Drought and climate adaptation program

Seasonal forecast and pasture growth – Mitchell Grass Downs

David Phelps

Principal Scientist

david.phelps@daf.qld.gov.au

Queensland Government

What I will cover in this webinar

- Information for Queensland's Mitchell grass pastures
- An overview of the current situation
- Potential pasture growth given rainfall outlook
- Pasture management tips:
  - When you've got hardly any bulk
  - When you've got some bulk to see you through
- Management to improve pasture growth and future recovery
- A lot of detail – it is recorded

  and can be watched again later

What I will assume in this webinar

- That you already have a good understanding of the basics of Mitchell grass, and you know:
  - It grows across western Queensland
  - It grows in clay soils
  - The difference between open downs, ashy downs and wooded downs
  - It is drought hardy
  - A wide variety of grasses, legumes and herbages grow in Mitchell grass pastures
  - The more Mitchell grass tussocks, the better the country can respond to rainfall
- That you are doing your best to juggle pastures, generate some cash flow and care for your animals
- You are looking for tips on managing your Mitchell grass

What I'm not covering in this webinar

- Not commenting on the financial costs or benefits of looking after your pasture
- Not going into options for supplementatio
- Not going into options for feeding hay
- Advice for your specific situation

The up-front summary

- Recent rain is likely to grow 50-200kg/ha
- Anticipate a further 200-400kg/ha growth on a dry matter basis by the end of February
- Still looks like a very tight season for most areas
- Options for increasing stock numbers very limited in most areas
- More likely need to consider destocking

The up-front summary

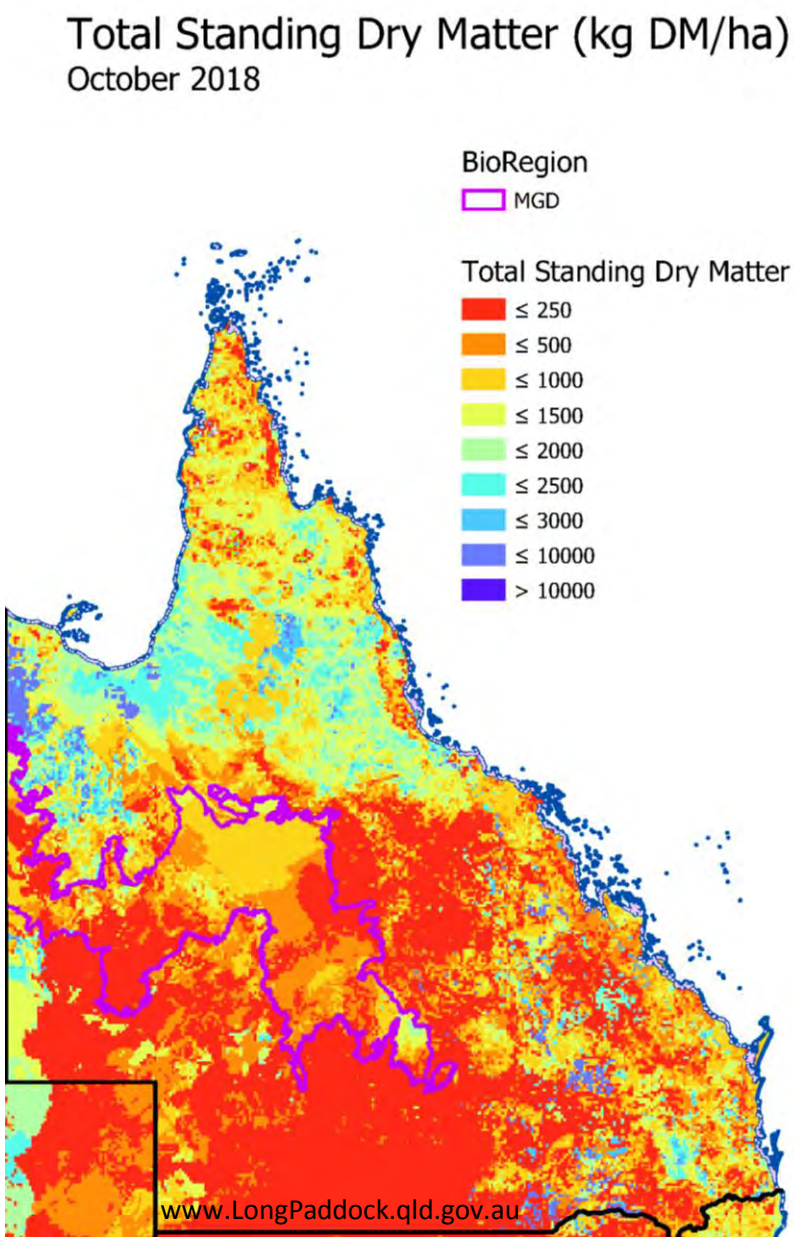
- Light grazing pressure, delayed restocking and wet season spelling are the key grazing management options available
- Plan to spell country if we get better rain from March onwards
- Review your situation and the rainfall and pasture outlook on Australia Day

Pasture growth

- Mitchell grass pasture grows about 4kg/ha of dry feed for every 1mm of rain
- This depends on:
  - The vigour of the Mitchell grass tussocks
  - Enough rain falling to get growth started
    - 15-25mm or more for open and wooded downs
    - 30-40mm or more for ashy downs
  - How the rain falls
  - Follow-up rain
- Growth can vary from 2kg/ha to 6kg/ha
- Poor Land Condition (low Mitchell grass density)
  - Halves pasture growth

Overview of the current situation

- October pasture yields through to what growth to expect from the rain in early to mid December



Pasture situation—end of October

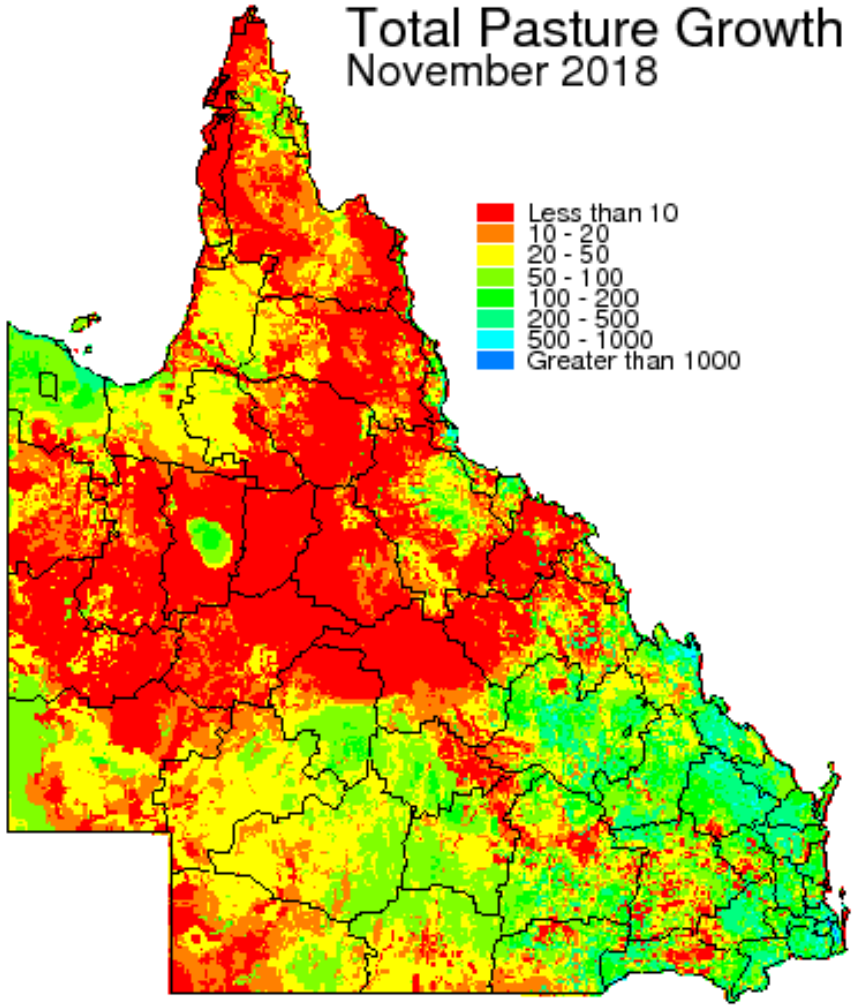
- The main Mitchell grass areas of the central and north-west are within the purple line
- Feed ranged from less than 250kg/ha to around 1,000kg/ha
- Most areas had less than 500kg/ha


