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For the latest in red meat R&D

Tropical grasses: A profitable and beneficial fit for NSW

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Why tropical grasses for NSW?

- Long lasting
- Good for organic carbon build up (OC)
- Productive pastures which offer high quality feed on a different growth curve than temperate pastures

Case study

15 January 2020

- Just prior to 26mm of rain
- Coming out of a three-year drought
- Useful groundcover
- Applying N

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Case study

22 January 2020

- 6 days after 26mm received

Grazing at 2 steers/ha – too early but possible with care

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Case study

28 January 2020

- 12 days after rain
- Premier digit and Consol lovegrass
- Showing the ability to quickly restock

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Case study

18 January 2020

- 27 days after rain
- Well managed Premier digit and Consol lovegrass
- Providing the ability to restock quickly after rain

Case study

1 March 2020

- 42 days after drought breaking rain
- >5t/ha DM

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Case study

10 March 2020 – Dunedoo

- Grazing drought recovered Premier digit grass
- David Brennan – sheep production business

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- Tropical grass species can provide excellent quality feed in feedbases across NSW, provided soil fertility and macronutrients (N, P, K, S) are available in the correct ratios.
- Nitrogen is commonly the big issue

Nitrogen for production & quality

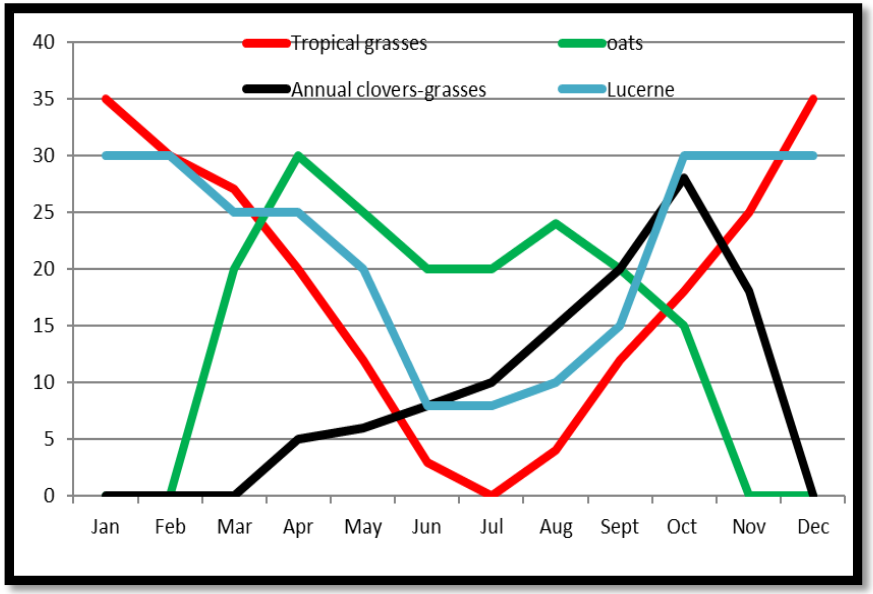
	Growth rate (kg DM/ha/day)
+N & +rainfall	>100
–N & +rainfall	35
–N & –rainfall	<10

Rest period (wks)	N rate (kg/ha)	Metabolisable energy density (MJ/kg DM)		Crude protein (%)	
		Leaf	Stem	Leaf	Stem
2	0	8.2	8.3	10.9	6.7
	100	9.1	8.6	17.5	11.0
6	0	8.4	7.7	10.6	5.3
	100	8.7	8.5	14.3	8.1

Boschma *et al.* 2015, 2017

Pasture growth curve

- Aim for feed all year
- Tropical grass species in addition to winter legumes.
- Lucerne is able to respond to rainfall quickly
- Dual-purpose winter crops also valuable feed source



Case study

8 May - Orange NSW

- 900m above sea level
- Tropical grasses suit higher areas but have a shorter growing season

