Appendix I – Weight of hay and silage bales

	Bale type	Wet weight (kg)	Dry Matter (%)	Dry Weight (kg)
Hay	Small square	23	85	20
	4 x 4 round	250	85	215
	5 x 4 round (15 small bale equivalents)	350	85	300
	5 x 6 round (20 small bale equivalents)	500	85	425
	8 x 3 x 3 square	300	85	255
	8 x 4 x 3 square	600	85	510
	8 x 4 x 4 square	750	85	640
Silage	4 x 4 round	700	35	245
	1 cubic metre (wilted)	580	30	175
	1 cubic metre (direct cut)	830	18	115
	1 cubic metre maize silage	500	35	175

Appendix II – Energy tables and calculations

Calculation for maintenance:
Maintenance MJ ME = (0.1 x liveweight) + 5

Calculations for daily energy requirements of growing cattle:

< 300 kg LW	0.5 kg/day	MJ ME = 1.7 x maintenance
	1.0 kg/day	MJ ME = 2.2 x maintenance
	1.5 kg/day	MJ ME = 2.7 x maintenance
300 – 500 kgLW	0.5 kg/day	MJ ME = 1.6 x maintenance
	1.0 kg/day	MJ ME = 2.1 x maintenance
	1.5 kg/day	MJ ME = 2.6 x maintenance
500 + kgLW	0.5 kg/day	MJ ME = 1.5 x maintenance
	1.0 kg/day	MJ ME = 2.0 x maintenance
	1.5 kg/day	MJ ME = 2.5 x maintenance

Lookup tables for daily energy requirements of pregnant and lactating cattle:

Requirements for pregnancy – add to maintenance of cow

Expected calf birth weight (kg)	Weeks before calving			
	- 12	- 8	- 4	0
	MJ ME/cow/day			
30	6	11	20	34
40	9	15	26	45
50	11	18	32	55

Requirements for lactation – add to maintenance of cow

Normal calf weaning weight (kg)	Months after calving			
	+ 1	+ 3	+ 5	+ 7
	MJ ME/cow/day			
150	35	45	55	55
200	40	55	65	75
250	50	70	85	95
300	60	80	100	115

Appendix III – Tactical feed budget

TACTICAL FEED BUDGET				
Scenario:				
Step 1 – Where are we now?				
No. of animals **(a)**	Liveweight (kg)	Current FOO (kg DM/ha) **(b)**	Pasture quality (MJ ME/kgDM) **(c)**	Grazing Area (ha) **(d)**

Step 2 – Where do we want to get to?			
Time frame (days) **(e)**	Required liveweight gain (kg/day)		Energy requirement (MJ ME/day) **(f)**
Animal feed requirement (kgDM/day) **(g)** g = f ÷c	Herd pasture intake (kgDM/day) **(h)** h = a x g		Total timeframe pasture intake (kgDM) **(i)** i = h x e

Step 3 – How do we get there?				
Future Growth				
Month	Days in month **(j)**	Pasture growth rate (kg DM/ha/day) **(k)**	Area (ha) **(l)**	Total grown/month (kgDM) = j x k x l
			Total Growth **(m)**	

Minimum pasture cover (kg DM/ha) **(n)**	Provision from current pasture (kgDM) **(o)** **o = (b – n) x d**
Provision from current pasture (kgDM) **(o)**	
Provision from future growth (kgDM) **(m)**	
Total pasture intake (kgDM) **(i)**	
FEED BALANCE (kgDM) = (o + m) – i	

Appendix III – Tactical feed budget (continued)

Step 4 – Options for achieving feed balance

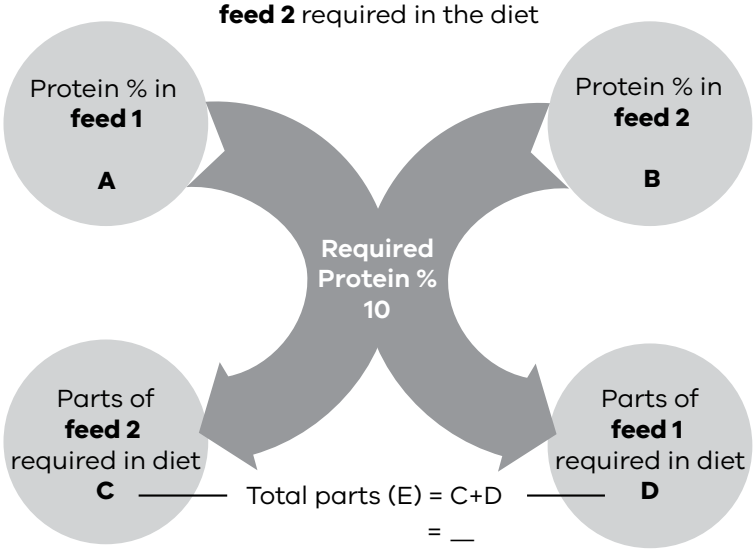
Converting pasture deficit into supplementary feed requirement

Determine total energy shortage				
Energy in pasture* MJ ME/kgDM **(c)**	X	Feed balance deficit kgDM	=	Total energy shortage MJ ME
Determine kgDM of supplement required				
Total energy shortage MJ ME	÷	Energy value of supplement MJ ME/kgDM	=	Supplement required kgDM
Determine 'as bought' amount of supplement				
Supplement required kgDM	÷	Dry matter % of supplement	=	'As Bought' supplement required kg

** This figure comes from box (c) on the Tactical Feed Budget*

Appendix IV – Pearson's Square worksheet

Difference in protein between **feed 1** and **required protein level** gives the parts of **feed 2** required in the diet



Proportion (%) of **feed 1** in diet = (D÷C) **Feed 1** = __ ÷ __ = __
Proportion (%) of **feed 2** in diet = (C÷E) **Feed 2** = __ ÷ __ = __

Appendix IV – Pearson's Square worksheet (continued)

Amount of energy needed from feed 1				
Proportion of feed 1 in diet	X	Animal requirements MJ ME/day	=	Amount of energy needed from feed 1 MJ ME/day

kgDM required of feed 1				
Amount of energy needed from feed 1 MJ ME/day	÷	Energy value of feed 1 MJ ME/kgDM	=	Amount required of feed 1 kgDM

Amount of feed required on an as fed basis (feed 1)				
Amount required of feed 1 kgDM	÷	Dry matter of feed 1 (expressed as a decimal, i.e. 90% = 0.9)	=	Kg as fed per head per day of feed 1

Amount of energy needed from feed 2				
Proportion of feed 2 in diet	X	Animal requirements MJ ME/day	=	Amount of energy needed from feed 2 MJ ME/day

kgDM required of feed 2				
Amount of energy needed from feed 2 MJ ME/day	÷	Energy value of feed 2 MJ ME/kgDM	=	Amount required of feed 2 kgDM

Amount of feed required on an as fed basis (feed 2)				
Amount required of feed 2 kgDM	÷	Dry matter of feed 2 (expressed as a decimal, i.e. 85% = 0.85)	=	Kg as fed per head per day of feed 2