300kg/ha


900kg/ha

Drought and climate adaptation program

November growth



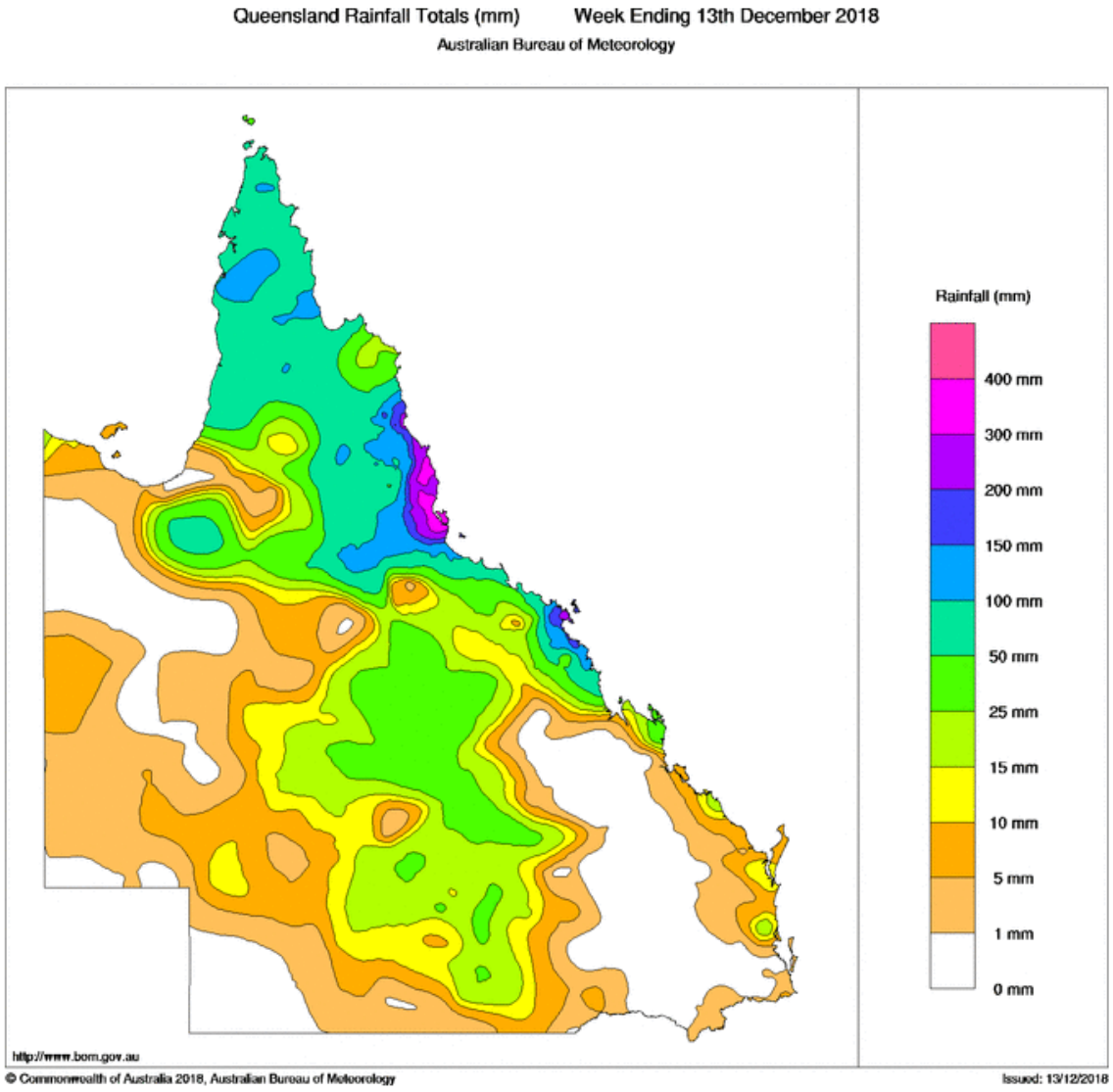
www.LongPaddock.qld.gov.au

- 'green pick' where there was more than 15mm rain:
  - Mainly isolated responses
  - Expect 30kg/ha
- 25-50mm rain
  - Expect 50-100kg/ha

Isolated areas of 100mm rain

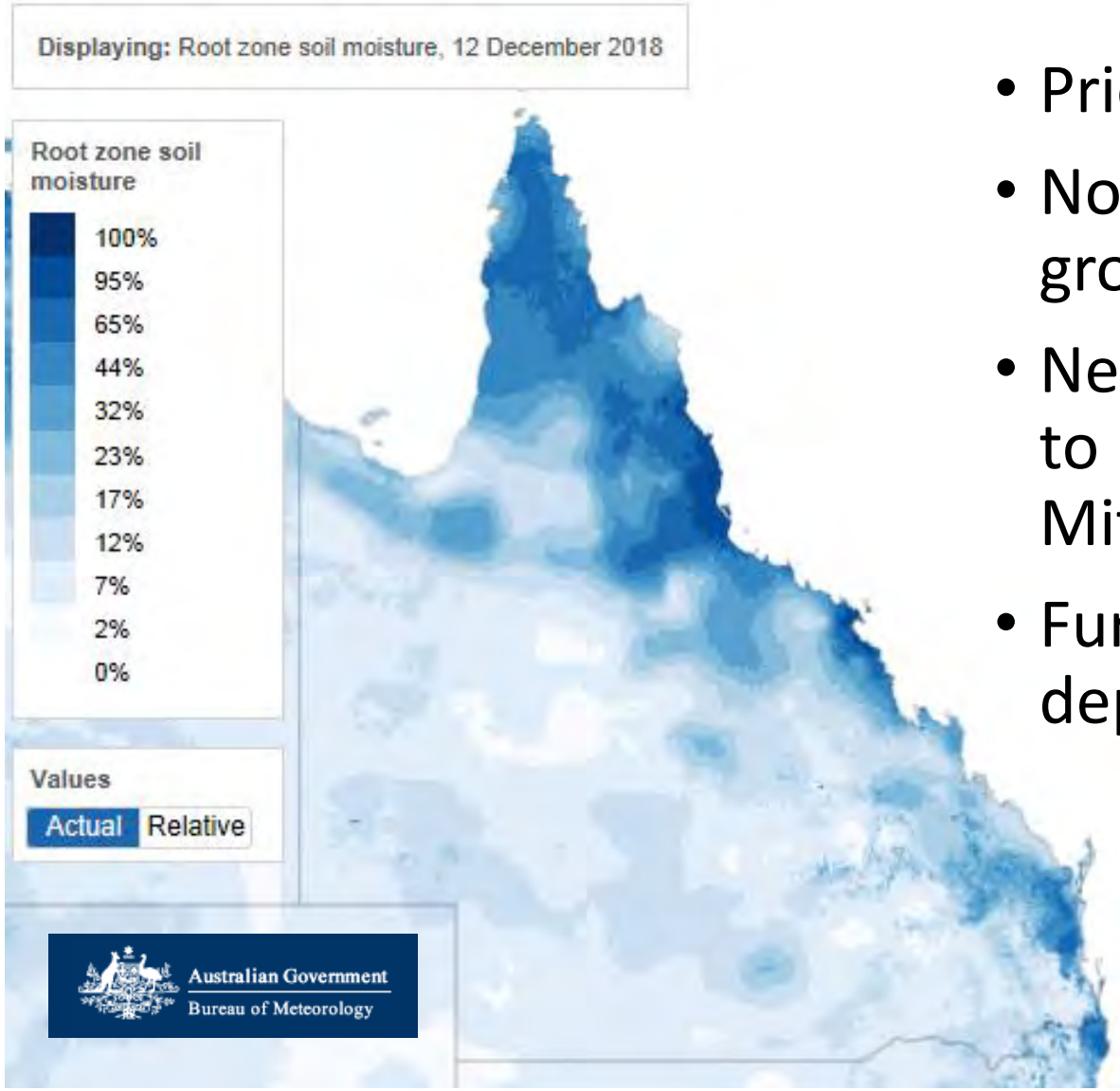
- Depending on how it fell, anticipate 200 – 300kg/ha of dry matter
- If you started with 250kg/ha or less, this will double your feed
- If you started with 500-1,000kg/ha, will add beneficial quality feed

