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Forage and Feed Planning Factsheet

Introduction

Challenging and unpredictable weather have highlighted the importance of forward planning in readiness of any future weather conditions, whatever it might throw at you!

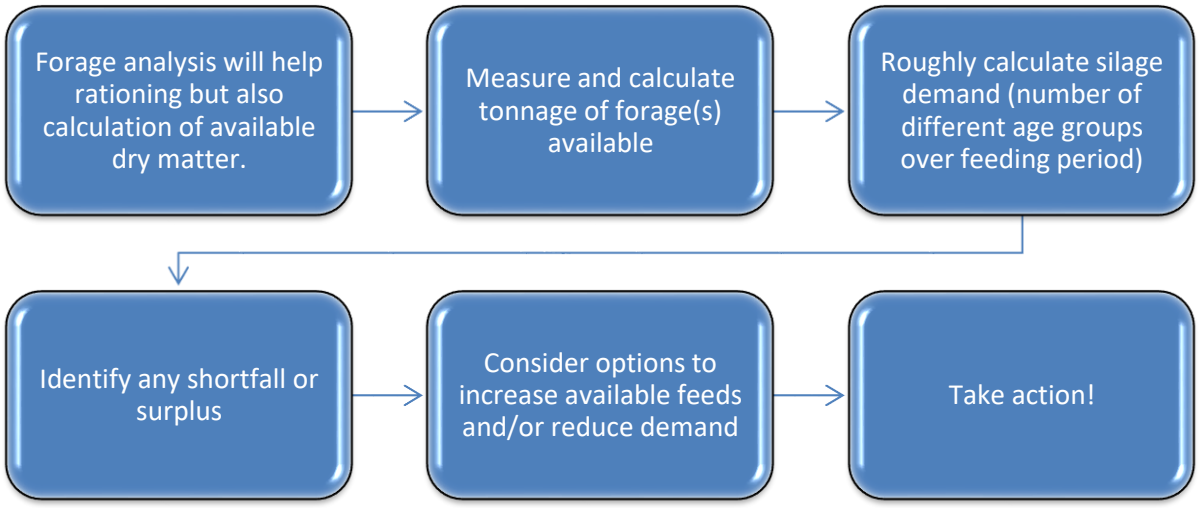
This factsheet provides a logical flow to the forage and feed planning process (also known as feed budgeting).

Why Feed Budget?

1. Peace of mind that feed supplies match expected demand.
2. Detection of supply shortfalls; informing early intervention.
3. Reduce risk of sudden diet changes or expensive feed purchases in late season.
4. Make best use of what you have.

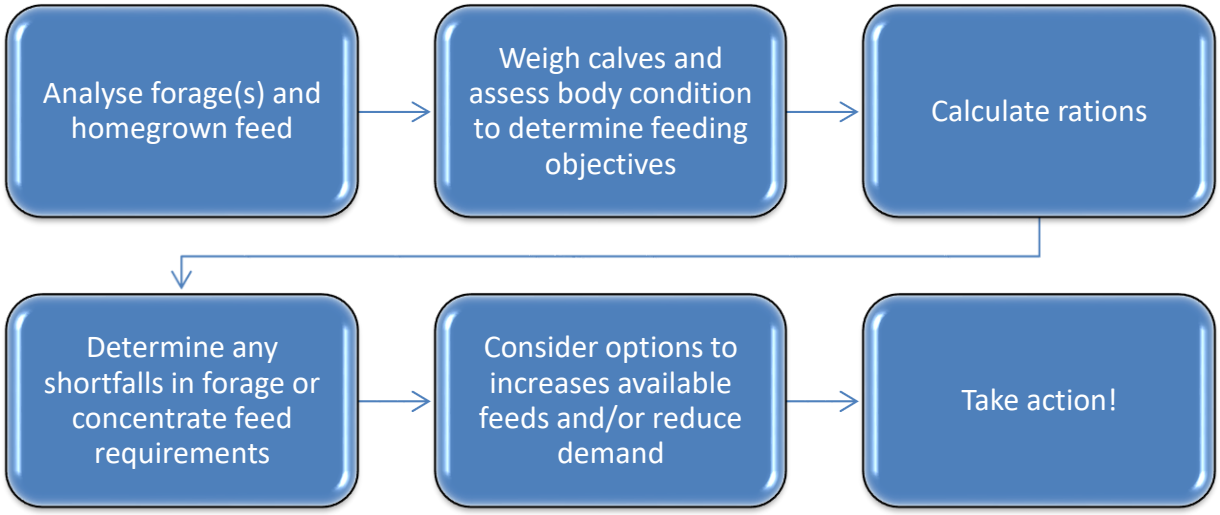
Forage budget

A forage budget can be a simple and quick barometer of forage stocks that is particularly useful if carried out in mid/late summer when more options are still available.



Full feed budget

A full feed budget considers all feeds, based on formulated rations for each livestock class. This is useful to assess whether there is enough homegrown feeds or when it is most timely to purchase required feeds.



