



# Pasture Quality & Quantity

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## Outline



- Pasture Quality – What is it?
- Why is Quality important?
  - Influence on Animal Production
- How do we get quality pasture?
- Nitrogen Exercise for additional Feed
- Summary



## Grazing Management



- Grazing Management is Harvest Management
- Good grazing management applies appropriate stocking rates to utilise a high % (>65) of available pasture, while avoiding regrazing.
- Dairy systems do it right! (mostly)
- Set stocking is only an option at lambing for 4-6 weeks on high DM pastures
- Correct grazing management is the single biggest free kick you can get, and it costs next to nothing
- Maximises pasture quality and quantity

## Grazing Management



Figure 5: Leaf and root development in ryegrass cut at 1, 2 and 3 leaves.



## Pasture Quality



- High Quality
  - is leafy and contains little stem material therefore has a high leaf to stem ratio and low levels of structural fibre
  - consists mainly of water-soluble and storage carbohydrates, Non Protein Nitrogen (NPN) and rumen degradable proteins.



## Pasture Quality



## Pasture Quality



- Low Quality
  - Less leafy, lower leaf to stem ratio and a higher fibre content
  - Contains more mature plant material or woody weed species consists mainly of water-soluble and storage carbohydrates
  - Contains high levels of structural carbohydrates



## Pasture Quality



## Pasture Quality



➤ Parameters:

1. Metabolisable Energy                      ME      (MJ/Kg DM)
2. Crude Protein %                              CP      (% of DM)
3. Neutral Detergent Fibre %              NDF      (% of DM)

Quality	Metabolisable Energy (MJ / Kg / DM)	Crude Protein %	Neutral Detergent Fibre %
High	11 – 12.5	25 – 32 +	28 – 36
Medium	9 - 11	18 – 25	36 – 50
Low	Less than 9	Less than 14	50 – 70 +

## Feed Values



	MJ	NDF%	CP %
➤ Rye	12	45-50	16-30
➤ Clover	12	35-45	20-30
➤ Kikuyu	8	60	16
➤ Capeweed	8	60	14

per kg/dm

## Animal Production



- Sheep
  - Maintenance of 50 kg animal
  - = 10MJ / Day (= 1 DSE)
  - = 17 MJ during late pregnancy
  - = 25 MJ during lactation
- Cattle
  - Maintenance of 500 kg animal
  - = 60MJ / Day
  - +/- 5 MJ for every 50 kg of liveweight
  - + 5 MJ/L for milk production
  - + 34 MJ/ per 1kg weight gain (lactation)



## Dry Matter Intake



- Limited DMI occurs due to:
  - Neutral Detergent Fibre %
  - Pasture Height
  - Water Content
- Generally restricted to:
  - % Bodyweight = 120/ NDF%



## What does it all mean?



- 30kg Weaner growing @ 100gm/day = 11 DSE (11MJ)
- Poor Pasture - 60% Capeweed, 25% Rye & 15% Clover

1KG/DM	MJ	NDF%	kg/DM	NDF%	Digest	Energy
					DM	Supplied
➤ Capeweed	8	60	0.60	0.36	0.24	1.92
➤ Ryegrass	12	45	0.25	0.11	0.14	1.68
➤ Clover	12	40	<u>0.15</u>	<u>0.06</u>	<u>0.09</u>	<u>1.08</u>
			1.00	0.53	0.47	4.68

- $120 / 53\% \text{ NDF} = 2.26\% \text{ Body Weight DMI}$
- $30\text{kg} \times 2.26\% = 0.678\text{kg day}$
- $0.678 / 53\% = 1.28\text{kg/DMI of } 4.68\text{MJ} = 5.98\text{MJ (Losing weight)}$

## What does it all mean?



- 30kg Weaner growing @ 100gm/day = 11 DSE (11MJ)
- Good Pasture - 10% Capeweed, 25% Rye & 65% Clover

1KG/DM	MJ	NDF%	kg/DM	NDF%	Digest	Energy
					DM	Supplied
➤ Capeweed	8	60	0.10	0.06	0.04	0.32
➤ Ryegrass	12	45	0.25	0.11	0.14	1.68
➤ Clover	12	40	<u>0.65</u>	<u>0.26</u>	<u>0.39</u>	<u>4.68</u>
			1.00	0.43	0.57	6.68

- $120 / 43\% \text{ NDF} = 2.79\% \text{ Body Weight DMI}$
- $30\text{kg} \times 2.79\% = 0.837 \text{ kg day}$
- $0.837 / 43\% = 1.94\text{kg/DMI of } 6.68\text{MJ} = 12.95 \text{ MJ (150gm/day)}$