Early December storms-a little extra



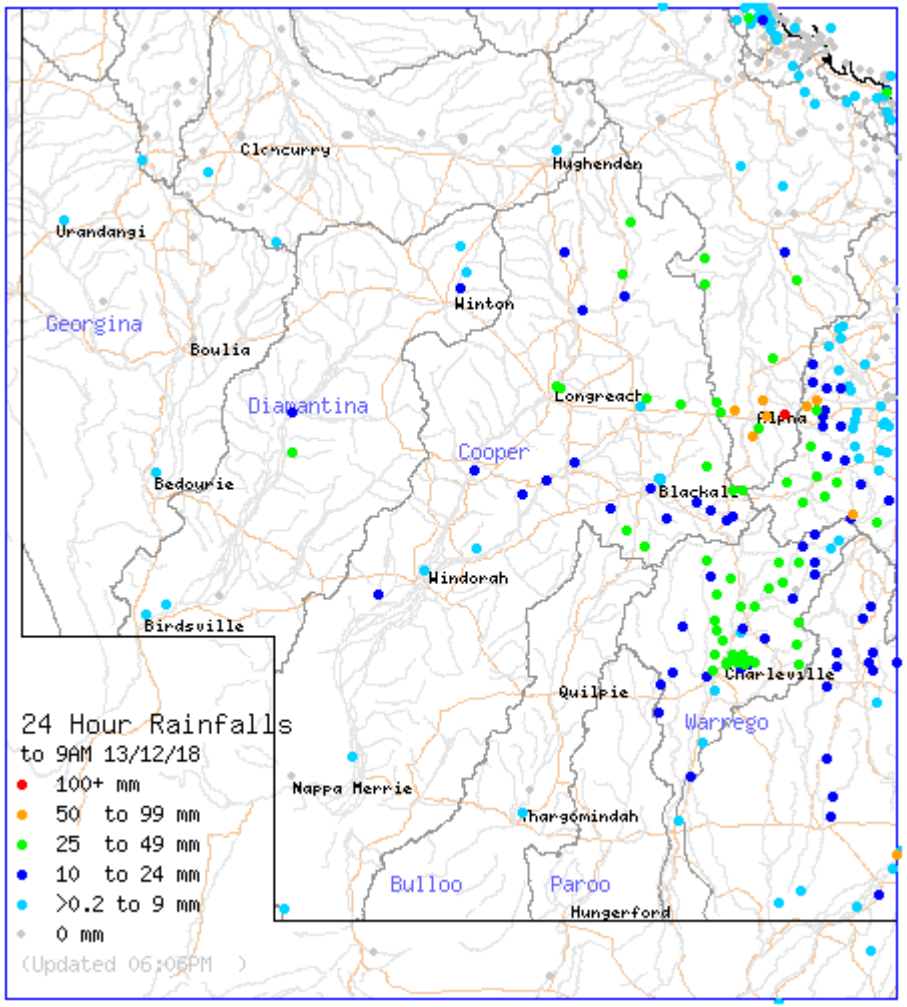
- 15-25mm rain:
  - Isolated responses
  - Expect 30-50kg/ha
- Follow-up storms within 5-10 days will give more effective growth
  - e.g. first storm of 25mm grows 50kg/ha, second storm of 25mm grows an extra 75kg/ha

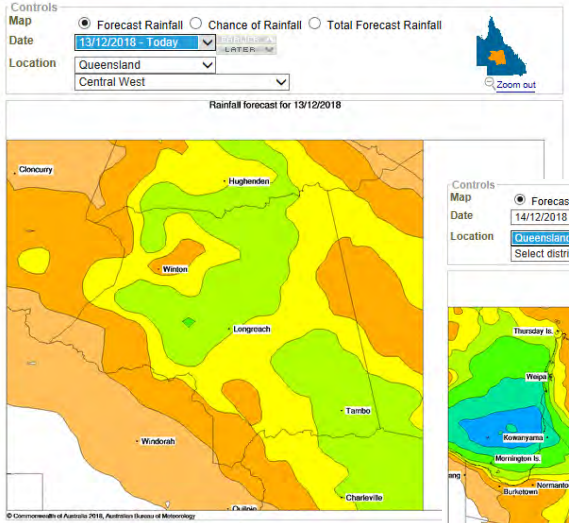
Soil moisture levels

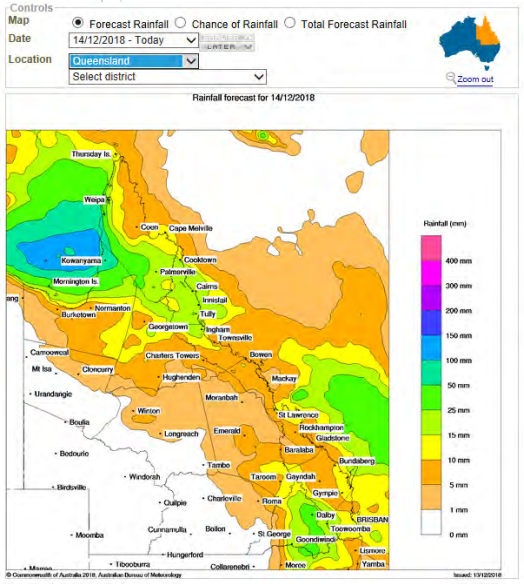


- Prior to TC Owen
- Not enough for extra growth
- Need about 17% level to keep green in Mitchell grass stalk
- Further growth dependent on rainfall

