



6. USING SUPPLEMENTARY FEEDS PROFITABLY



Determine whether supplements other than pasture can be used to improve profitability.



6. USING SUPPLEMENTS

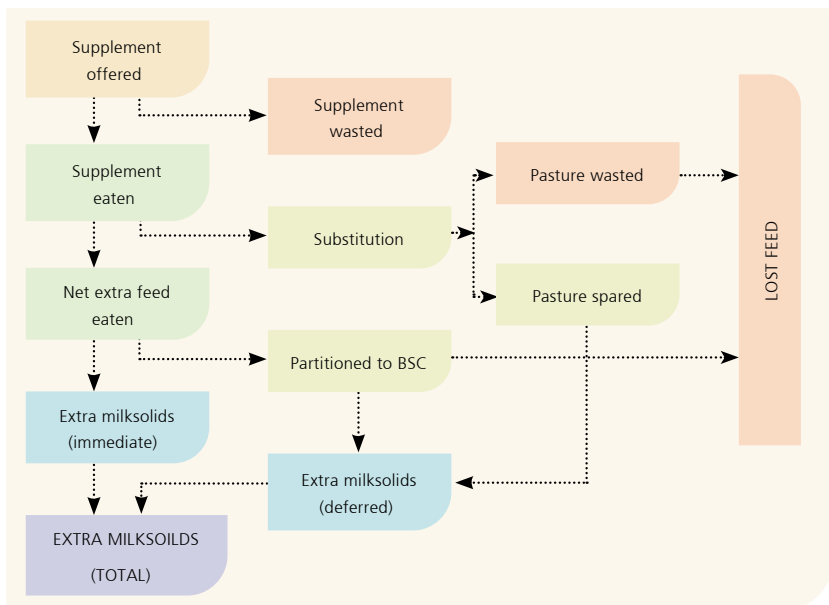
- In pasture-based systems, supplementary feeds should be used to fill a feed deficit
- The milksolids response to supplementary feeds depends on animal and feed factors
- Pasture substitution is a key determinant of the milksolids response when supplementary feeds are incorporated into a pasture-based system
- Financial implications of feeding supplements depend on the milksolids response and increase in revenue, and the costs of feeding the supplement

What is the milksolids response to supplement?

Under ideal research conditions, supplementary feeds return approximately 70 – 80g MS/kg DM fed. This is approximately 7.5 g MS/MJ ME offered, and in this situation, herd sizes are small, loss of supplements is limited and pastures are intensively managed to avoid wastage and maintain quality. Analyses from commercial farms report an average MS response to supplement of 55g MS/kg DM.

Although adding supplements into a pasture-based system has the potential to increase total intake and production, the actual MS response is often variable and less than expected. There are several factors that affect the MS response to supplement.

Factors that affect the milksolids response to supplements



Determine the amount of supplement required

Supplementary feeds should only be used when there is an energy deficit, and not to balance or improve the nutritive value of the cows' diet.

Therefore, supplements can be used:

- when pasture growth does not equal herd feed demand,
- to achieve pasture management targets (e.g. pre-grazing leaf stage/round length and/or pasture residuals),
- if the weather does not permit good pasture utilisation.

If supplements are bought in to fill a feed deficit, they should be purchased based on cost (c/MJ ME), how easily they can be fed to reduce wastage, and the milksolids response that will be achieved.

COST OF SUPPLEMENT c/kg DM feed c/MJ ME fed:

For example: PKE delivered for \$245/tonne, fed in trailers and 11 MJME/kg DM

\$/tonne wet weight	÷	DM%	÷	1000	=	\$/kg DM fed		
\$245	÷	0.90 (90%)	÷	1000	=	\$0.27		
c/kg DM	+	associated costs	=	c/kg DM fed	÷	MJ ME/kg DM	=	c/MJ ME fed
27	+	2.7	=	30	÷	11	=	2.7

**Associated feeding costs: associated feeding costs are approximately 10% of actual feed cost and are included when making tactical decisions on supplement use. They include repairs, maintenance, depreciation and tractor running costs.*

The amount of wastage varies depending on the feed, feeding method, infrastructure, and management practices of the operator(s).

