



Drought Management : Silage Issues

This series of notes aims to provide guidance for producers on options for handling their stock during a drought.

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Making up the silage shortfall

Reports from the many parts of the country suggest that first cuts of silage were lighter than normal. This comes as no surprise given the late start to spring growth and lack of bulk in the silage crops. Many will have relied on a bigger yield of second cut silage to make up the shortfall, but regrowth has been badly affected by hot dry conditions in mid summer. In some cases the second cut has been grazed to provide enough feed for stock.

To add to these problems, cattle growth rates were adversely affected by the late start to grass growth and the mid season drought. Cattle could be 30 – 50kg lighter than normal, resulting in fewer cattle sold off grass and more housed and finished from winter rations.

Recommendations for making up the forage shortfall:

- Assess how much silage you have in the pit.
- Get the silage analysed for dry matter and feed value.
- Work out your stocks feed requirements for next winter (your adviser or nutritionist can help with this).
- Identify the shortfall in silage availability

- Identify alternative strategies or sources of feed.

Details on how to assess the silage shortfall are shown later in this article.

Firstly, we can look at different strategies for feeding this winter.

Reduce stock numbers over winter by:

- a) Selling animals as stores between now and housing. Some areas are experiencing a severe grass shortage while others have adequate grass and forage supplies. There may be willing buyers for your store cattle or lambs. This is a good strategy for breeder finishers whose first priority is to maintain condition on ewes and cows.
- b) Provide supplementary feed to lambs and cattle to ensure that they either finish off grass or finish quickly after housing. Every day saved frees up feed for other stock.

Grow more feed by:

Establishing forage crops such as stubble turnips after winter barley or an early cut of spring barley. These crops need to be established ideally by mid August. A good establishment of stubble turnips can support 4 cows per hectare for 100 days.

Look at substituting other feeds for grass silage

- a) Cracked wholecrop. Either spring barley or winter wheat crops can be forage harvested and ensiled at high dry matters at the hard dough stage (approx 3-4 weeks before normal harvest). Cracked wholecrop (so called because the grains are cracked in a mill as they pass through the harvester) is normally harvested at between 55% and 75% dry matter and is either preserved using

an additive or using urea prills spread on the pit. It has an energy value similar to reasonable silage (10.0 – 10.5 MJ/kg DM). Crops preserved with additive have low protein content of around 9%, whereas the urea treated crops have high crude protein content.

It makes sense to store cracked wholecrop in a layer above the first cut silage in years when the pit is less than full. It is important to prevent rodent and bird damage. Some farmers have placed a net over the tyres on top of the pit to deter birds. Others have applied another layer of grass or draff to keep the wholecrop out of reach of pests.

Feeding the mixture of silage and wholecrop has not proved to be a problem since the energy contents are similar. Cattle intakes can increase by as much as 20% when on high dry matter feed and many have commented how well stock have done and how bedding has been saved when using a drier wholecrop diet.

Wholecrop yields will be approx 12-16t/ha of dry matter for winter wheat and between 8 –12t/ha of dry matter for spring barley. This equates to roughly 20-27 t/ha for wheat and 13-20t/ha fresh weight for spring barley at 60% dry matter.

- b) Straw. Those in or near arable areas have the option of either including a proportion of straw in the diet or feeding cows or wintered weaned calves on a straw plus concentrates diet.

We are often asked whether it is worth ammonia treating straw to improve the feed value and the answer is generally no when cereals are at a relatively low price. The old rule of thumb was that it was worthwhile treating straw when concentrate costs exceeded £120 per tonne, and mixes including cereal are well below this level. The only exceptions are where straw storage is limited and storing in tube lines is the best solution, or where farmers want to avoid carting a lot of concentrates to stock. Otherwise an untreated straw plus concentrate diet will be most economic.

- c) With their high levels of digestible fibre, distillers draff and brewers grains can be used as partial replacement for forages. However, they do not have the long fibre properties of the normal forages so some long fibre should normally be included in the diet, and it is usual to feed draff at up to 50% of the forage intake. Draff has a high oil content, resulting in a higher ME value than most forages (around 11-11.5MJ/kgDM) and the CP is around 20-24% but it is

low in minerals and these factors should be taken into account when formulating rations. Draff has been successfully fed as a concentrate replacer but if more than 50% of the diet is made up of draff, a special mineral supplement must be used to take account of the deficiencies and to protect the rumen bugs from the high oil content.

Additional notes on estimating silage yield.

Measuring the volume of silage in your pit.

A recent example from a Monitor Farm showed that there a rectangular section 20m long x 15m wide by 2.5m high, and a sloping section approximately 9m long x 15m wide x 1.25m high (divided by 2 to allow for the slope). This gave a volume of 919m³.

Assessing the dry matter of silage in the pit.

Silages can be sampled any time from 6 weeks after ensiling. It is important to know how much dry matter you have because the dry matter content rather than the water content that feeds the animals. There is a big difference in the amount of feed available in 30% dry matter silage compared to wet, 20% dry matter silage.

Calculating the tonnage of dry matter in the pit.

Bulk densities for 25% dry matter silages are as follows (source SAC Farm Management Handbook)

Settled height (h) in metres	Average dry matter density (D) (kg/m ³)
1	163
2	176
3	187
4	198
5	208
6	217

Therefore our pit holding 919m³ of silage at a height of 2.5m will contain 919 x (180/100) = 165 tonnes of dry matter at an average dry matter of 25%.

High dry matter silages will have different dry matter densities but there is little information available as guidance.

The best information we have is shown in the table below, prepared by SAC nutritionists and based on research work done in the 1980's. You can use this to work out dry matter densities for crops of 18 – 26 % dry matter and could extrapolate it for it for drier silages.

Silage D value %	Silage dry matter density kg DM/m ³					
	70			67		
Silage dry Matter %	18	22	26	18	22	26
Height of pit m						
2m	139	155	175	131	146	162
3m	148	165	186	139	155	172
4m	157	175	197	147	164	182

Calculating bulk density

Bulk density = 100(D)/DM.

For the farm example the bulk density is 100 x 0.180 divided by 25 = 720 kg/m³
 919m³ x 0.726 = 661 tonnes at 25% dry matter content.

Calculating feed requirements

For our example, cattle and sheep requirements were worked out by assuming 25% dry matter silage was being used and then converting this to dry matter, as can be seen below.

Group	Number	Est Kg/day	Days	Total tonnes
In calf heifers	25	35	180	157
Cows early winter	50	40	90	180
Cows late winter	50	30	90	135
Weaned heifers	25	25	130	80
Sheep	1150	4	90	483
				1035

Shortfall

1035t of silage at 25% dry matter equates to 258t of dry matter. The dry matter shortfall is therefore 258 – 165 = 93 tonnes.

Cracked wholecrop required to make up the shortfall

Assume a winter wheat yield of 15 t/ha DM. 93t DM divided by 15 tonnes DM per hectare = 6.2 ha or 15 acres of winter wheat wholecrop.

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