

Feed budget and rotation planner

The Feed Budget Rotation Planner is designed to help producers to plan their rotational grazing systems, determine appropriate stocking rates, calculate pasture growth rates, determine how long your paddocks will last and calculate the most economical ration.

Data tables used in the calculator are available for viewing by the user. The figures are sourced from Lifetime Ewe Management, Prograze and the Drought Feeding and Management books. Figures are currently being reviewed to validate against Grazfeed.

Simple pasture budgets

There are a number of pasture budget options which are particularly useful in working with producer groups to answer the following questions:

- ▶ What is the pasture growth rate?
- ▶ How much feed will I have left at the end of the grazing period?
- ▶ How many stock can I run in this paddock?
- ▶ How long will my paddock last?
- ▶ How much feed do I need at the start of the grazing period?

Table 1 Example: How long will my paddock last?

Paddock Details	Data	Calculations & Comments
a) Paddock size (Ha)	10	
b) Pasture available now (Kg DM/Ha)	2000	See table 6 for help if required.
c) Digestibility (%)	80% - Green, high clover	
d) Feed Wastage Factor	30%	Usually 30% for growing season and 50% for summer.
e) Pasture Growth (Kg DM/Ha/Day)	40.0	See table 7 for help if required.
f) Desired pasture available when animals removed (Kg DM/Ha)	1000	See table 5 for help if required.
ANIMAL CONSUMPTION		
Stock Type 1	Lambs	
Average Weight (Kg/Hd)	35	If you change Stock Type re-select Average Weight from list.
Physiological State	Not Applicable	If you change Stock Type re-select Physiological State from list.
g) Number of Animals Grazing	2000	
h) Consumption (Kg DM/Hd/Day)	1.5	
RESULTS		
m) Pasture available for consumption (Kg DM/ha)	1000.0	=b-f
n) Total animal consumption + waste (Kg DM/day)	3900.0	=(g*h+i)+k*(1+d)
o) Consumption + wastage/ha/day (Kg DM/ha/Day)	390.0	=n÷a
p) Change in feed availability (kg DM/ha/day)	-350.0	=e-o
Number of days paddock will last (=m÷p)	3	A negative number means growth is greater than consumption.

Table 2 Example: Summer feed budget

Paddock Details	Data	Calculations & Comments
a) Grazing area (Ha)	400	
b) Pasture available now (Kg DM/Ha)	2000	See table 6 for help if required.
Digestibility (%)	70% - Green, grassy	
c) Growing Season Feed Wastage Factor	30%	Usually 30% for growing season and 50% for summer.
d) Expected pasture growth rate between now and end of growing season (Kg DM/Ha/Day)	40.0	See table 7 for help if required.
e) Desired pasture available at autumn break (Kg DM/Ha)	1000	See table 5 for help if required.
ANIMAL CONSUMPTION BETWEEN NOW AND END OF GROWING SEASON		
Stock Type 1	Cows	
Average Weight (Kg/Hd)	600	If you change Stock Type re-select Average Weight from list.
Physiological State	Late lactation (5 mths)	If you change Stock Type re-select Physiological State from list.
f) Number of Animals Grazing	500	
g) Consumption (Kg DM/Hd/Day)	17.7	
RESULTS		
l) Total animal consumption + waste until end growing season (Kg DM/day)	11505	=(f*g+h+i+j+k)*(1+d)
m) Consumption + wastage/ha/day until end growing season	28.8	=l÷a
n) Expected no. days between now and end growing season	60.0	
o) Expected pasture available at end of growing season (Kg DM/Ha)	2674	=(d-m)*n+b
p) No. days between end of growing season and expected autumn break	120.0	
q) Expected pasture growth rate during summer - may be zero (Kg DM/Ha/Day)	0.0	See table 7 for help if required.
Pasture digestibility during summer (%)	50% - Dry, perennial	
r) Summer Feed Wastage Factor	50%	Usually 30% for growing season and 50% for summer.
ANIMAL CONSUMPTION DURING SUMMER		
Stock Type 1	Cows	
Average Weight (Kg/Hd)	600	If you change Stock Type re-select Average Weight from list.
Physiological State	Late lactation (5 mths)	If you change Stock Type re-select Physiological State from list.
s) Number of Animals Grazing	500	
t) Consumption (Kg DM/Hd/Day)	12.3	
RESULTS		
y) Consumption + wastage/ha/day during summer	20.0	=(s*t+u*v+w*x)*(1+i)÷a
z) Feed required at end of growing season (Kg DM/Ha)	3398.5	=(y-q)*p+e
aa) Difference between feed required and feed expected (Kg DM/Ha)	-724.3	=o-z
Total Feed Excess / Deficit (Tonnes DM) = aa*a ÷1000	-289.7	Excess is equivalent to tonnes dry matter of potential hay or silage harvest