## 100% Clover



- 30kg Weaner growing @ 100gm/day = 11 DSE (11 MJ)
- Good Pasture - 100% Clover
  

➤ 1KG/DM	MJ	NDF%	kg/DM	NDF%	Digest	Energy
					DM	Supplied
➤ Clover	12	40	1.00	0.40	0.60	7.20

  
- $120 / 40\% \text{ NDF} = 3 \text{ kg Body Weight DMI}$
- $30\text{kg} \times 3\% = 1 \text{ kg day DMI of } 7.20\text{MJ} = 7.20 \text{ MJ}$
- $1 / 40\% = 2.5\text{kg/DMI} \times 7.20 \text{ MJ} = 18\text{MJ/day (250gm/hd/day)}$



## How do we achieve quality?



- Manipulation
  - Herbicides – Spray Graze (BLW)
  - Selectively (Grass weeds)
  - Spray Top (Grass weeds)
  - Grazing – Stock Type / Class
  - Mob Size
  - Insect control – RLEM, Lucerne Flea, grubs etc...





## How do we achieve quality?



- Fertiliser
  - Phosphorus – negotiable
  - Potassium – Low CEC soils
    - Improve clover seed set / composition
  - Sulphur – N fixation & wool quality
  - Nitrogen – Drive grass dominant paddocks
    - Improve Protein % & Production

## How do we increase production?



- Utilisation
  - Use more available pasture = Ç stocking rate
  - Grazing Management
- Nitrogen
  - Grassy pastures – Spring 20kg/DM/unit N
    - Winter 10-15 kg/DM/Unit N
- Varieties
  - Clovers
    - Newer species more productive
    - Select varieties according to soil type
  - Grasses
    - Increased DM & quality yield over Wimmera
    - No issues with ARGV

## Wool Quality



- VM% @ 2.5% = 30c/kg clean discount
- 4kg/hd cut @ 10DSE = 40kg/ha
- 40kg x 30c/kg = \$12/ha lost income
  
- Manipulation
- Grass Selective (Verdict 520 @ 65ml/ha) = \$13/ha
  - Controls, Barley & Other Grasses & Gernanium
- Application \$5/ha (owner/operator)
  
- Net cost \$6/ha



## Pasture Growth Rates - Wandering



Nil nitrogen = 5.8DSE (40%)

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	7	10	15	19	26	47	34	15	0

Total Pasture Growth = 5266 kg/ha (5yr Av Pastures from Space)

23N May & 23N September = 6.6 DSE (40%) + 13%

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	7	21	15	19	26	62	34	15	0

Total Pasture Growth = 6046 kg/ha



## Pasture Growth Rates - Karridale



Nil nitrogen = 11.4 DSE (40%)

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	21	30	26	28	37	46	66	69	19

Total Pasture Growth = 10450 kg/ha (5yr Av Pastures from Space)

23N May & 37N June = 12.5 DSE (40%) + 10%

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	21	50	41	28	37	46	66	69	19

Total Pasture Growth = 11450 kg/ha



## Pasture Growth Rates – Frankland



Nil nitrogen = 8.5 DSE (40%)

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	15.5	23	22	22	28.5	46.5	59	35	2

Total Pasture Growth = 7753 kg/ha (5yr Av Pastures from Space)

37N Jun & 37N Jul = 9.5 DSE (40%) + 12%

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kg/h/day	7	21	30	19	36	62	34	15	0

Total Pasture Growth = 8679 kg/ha



## N & PGR's - 2015



- \$65 (x2) = \$47 (80kg Urea) + \$15 (Spreading) + freight for ~1000 kg/DM = \$130/T or 13c kg/DM
- Pasture (10 MJ/kg) 100%DM \$130 / 1000 kg/DM =
  - 1.3c/MJ
- Lupins (13.5 MJ/kg) 90% DM / \$350/T as fed
  - 2.9c/MJ + Feed Out costs
- Oats (10.5 MJ/kg) 90% DM / \$300/T as fed
  - 3.2c/MJ + Feed out costs

## N & PGR's - 2005



- \$58 = \$48 (100kg Urea) + \$10 (Spreading) for 780 kg/DM
- Pasture (10MJ/kg) 100%DM \$58 / 780 kg/DM = 7.4c
  - 0.74c/MJ
- Lupins (13MJ/kg) 88% DM / \$190/T = 21.6c/kg/DM
  - 1.28c/MJ + Freight & Feed Out costs
- Oats (12.5MJ/kg) 90% DM / \$140/T = 15.5c/kg/DM
  - 1c/MJ + Freight & Feed out costs

## Summary



- Grazing management – Your highest priority
- High Quality = Increased Production Potential
- Quality achieved by
  - Manipulation
  - Grazing Management
  - Insect Control
  - Correct Fertiliser Strategy
  - Species & Variety Selection
- Increased Quality = Higher Stocking Rate Potential
- Increased Stocking Rate = Increased Profitability



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