## Clippings – September 28, 2023

## ASH CONTENT IN FEED AND MITIGATION TECHNIQUES Jon Laube, Product Management Support, MacDon

Proper nutrition for livestock is essential for good milk production, growth, and overall physical health. This will lead to benefits such as better returns and higher profits. A high-quality feed is needed with minimal ash content. Feeding livestock a diet with a high ash content can lead to issues such as pain or discomfort, hindered movement, or even intestinal congestion. However, there are ways to mitigate the risk of ash contamination through good harvesting and storage practices.

Ash is the total mineral content of the forage or diet and consists of endogenous (internal) and exogenous (external) sources. Grasses typically contain around 6% internal ash and alfalfa contains around 8% internal ash. The higher the ash content, the greater chance the feed is contaminated with sand or soil.

Increased ash content can be due to a variety of different reasons, including lodged crop due to heavy rains and wind. The more time the crop is on the ground, the higher chance it has of becoming contaminated. Rain can cause soil particles to splash onto the crop and increase ash content. Drought can also cause contamination; dust is blown onto the crop as it sits in the field or when harvested.



By testing ash content, the amount of nutritional value in the feed can be predicted. It is done by burning the feed to determine the amount of inorganic material present. This is important to know because ash contains no calories and will lower the amount of nutrients in feed.

There are many options to mitigate the risk of getting a high amount of ash content in the feed. These include good harvesting and storage practices. Cutting higher off the ground rather than lower can decrease ash content. However, cutting higher will also lower yield. There is a tradeoff between yield and amount of ash, so a decision needs to be made as to how much ash content is acceptable. A higher cutting height can also be beneficial for other reasons. Grass crops store their energy in the base of stems, so cutting them higher will leave more energy in the crop. This gives the crop more leaf area for sunlight and covers more soil to retain moisture so the grass can grow faster. Leaving a residual height of 4" can increase the growth rate of the grass by up to 60% compared to a residual height of 2".

Techniques that pick up down or lodged crop typically result in a higher ash content. Harvesting down or lodged crop can't always be avoided; however, there can be ways to reduce the risk of

contamination. One includes planting varieties that withstand the potential for the wind to knock it over.

Another way to reduce ash content is to keep the windrow off the ground and lay a wide windrow that sits up on stubble. This not only allows for a quicker drydown time, but also reduces the chance of harvesting a layer of soil when picking up the windrow. When raking crops, the amount of time the rake tines touch the ground should be minimized. Using a rotary rake will typically allow for lower ash content because the tines move hay without touching the ground. Wheel rakes, being ground driven, scrape the ground as they move, causing the hay to have a higher ash content. A wheel rake can move more crop with fewer adjustments than a rotary rake, but at the expense of forage quality. Therefore, it is important to consider the ash content when choosing rakes. Another way to keep ash content low is to use a hay merger, which picks up and moves crop rather than drags it across the ground.

A disc mower's flatter blades can also reduce the amount of ash picked up. Higher angled blades can create a suctioning effect as the disks spin. Running the header at a flatter angle can also reduce ash content, as there is less chance of the blades contacting the ground. A high disc speed can blow around dust, especially in dry conditions, so reducing disc speed can help reduce ash amount.

MacDon disc headers can help reduce ash content with low-profile cutter bars and the use of an optional Dual Windrow Attachment (DWA). Low-profile cutter bars keep blades parallel to the ground to maintain low cut height and reduce the chance of scraping the ground. The DWA merges during cutting, which eliminates the need to merge after the crop has been sitting on the ground and minimizes ash contamination.

Good storage practices also help lower ash content. This includes avoiding storing hay bales directly on the ground. Bales stored on the ground will absorb water from soil and may start molding. When the bales are picked up, they might contain a layer of ash on the bottom if stored on the ground. When dealing with silage, it can typically be removed from a pile with little contamination when the soil is dry. However, this becomes more challenging when the soil is wet or muddy. Storing silage piles on concrete can help reduce the amount of contamination.

There will always be some ash contamination in hay or forage. Making sure it is at an acceptable level will ensure good performance and health of livestock. Using good harvesting and storage techniques can help reduce the total ash content in feed.