



Thriving into the 2019 Season

Barossa Improved Grazing Group Conference 2019



Farmer
Johns

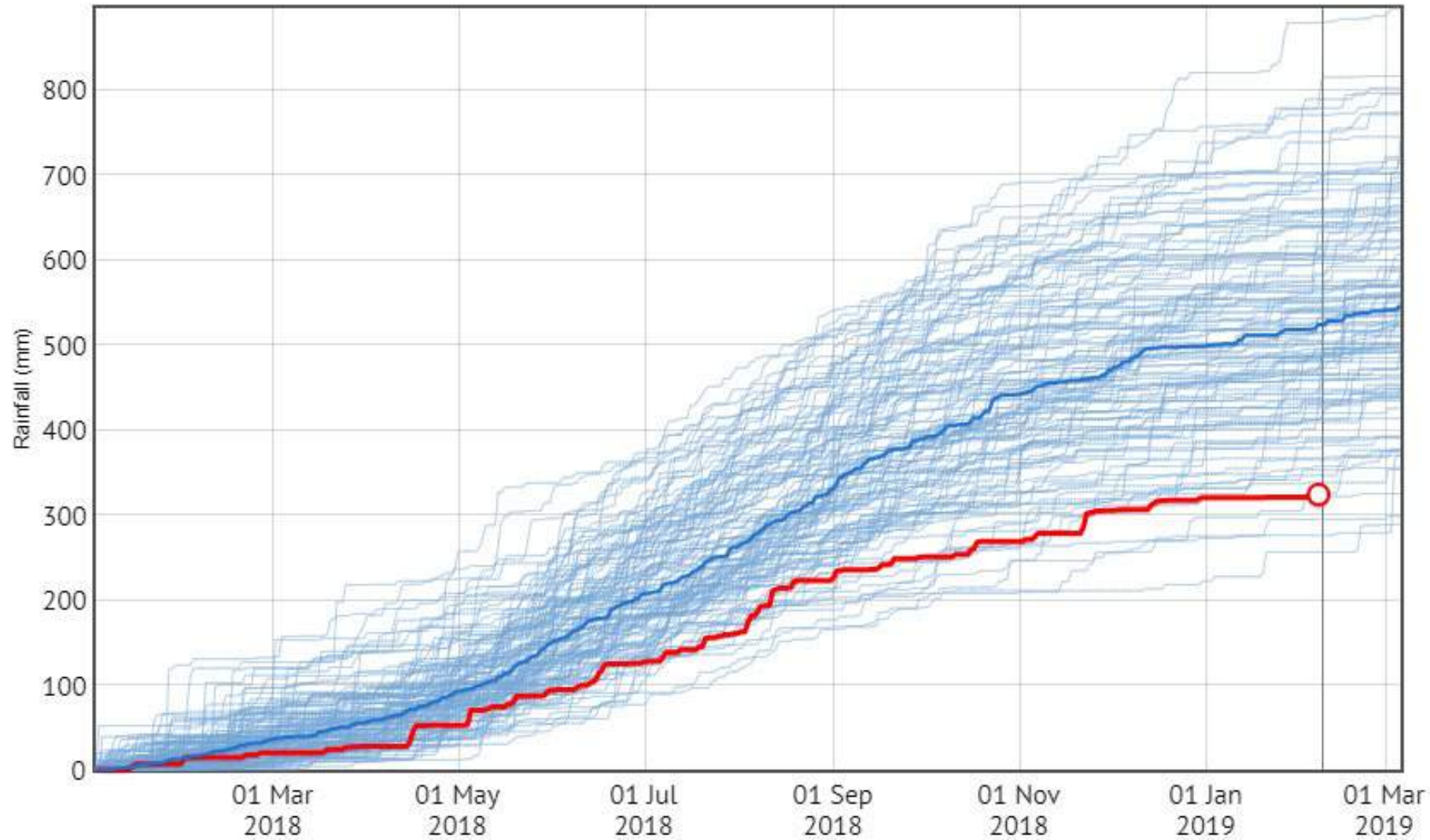


1. 2018 - The Year That Was
2. Hurdles to Production -
Getting the Basics Right



2018 - The Year That Was

Rainfall Jan 2018-Feb 2019 (NURIOOTPA VITICULTURAL)



2018 has left us with challenges

- ▶ Dry spring/summer = tighter grazing.
- ▶ Tighter grazing = reduced plant residue.
- ▶ Reduced plant residue = slower pasture recovery when the rain does come & reduced soil cover.
- ▶ Reduced soil cover = reduced soil OM & increased soil moisture evaporation.
- ▶ Increased soil moisture evaporation = slower infiltration & more rainfall required to wet up the soil profile.
- ▶ Increased hay requirement = zero fodder stock carry over.