After a few frosts

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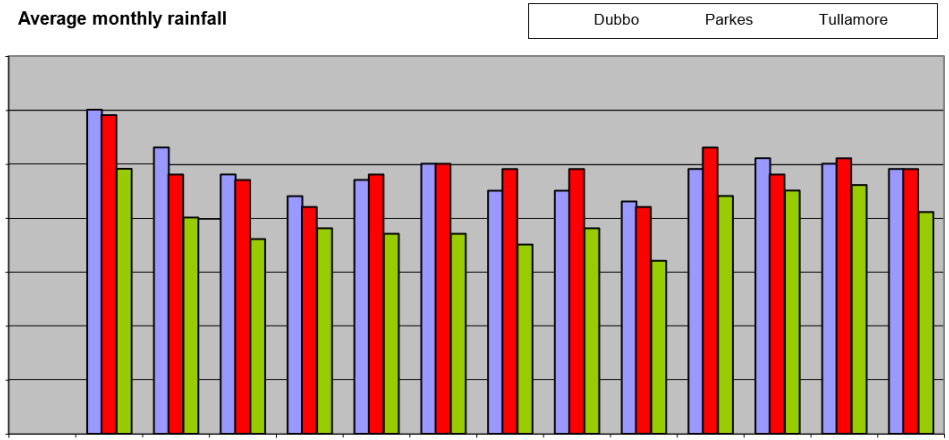
- A component of a productive feed year is conserving tropical grass hay or silage (i.e. good years like 2020, 2021)
- Tropical grass hay can be excellent quality

Rainfall patterns support tropical pastures

- Rainfall patterns for north west, central west and even south west support tropical pastures, winter legumes and lucerne.



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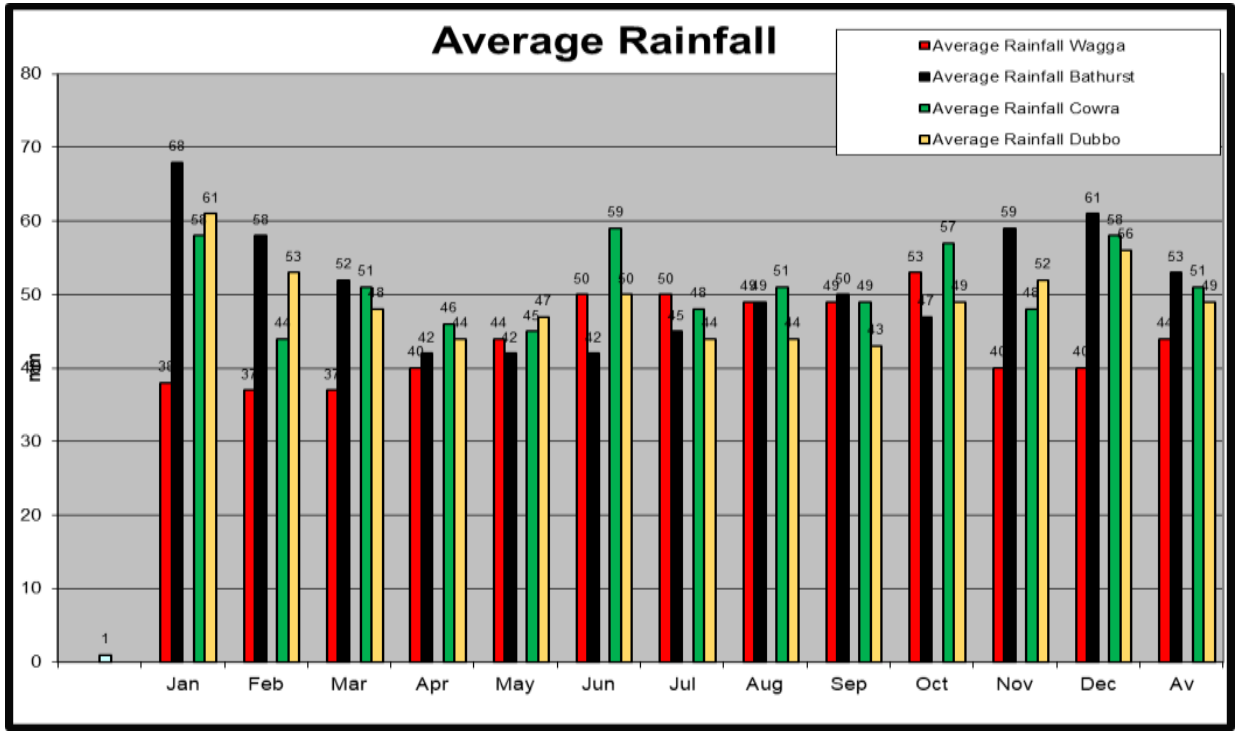
Rainfall patterns support tropical pastures



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Temperate perennials v tropical grasses

- 13 November in a typical dry spring year.7 days after 50mm rain
- Temperate perennial pastures (foreground) and tropical grasses (background)

- 12 March following year with typical summer storm and other rain events.
- Weeds in temperate perennial pastures
- Tropical growth measured at 4t DM/ha

Tropical grasses with winter legumes

- Winter legumes are an ideal fit with tropical grasses.

