



## APAL FEED ANALYSIS - REPORT NOTES

### Terms used:

**Dry Matter (DM):** refers to the amount of feed remaining after the water has been removed. All analyses are expressed on a dry matter basis due to great variation in water content of feeds.

**Crude Protein (CP):** is the percentage of true protein and non-protein nitrogen (eg urea) in the feed. It is calculated by multiplying the amount of nitrogen (determined by feed test) in the feed by 6.25. This is because on average, protein contains about 15% Nitrogen ie  $100/15 = 6.25$

**Neutral Detergent Fibre (NDF):** includes cellulose, hemicellulose and lignin and represents the most accurate reflection of fibre content of feeds. NDF content of a ration is strongly correlated with dry matter intake. A ration should contain a minimum of 30% NDF for best rumen function.

**Digestibility (DMD):** is the percentage of the feed dry matter actually digested by animals ie the remainder passes through the animal undigested.

**Metabolisable Energy (ME):** is the feed energy actually used by the animal. It is calculated from the DMD and expressed as megajoules per kilogram of dry matter (MJ/kg DM).

### AFIA\* Grades for Feed Quality:

Legume & Pasture Hay & Silage

DMD	ME	CRUDE PROTEIN %			
%	MJ / kg	> 19	14 - 19	8 – 13.9	< 8
> 66	> 9.5	A1	A2	A3	A4
60 – 66	8.6 – 9.5	B1	B2	B3	B4
53 – 59.9	7.5 – 8.6	C1	C2	C3	C4
< 53	< 7.5	D1	D2	D3	D4

Cereal Hay & Silage

DMD	ME	CRUDE PROTEIN %			
%	MJ / kg	> 10	8 - 10	4 – 7.9	< 4
> 66	> 9.5	A1	A2	A3	A4
60 – 66	8.6 – 9.5	B1	B2	B3	B4
53 – 59.9	7.5 – 8.6	C1	C2	C3	C4
< 53	< 7.5	D1	D2	D3	D4

\* = Australian Fodder Industry Association Inc., PO Box 4022, Balwyn East Vic 3129



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## Examples of Feed Requirements for Different Classes of Livestock

### 1) Sheep

Class of Sheep	Liveweight kg	ME Requirement MJ/day	CP Requirement % of DM
Weaners (growing at 50 g/day)	30	8	10
Dry ewes or wethers (maintenance)	55	8	8
Ewes in late pregnancy	55	12	8 - 10
Lactating ewes – single lamb	55	17	12 - 13
- twin lamb	55	26	12 - 13

### 2) Cattle

Class of Cattle	Liveweight kg	ME Requirement MJ/day	CP Requirement % of DM
Weaners (growing at 500 g/day)	300	57	10
(growing at 1 kg/day)	300	76	12 - 14
Dry cows or steers (maintenance)	500	67	6
Cows in late pregnancy	500	80	8 - 10
Lactating beef cows	500	90	10 - 12

### Feed Requirement Rules of Thumb

*The following rules of thumb are conservative and assume half the feed is being obtained from the paddock as dry pasture / residue ie increase the rates accordingly if less dry feed available in the paddock.*



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- 1) Young animal maximum daily intake is approx. 2.8% of liveweight daily.**
  - ie 20 kg lamb may consume 0.56 kg dry matter / day
  - 200 kg calf may consume 5.6 kg dry matter / day
- 2) Adult animal maximum daily intake is approx. 2.2% of liveweight daily.**
  - ie 50 kg ewe may consume 1.1 kg dry matter / day;
  - 500 kg cow may consume 11 kg dry matter / day.
- 3) Grain may be fed to a pregnant ewe / cow at 0.5% of liveweight per day.**

This is introduced to the diet slowly over a 20 day period to avoid grain poisoning and built up to 0.25 kg / day for a 50 kg ewe or 2.5 kg / day for a 500 kg cow.
- 4) Hay can be fed to a pregnant ewe / cow at 1% of liveweight per day.**
  - ie a 50 kg ewe could be fed 0.5 kg / day or
  - 500 kg cow could be fed 5 kg / day.
- 5) Once lambbed / calved, the grain ration and hay feeding can be doubled.**
  - ie 50 kg ewe could be fed 0.5 kg grain and 1 kg hay per day, or
  - 500 kg cow could be fed 5 kg grain and 10 kg hay per day.

### Calculating Daily Feed Requirements:

- ⇒ If a 500 kg cow in late pregnancy can eat 11 kg dry matter and requires 80 MJ energy daily (refer table page 2), then she will need to eat a diet with an average of  $80/11 = 7.3$  MJ/kg DM.
- ⇒ Assuming hay with 90% dry matter and 9 MJ/kg DM available ie  $9 \times 90/100 = 8.1$  MJ/kg as fed
- ⇒ The cow's energy requirements could be met by  $80/8.1 = 9.9$  kg (good quality) hay daily.
- ⇒ A hay diet with 90% dry matter and 7 MJ/kg DM (poor quality) ie  $7 \times 90/100 = 6.3$  MJ/kg as fed would not be able to support a cow in late pregnancy ie  $80/6.3 = 12.7$  kg hay required daily.
- ⇒ A better quality hay would be required for the cow's daily intake to meet her energy requirements. However, the energy shortfall may be met by utilising fat reserves (if available) in the short term ie "milking off the back".