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# Ryegrass – spring grazing management

Paddock guide

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This booklet is based on DairyNZ's *Perennial ryegrass grazing management in spring: paddock guide*, provided through a collaborative agreement, and adapted by Dairy Australia for Australian conditions.

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# How to use this booklet

This booklet provides information to enable you to answer key grazing management questions:

Is this  
perennial  
ryegrass?

At what leaf  
stage am  
I grazing  
pastures?

Is my  
rotation  
right?

Am I achieving  
target post-  
grazing residuals?

Am I using a combination  
of animal and pasture  
indicators to make profitable  
feeding decisions?



IDENTIFICATION



LEAF STAGE



PRE-GRAZING STAGE



POST-GRAZING RESIDUALS

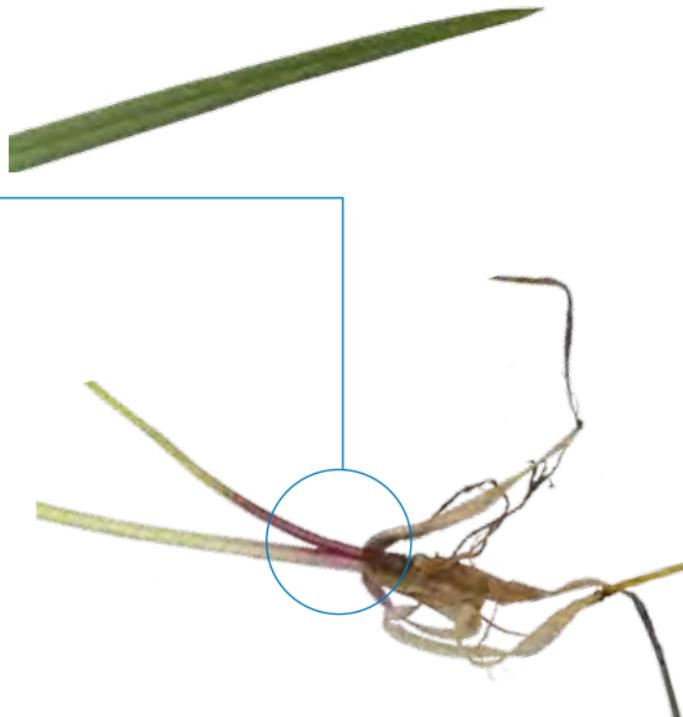


TOOL

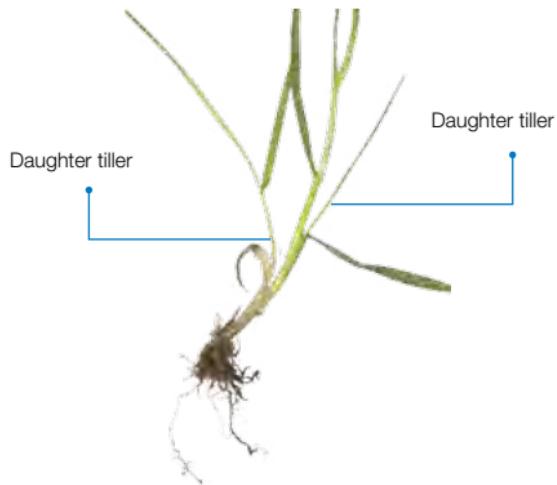


## Perennial ryegrass

- › Leaves: hairless, defined mid-rib, ribbed on upper surface, shiny underneath.
- › The emerging leaf is folded.
- › Reddish/purple base.  
*Dead leaf material may need to be peeled back to see this.*
- › Plants are made up of a number of tillers.
- › Each tiller:
  - has its own leaves and roots
  - maintains three live leaves which develop from the growing point at the base of the tiller
  - is capable of producing new or daughter tillers
  - has one leaf growing at a time – as the fourth new leaf emerges, the oldest leaf dies
  - lives for about one year.



- › Spring and autumn are key periods of tillering
    - production/growth of new tillers.
  - › Tillers can be classified as vegetative (leafy) or reproductive.
  - › A reproductive tiller can be identified by looking for, or feeling for, nodes on the stem.
- › When tillers become reproductive the stem elongates and eventually, if the tiller is not grazed, a seed-head is produced.
  - › Poa and Italian ryegrass are commonly mistaken for perennial ryegrass.



