

Dry forages: Process and techniques

Problem

Forage storage and quality are affected by the percentage of water contained in the plants. A high water content encourages the formation of mould and indigestible compounds from a reaction between sugar and amino acids (Maillard reaction) and brown forage. Enzyme processes can also modify forage quality due to plant respiration after cutting. A decrease in forage quality is also due to weather conditions during haymaking.

Solution

To increase water loss after cutting, grass needs to be spread with an appropriate machine (tedder) to expose more surface to the sun. When moisture content is around 45-50 %, the grass is turned. Rowing the grass at night reduces surface area and water reabsorption as well as increasing soil drying (Figure 1). This helps to decrease drying time and reduce losses in forage quality and quantity.

Benefits

The drying process preserves forage quality and increases protein and energy content. To improve the process, a conditioner can be attached to the mower where the grass is crushed between two rollers. Crushing the stems can speed-up the on field drying process, reduce nutrient losses and, if the drying process is completed in a hay dryer, reduce the energy consumption.

Practical Recommendations

- To obtain the best forage quality, cutting at the correct time is important, when cellulose and lignin content is not too high. During spring, cutting early is the best option to preserve forage quality; for grasses, the correct time is beginning of heading; for leguminous plants, it is beginning of blooming. However delaying cutting increases dry matter (DM) content, which speeds up the drying process. Favourable weather conditions can reduce drying costs. Making hay decreases the moisture content to 15 % and increases dry matter (DM) to 85 %. Cutting height (Figure 2) is important for a perennial crop, affecting speed and quantity of regrowth. Generally is not recommended cutting too close to the ground, because basal buds are the slowest to refill and have low vigour.
- Spreading the grass at cutting helps to decrease drying time and minimise forage quality and quantity losses. On field crushing of stems using a conditioner, increases water loss by up to 30 % and increases DM. The drying process can be completed on the field or in drying rooms, where forage quality is highest. At the end of the drying process, the hay can be baled and stored.

Applicability box

Theme

Crop production - Animal husbandry - Feed and nutrition - Feed processing and handling - Arable crops - Forage - Nutritive values and needs - Ration planning

Geographical coverage

Global

Application time

Growing and harvesting time

Required time

A few days of dry and sunny weather

Period of impact

October – June

Equipment

Hay-making machinery, tedder, mower, baler

Best in

Alfalfa, grass.



Figure 1: Rowing hay with a tedder. Photo courtesy of John Deere



Figure 2: Cutting forage. Photo courtesy of New Holland

Further information

Video

- The Character & Heritage Institute: [Video «The process of making hay»](#).

Weblinks

- Check the Organic Farm Knowledge platform for more [practical recommendations on animal husbandry and livestock feeding](#).

About this practice abstract and OK-Net EcoFeed

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