GRDC™

GRAINS RESEARCH & DEVELOPMENT CORPORATION

Agronomic and economic benefits of fallow in the low rainfall zone of Western Australia

Grains Research Update **Perth, 26-27 February 2024**

Fallow

A tale of contrasting seasons

A GRDC investment

Project Partners

Project details

Trial design

- Farm scale trials

(200 m long x 36 m wide)

Location 2022 trials

- Kalannie
- Gabbin
- Bonnie Rock
- Nungarin
- Merredin
- Hines Hill

Treatments

- Cereal
- Vetch
- Volunteer Pasture
- Complete Brown Out

Location 2023 trials

- Binnu
- Mullewa
- Morawa
- Carnamah
- Mukinbudin
- Westonia
- Mt Walker
- Salmon Gums

Treatments

- Cereal
- Legume (vetch/lupin)
- Mechanical Brown Out/Volunteer Pasture
- Complete Brown Out

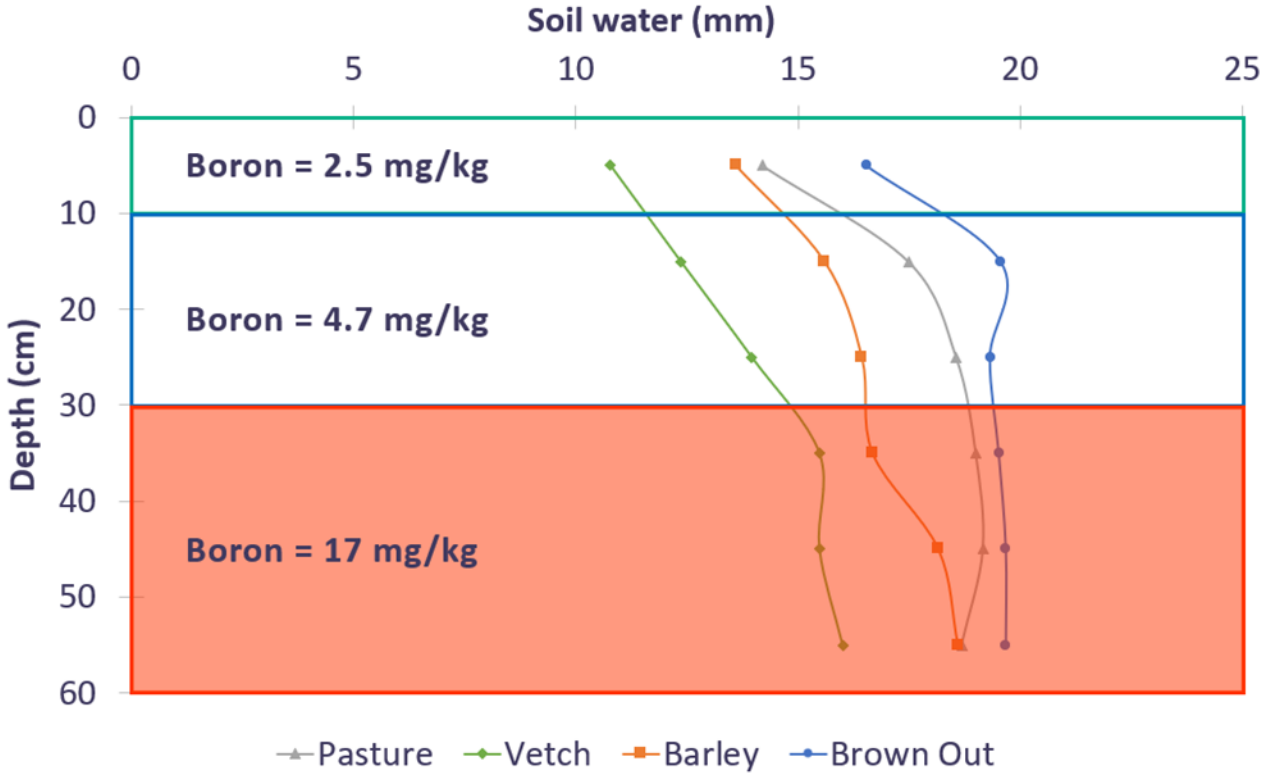
Bonnie Rock trial 2022

Photo 30 August 2022

Total water (mm) in the soil profile to 60cm – October 2022

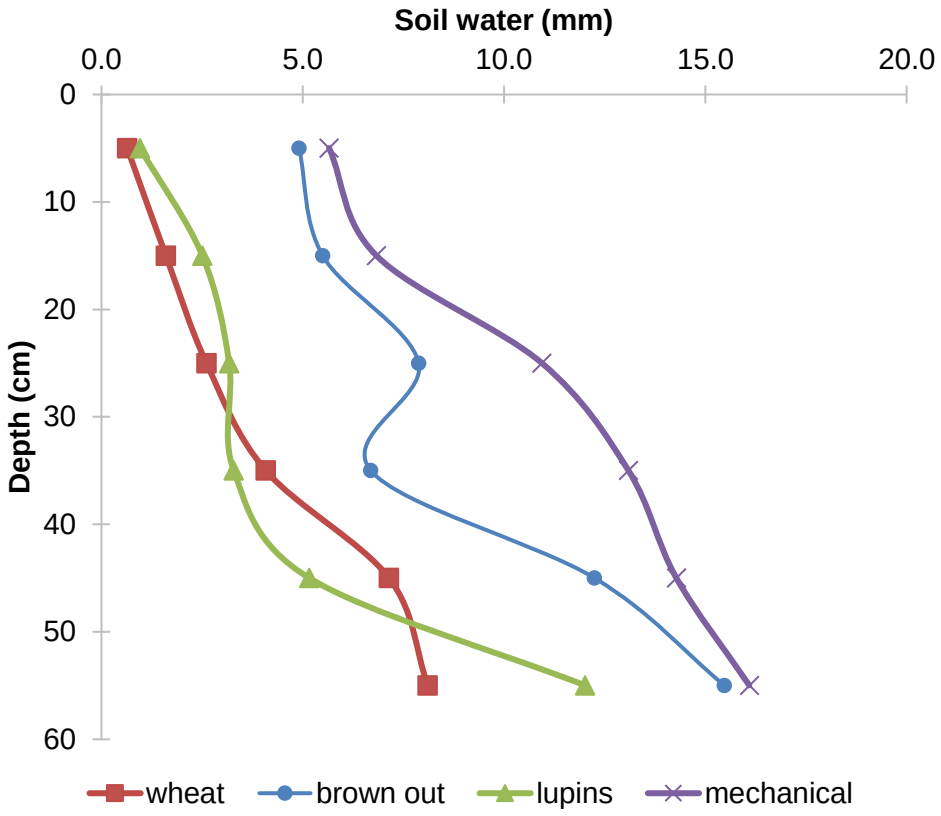
Site	Cereal	Vetch	Volunteer Pasture	Brown Out	Average
Merredin - loam	73	86	104	99	91
Nungarin – clay/loam	88	84	107	**114**	**102**
Hines Hill – loam	73	80	78	86	79
Bonnie Rock – sandy loam	45	47	50	78	55
Kalannie – sandy loam	**44**	50	67	82	61
Gabbin – sandy loam	52	49	50	60	53
Relative to cereal		**5%**	**21%**	**38%**	

