

Preserving Hay Quality

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Some hay producers across the province are struggling to get their hay put up dry. Here are several options.

Preservatives:

As a rule, preservatives will not increase forage quality. Once quality deteriorates, adding a preservative will not enhance the quality. Non-protein nitrogen, such as anhydrous ammonia, can slightly increase the crude protein levels in the hay. Some of the ammonia will bind with plant material and increase the overall protein content of the feed.

Preservatives allow forages to be baled at higher moisture content, and reduce the time required for the forage to be baled. There should be less leaf shatter and potentially better quality forage when baling at higher moisture content. However, it is still imperative that proper hay making procedures be followed when harvesting and baling.

Preservatives are most effective when the moisture content of the hay is between 20 and 30 per cent. Preservatives are not effective if the moisture content is greater than 30 per cent. The amount of preservative needed will depend on the moisture content of the forage in the swath.

Organic acids: Organic acids lower the pH and produce an acidic environment that is not conducive for mould or bacterial growth. Generally, low pH does not affect hay intake. The two main types of acids used as preservatives are propionic acid and acetic acid. Propionic acid is more effective at controlling mould and bacterial growth, and is more common than acetic acid. Some companies combine the two acids and this has proven to be quite effective. Acids are corrosive to haying equipment but the buffered acids, such as Ammonium propionate, is less corrosive. Organic acids will maintain hay at up to 30 per cent moisture.

Anhydrous ammonia: Anhydrous ammonia is more commonly used to improve the feed value of straw and chaff. It can also be applied to high quality forages to prevent heating and spoilage. Anhydrous ammonia binds to moisture, reducing moisture availability to mould and bacteria. It can also sterilize the hay and reduce the number of mould forming bacteria.

Anhydrous ammonia can create a toxic compound if it's applied to high quality forage such as alfalfa. Bales that have been treated with anhydrous ammonia should not be stored for long periods and the hay should be used within one to two months.

Anhydrous ammonia will maintain hay stored at up to 30 per cent moisture but isn't commonly used because of the risks of working with anhydrous ammonia and the cost. Anhydrous ammonia is usually injected into individual bales or released into a covered bale stack.

Bacterial inoculants: Bacterial inoculants are similar to silage inoculants. Most contain lactic acid forming bacteria that compete with mould forming organisms and help maintain forage quality. Some inoculants contain combinations of bacteria and enzymes.

The enzymes break down plant cell walls, making more cellulose and starch available to the lactic acid forming bacteria.

Bacterial inoculants are not as effective as organic acids or anhydrous ammonia. Inoculants will safely maintain hay at up to 23 per cent moisture and may be more effective in large square bales weighing over 2,000 pounds (900 kilograms).

Wrapping:

If the hay has to come off at moisture levels over 20 per cent, wrapping may be an option. Wrapping the hay seals oxygen out of the bale and organisms such as moulds and bacteria can't reproduce. At the same time, there usually isn't enough moisture in the bale to maintain anaerobic activity. Wrapped bales store well into the winter but may not last all winter. We normally recommend feeding these bales first, if given the choice.

Wrapping will maintain moisture levels up to 50 per cent moisture but keep in mind that a normal-sized bale at 50 per cent moisture can weigh up to 3,000 lbs (1,370 kg).

Silage:

Silage is another option and some of the larger cattle operators have gone this route. If the equipment and manpower is available, it may be a feasible option.

For more information on preserving hay quality, contact Andre Bonneau or Christy Winqvist at the Agriculture Knowledge Centre by calling toll-free at 1-866-457-2377, or by e-mail: aginfo@gov.sk.ca.