- Sub-clover growing through tropical grass.
- Grass grazed down to approximately ~3t DM/ha

- Serradella in a tropical grass pasture – 17 September in a good spring year.

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Wildlife control

- Keeping wildlife out of tropical pastures
- Added two top wires in addition to a bottom barb wire for kangaroo control
- Especially important in drought.

Case study

70km north west of Condobolin

- 400mm annual rainfall
- Premier digit grass and Bambatsi panic grass

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Case study

North west Gulargambone

- Hard setting sodic soils
- Bambatsi panic recovering after January rain
- This pasture has been persistent for over 20 years

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Case study

- South west Western Australia
- 15th October in a good spring (Mediterranean climate)
- Serradella over tropical grass pasture
- Legumes are critical for nitrogen fixation and provide high quality winter feed

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Tropical pastures and rain utilisation

- Tropical grass species are more effective at capturing summer storm rains than lucerne pastures after a long dry period

Treatment	Drymatter (Kg/ha)	Rainfall capture (mm)	Water Use Efficiency Kg DM/mm
100% Digit grass	3926	144	42
100% lucerne	841	36	4

9 January – 20 February – Tamworth Agricultural Institute

Case study

Koorawatha (between Cowra and Young)

- Tropical pasture and legumes in a southern climate a 12 year old stand

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Case study

<u>Yeoval – central west NSW</u>

- 16th April after a typical summer.
- 12 year old Premier digit pasture

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Case study

West of Parkes NSW

- February
- Tropical grass pasture over 12 years old

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Case study

7 May – Cowra ARC

- 350m above sea level
- Tropical grass pasture in its third year, producing 10t DM/ha/year

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Case study

10 March 2018 - Dunedoo NSW

- Tropical grass pasture after the Sir Ivan fire (September 2017)

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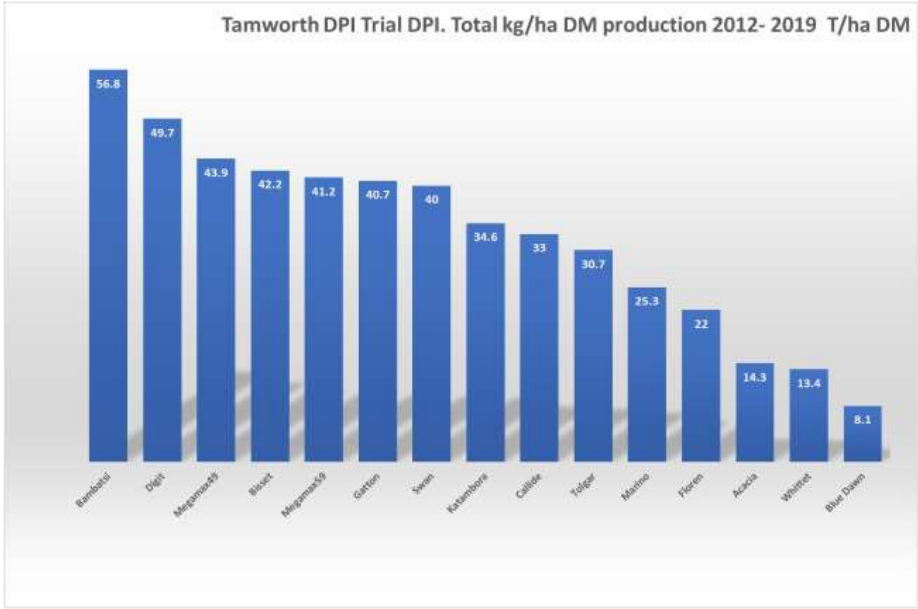
Getting the variety right

- Premier digit and Bambatsi panic are in most inland trials with best long term persistence



