4.3 Matching feed supply to livestock demand

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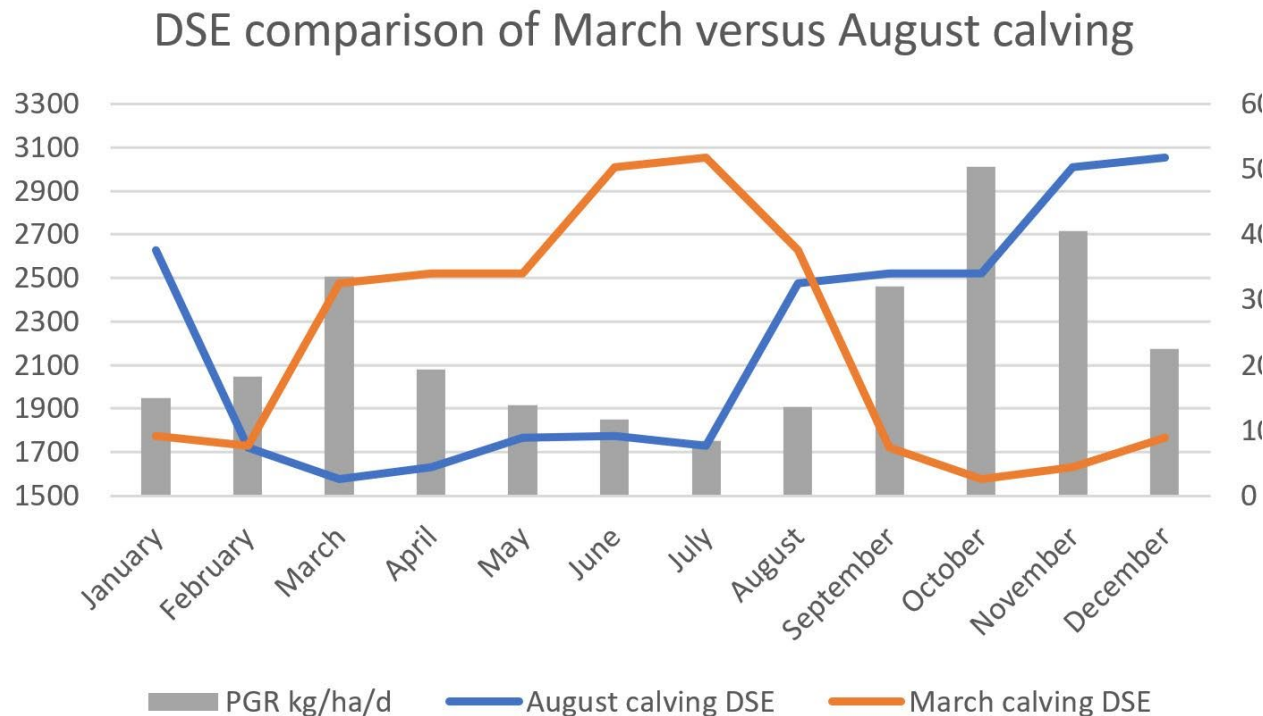
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VETS30030 / VETS90123

DSE stock requirements (demand)

DSE comparison of March versus August calving

Legend: PGR kg/ha/d · August calving DSE · March calving DSE

- On many livestock enterprises the same management schedule is used each year, particularly when birth period is

- Presuming self replacing enterprise, time of birth and duration of the birthing period of the herd/flock determines the DSE for the year

- An example of DSE for an August (winter) calving herd versus March (autumn) calving herd

