Containment feeding as a pasture management tool

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What I’m not covering!

- What cohorts enter confinement
  - Marginal cost versus marginal revenue
- Nutritional requirements of animals in confinement
- Feeding efficiency in confinement

Plant survival

- Plants will do what they car
  - Dry condition dormancy
  - Cold condition decrease gibb
  - Wet (waterlogged) they resp
- We can help!
  - Rest (go to confinement – th

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Plant survival

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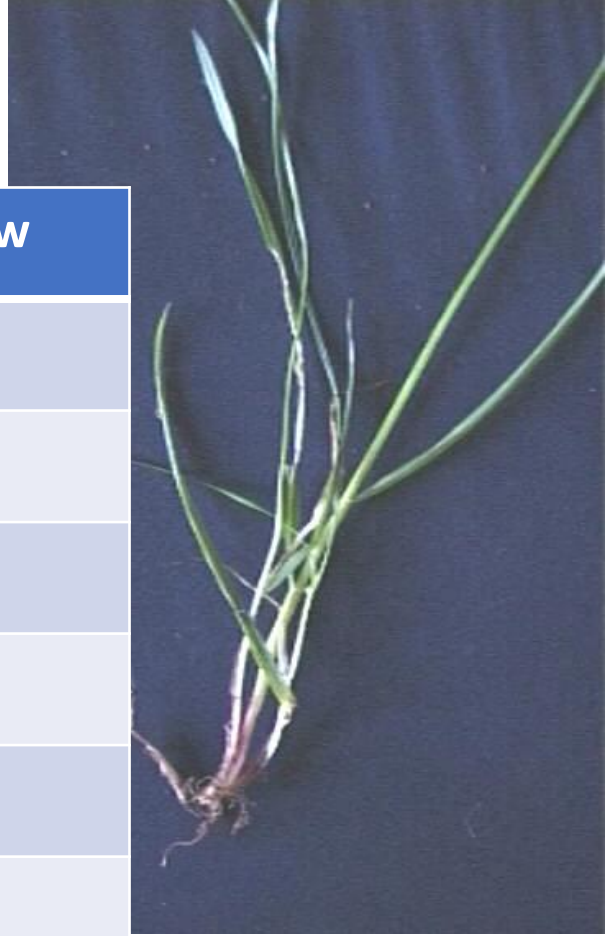
Rest for how long?

- Minimum time is associated with:
  - Tiller survival
  - Feed quality
- Maximum time is associate with:
  - Total pasture production (quantity)
  - Wastage

As an example!

- Ryegrass
  - 2-3 leaves
- But the princi

Species	Grazing window
Ryegrass	2-3
Cocksfoot	3-4
Fescue	2-4
Phalaris	2-4
Kikuyu	2-5
Setaria	2-6
Brachiaria	2-6



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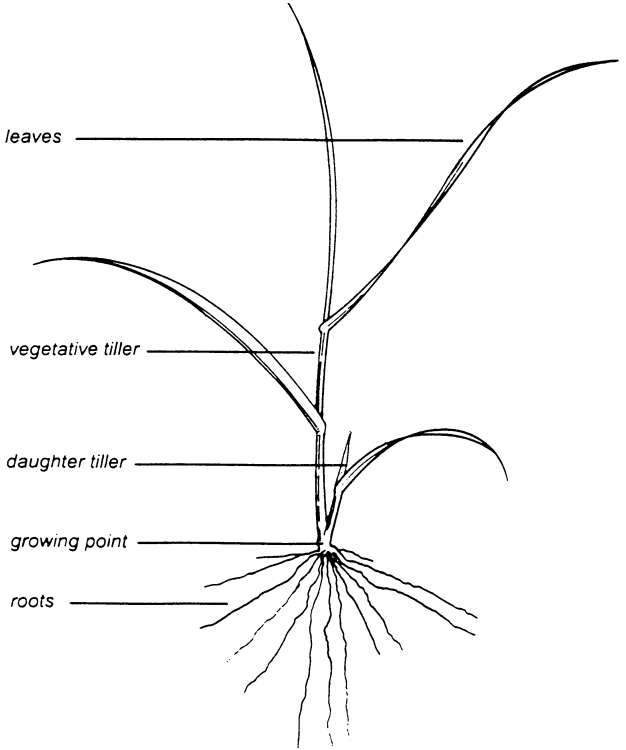
How plants grow!