IDENTIFICATION





## Leaf stage approach to grazing management

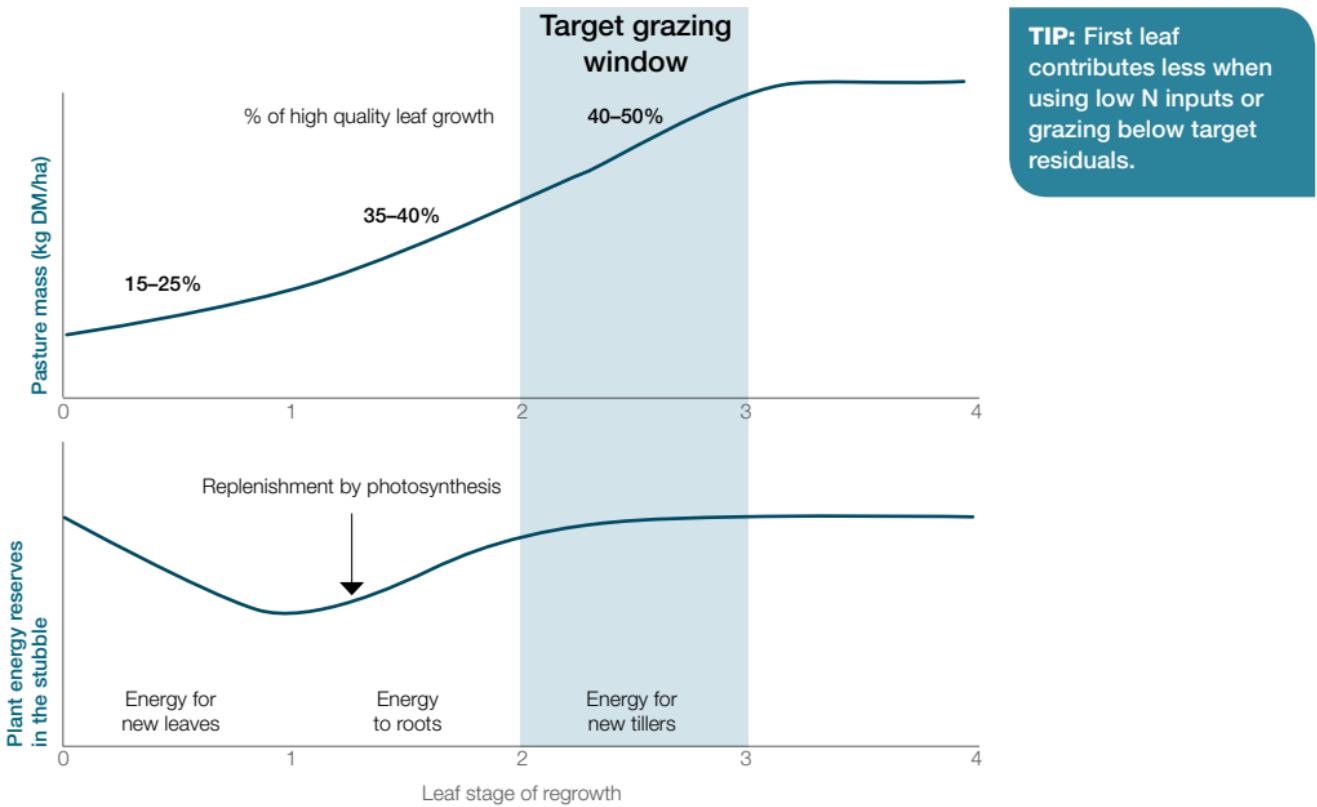
### Leaf stage:

- › is determined by the number of leaves per tiller
- › can be used to identify when a paddock is ready to be grazed
- › reflects the tillers energy status and ability to recover after grazing
- › is only measured on vegetative (leafy) tillers.

Graze between the 2 and 3 leaf stages of regrowth to optimise production of high quality pasture; earlier if canopy closure occurs (see page 12):

- › Grazing may occur closer to the 2-leaf stage when demand per hectare is low or when moving into surplus.

After the 3-leaf stage, older leaves die resulting in wastage and feed quality falls as dead material builds up.



**TIP:** First leaf contributes less when using low N inputs or grazing below target residuals.



LEAF STAGE

# Steps to estimate leaf stage

To the nearest half leaf

1

Choose a perennial ryegrass tiller.

