

Techniques help reduce ash in hay

By DAN UNDERSANDER



FARMERS have become more concerned about ash content of hay and haylage because each 1% of ash is 1% less of TDN, or total digestible nutrients, since ash provides no calories.

Thus, while we must have and benefit from a small amount of the minerals in ash of forage, total ash content above the minerals needed results in reduced TDN of the hay.

Ash comes from two sources:

- internal sources (e.g., minerals like calcium, magnesium, potassium, phosphorous)
- external sources (e.g., dirt, sand, bedding)

It is important to note that the sum of minerals on most forage reports is not total ash content because mineral analysis usually does not include silica, which is the largest proportion of ash. So look for an "ash" value on the report.

The dirt on dirt

The internal mineral content of most forages is about 6%. From thousands of samples analyzed at the University of Wisconsin Forage Testing Laboratory, average ash content was 10% to 11%, indicating 4% to 5% soil contamination of the forage. One sample for both hay and haylage was about 18% ash. These farmers were feeding almost 1 pound of dirt for each 4 pounds of hay or haylage!

While it is not possible to eliminate all dirt from hay, it should be possible for more growers to make hay or haylage with 2% to 3% dirt contamination.

Lodged alfalfa will have higher ash content because the stems are lying on the ground. If stems are left in the field, the effect on ash will be less, but the tonnage loss will be greater. Some alfalfa varieties stand better than other varieties, and these should be considered if lodging is a problem. The key is to harvest early before lodging occurs.

The mower can have an impact, too. Disk mowers come with either flat knives or angled knives. The angled knives pick up downed hay better, but also pick up more dirt when the soil is dry. In addition, cutting height can have an effect. Lower cutting will generally give higher yields but result in more ash content. We recommend cutting at 3 to 3.5 inches.

Putting hay or haylage in a wide swath immediately after cutting can reduce ash because the swath stays on top of the stubble while a windrow sinks to the ground and picks up some soil. Further, when raking a swath on top of stubble, the tines need not touch the ground so less dirt is added in raking.

Raking can increase ash content. This means that a rotary rake is better than a wheel rake, which is driven by tines touching the ground. If using a wheel rake, adjust the float so tines touch the ground with the minimum necessary to turn. Also, move hay horizontally across the ground as little as possible; it is better to move two swaths to the middle rather than to one side. Using a merger will reduce ash content because hay or

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haylage is picked up and moved across on a conveyer to the windrow.

Lastly, care in storage and feedout will reduce ash content. Bales that are left set on the ground will pick up soil.

Placing them on concrete, pavement, or a layer of hay or other material will reduce soil picked up during storage. One of the most common reasons for high ash content of haylage is when farmers are feeding from silage tubes in the spring and rains turn the storage area into a mud patch. One can easily add 10% to 15% dirt on feedout.

In summary, ash provides some needed minerals but will reduce TDN content of the hay as levels rise. As one nutritionist said, "While there have been few research trials in this area, it is highly likely that cows do not milk well when fed dirt."

Undersander is with the University of Wisconsin Extension.

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