- 100 cow herd using same times post calving ad retention of young etc
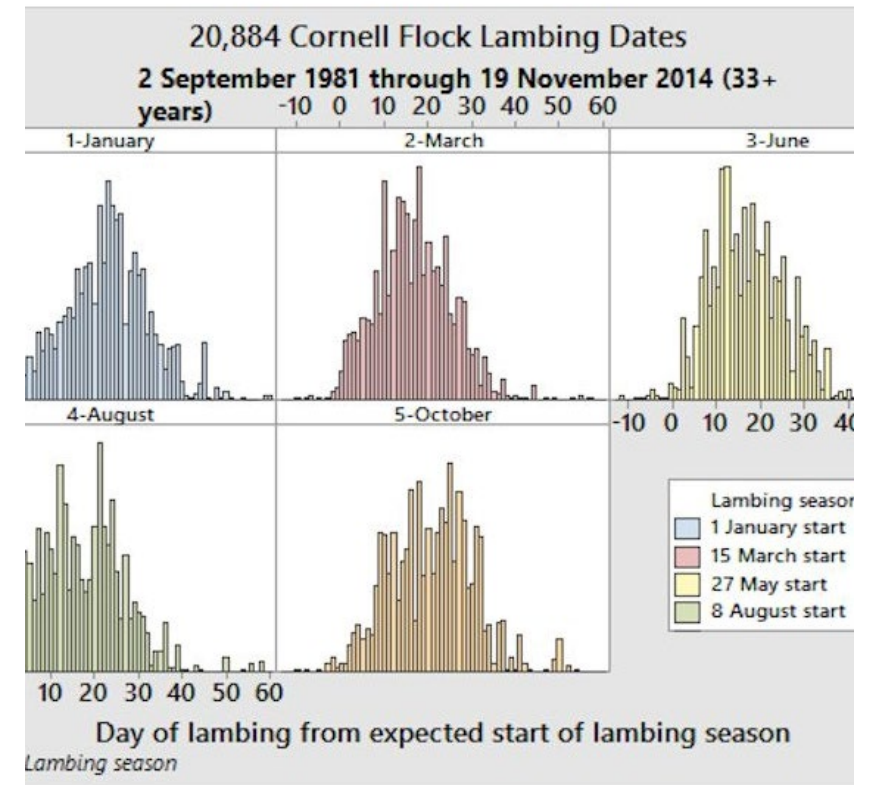
DSE stock requirements

- Aiming to try and match DSE requirements throughout the year as close as possible to the pasture supply (unless there is a good reason to do something different!)

- Big challenge with the autumn calving example is the feed deficit during winter time. This would require significant supplementary feed and likely a drop in condition score to manage the herd.

- If shorter gestation/lactation period then more able to match short seasonal fluctuations more easily – hence why sheep are more commonly found in sheep/wheat zone where growing season is shorter

DSE requirement throughout the year

- Relevant DSE of animals in herd/flock at different stage of lactation/gestation (higher requirement last third of pregnancy and lactation)

- Duration of calving/lambing/kidding etc. Short joining period and therefore short period for parturition across herd/flock means most animals at similar stage. If increase joining period to more cycles it is harder to allocate feed appropriately

- Remember that livestock in a herd/flock will be at slightly different stages e.g. not all sheep in a mob will lamb on same day

- Impact of sales – once sold no longer contribute to DSE

- Category movement e.g. weaner to yearling

ly percentage of ewes lambing within lambing seasons

20,884 Cornell Flock Lambing Dates
2 September 1981 through 19 November 2014 (33+ years)

Day of lambing from expected start of lambing season

Lambing seasons
- 1 January start
- 15 March start
- 27 May start
- 8 August start

https://blogs.cornell.edu/newsheep/cornell-star-managed-sheep-flock-data-summaries/

PGR and pasture height

- Some stock set-stocked but commonly there is some form of rotation so demand on a paddock varies

- Sheep example: Stock introduced to paddock when it is 2500 kgDM/ha and removed when 1500 kgDM/ha. If paddock 10 ha and pasture growing 50 kgDM/ha/d

- Assume each sheep eats 1 kgDM/day (depends on grass quality)

- 750 wethers in paddock, how long can they stay?

- Know there is 1000 available kgDM at start (2500-1500), 10 ha = 10,000 kg/DM. Each day wethers eat 750kg but paddock grows 10* 50, so each day amount reducing by 250kg

