

## Assessing Forage Stocks

There is still some way to go yet before the end of winter and concerns remain about the amount of forage in store to see the winter out.

In order to assess stocks of forage it is essential to know the quality and the quantity in store. Then, if forage is in short supply, it can be allocated appropriately to the different classes of livestock.

Firstly, to know the quality of the forage it is necessary to get a sample analysed if this has not been done already. An analysis will give the dry matter (DM) content and an estimate of the digestibility, metabolisable energy and protein value. Knowing the DM content is particularly important because rations are calculated on a DM basis before converting to fresh weights and the DM content can be used to estimate the quantity in store, as follows.

### Silage in pits

Silage (t) = length x width x height x density

Length, width and height are in metres and are easily measured.

Density depends on the DM content of the silage:

Density (t/m<sup>3</sup>) = 65/DM + 0.4

For example, for a pit 30 x 15 x 2.5m and a silage with 250gDM/kg

Density = 65/250 = 0.4 = 0.66t/m<sup>3</sup>

Silage (t) = 30 x 15 x 2.5 x 0.66 = 743 and silage DM(t) = 743 x 250/1000 = 186

### Silage in big bales

Ideally, if the equipment is available, a selection of bales can be weighed to give an average weight per bale. Alternatively, the weight of a bale (1.2 x 1.2m) can be estimated as

Silage t/bale = 0.725 – (0.0007 x DM)

For example, for 500 bales of silage with 350gDM/kg

Silage t/bale = 0.725 – (0.0007 x 350) = 0.48

Then the total amount of silage (t) = number of bales x weight/bale = 500 x 0.48 = 240

and silage DM (t) = 240 x 350/1000 = 84

The weight of silage in a large rectangular bale (0.8 x 0.9 x 2.0m) is around 0.6t (0.53 to 0.64) fresh weight.

### Hay and straw in small bales

Weigh 10 bales (avoiding those on the outside of the stack) to obtain an average weight per bale or use the table below.

	kg
Field dried hay	25
Barn dried hay	23
Barley straw	16
Wheat straw	14

For example, for a hay with 850gDM/kg, average weight of bale = 24kg and 500 bales

Hay (t) = (500 x 24)/1000 = 12 and hay DM (t) = 12 x 850/1000 = 10.2

**Hay and straw in big bales**

Typical bale weights (kg) are as follows.

	Hay	Straw
1.2 x 1.2m round	170 - 190	115 - 135
0.8 x 0.9 x 2.0m rectangular	290	215
1.2 x 1.3 x 2.75m rectangular	860	650

The actual weight of large hay and straw bales can vary considerably with baler type and packing density so, again, it would be useful to weigh a selection of bales, if possible, to obtain an average bale weight.

In all cases, when measuring materials, allowance must be made for obvious spoilage.

**Colin Morgan, SAC Animal Nutritionist**  
[Colin.Morgan@sac.ac.uk](mailto:Colin.Morgan@sac.ac.uk)