Back of the envelope feed budget

Feed budgeting is an essential planning tool for dairy farmers. When the price of fodder and/or grain is high it becomes even more important to complete a feed budget to calculate how much feed is needed in the coming months to meet milk production requirements.

This fact sheet walks through the process of calculating an annual feed budget by estimating the total feed requirements (dry matter [DM]) of each class of stock in your herd (see Tables 1, 2 and 3) and the total feed available on farm (see Table 6). These calculations will indicate whether there is a shortfall/surplus by subtracting the total feed available from the total annual requirements (see Table 7).

KEY MESSAGES

Feed budgeting is an essential planning tool

Use this simple feed budget to calculate how much feed in tonnes of dry matter you need to purchase per year

Annual feed requirements per stock class

Milkers

Annual dry matter requirements (t DM/cow) for milkers vary depending on liveweight and milk production levels over a lactation of 300 days. Determine A (the annual requirements for milkers in your herd) by multiplying the number of milkers by their intake (t DM) based on the liveweight (kg) and milk production levels that are closest to your cows resembles your farm (see Table 1).

Table 1 Ready reckoner for annual feed requirement (300–day lactation)
Milkers' annual intake in tonnes of DM/cow @ 11 MJ ME/kg DM

Production		Liveweight (kg)					
(kg MS/cow)	litres/cow	400	450	500	550	600	650
300	3,529	3.5	3.6	3.8	3.9	4.0	4.1
350	4,216	3.8	4.0	4.1	4.2	4.3	4.5
400	4,942	4.2	4.3	4.4	4.6	4.7	4.8
450	5,713	4.5	4.6	4.8	4.9	5.0	5.1
500	6,536	4.8	5.0	5.1	5.2	5.4	5.5
550	7,418	**5.2**	5.3	5.5	5.6	5.7	5.8
600	8,370	**5.5**	**5.7**	5.8	5.9	6.1	6.2
650	9,401	**5.9**	**6.0**	**6.2**	6.3	6.4	6.6
700	10,526	**6.3**	**6.4**	**6.6**	**6.7**	6.8	6.9

Bold cells are unlikely production target

	Number of cows	Annual requirement (t DM/head)	Total annual feed required (t DM)
A Milkers			

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Dry cows

Dry cow requirements range between 10–15kg DM per cow per day over the dry period. For example, cows will be dry for 65 days, therefore 65 days x 15kg DM= 975kg DM/cow is required for the dry period. Determine the value of B (annual requirement for dry cows) multiplying the number of dry cows by their feed requirement and length of dry period.

Table 2 Total dry cow feed requirements kg DM per cow per day

		Number of cows	Feed requirement (t DM/head)	Total feed required (t DM)
B	Dry cows			

Yearling heifers and calves

Determine the value of C and D (annual requirements of yearling heifers and calves) by multiplying the number of animals by the feed required for the target liveweight and adding the total feed requirements of the two classes of stock.

Table 3 Total annual feed requirements (t DM/head) for yearling heifers and calves at two different target liveweights

			450kg*	550kg*	Number	Total feed required (t DM)
		Age (months)	kg DM/day	kg DM/day		
C	Yearling heifers	12–15	5.6	7.2		
		15–18	6.6	8.3		
		18–21	7.6	10.4		
		21–24	11.6	13.7		
	Annual total (t DM)		**2.8**	**3.6**		
D	Calves	3–6	3	3.4		
		6–9	3.8	4.6		
		9–12	4.7	5.8		
	Annual total (t DM)		**1**	**1.2**		

*Target liveweight as a 2-year-old

Total annual feed requirements

Total annual feed requirement (Table 4) is calculated by adding feed requirement of each class of stock calculated in Tables 1, 2, and 3. F = (A + B + C + D + E).

Table 4 Total annual feed requirements

		Number	Annual requirement (kg DM/head)	Total annual feed required (t DM)	
A	Milkers		✗	=	A = number × daily requirement × no. of days
B	Dry cows		✗	=	B = number × daily requirement × no. of days
C	Yearling heifers		✗	=	C = number × daily requirement × no. of days
D	Calves		✗	=	D = number × daily requirement × no. of days
E	Others		✗	=	E = number × daily requirement × no. of days
F	Total (A + B + C + D + E)				F = (A+B+C+D+E)

TIP

Bull feed requirements range between 15–18kg DM per bull per day. Include this information in your feed budget if applicable to your farm.

Total feed available

The total available feed is calculated by adding the pasture yield, the tonnage of grain/pellets used and the fodder that is available.

- To avoid over-estimating tonnes dry matter of fodder available, you should adjust for wastage expected at feed-out. This is value P in Table 6. Refer to the Table 5. For further information, see the fact sheet *Reducing feed wastage costs* at **feed.dairyaustralia.com.au**.
- Be careful converting 'as fed' figures to 'DM' e.g. grain: 90 per cent DM, hay: 85–90 per cent DM, pit silage: 32–38 per cent, baled silage: 35–50 per cent DM.

Table 5 Feed wastage using different feed-out methods

Feed-out method	Min %	Typical %	Max %
In the dairy at milking	0	1	2
In grazing paddock, on pasture	5	15	25
In sacrifice paddock, fed on bare ground, in ring feeders, or under a fence line	5	25	35
On permanent feed pad incorporating a compacted surface and purpose-built feed troughing	2	5	10
On permanent, fully developed feed pad with concrete surfaces	0	3	5

NB These figures assume dry conditions. They may not reflect the full range of wastage that might occur under wet conditions.

Table 6 Annual feed supply

		Fill in		
G	Pasture available		hectares	G
H	Estimated pasture harvest/ha		t DM/ha/year	H
I	Annual pasture yield		t DM/year	I = (G × H)
J	Number of cows		cows	J
K	Normal grain/pellet feeding		t DM/cow/year	K
L	Normal grain/pellet feeding		t DM/year	L = (J × K)
M	Conserved fodder		t DM	M
N	Purchased fodder		t DM	N
O	Fodder available		t DM	O = (M + N)
P	Feed out wastage *see Table 5*		%	P
Q	Net fodder available			Q = (O − [P/100 × O])
R	Total feed available		t DM	R = (I + L + Q)

Calculate the shortfall or surplus

The shortfall or surplus can be calculated by subtracting the total feed available (R from Table 6) from the total annual requirements (F from Table 4). A positive number means that feed needs to be purchased.

Table 7 Farm's annual shortfall or surplus of feed

		Calculate		
F	Total annual feed requirements		t DM	F = (A + B + C + D + E)
R	Total available feed		t DM	R = (I + L + Q)
S	Shortfall/surplus		t DM	S = (F – R)

FOR FURTHER INFORMATION

Dairy Australia's easy-to-use *Feed Budgeting Tool* (Excel spreadsheet) enables you to look at feed supply and feed demand over a 3, 6, 9 or 12 month period.

To download this tool, please visit **feed.dairyaustralia.com.au**