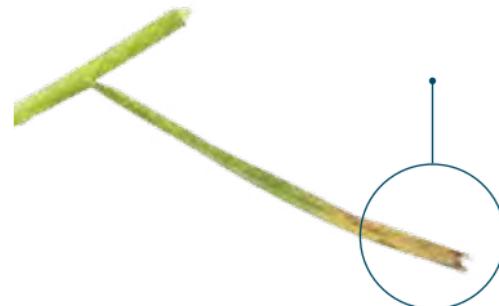
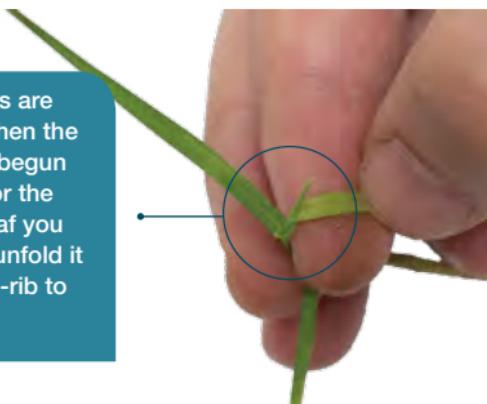
2

Check if the tiller is vegetative.

3

Check if the tiller has a remnant leaf (one that was grazed at the last grazing and has a blunt tip). If more than one remnant leaf just include the uppermost remnant leaf.

**NOTE:** Leaves are fully grown when the next leaf has begun to emerge. For the uppermost leaf you may need to unfold it along the mid-rib to check this.



4

How big is the **remnant** leaf compared with the leaf above it (first new leaf)?

Less than half  
the size  
Do not count it

Greater than half  
the size  
Count it as half

5

How many **fully grown** leaves with pointy tips are there?

1

Count it as 1

2

Count them as 2

3

Count them as 3

6

If uppermost leaf is **not fully grown** how big is it compared with the leaf below it?