- Energy hierarchy in plant:
  1. Leaf growth
  2. Root growth
  3. Tillering/reproduction
- Grass plant is a collection of tillers
  - Each tiller has its own leaf and root system
  - Tiller lives for about a year
  - Perennial persistence is about tillering not seed-set



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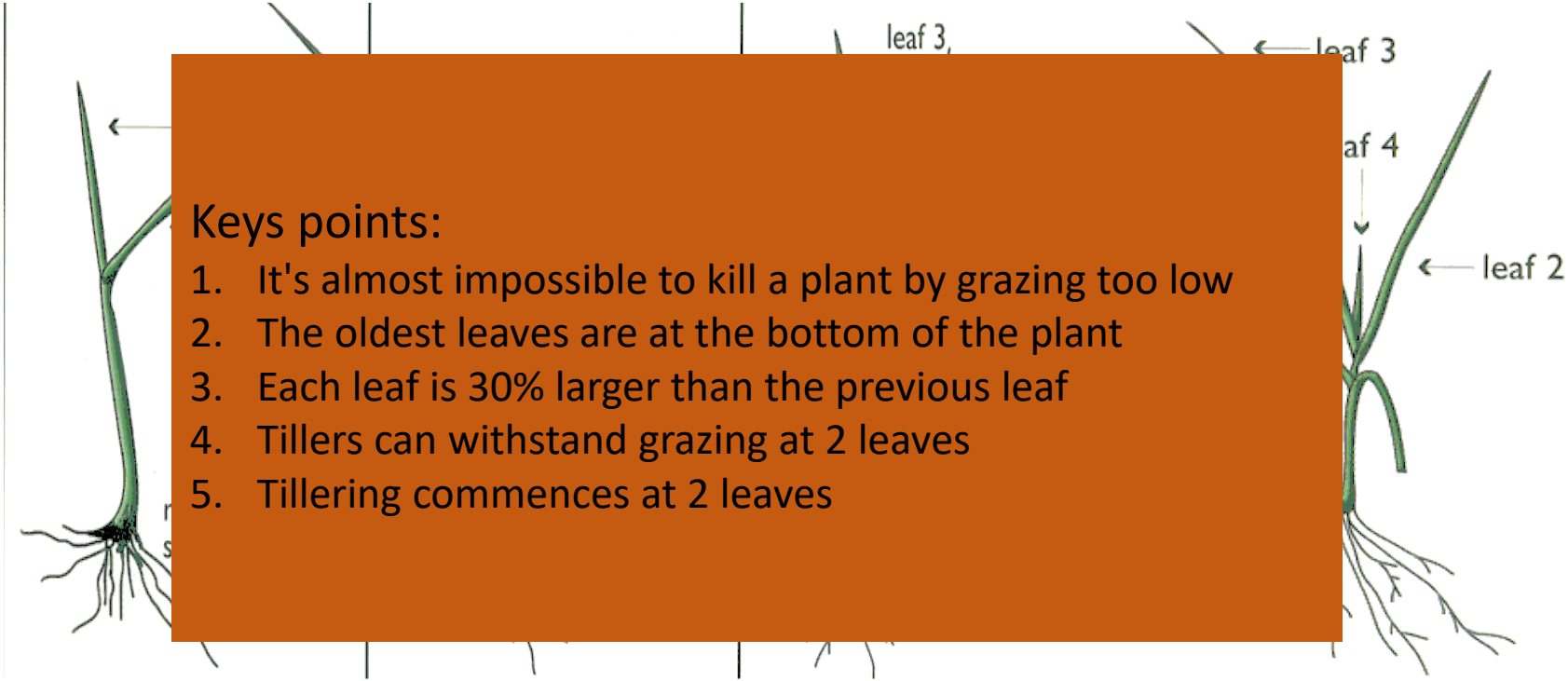
How plants grow – above ground



Keys points:

1. It's almost impossible to kill a plant by grazing too low
2. The oldest leaves are at the bottom of the plant
3. Each leaf is 30% larger than the previous leaf
4. Tillers can withstand grazing at 2 leaves
5. Tillering commences at 2 leaves