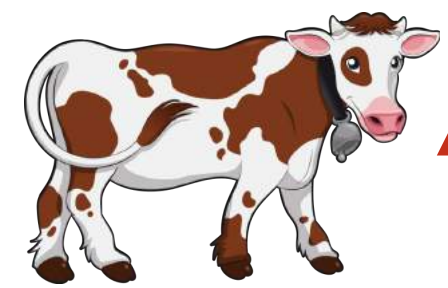


Get The Basics Right!

Hurdles to Pasture Production

- ▶ We are in the business of feeding livestock.
- ▶ Need to match pasture production with stock requirements.
- ▶ The coming year will present a number of barriers to production.
- ▶ The more hurdles we can jump, the closer we will get to peak production.
- ▶ 100 changes of 1% = 100% change





Genetic Potential of pasture = 100%



► Soil pH



Starting Point

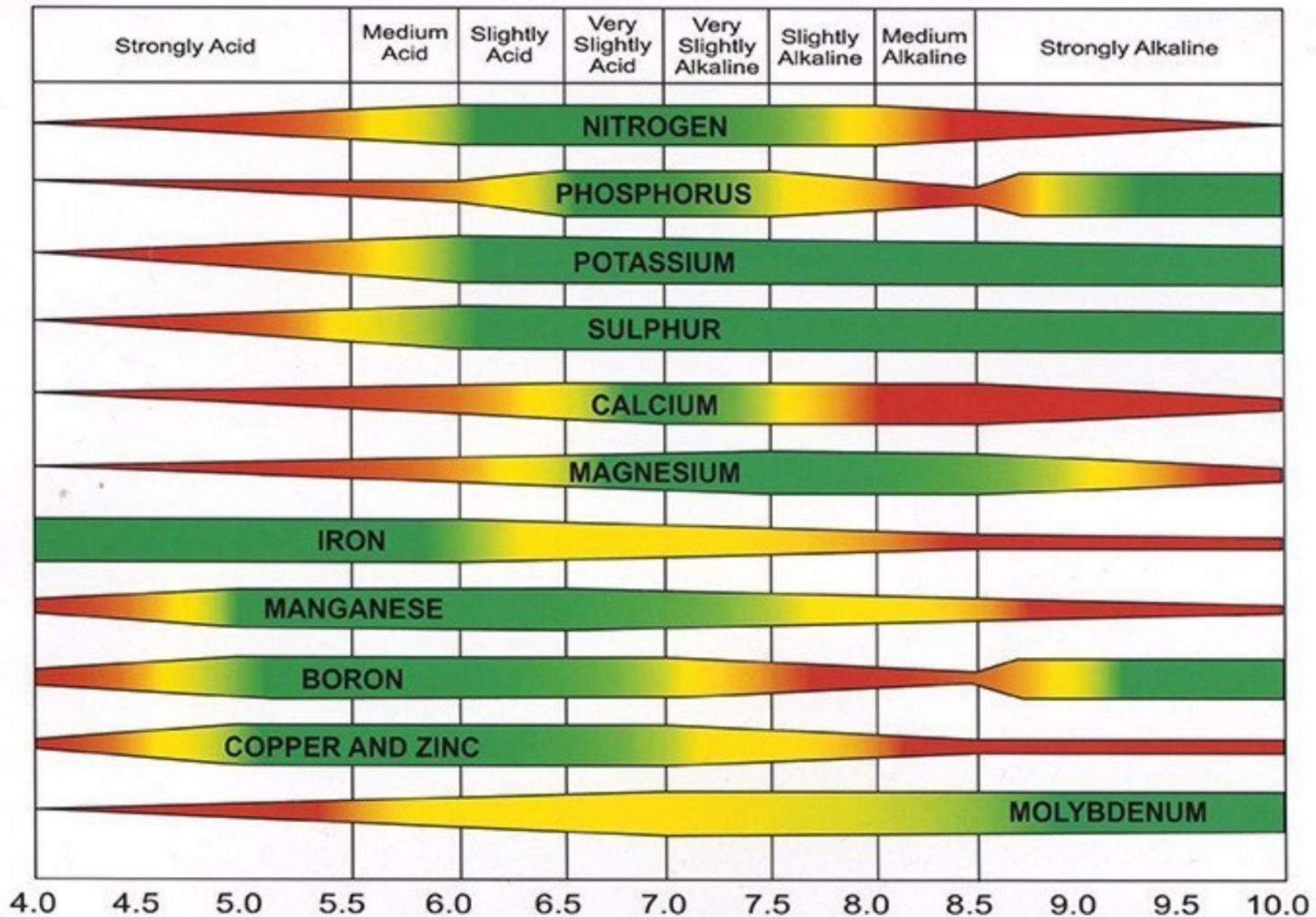
Soil pH

Problems

- ▶ Nutrient lock up -
@ pH 5.5 50% of N & 80% P is
unavailable.

Solutions

How soil pH affects availability of plant nutrients.



Soil pH

Problems

- ▶ Nutrient lock up - @ pH 5.5, 50% of N & 80% P is unavailable.
- ▶ Aluminium toxicity can rise as pH reduces.
- ▶ Weeds associated with low pH e.g. Sorrel, Guildford Grass.

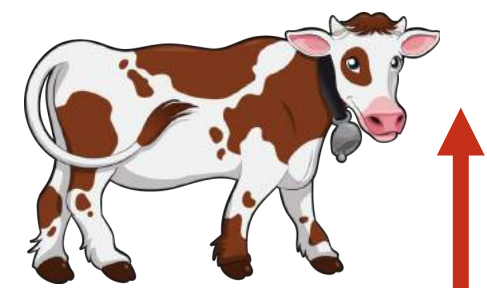
Solutions

- ▶ Lime - threshold = <pH 5.5
- ▶ Aim for pH 6.5
- ▶ Species selection

Genetic Potential of pasture = 100%

- ▶ Soil Nutrition
- ▶ Soil pH

Starting Point



Soil Nutrition

Problems

- ▶ Reduced nutrition = reduced production.