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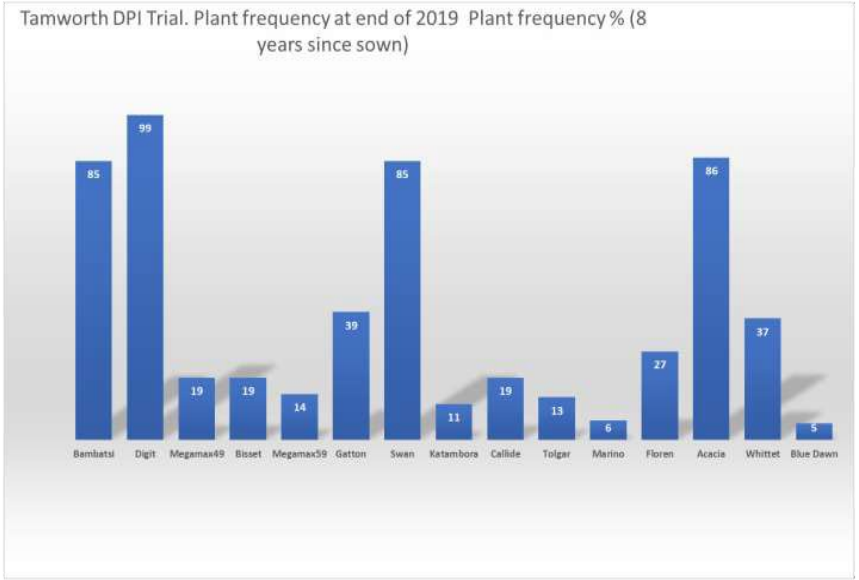
- Persistence is most important
- Premier digit and Bambatsi panic are the leading lines



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Weed control and tropical pastures

- Weed control is a big aspect of tropical pastures.
- This pasture was once a bad Blue heliotrope area.
- After a weed clean up (3 years in a winter crop and clean fallows) this was sown to tropical grass and winter legume
- This pasture is now 20 years old

Establishment

- Good establishment is critical for tropical pastures
- New sowing of digit and Bambatsi panic at a rate of 4kg/ha.
- After 3 years of weed clean up
- Sown late October, pictures take 5 weeks after sowing

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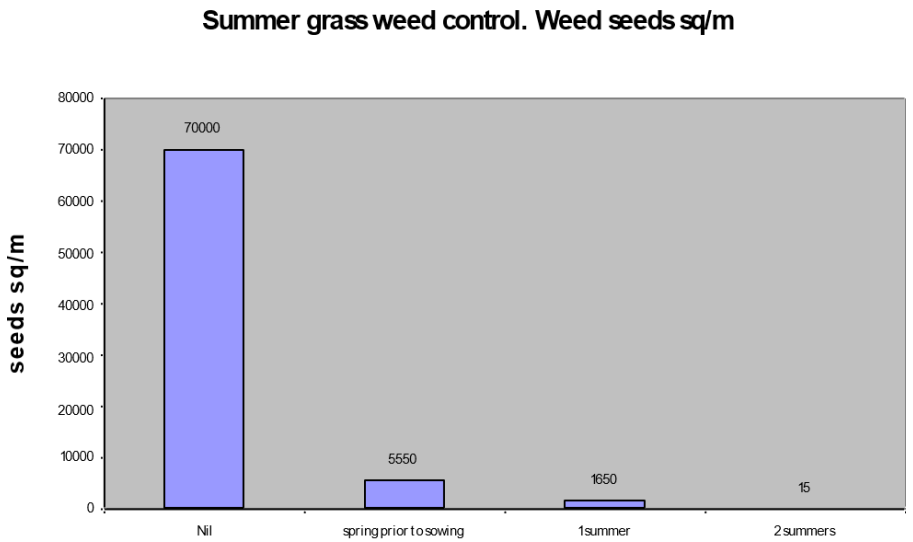
- Poor weed control risks failure of establishment
- Tropical grass sowing swamped with weeds

- Plan to control grass weeds prior to sowing tropical species.
- NSW DPI data from north west NSW.
- Total weed seed prevention - requires 2-3 years of crop and fallow to eliminate summer weed seed banks.



Case study

October

- Sown dry 18 October following a winter oat crop sprayed out 2 months earlier
- Shallow sown (0-10mm depth) in a weed free situation (3 years clean fallow)
- Stubble retention important (water collection, erosion prevention)

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Case study

November

- One month after sowing of Premier digit grass
- Followed 3 years of completely clean summer fallow
- Sown on target date not after rain event

Case study

20 December

- Sown early for maximum opportunity for germination rain
- Picture taken two months after sowing

Case study

22 January

- 3 months after sowing, in a good rain year
- Fully productive with legumes added in autumn

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Take home messages

- 1. Understand all the issues surrounding tropical pastures so sound decisions can be made
- 2. Tropical grass pastures can turn second rate land into productive pastures
- 3. Tropical grasses have the ability to improve soil quality, especially carbon, and soil fertility, including N via legume component.

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Tools and resources

- Tropical perennial grasses for northern inland NSW (Book) – NSW DPI
- How do I improve my sub-tropical grass-based pastures (MLA fact sheet)
- Down to Earth – weekly column in The Land

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