Less than half  
the size  
Do not count it

Half the size  
Count it as half

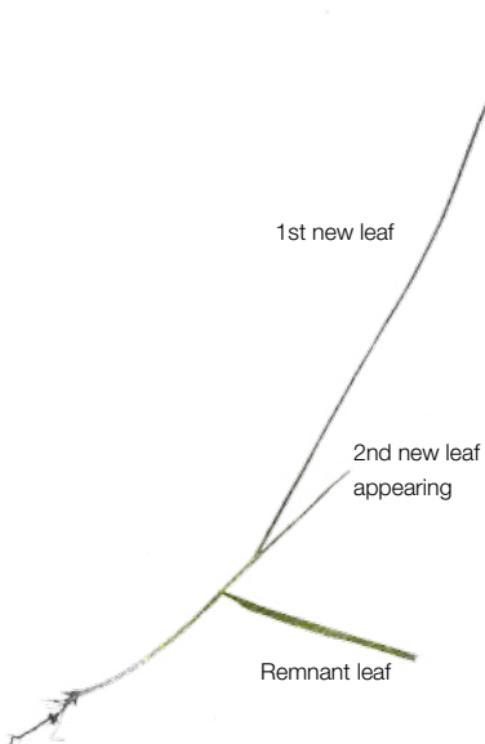
The full size  
Count it as 1

Repeat for 10 tillers

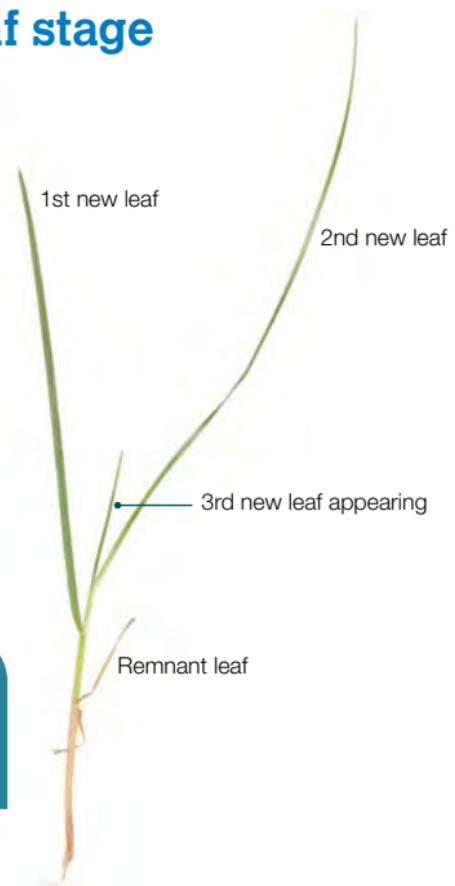


LEAF STAGE

## 1-leaf stage

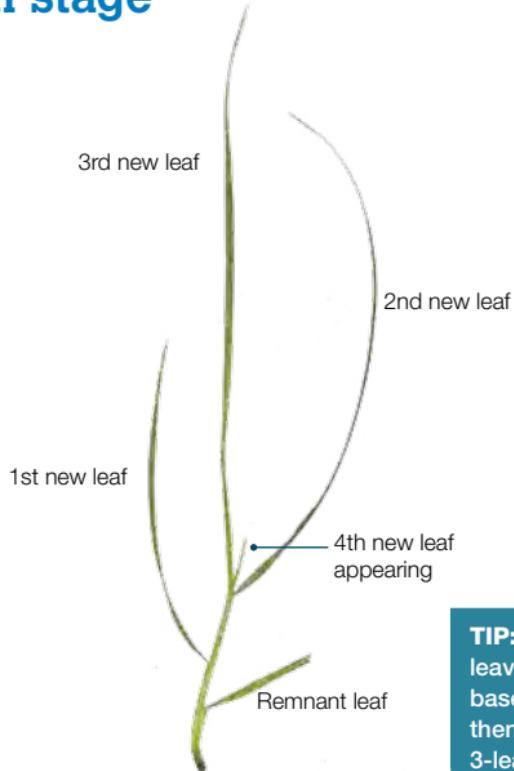


## 2-leaf stage

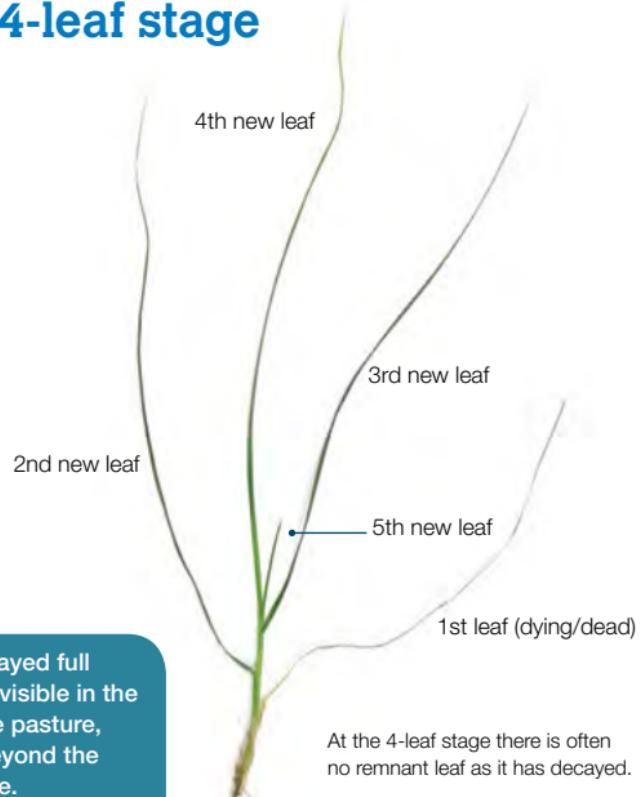


**TIP:** If blunt tips  
are visible across  
the paddock then  
not at 2-leaf stage.

## 3-leaf stage



## 4-leaf stage



At the 4-leaf stage there is often no remnant leaf as it has decayed.



LEAF STAGE



## Canopy closure

If pastures are at or nearing canopy closure they need to be grazed or conserved regardless of leaf stage.

- › Standing in the paddock you can't see the base of the pasture and very little bare ground or soil.
- › Grass leaves beginning to fold over rather than stand upright.
- › Yellowing at base.

### Canopy closure =

- ↑ shading
- ↑ tiller death
- ↓ new tiller growth
- ↓ clover content
- ↑ aerial tillers
- ↑ stem production

If canopy closure is happening repeatedly, re-assess nitrogen policy, check target residuals are being achieved and ensure rotation length is not too long.