How plants grow – below ground

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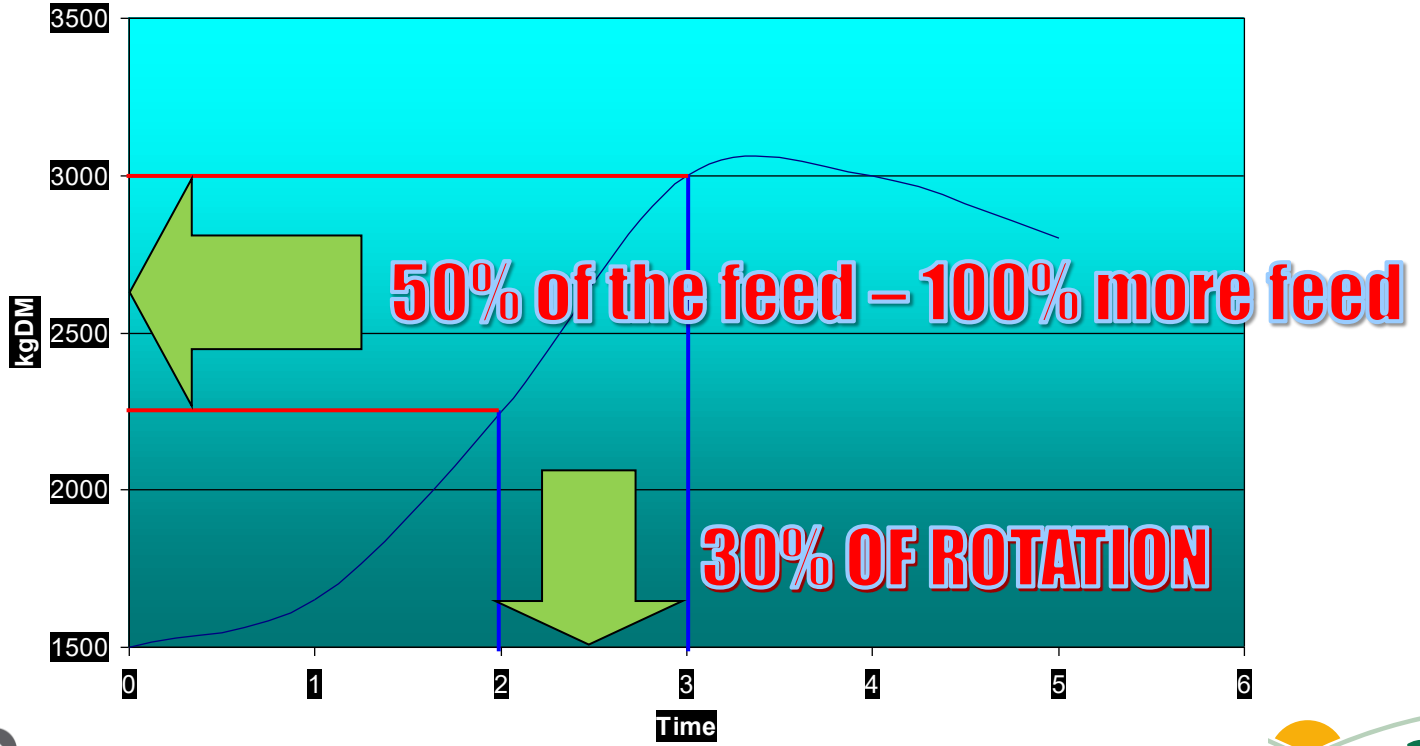
Quantity



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Quality

Leaf Stage	NSC/DIP	RDN (%)	Ca:P	K/(Ca + Mg)	Energy (MJ)
1	1:2	35	1:1	8	20%
2	1:1	25	1.5:1	4	50%
3	2:1	24	2:1	2.5	100%
Optimal	2:1	19	2:1	2.2	100%

Survival/perenniality

- Tiller formation won't start until energy reserves ensure parent survival
- If grazing duration is longer than 2-3 consecutive days
  - Plant energy reserves depleted (less than 1 leaf)
  - About 20-30% less regrowth
- If greater than 5 days
  - Can lead to a 40-60% reduction in re-growth
  - And 40-50% tiller death

