



# Stretching out forage supplies for the dairy herd

## Technical Update

The extremely dry weather means grass has stopped growing and conserved forages are in short supply. If you are running an all year-round indoor feeding system, or a more conventional summer buffered grazing and housed winter system, it is possible to stretch forage stocks by prioritising stocks and feeding less but over a longer period. If you are in this position, plan now so that you are not faced with empty silage clamps later in the winter.

The first step is to work out how much silage dry matter (DM) you have, and to calculate what this translates to in kg of DM per cow, per day (don't forget dry cow requirements and consider alternatives for youngstock). Working on a DM basis is important as it gives a more accurate figure and might reveal that you're not as short on quantity as you think you are. For example, you might have a small volume of second cut, but if the second cut has a dry matter of 55% instead of the normal 27%, then the tonnes of dry matter in the clamp could be double.



### Calculating forage stocks

#### Step 1 – Calculate clamp size

This is done by calculating the volume of silage available from the expression: Volume (m<sup>3</sup>) = height (m) x width (m) x length (m) then multiply the volume by the density of the clamp. If you do not like working in meters then calculate the volume of the clamp in cubic feet, and multiply by 0.02832 to convert from cubic feet to cubic meters.

#### Step 2 – Calculate silage density

Silage density varies according to the height of the clamp, the DM of the silage and how well the clamp was consolidated.

Wholecrop tends to have a lower density of between 550 – 650 kg/m<sup>3</sup>, while maize silage is heavier with a density of 750-800 kg/m<sup>3</sup>.

If a compactor was used on the farm, then the density of the silage could be 10% greater than the figures given; towards a ceiling of 950 kg/m<sup>3</sup> in well rolled clamps.

### Grass silage density guide (ref: AHDB), kg/m<sup>3</sup>

Silage DM, %	Clamp height, m			
	2.0	2.5	3.0	4.0
20	780	840	890	950
25	690	730	775	830
30	620	660	690	740
35	570	600	625	670
40+	520	550	570	610



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### Step 3 – Convert to a DM basis

Once you've calculated the tonnes of forage available, convert this into tonnes of DM using the silage analysis for each clamp. Then add your estimated yield of DM from any crops such as maize in the field, and from knowing your farm. Include an estimate for late cuts of grass silage.

### Step 4 – Calculate kg/DM available per day

Once you have a reasonable estimate for the quantity of forage DM available, divide this by the number of cows and then the number of days between now and turnout next spring. This will give you the maximum figure of forage DM inclusion you can feed over the winter.

If this value is lower than your usual feed rate, consider the following options to help ease you through low forage stocks this winter.

### Maintain the forage stocks you have

Good clamp management will be essential to keep the forage you do have, in good quality and palatable condition. Some

farms we see have hardly any losses, while others are discarding 10-20% of their silage because of poor sealing and poor clamp management. Keep the clamp face neat and flush on a daily basis, with the plastic close to the face to limit oxygen penetration and heating.

Any heating in the clamp will reduce the energy content of the silage by 20-80%, and lead to clostridia and mycotoxin growth in grass, maize and wholecrop silage, resulting in low grade loss of milk (1-2 litres/cow/day), more serious losses and even embryo death. Discard any mouldy areas of silage; there is no benefit to feeding mouldy silage to cows as this reduces overall intakes and will increase feed costs further.

### Prioritise which animals receive what feed

The most important cows on the farm are the pre-calvers and high yielders. These cows are going to drive milk yields over the next six months. Any cows that are due to be culled in the next eight weeks should be sent off now to save forage. Youngstock will do very well on straw or hay supplemented with a 18% concentrate or home mix. Low yielders are low priority animals.





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### Choice of feeds to replace forage

Once you have worked out the total tonnage of forage DM available to you after prioritising the number of animals you wish to feed, then you can start to plan what to buy and feed in order to stretch forage stocks.

The cow's rumen is very flexible and although it is traditional to feed forage, the rumen can work quite happily without grass or silage. The only thing that matters to the rumen and rumen bugs is consistency of dry matter, and having a reasonably digestible mould free diet, available 24 hours per day with adequate levels of fresh water.

High yielding cows producing 40-50 litres of milk will do fine on 8 kg of forage DM, as long as the total diet is balanced with sufficient energy, protein, and rapidly fermentable carbohydrate from high fibre co-products. In this situation the key is not to necessarily chase high energy ingredients but to select cost effective ingredients which bring consistency to the diet and

encourage high DMI. Wet succulents would be an option, but dried ingredients are easier to source, with lower on farm losses and generally lower haulage costs. Also, look at the cost of the feed on a DM basis before you buy anything.

For example, potatoes at £46 per tonne might not sound too bad, but the DM of potatoes is only 20%. On a DM basis this is equivalent to a cost of £230/tonne of DM ( $£46 / 20 \times 100 = £230/\text{tonne DM}$ ), which makes them expensive. In the same way brewers grains at £50/tonne, with a DM content of 24%, equates to a price of £208 per tonne of DM ( $£50 / 24 \times 100 = £208.3/\text{tonne DM}$ ), but adding between 5-10% loss on farm pushes the real price up to around £223.