TC Owen storms

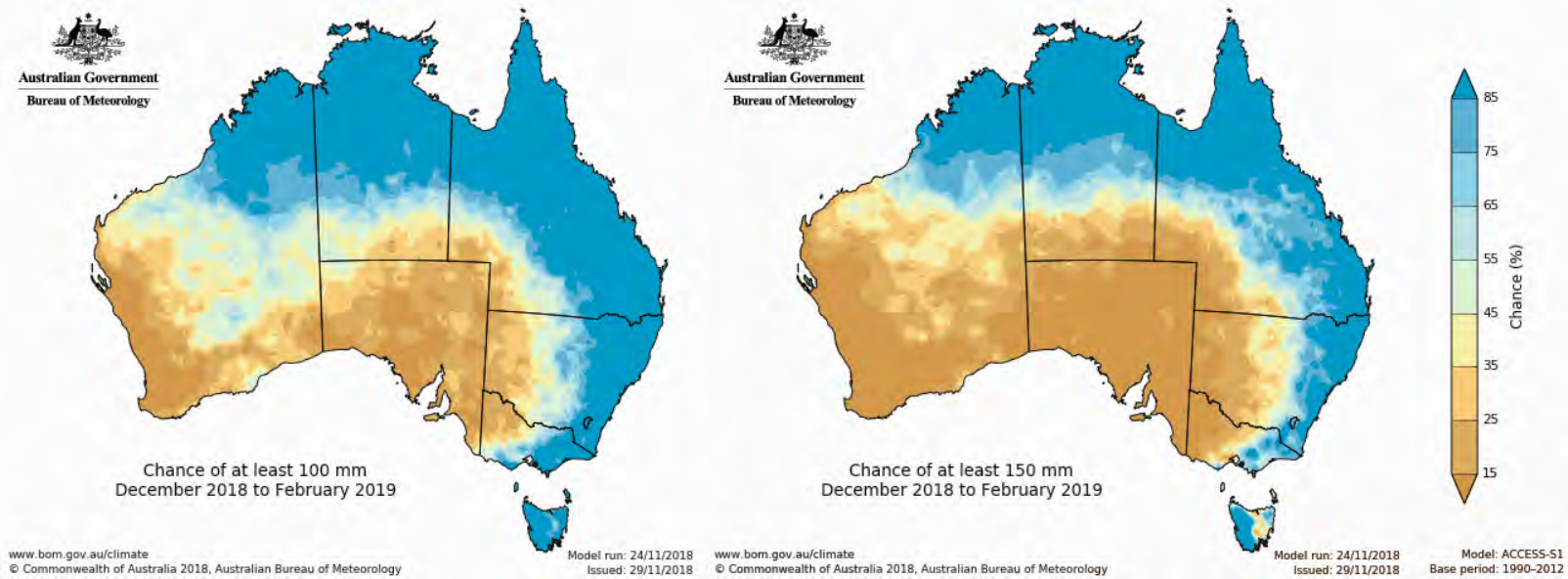


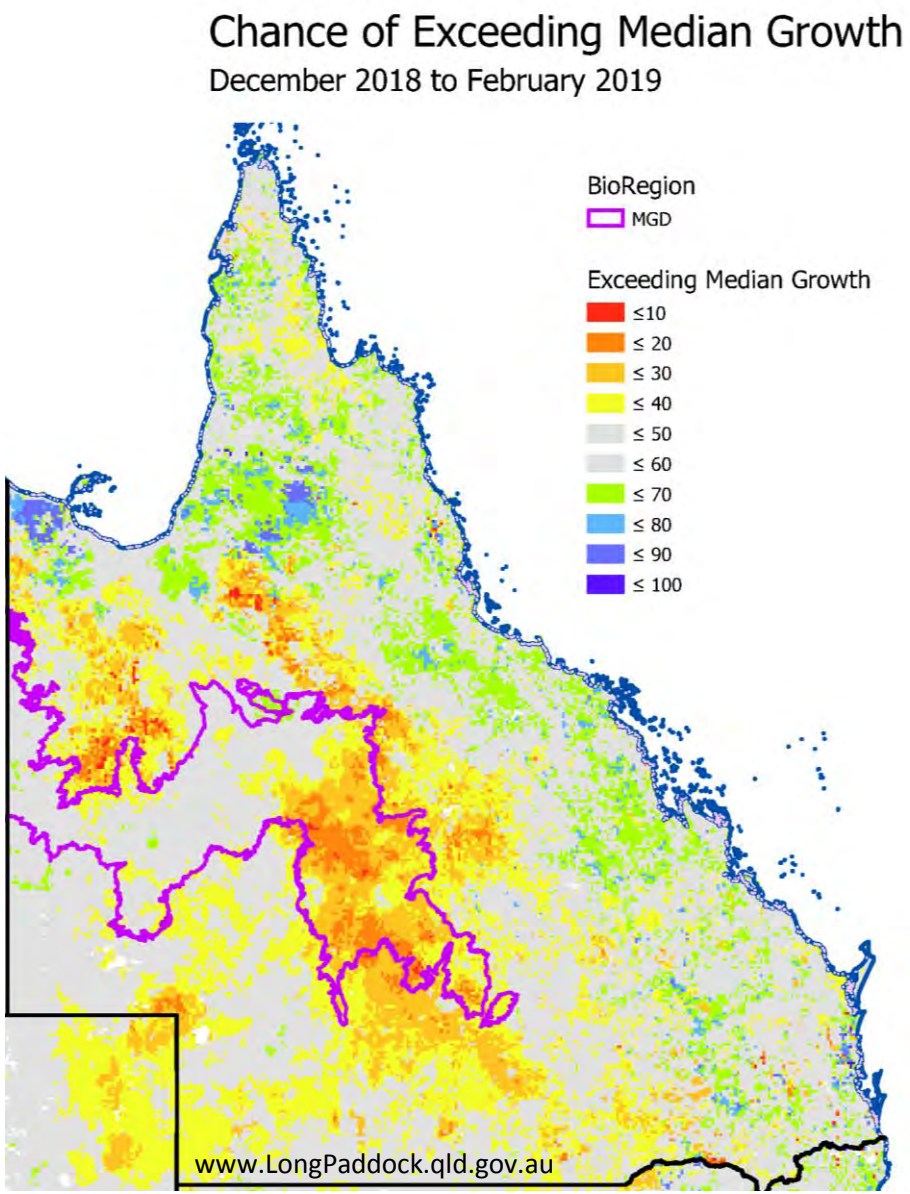




Potential pasture growth

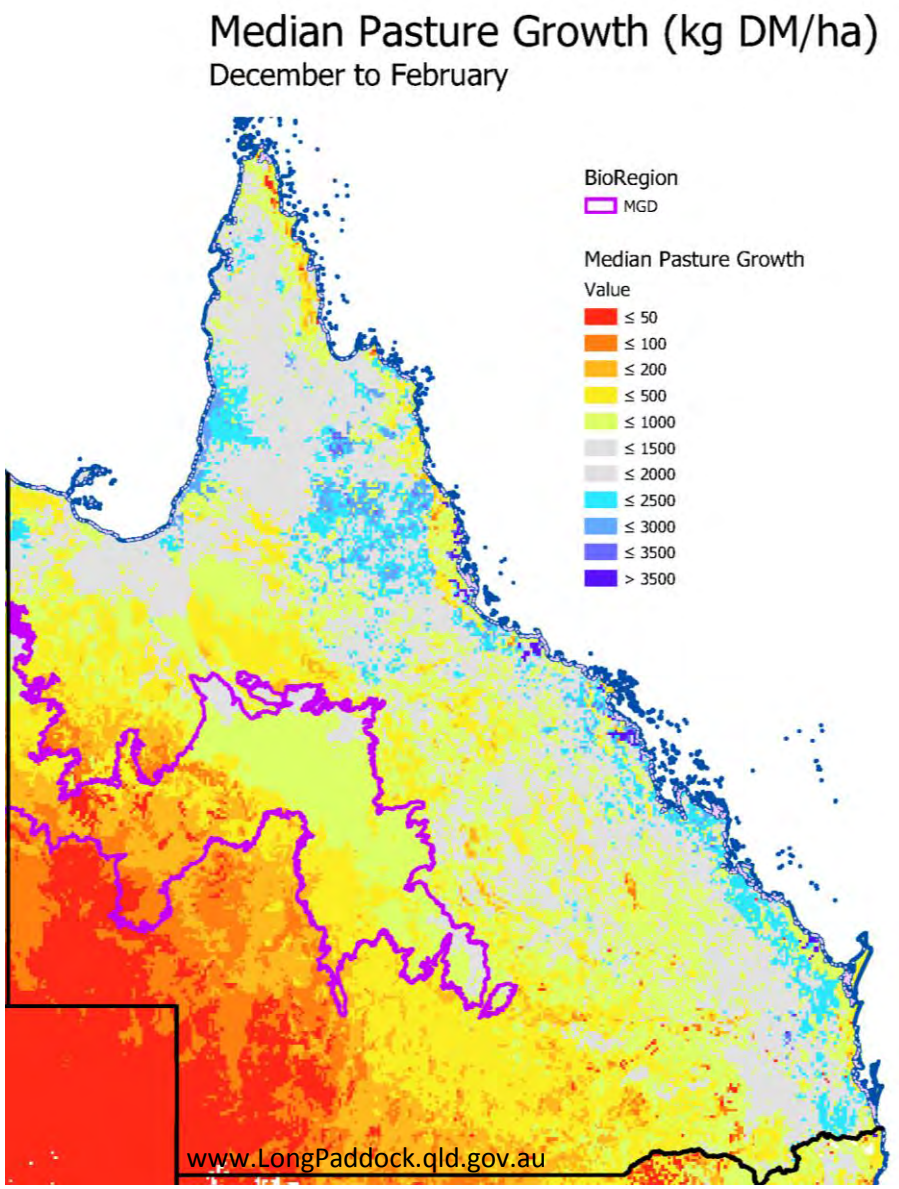
- About 200-400kg/ha seems most likely through to the end of February 2019
- As Peter noted, we can probably expect about 100mm rain
- A chance of 150mm, which should grow 300-500kg/ha