What plants need to grow

1. Temperature
2. Water

how
FAST
Leaves grow

3. Light
4. Nutrients

how
BIG
Leaves grow

We want to measure this to make grazing decisions

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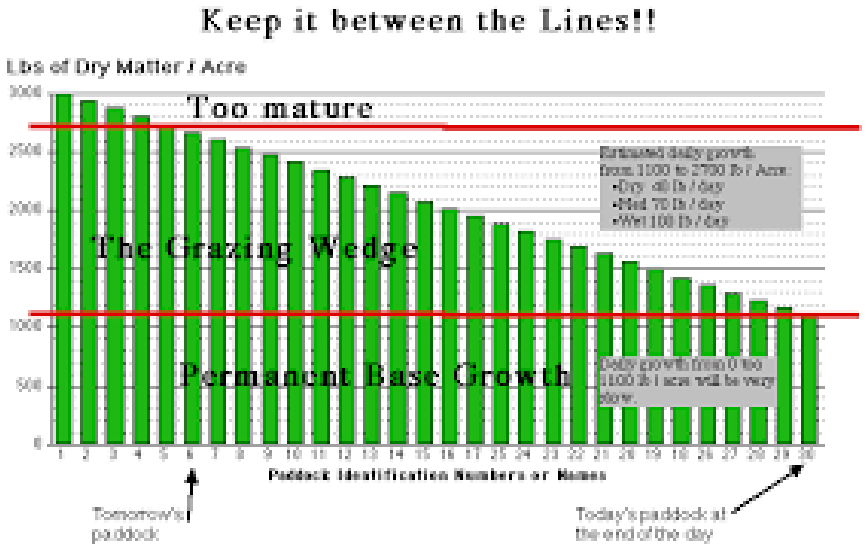
Entering confinement

- When there is no pasture left
  - 750-900 kg DM/ha (or 1-2 cm)
- Why
  - Plants will recover from this
  - You can’t preserve the feed
    - Leaf material left will be the oldest leaves
    - Ground cover should be achieved with tiller density not leaf material and trash
    - You have maximised the time/chance of not having to go to confinement

Exiting confinement

- From our pasture knowledge
  - Optimse quality and survivability of tillers
  - Maximize feed accumulation Minimize waste
  - Acknowledge the feed will be a block rather than a wedge



Exiting onto low cover and slow growth rates

- Limitation to growth
  - LER
  - Leaf size
- Maintain the right rotation (rest period)
  - Add growth promotant's like Nitrogen and Gibb acid
  - Exit the right number of animals
    - Match supply and demand
- Don't wait
  - Waste feed

Exiting onto low cover and slow growth rates

- Say you have 1,200 ha
- A LER rate of 20 days/leaf
- Pregrazing cover of 1,300 kg DM/ha
- Happy to graze to 900 kg DM/ha
- Want to grow as much feed as possible
    1. Exit at 2-2.5 leaves (Quantity, Quality, Survival)
    2. Go on a 60-day rotation
    3. 20 ha/day at 400 kg DM/ha available = 8,000 kg DM
    4. Release 4,000 ewes rated at 2 DSE or 2 kg DM/ewe/day
- As pregrazing mass increases release more animals

Quantifying wastage

- Too late is dead/decayed leaves
- Too early missed opportunity to grow 100% more in 30% more time
- In our previous example
  - 1,200 ha at 400 kg DM/ha
    - Exit too late lose inimum 20% from plant death (wasting 1 leaf)
      - 400 kg DM/ha x 20% = 80 kg DM/ha
    - Exit too early lose 50% feed (not growing 1 leaf)
      - 400 kg DM/ha x 50% = 200 kg DM/ha

Quantifying wastage at 400 kg DM available

Leaves	Death (kg DM/ha)	Lost feed (1,200 ha)	Purchase cost ($400/t)
1 (20%)	80	96 t	$38,400
2 (30%)	120	144 t	$57,600
3 (50%)	200	240 t	$96,000
Total (100%)	400	480 t	$192,000 ($160/ha)

Quantifying lost opportunity at 400 kg DM available

Leaves	Not grown (kg DM/ha)	Lost feed (1,200 ha)	Purchase cost ($400/t)
1 (50-20%)	120	144 t	$57,600
2 (50-20%)	120	144 t	$57,600
3 (50-20%)	120	144 t	$57,600
Total (100%)	360	432 t	$172,800 (144/ha)

Either or….?

- No…you can have any
  - Exit too late with was
  - Exit too late with was
  - Exit too early and mis
  - Exit too early and mis
- So exit midway betwe
  - Monitor – frequency
  - Its easier to take mor
- Unless you're a fantas
  - Exit close to the top e

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Take home messages

- Understand how plants grow
  - Make regular observations
- Enter confinement when all the pasture is gone
  - Pasture has a limited shelf life
  - You won't kill pastures grazing too low
  - You will kill grazing too frequently
- Exit containment between the minimum and maximum leaf stage for the main species
  - Maximises the response to feeding
  - Maximises quantity, quality and persistence
- When exiting onto low covers and slow growth
  - Maintain the right rotation and feeding level by exiting the right number of animals

Tools and resources

- MLA Feed Demand Calculator
- More Beef from Pastures
- Pasture Principles
- Gass to Dollars

Thank You

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