- Wethers can stay in paddock for 40 days

- A range of online calculators use this method for stock movement calculation
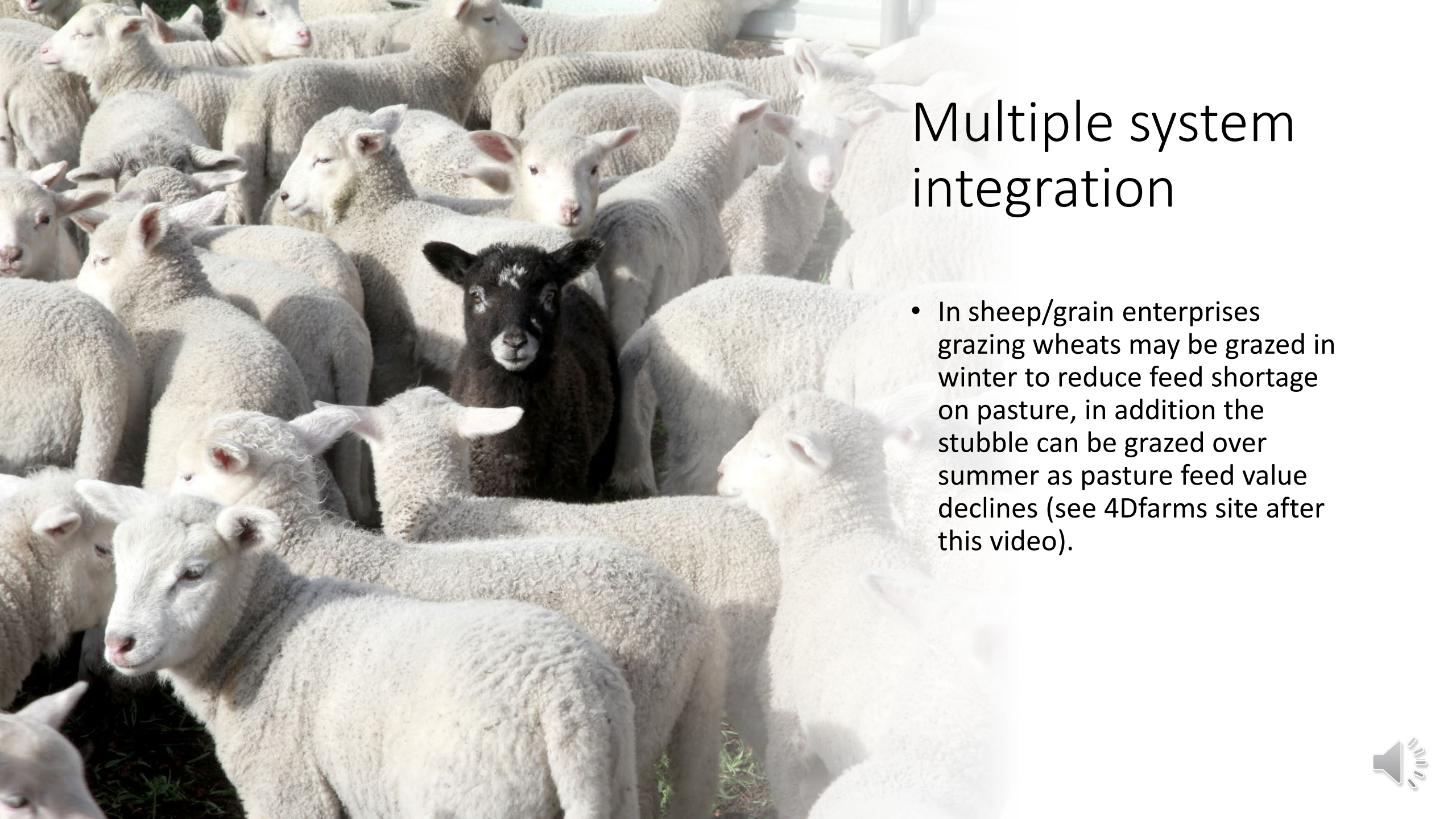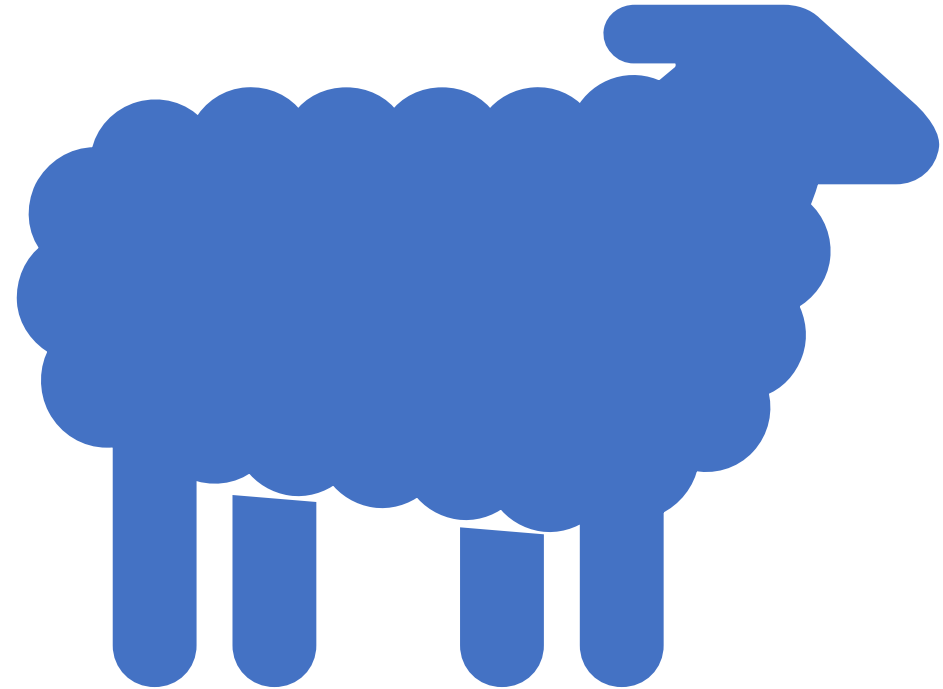
Grazing calculations

- Next question is how long will it take before we can graze the paddock again?