Pasture growth outlook

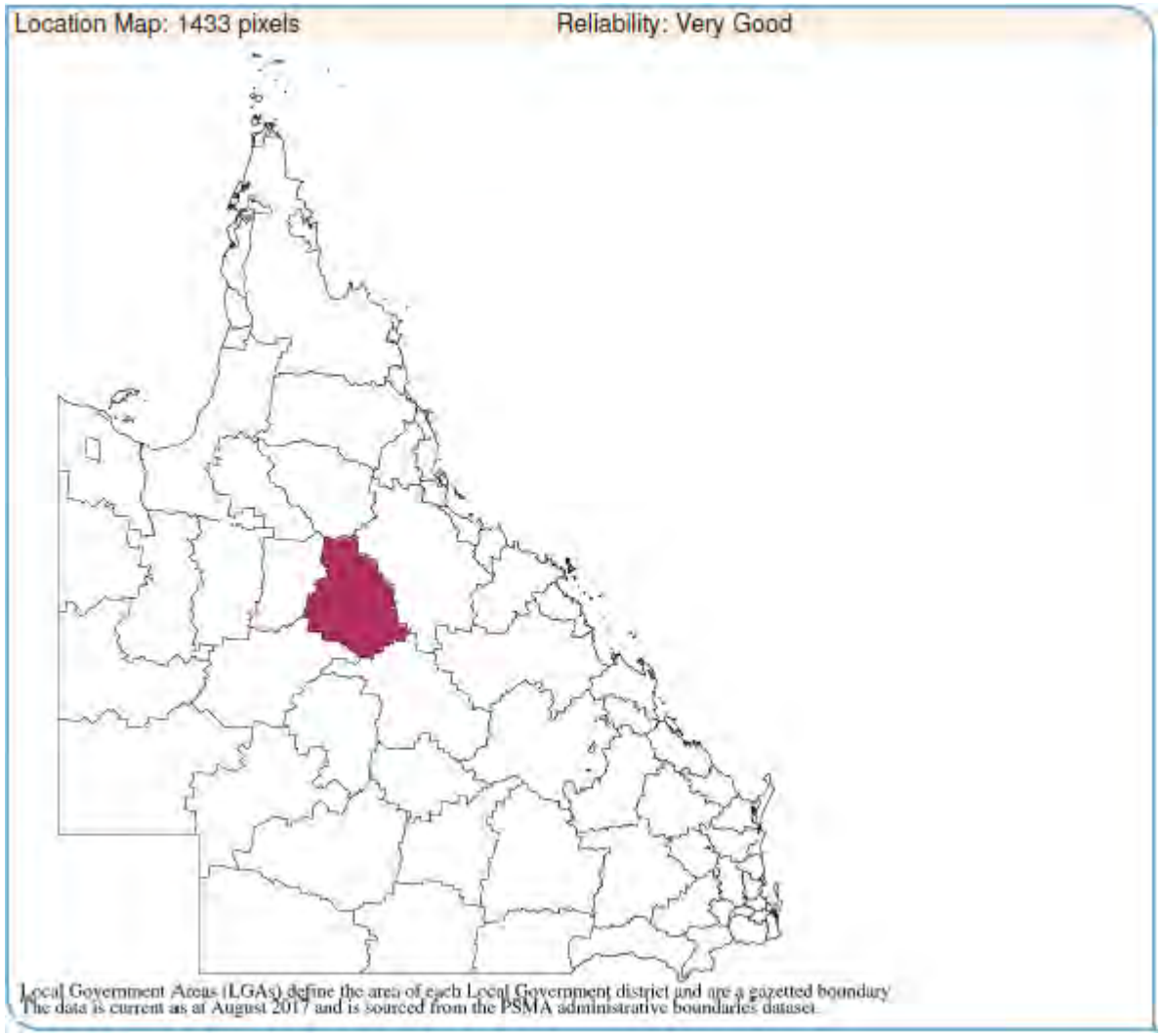
- Little chance of exceeding median growth
- The western and northern areas are more likely to achieve their 'usual' growth
- The eastern areas are not very likely
- But what is 'usual' growth?



'Usual' growth

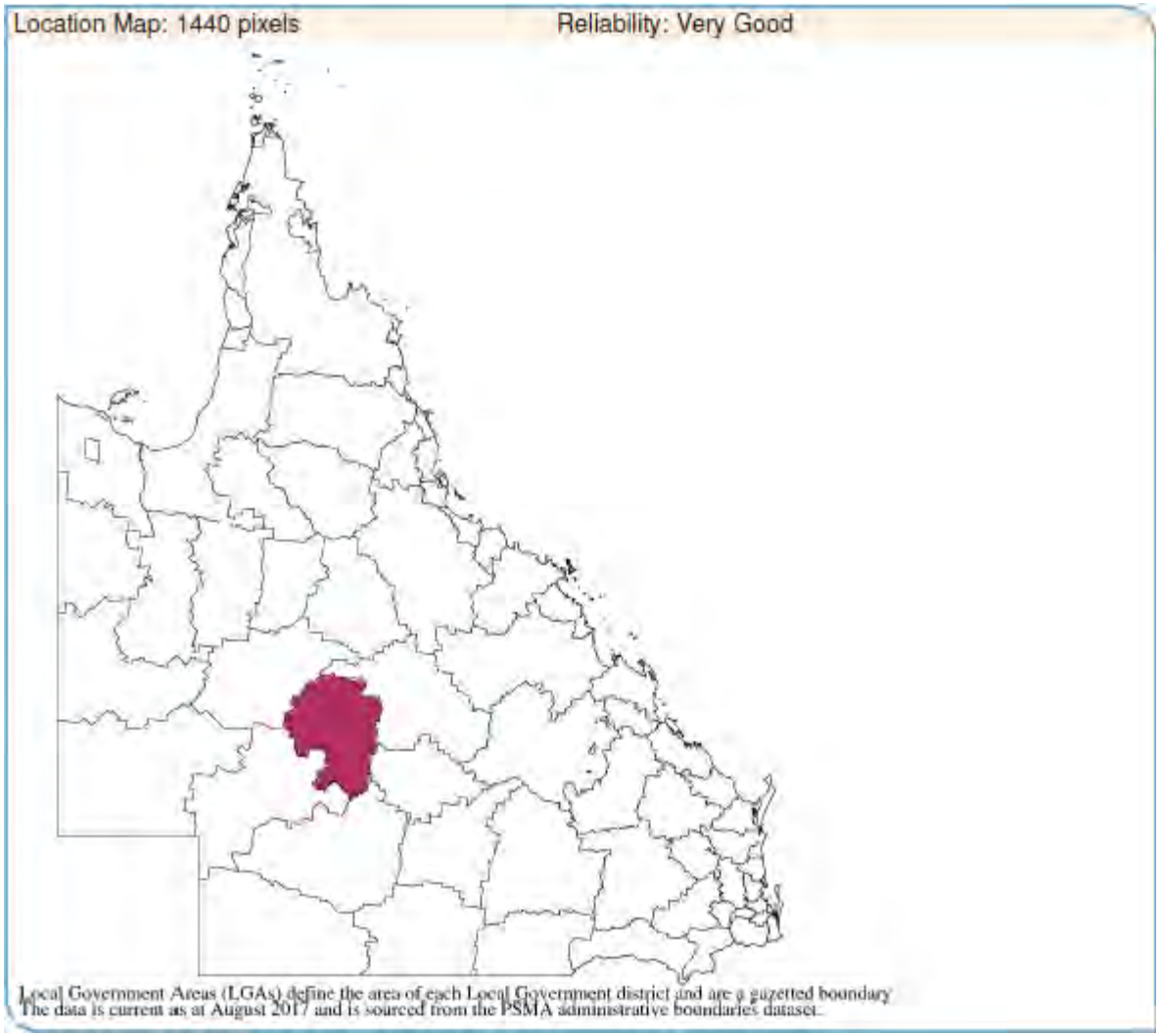
- Shown as median, which is the amount that 'most often' grows
- Lower than the average
- The western portion usually grows 100-500kg/ha
- The northern and eastern areas 500-1000kg/ha

