



MAKING AND STORING HAY

DERRYN NASH

Roughage (mainly grass or maize silage) is the cheapest source of feed for the ruminant animal. The better the quality of the roughage the better the animal will perform and less concentrates will be required to feed it to the required level of performance.

Why make hay

Grass does not grow all year around. Tropical grasses (usually *Eragrostis* spp) grow well after the rains in spring and summer. Spare grass during the growing season needs to be conserved as hay to feed when the grass does not grow in autumn and/or winter. Spare grass from temperate pastures, can also be conserved but are quite high in water content

and needs a lot of drying before baling. The grass can be baled and wrapped with plastic and put up as silage or stored, well compressed, in an airtight bunker. This can be a very expensive option because it must be from pastures that are usually planted annually, irrigated and well fertilised. Making hay or silage will always reduce the quality of the grass being cut.

What kind of hay

Veld hay: Veld in Sourveld areas can be conserved for winter by cutting for hay in autumn. Cutting veld later than autumn will result in very low quality hay as seen in Table 1.

TABLE 1 Quality of veld hay baled in different months of the year (Bredon, Stewart and Dugmore, 1987) (results on an as is basis)

Month baled	Crude Protein (%)	Energy (ME MJ/kg)
February	6.1	7.1
March	5.1	6.7
April	3.9	5.8

Sourveld which is dominated by unpalatable species eg *Cymbopogon* spp, *Hyparrhenia* spp, *Aristida* spp is not suitable for making hay. The hay is unpalatable and should only be used for bedding. If roughage is in very short supply and there is an emergency this hay should be sprayed with liquid molasses and urea to help improve digestibility.

Veld in Sweetveld areas can be grazed all year around therefore it does not need to be baled, camps can be closed off and grown out for winter.

Planted Pastures for hay: Usually *Eragrostis curvula* is planted as a permanent pasture and cut for hay. It can be cut three or four times a season depending on

rainfall. The quality of the hay depends on when it was cut - grass in full flower will have a lower quality than grass cut just before flowering.

Eragrostis teff is an annual, ie must be replanted every year, which can make very good quality hay. This is much preferred by the horse fraternity for feeding their horses. Depending when the pasture is planted, two to three cuts can be taken.

Both these species are fine leafed and can be cut, dried and baled in two days depending on stage of growth and weather conditions. Both pastures must be fertilized after cutting with 50kg N/ha and 50kg K/ha. If potassium is not applied the lands will quickly be “mined” of minerals that are being removed in the bale. Chicken litter or manure can be used instead of inorganic fertilizers.

How to make hay

Do NOT bale grass leftover from grazing animals. It has low quality, which is why they did not eat it, and it will just become worse after baling. It will also be full of dung pats further reducing its palatability.

Timing is everything, the quality of the grass cut will determine the quality of the hay baled. Cut the grass in the early morning when you know there is good weather for the next few days. The hotter and drier the weather the quicker the grass will dry for baling. Cut and leave the grass to dry on the topside, turn and dry underneath. Once the grass is 15 to 20% dry matter rake into windrows and bale.

Do not bale grass when it is still too wet, it will spoil with bacterial or fungal growth and it may get so hot that it bursts into flame in storage. Hay can be made mechanically into small square bales, small round bales or large round bales.



FIGURE 1: Examples of a square baler (top) and a round baler (bottom).



Making hay by hand

It is possible to cut with a sickle or brush-cutter and make small square bales by hand if one is a small scale farmer without access to mechanisation.

Storing the hay

Storing hay outside will cause spoilage from the weather. The aim is to minimise the spoilage to acceptable levels. Figure 2 shows how much hay is lost in a bale of various sizes depending on how deep the spoilage due to weathering goes. Between 10 and 50% of a bale can be lost depending on how it is stored.