- ▶ Reduced production & low rainfall in 2018 = nutrients left behind?
- ▶ Production is only as good as the most limiting nutrient.
- ▶ Remember the leaky bucket...

Solutions



Soil Nutrition

Problems

- ▶ Reduced production.
- ▶ Reduced production & low rainfall in 2018 = nutrients left behind?
- ▶ Production is only as good as the most limiting nutrient.
- ▶ Remember the leaky bucket...

Solutions

- ▶ Soil test - understand the nutrient reserves of your soil before making any fertiliser decisions.
- ▶ Tissue test
- ▶ Known crop removal
- ▶ Nutrient Budget
- ▶ Manure
- ▶ Fertiliser
- ▶ Cut P? Possibly!
- ▶ Cut N? Possibly not!

Genetic Potential of pasture = 100%

- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH

Starting Point



Physical Constraints

Problems

- ▶ Autumn soil moisture
- ▶ Sodicity
- ▶ Soil Type
- ▶ Compaction
- ▶ Pugging
- ▶ Wind erosion

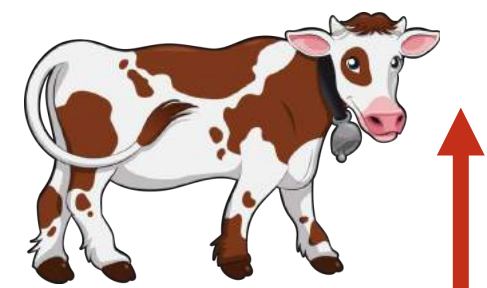
Solutions

- ▶ Gypsum
- ▶ Organic Matter
- ▶ Ground cover
- ▶ Grazing timing
- ▶ Water/feed trough location
- ▶ Smaller paddocks/quicker moves/longer residues
- ▶ Remove stock to sacrificial areas?