Average growth



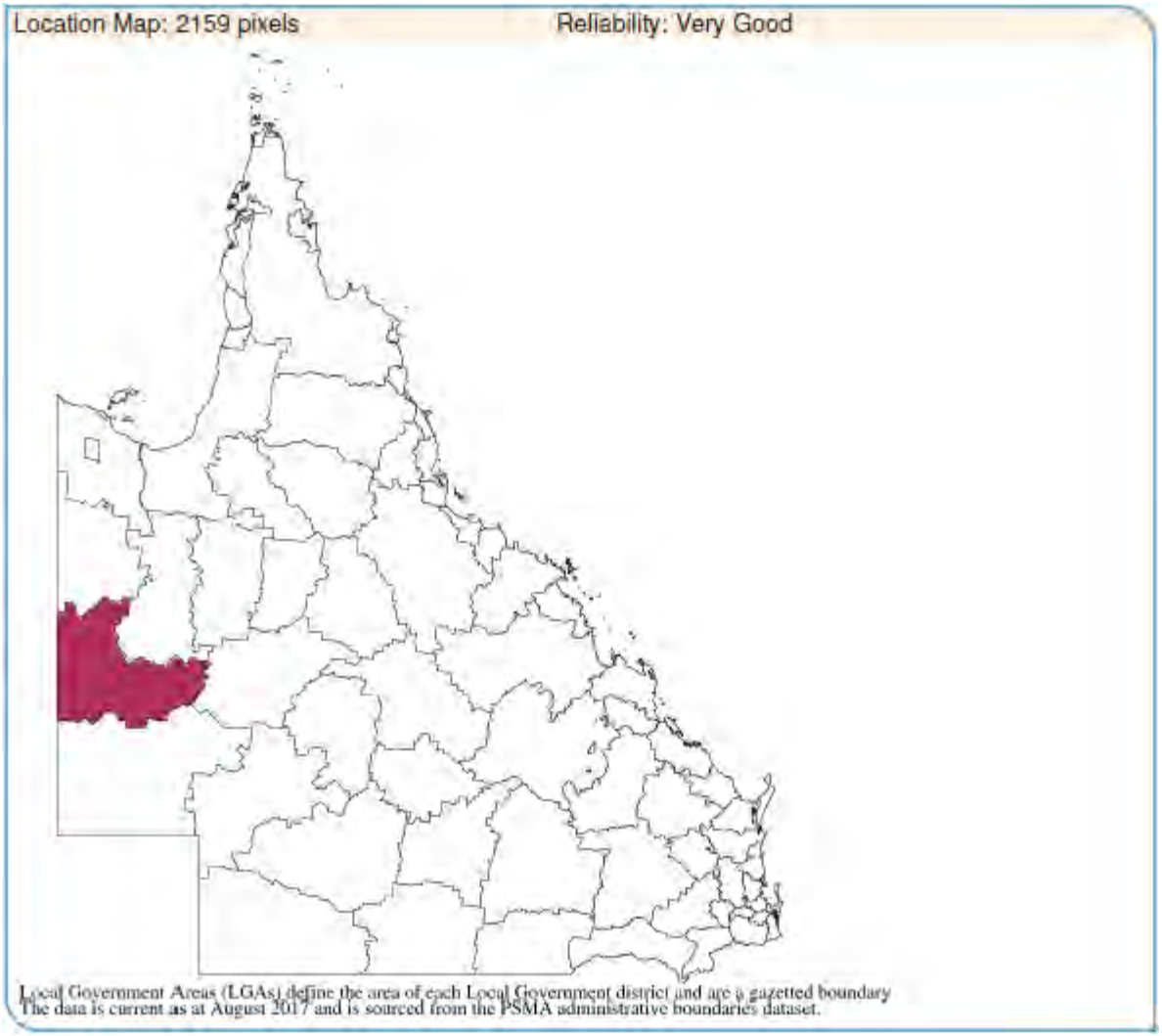
- Is higher than the median, because the good years are few and far between
- Flinders Shire
  - 1,900kg/ha

Average growth



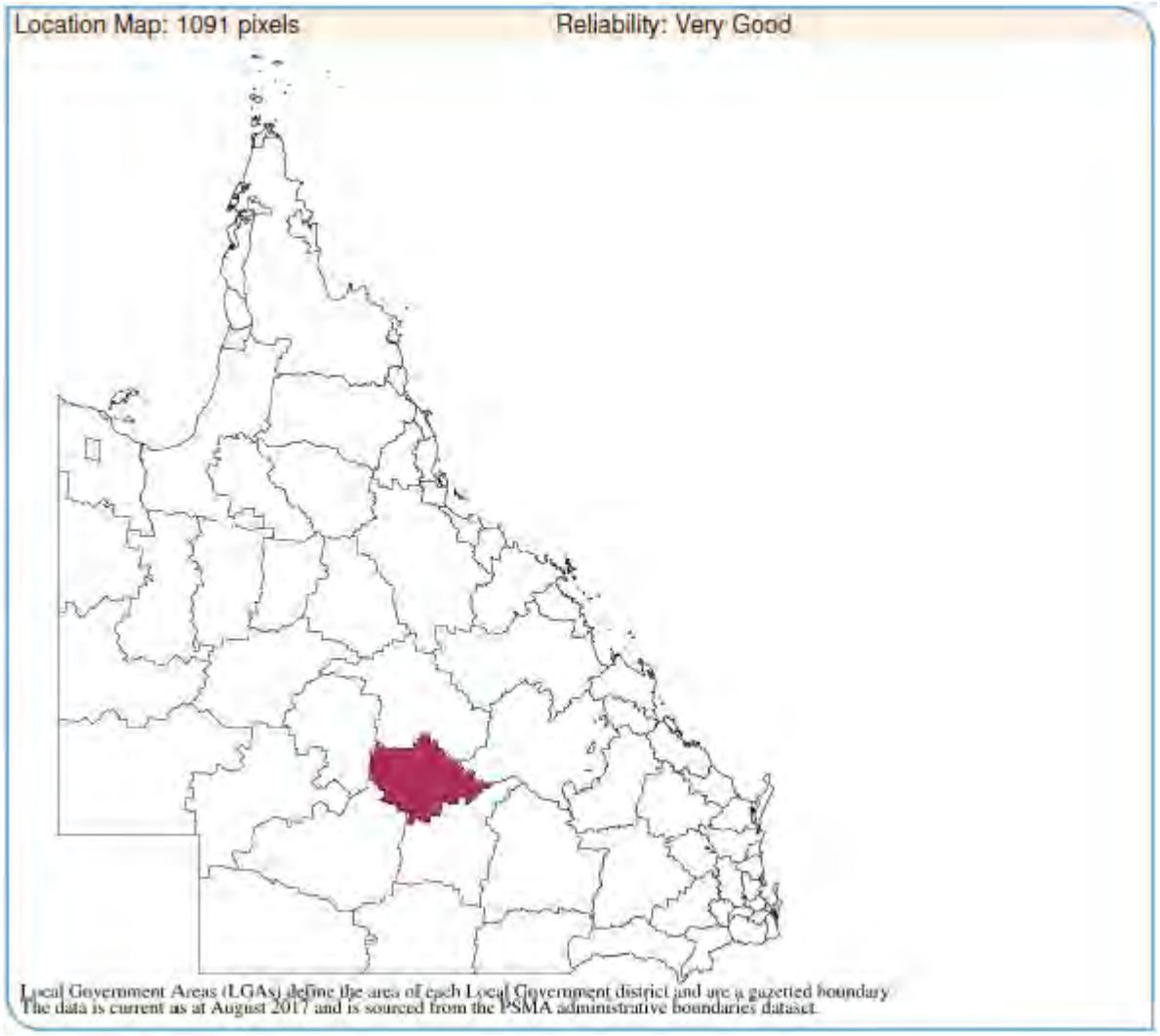
- Is higher than the median, because the good years are few and far between
- Longreach Regional Shire
  - 1,200kg/ha