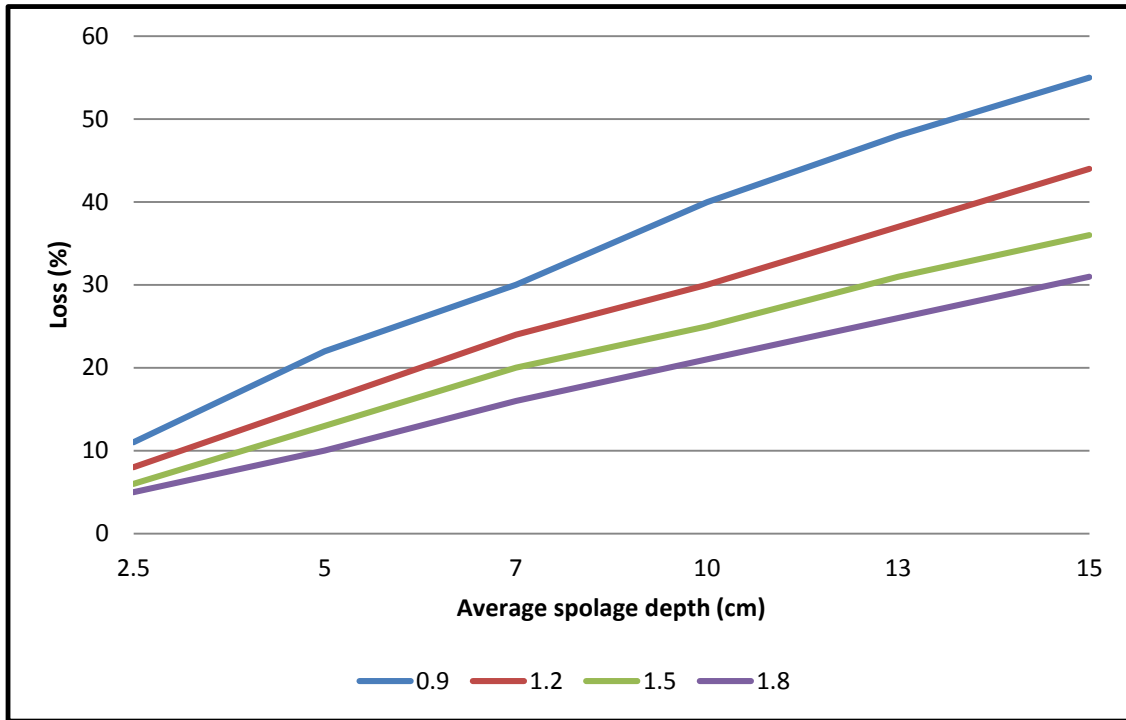


FIGURE 2: Percentage loss of hay depending on spoilage depth and bale diameter. Bale diameter (m) is shown in the legend.

The best place for a bale is under cover on dry ground. If one has to store outside, it is most important to keep the bale off the wet ground as the dry grass will absorb the soil moisture upwards. Store on a well-drained site or on pallets or poles. Do not store bales under trees as the sun will not dry them out after rain. Store the round bales in a row going from north to south if possible.

This means the sun can shine on both sides of the bale during the course of the day (sun is going east, west). The slope should be in the same direction so water can drain along rows and not across them. Do not store rows close to each other as the rain being shed off the bale will accumulate between them and spoil them. The rows should be at least one metre apart. See Figure 3.

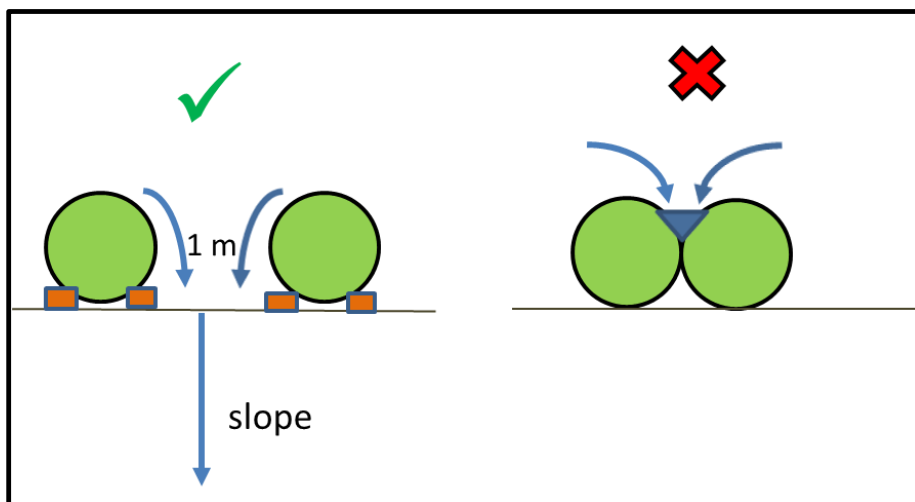


FIGURE 3: How to store bales to keep as well as possible

It is best to stack square bales or small round bales off the ground and cover with a tarpaulin. The best storage is under cover in a shed, however, this is expensive.

Buying hay

Most people have to buy their hay in.

Questions to ask if buying in hay bales:

1. What grass is it and if not veld, was it fertilised?
2. When was the hay baled: month and growth stage (flowering or not)?

Check the following

1. *What colour the bale is?*

A nice pale green colour is best for *Eragrostis* hay while veld should be a reddish colour and not too stalky

2. *How tightly baled is it?*

A loose bale will be more prone to spoilage and weigh less

3. Be aware ticks may be imported onto your farm in the hay bales.

If you are buying a lot of hay from one source take a representative sample and send it to Cedara laboratory for a quality analysis. This will allow you to use the bale in the best way and feed your animals optimally by balancing what they need in addition to the hay.

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