Canopy closure

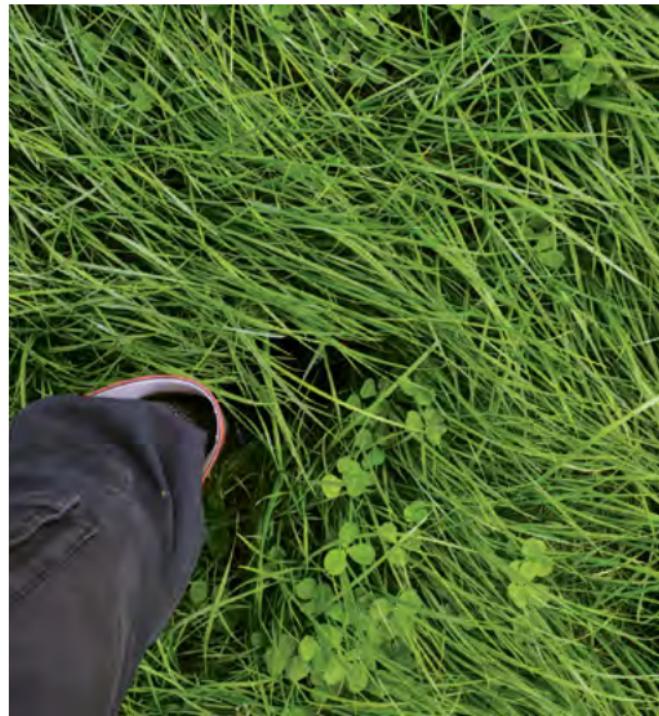


Aerial tillering

## 3-leaf and canopy closure



## Post canopy closure



PRE-GRAZING STAGE



## Post-grazing residuals

Focus on the post-grazing residuals to optimise pasture utilisation and subsequent pasture growth and quality.

**Target a post-grazing residual of 1500–1600 kg DM/ha or 4–6 cm**

- › Lower residuals will reduce regrowth.
- › Higher residuals reduce pasture quality at subsequent grazings and increase pasture wastage.

**Achieving target post-grazing residuals and good animal performance requires:**

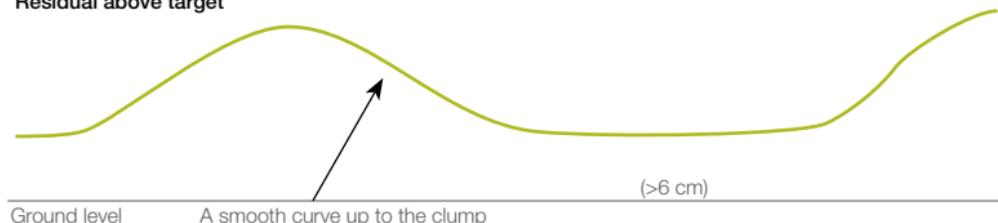
- › grazing at 2.5–3 leaves and prior to canopy closure
- › supplement allocation that matches pasture growth and cow demand
- › use of corrective actions when targets are not met.

**TIP:** Think of a simple way to record residuals daily such as on the whiteboard in the farm dairy.

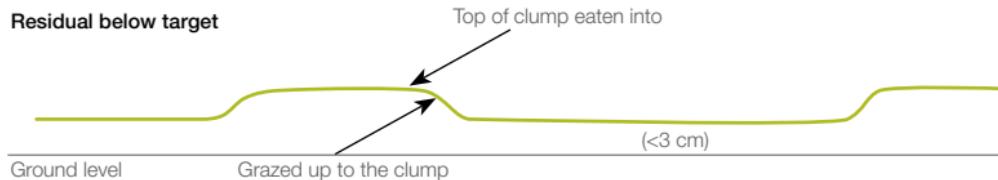
## Clumps

- › Use visual observation of clumps left behind in the paddock to help determine if your grazing pressure and feeding levels are right.
- › The aim is to achieve residuals of 4–6 cm.
- › Above 6 cm clumps tend to be smooth and rounded with little grazing of clumps occurring.
- › Below 4 cm clumps tend to be well grazed with sharp shoulders on the edges and not obvious in the paddock.