Average growth



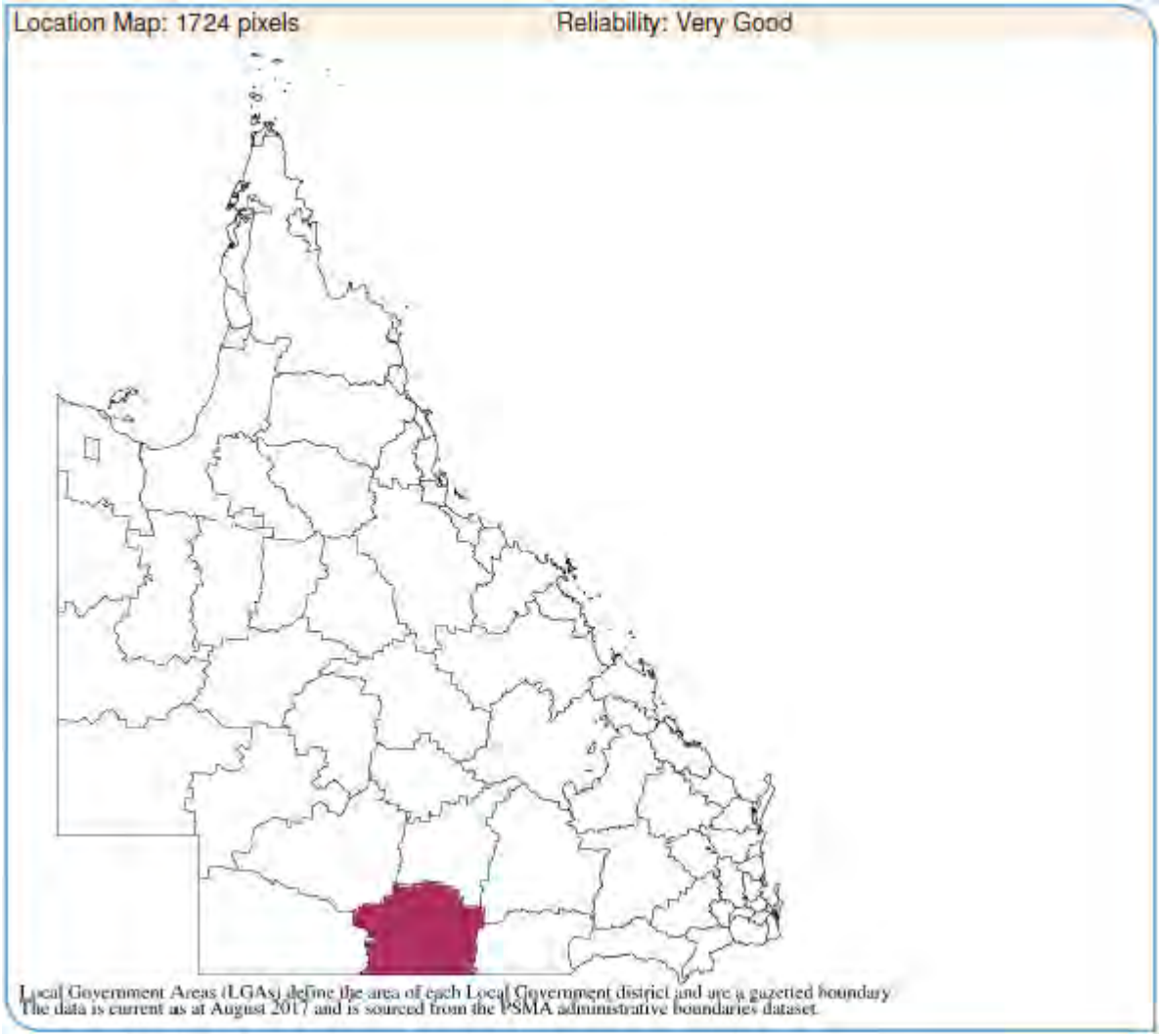
- Is higher than the median, because the good years are few and far between
- Boulia Shire
  - 550kg/ha

Average growth



- Is higher than the median, because the good years are few and far between
- Blackall-Tambo Shire
  - 1,900kg/ha

Average growth



- Is higher than the median, because the good years are few and far between
- Paroo Shire
  - 1,000kg/ha

Pasture management guidelines

- Summarise into:

- A bit tricky, given a range of starting yields and patchy rains received

Decisions now…

…are your opportunity to influence your:

- pasture response
- future productivity and profit
- drought resilience

If you have 1,000kg/ha or more…

- You have options through to about March
- This depends on current stock numbers
- Aim to preserve 15-20cm stubble height by the first effective rain, which you may have already received
- Review your situation and the rainfall and pasture outlook on Australia Day and in March

- Plan for the possibility of reducing stock numbers based on 200-400kg/ha pasture growth

...but if it is poor land condition

- Wet season spell over January-March to improve land condition
- Review your situation on Australia Day and in March
- Plan to stock over April-December, based on the feed on offer
- Aim to preserve 15-20cm stubble height at the end of 2019

- Plan for the possibility of reducing stock numbers based on 200-400kg/ha pasture growth