In contrast, wheat feed at £177 per tonne fresh weight at 88% DM is £201/tonne of DM delivered ( $£177 / 88 \times 100 = £201/\text{tonne DM}$ ), making wheat feed a much better buy on a DM basis. On a DM basis, 1 tonne of wheat feed would replace roughly three tonnes of silage at 30% DM.



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The following is a list of some high fibre ingredients to potentially replace silage:

	Analysis guide, on a DM basis				Comment	Feed rate, kg, up to:
	DM, %	ME, MJ/kg	Fibre, % (NDF)	Protein, %		
Wheat straw	85	6.5	81	4.3	Low energy, must be chopped to 10-12 mm	6 kg
Palm kernel	90	12.2	69	17	Can be gritty and soapy tasting	2 kg max
Soya hulls	86	12.2	68	11.5	Good source fibre and a good forage replacer	6 kg
Wheatfeed	88	11.9	36	18	Good all-rounder, needs water to soften	6 kg
NIS, Nutritionally Improved Straw	90	9.0	66	3	Enhances rumen health	6 kg
Brewers grains	24	11.7	57	24	Limited supply, hard on BF%, prone to heating	15kg
Malt culms	89	11.5	53	27	Nice feed, limited supply	4 kg
Oat husks	84	6.5	50	7	Very variable, can be a mycotoxin risk	3 kg
EU Sunflower	89	9.6	47	34	Good cost effective protein	2 kg
Imported beet pulp	88	12.4	37	9.7	Very hard nuts, needs water to soften	6 kg
Dried Citrus pulp	89	12.6	23	6.8	Currently unavailable but situation could change	5 kg
Pressed Pulp	27	12.7	55.7	11	Available once sugar beet factories open	15 kg
Fodder Beet	18	11.9	12.7	6.3	Available throughout winter	15 kg

### When balancing low silage diets:

- 1) Beware of diet sorting – this is where cows can shuffle the food around to selectively eat the concentrates and can cause poor rumen health, acidosis, and low milk butterfat %. To prevent this, try 'compact feeding' where water is added to dried feeds to bring the overall dry matter of the TMR down to 40% after the forages have been included.
- 2) Keep an eye on protein. Diets which are low in grass silage or a diet with a high percentage of maize or wholecrop silage tend to be short of rumen degradable protein, in which case the cows will benefit from 100-150 grams of feed grade urea.
- 3) Keep an eye on calcium, magnesium and sodium levels in the diet. Early lactation cows on low levels of grass or grass silage

tend to be deficient in these major minerals and often benefit from 100-150 g of limestone, with 50 g of magnesium oxide, and some salt on top of the minerals being fed.

Also make sure the cows have plenty of fresh water in the troughs, with good ventilation in the sheds during these periods of heat stress.

### Replenishing forage stocks from the farm:

We are an island with a temperate climate so it will rain at some stage. We need to be prepared to take advantage of any grass growth that we do get this autumn. It is now too late for wholecrop other than alkalage, so the focus needs to be on getting the best from grass and potentially catch crops later in the year.



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### Fertiliser applications:

There is no point applying any fertiliser to parched ground as it will be wasted. Once soil moisture levels start to recover and there is rain forecast, then applying 2.5kgN/ha/day (2units/acre/day) will give grass a boost as it recovers from its dormant state. With very warm soils there will also be mineralisation of soil N once moisture levels increase. It will take about four weeks for grass to recover, start growing rapidly and build up decent covers again. Grass generally grows well as it comes out of drought and as we are coming from a standing start quality will be good.

Depending on when the drought breaks it may be possible to take at least one or possibly two more cuts of silage depending on the conditions through the autumn, as well as getting some valuable grazing.

### Reseeding:

There will be few farms that will have the luxury of being able to take much land out of production for the autumn with a full reseed this year. Swards will undoubtedly have suffered some damage from the drought so will need either rejuvenating or replacing next year.

As with fertiliser, there is no point putting seeds into completely dry soil so any remedial work should wait until soils are moist. One way of increasing production for later in the autumn and also bulking up early cuts in 2019 would be to over-seed. Use large seeded, vigorous species like Italian ryegrasses or Westerwolds, which will help with yields later in the year and also give a boost to early cuts next season. If there is sufficient rain in August to allow seed germination then it may also be prudent to look at sowing grass into cereal stubbles to increase production in the short-term. As with all grass seeds, create as good seed to soil contact as you can to encourage rapid germination.

### Catch crops:

There are a number of rapid growing crops that can be sown in the late summer/early autumn and be grazed in 6-8 weeks. Stubble turnips can be sown until August and will be ready to graze in eight weeks. Crops such as kale and Typhon are also suitable for sowing up until September (the earlier the better for autumn utilisation) and will give some regrowth for an early bite in the spring. The catch crop option should also be considered for youngstock who, provided they have sufficient supplementation to maintain growth rates, and ground conditions allow, can graze crops like kale with some grass run back well into the winter, saving all important tonnes of conserved forage and reducing bedding requirements.