Genetic Potential of pasture = 100%

- ▶ Species Selection
- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH

Starting Point



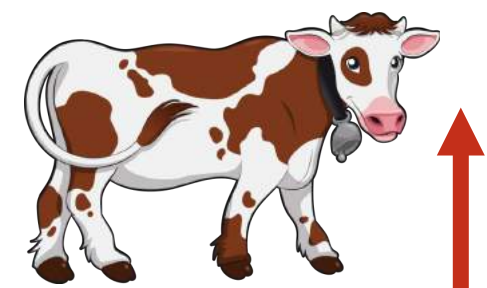
Species Selection

Problems

- ▶ Heading Date
- ▶ Palatability
- ▶ Too dry/drought
- ▶ Too wet/water logging
- ▶ Soil type

Solutions

- ▶ Annual/perennial in 2019?
- ▶ Perennials take longer to establish.
- ▶ Remember, many perennials (Cocksfoot/Phalaris) store nutrients above ground when dormant.
- ▶ Over grazing can damage the crown and reduce the plants ability to recover in autumn/winter.



▶ Genetic Potential of pasture = 100%

- ▶ Soil Biology
- ▶ Species Selection
- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH



▶ Starting Point

Soil Biology

Problems

Low rainfall & production results in:

- ▶ Reduced organic matter
- ▶ Reduced cover
- ▶ Increased evaporation
- ▶ Increased wind erosion

When the rain does come:

- ▶ Increased water erosion
- ▶ Decreased water infiltration

Solutions

- ▶ Ground cover

Ground Cover



VS



Managing Pasture Residuals...

- ▶ Many perennials (Cocksfoot, Phalaris etc) store their nutrients above ground during dormancy.
- ▶ If the crown is damaged, their ability to recover is damaged.
- ▶ Minimum plant residue required to protect soil and allow regrowth/recovery, c1200/1500kg/ha.
- ▶ Be aware of how much residue should be left when budgeting grazing/stocking rate.

Soil Biology

Problems

Low rainfall & production results in:

- ▶ Reduced organic matter
- ▶ Reduced cover
- ▶ Increased evaporation
- ▶ Increased wind erosion

When the rain does come:

- ▶ Increased water erosion
- ▶ Decreased water infiltration
- ▶ Reduced nutrient availability

Solutions

- ▶ Ground cover
- ▶ Livestock action
- ▶ Manure
- ▶ Root mass
- ▶ Organic Matter
- ▶ Feed the soil biology!



Genetic Potential of pasture = 100%

- ▶ Weeds
- ▶ Soil Biology
- ▶ Species Selection
- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH



Starting Point

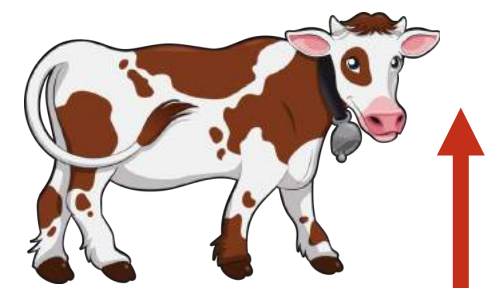
Weeds

Problems

- ▶ Competition for: Light, space, nutrients, WATER
- ▶ Allelopathic effect of some plants
- ▶ Attract certain pests e.g. Cape Weed/RLEM

Solutions

- ▶ Ensure as much crop competition as possible.
- ▶ Encourage a healthy, diverse pasture base.
- ▶ Grazing pressure before viable seed set.
- ▶ Spray graze
- ▶ Hay
- ▶ Chemical weed control



Genetic Potential of pasture = 100%

- ▶ Pests
- ▶ Weeds
- ▶ Soil Biology
- ▶ Species Selection
- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH



Starting Point

Pests

Problem

- ▶ Wide variety - Roos to Red Legged Earth Mite
- ▶ RLEM @ 12,000/m² consume the same energy as 1 DSE
- ▶ Reduced productivity
- ▶ Reduced palatability
- ▶ Creates gaps for weeds
- ▶ Virus vectors

Solution

- ▶ Integrated Pest Management

RLEM Resistance

- ▶ Resistance to Synthetic Pyrethroids (SP's) and Organophosphates (OP's) confirmed in SA.
- ▶ Resistance selection happening on a farm-by-farm basis.
- ▶ Sexual or asexual reproduction- RLEM reproduce sexually and this can lend itself to quicker build-up of resistance.
- ▶ Level of exposure - Repeated use will increase selection pressure and likelihood of selecting for resistant individuals.
- ▶ The level of cultural control methods utilised to manage the pest - Resistance will be delayed where cultural control methods are utilised in addition to pesticides.