Impact of subsoil constraints



Boron desired range 0.5-2.0 mg/kg

Soil water at Binnu - October 2023



Total water (mm) in the soil profile to 60cm

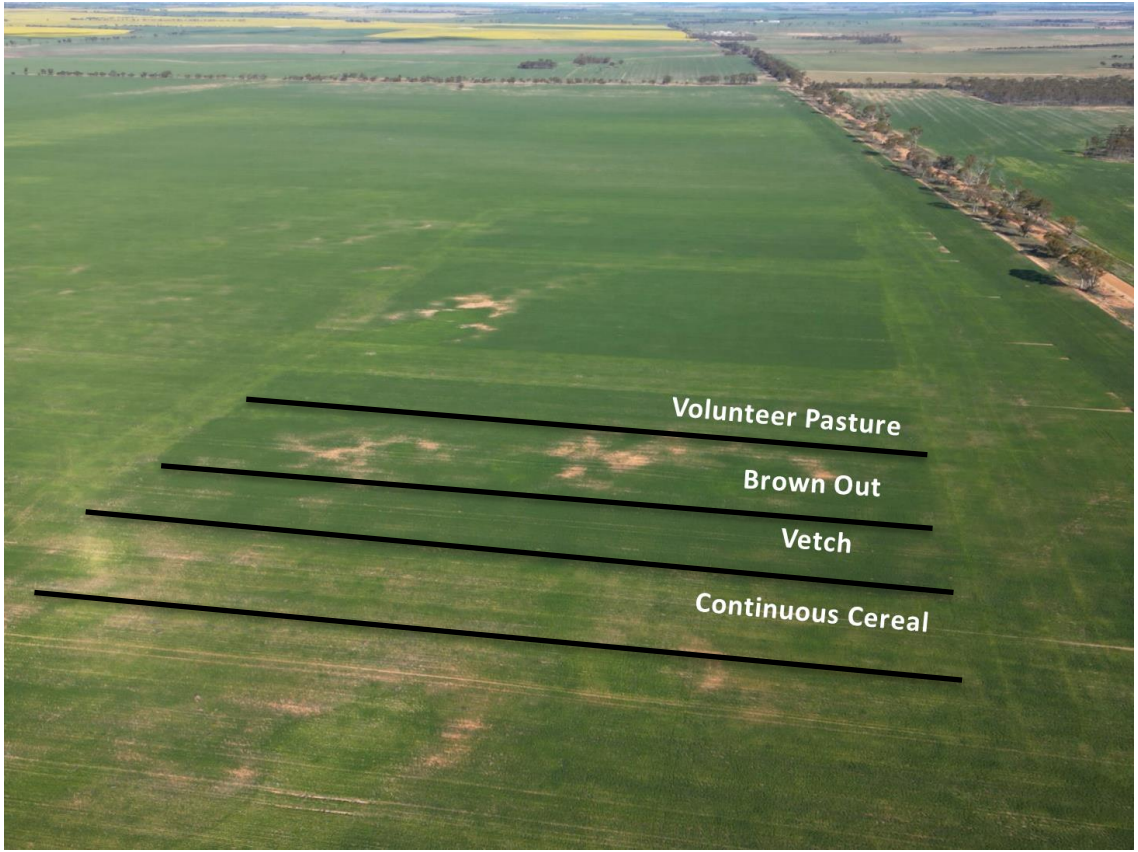
April 2023

Site	Cereal	Vetch	Volunteer Pasture	Brown Out	Average
Merredin - loam	104	104	69	88	91
Nungarin – clay/loam	91	103	116	110	110
Hines Hill – loam	76	86	90	81	83
Bonnie Rock – sandy loam	56	64	64	47	**58**
Kalannie – sandy loam	45	45	44	66	**50**
Gabbin – sandy loam	51	56	50	53	**53**
Relative to cereal		**2%**	**8%**	**5%**	

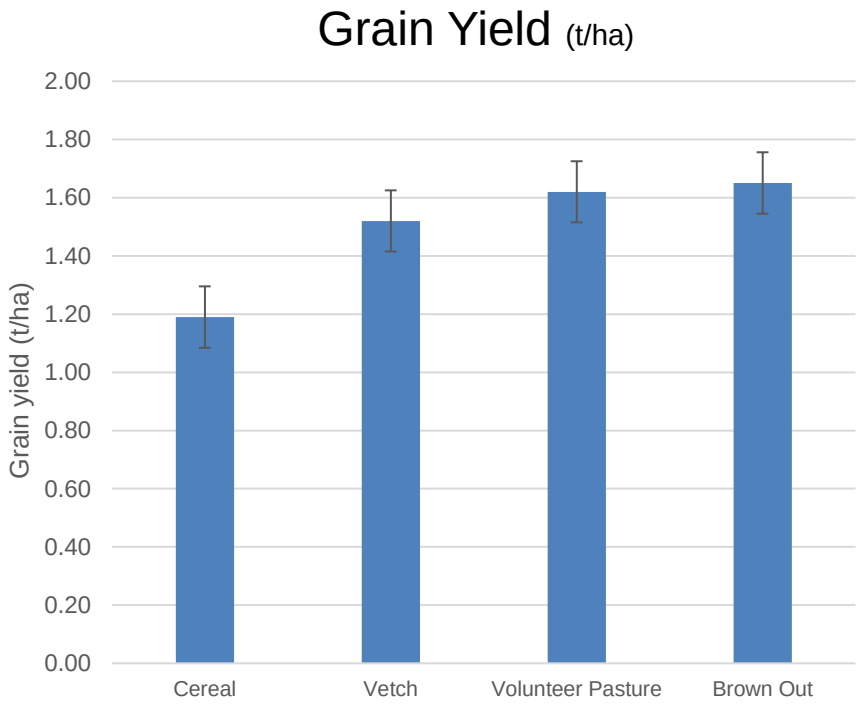
Total nitrogen (kg N/ha) in the soil to 30cm April 2023

