and structure of the hoof horn are affected by the percentage of fibre in the diet, the concentration of starch, amino acids, minerals, and vitamins.

Figure 1



Many of these feed components are involved in the keratinization process (hardness of the hoof), the growth of the horn, the structural binding of keratin proteins and the digital cushion (Figure 1).

Balanced Diet

Fiber and carbohydrate unbalances in dairy rations impact the development of laminitis. Under conditions of sub-acute ruminal acidosis (SARA) as a result of low-fiber or high-concentrate diets, excessive lactic acid production in the rumen causes damage to the rumen wall. The ruminal epithelium is permeable to pathogens and endotoxins which together with histamine production (inflammation) and poor circulation, challenges the hoof integrity (digital cushion), resulting in pain, bleeding in the horn, and various forms of hoof ulcers. This is a vicious cycle because discomfort and pain lead to reduced visits to the feed bunks and lower feed intakes, which leads to further dietary unbalance. Even though the diet may be adequately balanced, particle size variation and sorting of the total mixed ration could cause low ruminal pH and SARA. Slug feeding in overcrowded conditions and cow-dominance effects could also cause SARA.

Amino Acids

Nutrients that are necessary for keratinization include amino acids like cysteine and methionine, which contain sulphur. They are involved in the formation of a disulphide bond during keratinization and are essential for promoting the structural and functional integrity of the hoof.

Trace Minerals

Trace elements, such as zinc, manganese, and copper, are essential cofactors for enzymes involved in keratin production. These microminerals play a substantial role in the healthy development of the horn and keep the antioxidant power under conditions of oxidative stress (inflammation, lesions, and disease). Research has shown feeding these same trace minerals in chelated form (organic sources) positively affects the hardness of the hoof horn and the function of the immune system. Zinc supplementation is critical for maintaining the health and integrity of the skin

Promoting milk production through balanced nutrition with



due to its role in cell repair and replacement. Along with manganese, copper and selenium, zinc also plays a crucial role in wound healing and combating infection.

Biotin

Biotin, also known as vitamin B7, is a significant vitamin for hoof integrity. Studies have indicated that the inter and intracellular structures of the horn were improved by biotin supplementation. In the absence of biotin, the horn became whitish in color, and brittle with a friable consistency. This vitamin is also very active in energy metabolism as an enzymecofactor, for both the cow (gluconeogenesis) and for the bacteria (propionic acid). Microorganisms in the rumen synthesize biotin in varying amounts depending on the composition of the diet and other B vitamins. However, for high-yielding dairy cows fed a diet high in carbohydrates, the synthesis of biotin by the rumen microbes is insufficient.

Strategy, Records and Follow Up

Deficiencies in minerals and vitamins along with other nutrient unbalance (high starch or low fibre) can lead to a fragile horn that is prone to cracks and infections. However, to combat lameness, lesions, and digital dermatitis a balanced and fortified diet is not enough. All hoof experts and herd trimmers agree that record keeping is key. Monitoring based on trimming records is effective to detect chronic cases and follow up recovery. The farm needs a footbath protocol established based on hoof health audits. Furthermore, any treatment with antibiotics must be done appropriately (product, withdrawal and wrapping). Consult with your New-Life Mills Ruminant Technical Representative and your Veterinarian on how to improve the hoof-health on your farm.



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