Some good rules of thumb for wastage are:

- 5% for in-shed feeding
- 10% for feed offered on a feed pad
- 15% for feed offered in trailers in the paddock
- 20% for feed fed out in the paddock in good (dry) conditions
- 40% for feed fed out in the paddock in poor (wet) conditions.

Feed wastage or feed utilisation needs to be taken into account when calculating the amount of supplementary feed that the cow has eaten.

kg DM fed/cow and kg DM eaten/cow

For example: 0.8 tonne wet weight PKE fed in trailers to a herd of 360 cows

\$/tonne wet weight fed to herd	x	DM%	x	1000	=	kg DM fed/herd
\$245	÷	0.90 (90%)	÷	1000	=	\$0.27

kg DM fed/herd	÷	number of cows	=	kg DM fed/cow
720	÷	360	=	2

kg DM fed/cow	x	utilisation*	=	kg DM eaten/cow
2	x	0.85 (85%)	=	1.7

*typical utilisation

in paddock in wet conditions	in paddock in dry conditions	trailers in paddock	feed pad	in-shed
60%	80%	85%	90%	95%

*Utilisation (%) = 100 – wastage (%)

Estimates of % wastage rates in storage and feeding out

Supplement	Storage			Feeding out paddock ²			Feeding out bins ³	
	Excellent	Average	Poor	Excellent	Average	Poor	Very good	Poor
Grass silage (%)	5	10-15	20-40	10	20	40	5-10	25
Maize & cereal silage (%)	6	10-15	20-40	15	25	40	5-10	25
Palm kernel (%)	<2	10-15	20	25	30	50	10	25
Concentrates (%) ⁵	<2	5	15				5	25

¹ As research on wastage of supplements is limited, the above are based on best estimates from scientists and industry experts

² Includes losses at the stack face and when loading the wagon

³ Bins = Feed trough for PKE fed in the paddock or feed pad for forages or in-shed feeding for concentrates

⁴ Excludes refusal in the bin for rotten silage

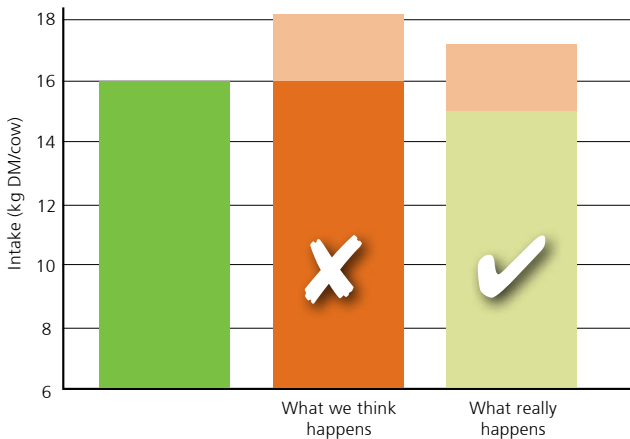
⁵ There are additional losses feeding concentrates e.g. small grain losses up to 40% as grains are undigested by the cow. There are also losses when grains are digested whole.

Substitution

Typically, the factor that has the greatest impact on the milksolids response is the reduction in pasture intake when supplementary feeds are eaten: this is known as substitution.

There is always some substitution when grazing cows eat supplementary feeds, and on average, cows will graze for 12 minutes less for every 1kg DM of supplementary feed that is introduced into the system.

Substitution simply means that when supplements are fed, the increase in total DM intake is less than the amount of supplement offered.



Determine the economics of feeding supplements

Decisions on purchasing and feeding supplements can be made at both a strategic and tactical level.

Tactical

DairyNZ's Supplement Price calculator can help you answer: 'Should supplements be fed today and if so, how much should be fed?'. Visit dairynz.co.nz/supplementcalc for information.

Also helpful is DairyNZ's Spring/Summer Feeding Check, which is based on estimates from the Supplement Price Calculator and encourages the use of a weekly feed management check to monitor feed management both in the paddock and the use of supplements at various times of the season.

Strategic

The decision to incorporate supplements into a system should involve an annual feed budget and is based on many factors.

When making strategic decisions, key components are that the system is resilient to outside influences where possible and to remember that the average annual response to supplementary feeds on-farm is between 55 g – 70 g MS/kg DM.