Table 3 Output for rotation planner

Paddock Name	Energy intake from pasture at target feed available when animals taken out (MJ ME/hd/day)*	Days in each paddock based on rotation length, paddock rating & paddock area.	Date to move stock to next paddock based on set rotation length	Feed available when animals in (Feed available at measurement + feed grown since measurement)	Animal Consumption (Kg DM per Hd per Day)	Feed available when animals removed (Kg DM/Ha)	Predicted energy intake from pasture when animals are removed (MJ ME/hd/day)*	Number of days paddock will last to reach target feed available	Date to move stock to next paddock based on target feed available
Blacks	115.3	10	11-Jan	1600	12.8	1068	115.3	11	11-Jan
Wombat	115.3	23	3-Feb	1800	10.9	1090	115.3	24	4-Feb
Noels Nixes Crossing	115.3	18	21-Feb	1860	10.9	690	77.2	14	18-Feb
	115.3	35	28-Mar	2530	10.9	2092	148.0	61	18-Apr

Example Calculation- How long will my paddock last?

John has 2000 lambs he wants to put in a 10ha paddock. He wants to know how long the paddock will last. He has measured the paddock and found that there is 2000 kg/ha available. He wants to take the lambs out when the pasture gets down to 1000 kg/ha. It is September and the estimated pasture growth rate is 40 kg/ha/day and the pasture digestibility is 80%. A wastage factor of 30% above consumption is considered in the equation. The pasture budget template John uses is presented below. Once John has entered the assumptions and selected the animal type, the calculator refers to figures in the Prograze tables to determine consumption rate of the animals. The result is that John can keep his stock in the paddock for 3 days before they will eat it down to 1000 kg/ha.

Summer and winter feed budgets

The winter feed budget calculates the amount of feed required at the start of winter to allow them to get through to a target for the end of winter. This assists with decisions about locking up stock in Autumn to develop a feed wedge for the winter.

The summer feed budget calculates how much feed is required at a point in Spring to get through to an autumn break target. This helps with decisions such as the area to lock up for fodder conservation or the number of animals to sell to conserve feed.

Example summer feed budget: John has 500 cows and calves he needs to get through the summer on 400 ha. It is the beginning of October and he has an average of 2000 kg/ha available across the farm. He wants to have 1000 kg/ha available at the end of the Summer period and wants to know if he needs to take action now.

The output from the calculator is provided in Table 2 and is telling John that he is 724 kg/ha short of where he needs to be at the end of the growing season, and that he would need to off-load stock now to get through the summer.

Rotation Planner

The Rotation Planner (currently under review) calculates the number of days you would need to leave the animals in each paddock in a rotation. The user inputs the animal details, the paddock details including a feed availability on a set measurement date. They also estimate a "paddock rating" to determine the relative productivity of one paddock compared to another.

The number of days to leave the stock in each paddock is provided in two forms – one based on the paddock rating and a set rotation length (eg. 60 days), and a the second based on a feed budget. An example of the input and output is provided in Table 3.

The calculator has been developed by Kate Sargeant and Lee Beattie. It is available on the EverGraze website at www.evergraze.com.au. It is currently undergoing a trial and review period. Feedback on the tool is gratefully received by Kate Sargeant.

For further information:



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