Site	Cereal	Vetch	Volunteer Pasture	Brown Out
Merredin - loam	14	31	26	23
Nungarin – clay/loam	**12**	25	21	36
Hines Hill – loam	16	30	11	25
Bonnie Rock – Sandy loam	31	62	33	**64**
Kalannie – sandy loam	15	17	18	24
Gabbin – sandy loam	29	37	40	36
Average	**20**	**34**	**25**	**33**

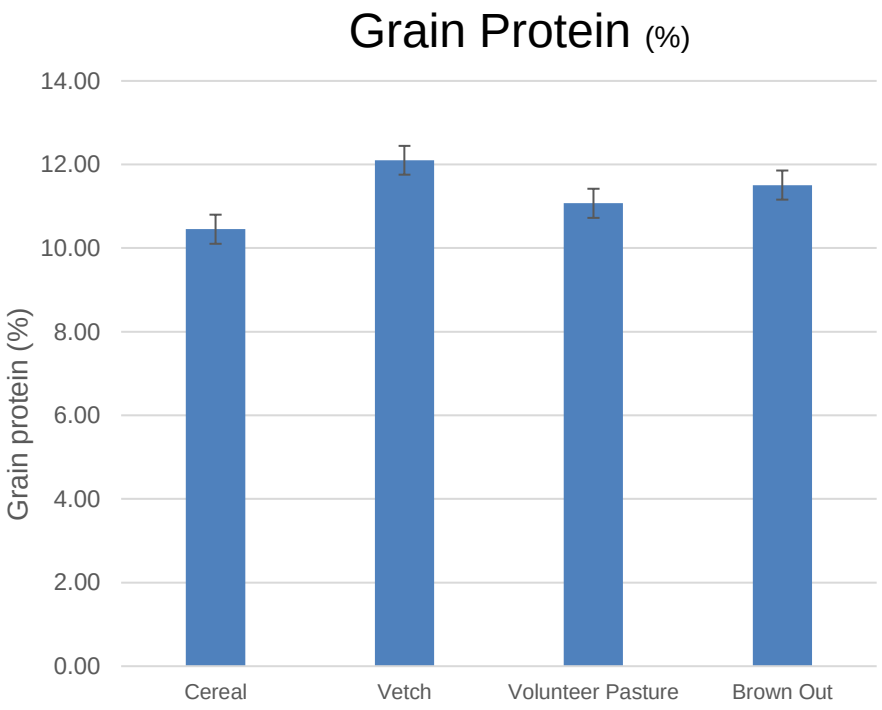
Nungarin fallow trial – late July 2023



Treatment impacts on 2023 cereal grain yield and protein



LSD 0.3

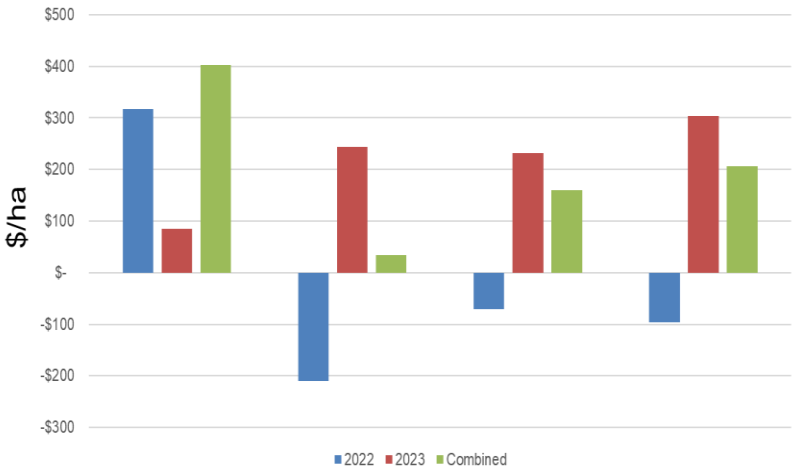


LSD 0.9

Financial returns over 2022 and 2023.

Financials of fallow

Profit & Loss Statement



Balance Sheet

A strategic asset

- Weed control
- Less issues with herbicide carryover
- “Makes it easy”
- Risk
- Machinery utilization
- Water
- Nitrogen
- Root disease
- Confidence

$120/ha?

Take home Message

Financial

- Cereal on cereal highest GM
- Fallow is a strategic asset

Brown out is the best option

- Water
- Nitrogen
- Glyphosate resistant weeds

Project extended 2027

Thank you

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