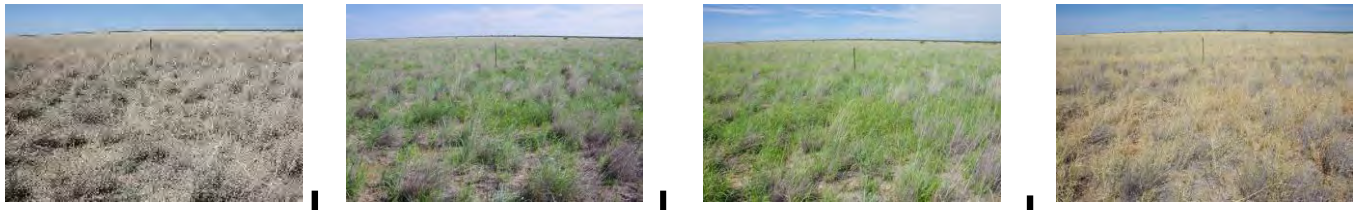
If you have 500kg/ha or less…

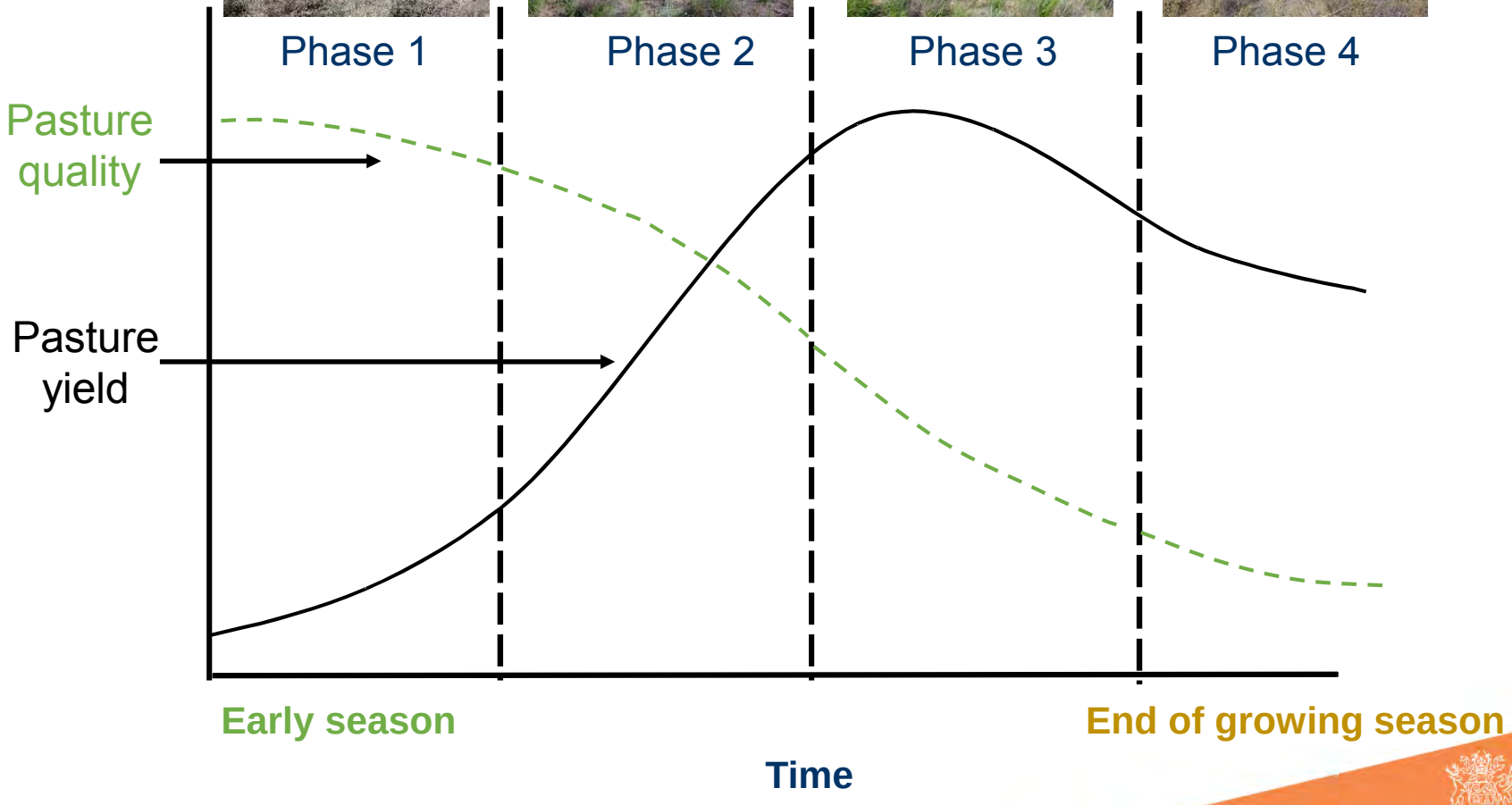
- Limited options
- Relying on current pasture and anticipated growth
- Try to keep stock off fresh green pick
- Plan for the likelihood of further reducing stock numbers

Grazing guidelines

- Do your best to have light to no grazing on fresh green pick shooting from tussocks
- We refer to fresh green pick as ‘Phase 1’ growth
- Mitchell grass is doing its best to reinvigorate itself
- The leaves are converting solar energy into sugars and starches via photosynthesis
- This is stimulating root growth, to seek more moisture and nutrients
- Growth then accelerates into Phase 2, if there is enough moisture

The four phases of pasture growth





Grazing guidelines

- In the areas with lighter falls of rain, most response has been Mitchell grass leaf (Phase 1)
- A lack of herbage, legumes and annual grasses exposes Mitchell grass leaf to grazing
- Sheep, goats and kangaroos are able to pluck the leaf and reduce photosynthesis
- Cattle struggle to graze such short feed, but trying hard at the moment

Isolated areas of 100mm rain

- Depending on how it fell, anticipate 200 – 300kg/ha of dry matter
- If you started with 250kg/ha or less, this will double your feed
- Mitchell grass will be very vulnerable
- Stock will switch exclusively to the fresh pick

Cattle and sheep grazing

- Sheep pose greater risk to Mitchell grass tussocks with small falls of rain and green pick
- Sheep can graze as little as 1 kg/ha of green
- If the only green pick is Mitchell grass leaf, sheep will target it – this is when root growth and vigour will be set back
- Constant and consistent sheep grazing of fresh Mitchell grass leaves will eventually kill off tussocks

Cattle and sheep grazing

- Spelling impacted Mitchell grass with the next rain instead of allowing heavy grazing of the same areas
- If there is a good mix of other pasture species, sheep will graze these first – even roly poly seedlings are grazed before Mitchell grass leaf
- if there is enough other feed, sheep wont graze Mitchell grass until its growth is well advanced
- When there is a good pasture mix, the tussocks are spelled

Cattle and sheep grazing

- Cattle pose greater risk to Mitchell grass tussocks in Phase 2 and Phase 3 growth
- Cattle struggle to graze less than 200-300kg/ha of green
- If the only green pick is Mitchell grass leaf, cattle will try to graze but find it difficult to fully grip it
- Cattle can readily graze taller Mitchell grass shoots and bulked-up tussocks
- Grazing action can pull entire tussocks out of the ground-especially in looser ashy soils

Cattle and sheep grazing

- Overgrazing in a single summer with cattle can do lasting damage by removing and killing Mitchell grass tussocks
- Spell impacted Mitchell grass for a full wet season
- If there is a good mix of other pasture species, cattle still select Mitchell grass as they are less able to be selective than sheep
- Even when there is a good pasture mix, the tussocks are not spelled

Grazing guidelines-current conditions

- Much of the November growth is starting to hay off
- As the leaves hay off, sugars are moved to the crown and roots
- Once it's hayed off, photosynthesis stops and the sugars have finished being redirected into the crown and roots
- The reserves have been replenished as much as they can be at this stage
- Grazing leaf at this stage does little harm to root growth or sugar storage
- There will still be physical damage that will slow future recovery

What is 'light grazing'?

- If you only start with 250 kg/ha, there is very little on offer
- Mitchell grass tussock height is already below the recommended residual height of 15-20 cm
- From a pasture management viewpoint, no grazing is the best option to allow tussock recovery
- Light grazing for sheep will be about 1 dse:20-40 acres
- Light grazing for cattle will be about 1 AE:100-200 acres
- For cash flow, I recognise this is not always possible

What is 'light grazing'?

- If you start with 500-1000 kg/ha, there is some 'room to move'
- Mitchell grass tussock height is between 10-20 cm
- Some tussocks will be below and some above the recommended residual height of 15-20 cm
- Light grazing for sheep will be about 1 dse:10-20 acres
- Light grazing for cattle will be about 1 AE:50-100 acres

Making up for drought damage

- Plan to make up for the inevitable damage caused during drought
- The stress of drought alone sets Mitchell grass back, even if not grazed
- Plan to slowly rebuild stock numbers – restock after summer rains
- Plan to spell country – especially with low vigour impacted tussocks and country recovering from poor land condition

Seedlings

- Seedlings are the only way for land in poor condition country to recover
- If there has been enough rain to germinate seedlings, these are worth protecting
- Maintain light grazing pressure to allow them to grow
- Research suggests that seedlings are not pulled out as long as there is a good variety of other plants to be grazed
- If there are no other plant species, there is a higher risk of seedlings being grazed and pulled out

Side note-one lesson from history

- The biggest stock losses across western Queensland have been during drought breaking rains when:
  - Stock are weak
  - Get bogged in clay soil cracks
  - Also suffer from exposure

To sum up: anticipate 200-400kg/ha

- It looks most likely to be a light season through to the end of February
- Light grazing pressure and wet season spelling are the key grazing management options available
- Mitchell grass is set-back by drought
- Grazing is an extra stress
- Given the light season, there are not many options for increasing stock numbers in most areas
- Plan for adjusting stock numbers according to conditions
- Plan to spell country if we get better rain in March or later

Outlooks are a guide…

- Remember, all of this is based on the number of times rainfall has occurred in previous years given similar climate patterns
- The pasture growth outlooks largely depend on the rainfall outlook
- If there is a 50% chance of one outcome, there is there is still a 50% of another one!
- BoM indicates their rainfall outlook skill for western Queensland is relatively low
- Use the outlooks as a further guide to build on your own experience and knowledge for your own property

On-line resources

- Resources to learn more about the science and for up-dated pasture information
- The Long Paddock website has a number of products that offer good guides to ground cover, tree cover, pasture yield estimates, land types and more. Forage property reports and AussieGRASS are key products:
- https://www.longpaddock.qld.gov.au/
- https://www.longpaddock.qld.gov.au/forage/
- https://www.longpaddock.qld.gov.au/aussiegrass/
- https://app.longpaddock.qld.gov.au/poster/
- Webinars explaining these products, and to best use them are at:
- https://futurebeef.com.au/knowledge-centre/

- BoM http://www.bom.gov.au/climate/outlooks/#/overview/summary