Review

These techniques help assess risk and forward plan, giving the widest window of opportunity to react.

The second part is to ensure rations are performing as expected by observing animal body condition and growth rates. Investigate wastage at the feed barrier and routinely stock-take feed supplies throughout the feeding period to assess speed of use compared to expectation.

The importance of feed budgeting is heightened when forages or other feeds are scarce but it is a good discipline in any year to make best use of available resources.

Forage Budget

Below are simple forage budget examples that project how many days' worth of feeding is available and identify any likely shortfall or excess.

- ***Blank sheets are also provided at the back of this factsheet.***

This example compares two silages of significantly different dry matters to demonstrate the difference between cuts or years and therefore the importance of silage analysis:

Step 1: Silage Available	**Silage A**	**Silage B**
Total Clamp Volume		
(A) Pit Length (m)	30	30
(B) Pit Breadth (m)	12	12
(C) Pit Height (m)	3	3
(D) Total Available Storage (AxBxC) m^3	1080	1080

Dry Matter % (from silage analysis)	21%	36%
Density (*see table below)	890	630

Total Tonnes Fresh Weight (**D) x by density / 1000**	961	680
Total Tonnes Dry Matter **Total fresh weight (above) x DM% / 100**	201	244

For a silage clamp containing the same volume of forage, any difference in crop dry matter can make a significant difference to the actual tonnage available during the winter. Dry matter content is most important as this contains the fibre and major nutrients.

*Density Table (tonnes fresh weight per cubic metre)

DM (%)	Clamp height (m)			
	2	**2.5**	**3**	**4**
20	790	840	890	950
25	690	730	780	830
30	620	660	690	740
35	570	600	630	670
40+	520	550	570	610

Note – Crop bulk density is similar for grass, wholecrop and maize silage. Bulk densities are a guide, which also depends on level of silage compaction, chop length and fibre content.

Step 2- Silage Demand

Livestock to be housed	Number		Silage Consum-ption DMI/day (KG)		Days house (predicted no days)		Sub-total silage requirements (answer/1000 to convert to tonnes)	tonnes of DM used per day
Suckler cows (spring calving)	60	x	8	x	226	=	108	0.48
Suckler cows (autumn calving)	15	x	10	x	226	=	34	0.15
Finishing cattle	12	x	7.5	x	226	=	20	0.09
Rearing Cattle	55	X	4	x	226	=	50	0.22
				Sub-Total (A) tonnes DM			212	0.94
				Total including estimated wastage or safety margin of 10% (A x 1.10)			233	1.03

Step 3- calculate shortfall or surplus

A From Step 1 **Total tonnes of DM available**	201	244	tDM
B From step 2 **Total silage requirement**	233	233	tDM
C **Total DM shortfall/surplus** (A *less* B)	-32	11	tDM
Total days surplus/shortfall (C *divided by* total tonnes DM used/day)	-34 days	+11days	

The above table highlights the difference between silage at two different levels of dry matter, as presented on the previous page. The wetter clamp of silage has less dry matter and could therefore be expected to last 45 days less (34+11 days) in the given example.

Step 4 – If there is a shortfall – options to consider:

A judgement call then needs to be made whether any projected forage shortfall is an acceptable risk (e.g. in the event of an early spring) or whether further action is required. This process allows early identification and the widest possible window to adapt rations, buy additional feed or provide similar intervention, see below:

1 Can additional silage be harvested without compromising performance at grazing?

2 Can alternative value feeds be sourced now?

3 Can you finish youngstock quicker or sell store etc before winter housing?

4 Avoid overwintering 'passengers' by selling breeding stock not selected for replacements.

Alternatives

The table below is a guide to partially replacing grass silage (25% dry matter, 10MJ/kgDM, 12% protein) in a ration, if it is short. This will vary depending on the silage being replaced and is intended as a guide only.

	Alternatives to replace 10kg of average silage (kg)				
Straw	1	2.5			
High quality hay			3		
Draff	7.5				
50% protein liquid		0.8			
Barley					
Rapeseed meal					
Fodder beet*				12	
Turnips*					24

*watch overall protein
https://www.fas.scot/downloads/tn694-alternative-forages-sheep-fodder-beet/

Step 4 – Monitor forage usage against predictions

1. Assess monthly usage i.e. measure how far back in clamp is used or do a bale count
2. Is the ration being fed and eaten as expected? Are they eating less or more than expected?
3. Is the ration performing as expected i.e. weighing livestock to check weight gains
4. How much waste/rejected material is left? Has this been accounted for in allowances?