- ▶ **The Big Four!**
 1. Assess Risk. Move away from preventative insecticide applications.
 2. Rotate Chemistry.
 3. Diversity strategy.
 4. Report control failures.



Options for IPM

- ▶ Identify!
- ▶ Spring grazing
- ▶ Control weeds e.g. Capeweed, Salvation Jane etc
- ▶ Encourage beneficials: predatory mites, beetles etc
- ▶ RLEM tolerant varieties e.g. Narrikup sub-clover
- ▶ Use thresholds & correct timing if insecticide - TimeRite

- ▶ Pyrinex Super - Chlorpiriphos + Bifenthrin.
 - ▶ Soil or early post emergence application.
 - ▶ Residual for up to 50 days.
 - ▶ 4 week grazing withholding.
 - ▶ Broad spectrum - RLEM, Blue Oat Mite, Bryobia Mite, Balaustium Mite, Pasture Webworm, Cutworm, Lucerne Flea, Brown Pasture Looper.



RLEM



Blue Oat Mite



Bryobia Mite



Genetic Potential of pasture = 100%

- ▶ Water Holding Capacity
- ▶ Pests
- ▶ Weeds
- ▶ Soil Biology
- ▶ Species Selection
- ▶ Physical constraints
- ▶ Soil Nutrition
- ▶ Soil pH



Starting Point

Water Holding Capacity

Problems

- ▶ Reduced ability for plants to access water.
- ▶ Increased soil temperature.

Solutions

- ▶ Increase OM
- ▶ Increase root structure
- ▶ Maintain ground cover



Genetic Potential of pasture = 100%

- ▶ Environmental Constraints
- ▶ Water Holding Capacity
- ▶ Pests
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Starting Point

Environmental Constraints

Problems

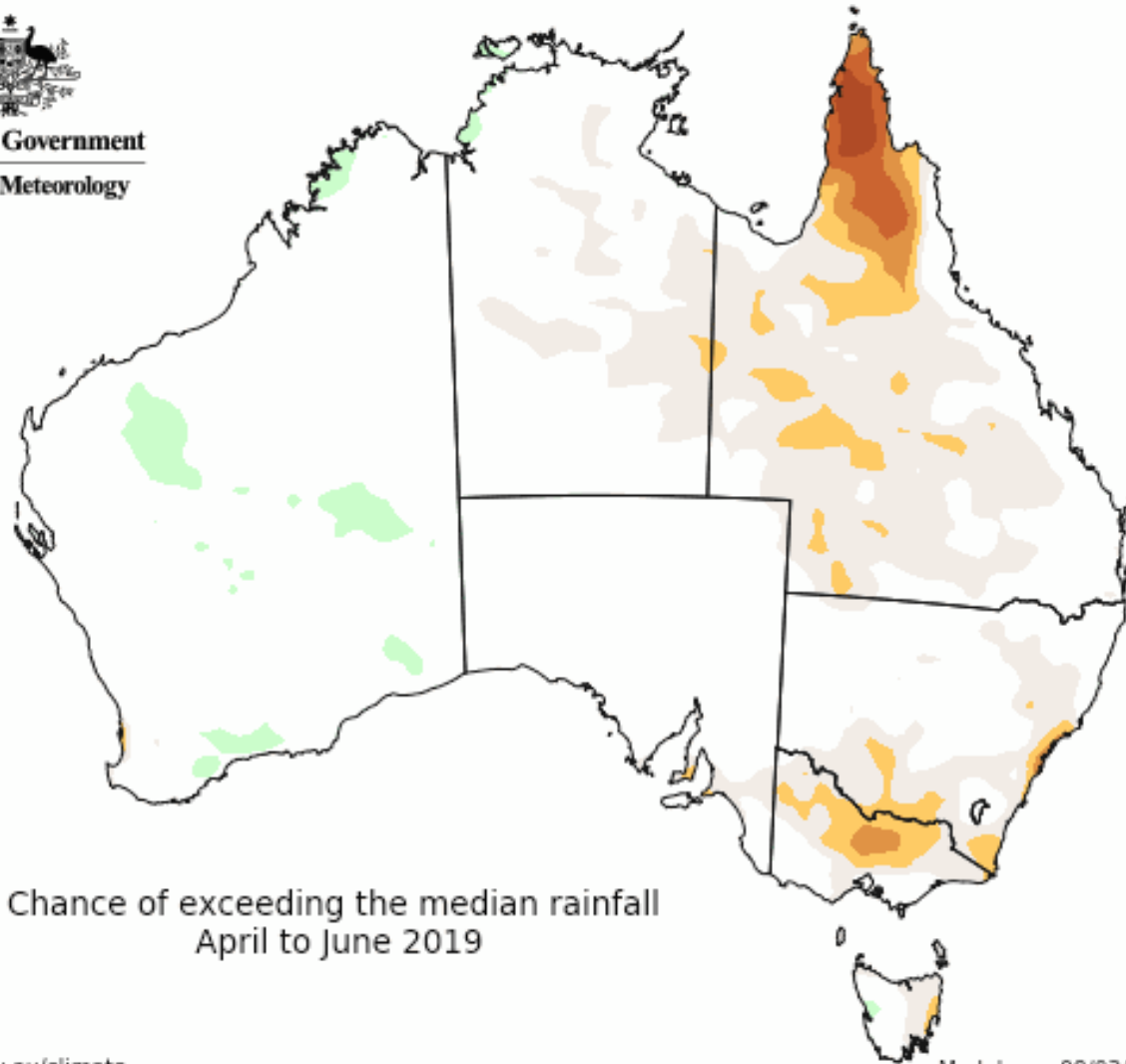
► Rainfall!