- If starting at 1,500 kgDM/ha and we want to get to 2500 kgDM/ha then it is how long will it take to grow 1000 kgDM/ha. We can divide this total by growth per day to calculate number of days.

- If growing at 50 kgDM/ha/d then = 20 days, but if growing at 20 kgDM/ha/d then would be 50 days before next rotational graze

- This would be like comparing winter and spring PGR

- To manage during spring it is common for producers to not graze some paddocks and cut for silage/hay

Multiple system integration

- In sheep/grain enterprises grazing wheats may be grazed in winter to reduce feed shortage on pasture, in addition the stubble can be grazed over summer as pasture feed value declines (see 4Dfarms site after this video).

Stock needs

- Different classes of stock need different heights of pasture to support them, so they can eat enough grass (energy, protein)
- Only have a certain amount of time (and bites) per day to consume grass as also need to chew and ruminate

Production class	Metabolisable energy				Crude protein	
	MJ/d	DSE	MJ/d	DSE	Sheep	Cattle
	Sheep		Cattle			
Weaners/yearlings	8	1	40-60	6-8	12-16%	
Steers			60-80	8-11		6-12%^
Dry or early pregnant	7.7	1*	60	8-9	6%	6-8%
Late pregnant	9–12	1.5	70	10	8%	9%
Lactating (Merino/beef)	18	2.5	84-130	12-17	10-12%	
Milking dairy cow (20 L/d)			170	23		14-20%
Rams / bulls	15	2	100	15		10%

* 1 DSE ≈ 7–8 MJ ME/day
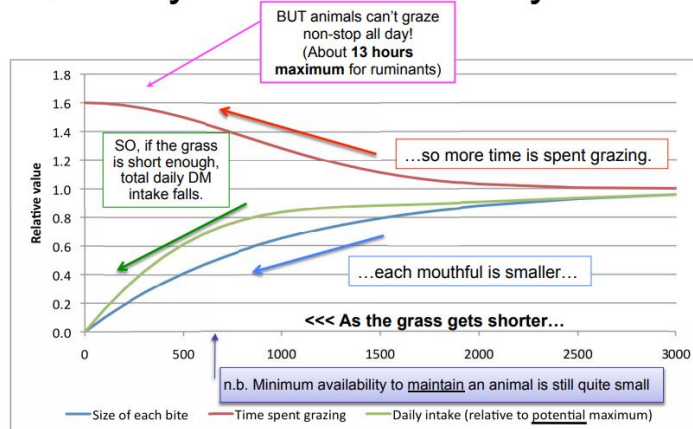^ more protein = more / faster weight gain
younger stock need greater CP%

Maintenance requirement

Type of stock	kdDM/ha required	Pasture height (cm)
Dry cow	1000	3
Pregnant cow in last three months	1200	4
Lactating cow	2000	9
Dry sheep	500	1.5
Pregnant ewe in last month	900	2.75
Lactating Merino ewe with single	1200	4
Lactating Merino ewe with twins	1500	5.5

This table presumes good quality feed of moderate to high digestibility, below 60% digestibility all classes of stock except dry or early pregnant will not maintain weight

Quantity: Feed Availability & Intake

BUT animals can't graze non-stop all day! (About **13 hours maximum** for ruminants)

SO, if the grass is short enough, total daily DM intake falls.

…so more time is spent grazing.

…each mouthful is smaller…

<<< As the grass gets shorter…

n.b. Minimum availability to maintain an animal is still quite small

— Size of each bite   — Time spent grazing   — Daily intake (relative to potential maximum)

Relative availability (i.e., intake) = eating rate X grazing time

Stock needs

- Useful "rules of thumb"

- If pasture above average quality then need less height

- Low digestibility pasture may not meet needs even if >20cm high

- If pasture height below maintenance then cant meet needs

- Useful for rapid pasture assessment in padock