Useful Tips at Forage Making Time

- Using ration information from previous winter and stock numbers to work out how much forage is likely to be required
- Count up bales/loads from each field to get a rough idea of tonnage dry matter yield per field. This will also tell you how the field is performing and help inform, along with soil analysis, agronomy decisions for the sward
- Write on the bale stack, with spray marker, where fields started and finish. For clamp silage, mark where cuts start and finish on the side of wall or stake an earth bank. This will make identifying quality and quantity easier.
- Test silage early (4-6weeks post cutting) to see how much dry matter you have and what is required for next cut and whether this is achievable.

Full Feed Budget

This process goes beyond simple forage budgeting but considers all feeds required. Values are expressed on a fresh weight basis:

Example

	Diet 1	Diet 2	Diet 3	Diet 4
Animal Group	Sucklers	sucklers	bulling heifers	heifer calves
Description	Spring	autumn		
Live wt.	700	700	550	350
no. in group	49	30	4	20
Start of Feeding	20/12/2018	20/12/2018	20/12/2018	20/12/2018
End of feeding	01/05/2019	01/05/2019	01/05/2019	01/05/2019
No. of days	132	132	132	132

Daily Ration (kg/hd/d)

Silage	27	12	7.5	6
Straw	3	1.5	0.94	0.5
Barley		1.2	0.75	1
wholecrop		12	7.5	6
protein liquid		2	1.25	2

Daily Group Ration (kg/group/d)					**(t)**
Silage	1,323	360	30	120	1.8
Straw	147	45	4	10	0.2
Barley		36	3	20	0.1
wholecrop		360	30	120	0.5
protein liquid		60	5	40	0.1

Winter Group Ration (t/group/winter					**(t)**
Silage	175	48	4	16	242
Straw	19	6	0	1	27
Barley		5	0	3	8
wholecrop		48	4	16	67
protein liquid		8	1	5	14

Winter Feed Budget

Feed	**Available (t)**	**Required (t)**	**Balance (t)**	**Cost (£)**
Silage	225	242	-17	25
Straw	48	27	21	100
Barley	16	8	8	180
wholecrop	65	67	-2	
protein liquid	10	14	-4	250

If you expect to be short, plan alternatives early, speak to suppliers and go through options and availability with your nutritionist.

Blank sheets (for own use)
Simple Forage Budget

Step 1: Silage Available Clamp

	Clamp 1	Clamp 2
Total Clamp Volume		
(A) Pit Length (m)		
(B) Pit Breadth (m)		
(C) Pit Height (m)		
(D) Total Available Storage (A x B x C) m^3		

Dry Matter % (from silage analysis)		
Density (*see table below)		

Total Tonnes Fresh Weight (**D) x by density / 1000**		
Total Tonnes Dry Matter **Total fresh weight (above) x DM% / 100**		

*Density Table (tonnes fresh weight per cubic metre)

DM (%)	Clamp height (m)			
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Note – Crop bulk density is similar for grass, wholecrop and maize silage. Bulk densities are a guide, which also depends on level of silage compaction, chop length and fibre content

Silage Available (Bales)

NB: A sample of bales must be weighed where possible to ensure accuracy of calculations due to wide variance of bale weight depending on dry matter, baler model and settings.

	Stack 1	Stack 2	Stack 3
A Number of bales in stack			
B Average bale weight (kg)			
C Total tonnes of fresh weight (FW) ***(AxB/1000)***			
D Dry Matter % *(from silage analysis)*			
E Total baled dry matter (DM) ***(CxD/100)***			

Total Tonnes Fresh Weight ***(add all the 'C' answers above)***			
Total Tonnes Dry Matter (DM) ***(add all the 'E' answers above)***			

Now add the total fresh weight of each forage type (bales and clamp) together. Repeat for dry matter:

Total farm forage available:

Total Tonnes Fresh Weight (t FW) ***(of bales and clamp(s))***	
Total Tonnes Dry Matter (t DM) ***(of bales and clamp(s))***	

Step 2- Silage Demand

Indicative dry matter intakes in below table. Conserved forage intakes will depend on stage of pregnancy or lactation, weight, growth rate, body condition score or change, and other feeds fed.

	Forage Consumption DMI/day (KG)
Suckler cows (spring calving)	8
Suckler cows (autumn calving)	10-14
Finishing cattle	7.5
Rearing Cattle	4
Dry ewe	1.1
Late pregnancy ewe	1.6

Livestock to be housed	Number		Silage Consumption DMI/day (KG)		Days house (predicted no days)		Sub-total silage requirements (answer/1000 to convert to tonnes)	tonnes of DM used per day
Suckler cows (spring calving)		x		x		=		
Suckler cows (autumn calving)		x		x		=		
Finishing cattle		x		x		=		
Rearing Cattle		x		x		=		
				Sub-Total (A) tonnes DM				
				Total including estimated wastage or safety margin of 10% (A x 1.10)				

Step 3- calculate shortfall or surplus

A From Step 1 **Total tonnes of DM available**	
B From step 2 **Total silage requirement**	
C **Total DM shortfall/surplus** (A *less* B)	
Total days surplus/shortfall (C *divided by* total tonnes DM used/day)	