**Residual above target**



**Residual below target**





**1300 kg DM/ha or 3 cm – below target**





- › Very little to no leaf remaining in the paddock.
- › Lots of bare ground or soil visible.
- › Little herbage remaining around the clumps and the clumps are not obvious in the paddock.

#### **Residual below target/over-grazed**





**1500 kg DM/ha or 4–6 cm** – target residual





**TIP:** Cows will only willingly eat what's grown since the last grazing.

- › Very little leaf remaining between the clumps.
- › Clumps are small with a 'sharp' shape and are distinct across the paddock (dinner plate size).
- › Tops and sides of the clumps are well eaten into.
- › Clumps make-up ~15% of the area.

**Target residual 4–6 cm**



POST-GRAZING RESIDUALS



**1900 kg DM/ha or 6–8 cm – above target**





- › Between the clumps is not grazed well.
- › Good quality, grazeable leaf remaining.
- › Very large, rounded clumps with some clumps completely un-grazed.
- › Little herbage is removed from around dung pads.
- › Clumps make-up ~30% of the area.

#### Residual above target/under-grazed



POST-GRAZING RESIDUALS



## Wet weather management

Seek to minimise pugging and compaction damage

A decline in pasture utilisation may have to be accepted in order to minimise soil and pasture damage, resulting in higher than desired post-grazing residuals at this grazing event.

**Corrective action must be taken  
at the next grazing to reset the  
post-grazing residual.**



## Management options

- › Select drier paddocks or cropping paddocks.
- › On/off grazing.
- › Graze lower pre-grazing yield and therefore allocate a larger area per day for a short period.
- › Accept higher residuals at this grazing event and use corrective action when able.
- › Use back fencing to prevent repeated pugging.
- › Use gateways and races effectively.
- › Consider impact of reduced utilisation on feed offered.

## Subsequent management

- › Aim to promote tillering and pasture recovery by achieving target pre-grazing yields and residuals, and through the use of nitrogen fertiliser.
- › Keep a record of wet/damaged paddocks.
- › Avoid successive pugging events in individual paddocks.



## Decision support tool

Put a tick in the coloured cell that best describes your situation. Complete as many rows as possible.

Add up the ticks in each column – if you have a high number in the **green** column you are on target, a high number in **red** indicates you are off target.

Assessing rotation length	Too short	Target	Too long
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### Pre-grazing pasture

Current leaf stage	1 per tiller	2–3 per tiller	More than 4 per tiller
Has canopy closure occurred in this paddock?	Can still see ground through pasture	No ground seen	Pasture beginning to lay over

Assessing feeding level	Suggests inadequate feeding	Target	Suggests overfeeding
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### Post-grazing residual

Overall height	Less than 3 cms	Just right	Greater than 6 cms
Grazing of clumps	Completely grazed	Small and sharp	Untouched
Grazeable leaf remaining	None		Large amount
Is supplement being wasted?	No	No	Lots

Assessing feeding level	Suggests inadequate feeding	Target	Suggests overfeeding
<b>Pasture quality and regrowth</b>			
Paddock regrowth and quality at the next grazing	Reduced regrowth	Maximum regrowth and quality	Reduced quality
<b>Cow behaviour</b>			
The herd on entering the paddock	Run and bellow	Graze quietly	Little grazing/lie down
The herd leaving the paddock	Run home	Walk slowly	Hard to get out of the paddock
<b>Cow performance</b>			
Am I optimising production from pasture?	No, cows overgrazing	Hitting target production	No, lots of grazable pasture left
<b>Total number of ticks</b>			



# Useful calculations

## Leaf emergence rates

### Leaf emergence rate = days since grazing/leaf stage

- › If pastures are at the 2-leaf stage 20 days after grazing the leaf emergence rate is 10 days ( $20/2$ ) (pastures will be at the 3-leaf stage in ~30 days).
- › Leaf emergence rate will not be less than 8 days.
- › Depends on temperature and moisture.

## Estimating days since paddock was grazed

### Leaf stage x leaf emergence rate

e.g.  $2 \times 10 = 20$  days

## Rotation length

### Rotation length = total area ÷ area grazed

### Area to graze = total area ÷ rotation length

## Pasture quality

	Energy (MJ ME/kg DM)
Green leaf	10.5–12.5
Soft stem	10–11
Hard mature stem	6.5
Dead material	6.5

# Further support

For more support on grazing management contact your RDP



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