Solutions

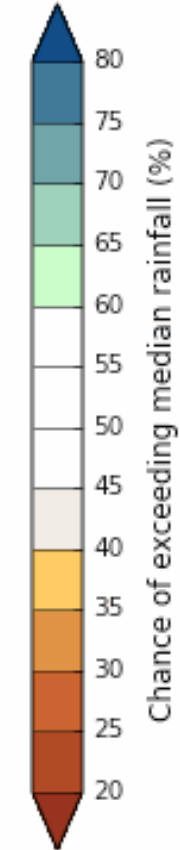
2019 - What's Ahead?



Australian Government
Bureau of Meteorology



Chance of exceeding the median rainfall
April to June 2019



Environmental Constraints

Problems

- ▶ Rainfall!

Solutions

- ▶ Species selection: Annual or perennial?
- ▶ Destock? (When & by how much?)
- ▶ Maximise every opportunity to retain and store rainfall in the soil.
- ▶ When the rain does come...
- ▶ How quick will it infiltrate into our soil. (Ground cover, organic matter, roots)

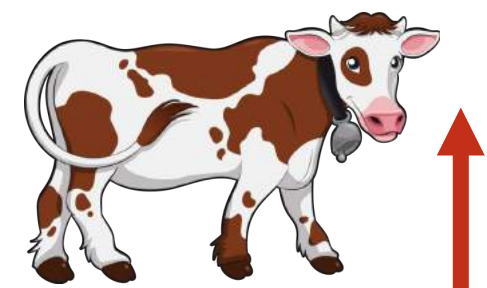
Rain Water Infiltration Rate

- ▶ Simple test that you can do your selves.
- ▶ 6' cylinder sunk 3' into the ground.
- ▶ 440mL water x 2 (or more).
- ▶ Time how long it takes for water to completely disappear.

25mm Rain Event	Bare Ground	3yr Lucerne	Diverse Pasture
1 st	2:30	1:32	0.32
2 nd	7	5	2
3 rd	15	10	5:30
Cumulative	24:30	16:32	8:02

Infiltration time in Mins:Secs





Genetic Potential of pasture = 100%

- ▶ Environmental Constraints
- ▶ Water Holding Capacity
- ▶ Pests
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Starting Point

Lessons for 2019

1. 100 changes of 1% = 100% change!
2. Focus on the basics and get them right!
3. Look after your soil!



F a r m e r
J o h n s

53 Railway Tce, Nuriootpa
P: 8562 1311

Anthony Ellis - mob: 0438 488 606
email: anthony@farmerjohns.com.au

Shaun Falkenberg - mob: 0417 887 108
email: shaun@farmerjohns.com.au



Pasture Evaluation & Demonstration Site

