

Feed budgeting

Technical note 17

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What is a feed budget?

Feed budgeting is a farm assessment to identify feed requirements based on the number and class of livestock to be fed and the production levels that are targeted. A feed budget is generally used as an outline of the feed supply and demand over a 12-month period—a feed year plan.

How to feed budget ...

Step 1: Calculate how many tonnes of dry matter your herd requires for the year

Average cow body weight..... (kg) × 0.020	A=	_____
Target milk production (litres/day) × 0.3 kg	B=	_____
	A + B =	C= _____
Total cow number (dry + milkers) × 0.365	D=	_____
	C × D =	E= _____

Calculate home-grown feed

Step 2: How much grain, silage and hay can you produce on your farm over a year?

.....tonnes of grain (as fed) × 0.9	F=	_____
.....tonnes of silage (as fed) × 0.35 × 0.85	G=	_____
.....bales of round bale silage (as fed) × kg weight × 0.5 ÷ 1000	H=	_____
.....bales of hay × weight (kg) × 0.85 ÷ 1000	I=	_____
	F + G + H + I =	J= _____

Step 3: How much pasture is grown on your farm?

Include all pasture types grown in a year to determine the total amount of pasture produced (i.e. do this calculation for every different pasture species).

Is this amount of pasture required obtainable on your farm?

- Use pasture meters and photo standards to estimate the amount of feed that is grown on your farm.
- Also remember that pasture growth is not consistent all year round—always take into account when there might be feed gaps (autumn).

This table indicates the range of potential dry matter (DM) yields of some pastures that are both raingrown and irrigated.

Pasture type	Rain grown (t DM/ha)	Irrigated (t DM/ha)	Pasture utilised/ha	No. of ha	Tonnes DM/year
Ryegrass	-	8 - 14	..... X	=	.....
Oats	1* - 7	3* - 10	..... X	=	.....
Barley	1* - 5	3* - 9	..... X	=	.....
Lucerne	3 - 10	10 - 20	..... X	=	.....
Kikuyu	3 - 8	10 - 15	..... X	=	.....
Forage sorghum	8 - 15	20 - 30	..... X	=	.....
Lablab	2 - 6	-	..... X	=	.....
Total pasture (add all pasture utilised together)				K =	.....

These figures are amounts grown with no nitrogen application

Home-grown feed total → J + K = L = _____

Calculate purchased concentrates and byproducts

Step 4: Concentrates and/or byproducts purchased on a regular basis and used at a consistent rate/day....
Work out how much is required for a year.

Amount of grain fed.....kg/cow/day × 0.90 M = _____

$(M \times D) - F =$ **N** = _____

Amount of protein meal fed.....kg/cow/day × 0.91 O = _____

$O \times D =$ **P** = _____

Amount of whole cottonseed fed.....kg/cow/day × 0.94 Q = _____

$Q \times D =$ **R** = _____

Type of by-product	Amount fed (kg/cow/day)	DM %	Amount fed (kg DM/cow/day)
Brewers grain	..... x	0.22	=
Pineapple/citrus pulp	..... x	0.22	=
Bakery waste	..... x	0.70	=
Molasses	..... x	0.85	=
Other	..... x		=
Total (add all by-products together)			S = _____
Amount of by-products fed	_____ →	$S \times D =$	T = _____

The amount of concentrates and/or byproducts required maybe a purchase, so include it as a buy in feed

Regular purchased concentrates and by-products total

$N + P + R + T$ _____ → **U** = _____

Step 5: Calculate the amount of extra feed you will need to purchase?

Surplus/deficit feed DM

$E - (I + U)$ _____ → **V** = _____

- If the above calculation is a positive number then this is a deficit and this is the approximate amount of feed DM required to be bought in. If the number is a negative, then there is a surplus feed supply for the year.
- Note: this value is tonnes DM/year and needs to be converted to tonnes feed to be purchased on an as-fed (wet) basis in the table below.

Step 6: Don't forget to check the diet against cow requirements, milk production and composition every time there is a change of forage, grazing management or feeding regime.

It is important to consider constructing a feed year plan as it becomes extremely beneficial when determining what feeds can be home grown and which feeds are economical to purchase. It does, however, need to take into account a risk analysis, where certain limitations may impact on feed availability.

Step 7: Work out which purchased feeds are most cost effective, and diet mix for optimum supply of nutrients.

See Technical Note #18: Nutritional economics for cost effectiveness and Technical Note #6: Balancing the diet for optimum nutrient supply.

Step 8: Convert the DM required to be purchased to an as-fed (wet) basis to calculate the actual amount of feed to purchase.

Amount of wet feed to purchase

With the balanced diet(s), calculate the quantity of each individual feed that is required to be purchased using the following formula and table below.

$Tonnes\ DM\ required = \dots\dots Kg\ DM\ of\ a\ feed/cow/day \times no.\ of\ cows \times no.\ of\ days\ used/year \times 1000$

After doing the above formula for each individual feed, insert the value calculated in the associative feed listed below and use the conversion factor to determine the tonnes of feed to purchase/year **as-fed**.

Feed	V (tonnes DM/Yr)		Conversion factor		Feed to purchase tonnes/yr as-fed
Pit silage	x	3.3	=	.....
Round bale silage	x	1.6	=	.....
Grain	x	1.1	=	.....
Protein meal	x	1.1	=	.....
Brewer grain	x	4.5	=	.....
Citrus pulp	x	5.0	=	.....
Molasses	x	1.3	=	.....

Consider the following factors:

- If there is a deficit in feed supply, then it is recommended to calculate what nutrient(s) are limiting by formulating the diet to determine what feeds are most beneficial. For example, if DM intake and energy is limiting, then purchase silage or grain but if forage is the limitation then always replace with a forage source.
- If there is no limitation of feed supply, but the nutritional composition of the feed does not meet the recommended nutrient requirements, then determine what supplement/s maximise rumen health and production. For example, if protein is most deficient, then the inclusion of a protein meal would be most beneficial.
- Always consider the limitations of certain feeds fed to dairy cows, as excesses of a particular feeds can cause rumen health problems.
- A combination of various supplements may be required to achieve the correct nutritional balance.

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Further information

- DEEDI website www.deedi.qld.gov.au for the Nutrition Plu\$ Technical Note series
- Protein Plu\$ checkbook (Published 2006 by DPI&F, Queensland)
- Feed Plu\$ CD v4.0 (Published 2008 by DPI&F Queensland)
- Condition magician booklet (Published 2003 by DPI Victoria)
- www.dairyinfo.biz

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