Mixed Enterprises 2.0

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Introduction to GSA

- Agronomy
- RnD
- Legumes
- Farming Systems
- Soil

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What will you get from this

- Current systems need attention
- Whole of system profitability is difficult to capture
- Farming is getting expensive, mixed enterprise is best positioned to leverage input management and output maximisation
- **NUE is the golden goose for mixed enterprise**

It starts with highly productive legume pastures

Mixed Enterprise 1.0

"Intensify" – Is it broken?

- Ley pasture systems becoming less productive
  - Herbicide conflict between systems grows
- Highly grazing tolerant clover-based systems reducing
  - Over-stocked and over-exposed
- Cropping dominated income
  - Cropping dominated stress
  - Cropping dominated investment
- ++ indicators to leave the industry

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Intensifying Livestock

Carrying more numbers

- High Performance Pastures
- Intensive grazing
- Crop grazing
- Deferment
- Long Crop Phase (hard seed)
- Options
- Labour…Labour…
- …More labour

Intensifying Livestock

Carrying more numbers

- Seasonal Risks
- Systemic Risks
    - Dry seeding – Feeding costs
- Investments in pasture not always supported
    - Opportunity cost
- *Livestock are exiting the system*
    - Will this change our decision-making process?

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Planfarm Benchmarks

2017-2022

- $458/ha Operating costs
- 15% LVR
- + Machinery, Interest

50kgN/ha unresponsive N application is a 45% reduction in **profit**

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Fodders for the Whole System

- What is your pasture feeding, your sheep/cattle or your system?
  - *What is the value to your system?*

- How do we manage feed gaps across the system

  Autumn
  Winter
  Spring

True value of mixed enterprise comes from ***leveraging*** synergies

HALO – Harvestable Annual Legume Options

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HALO
HARVESTABLE ANNUAL LEGUME OPTIONS

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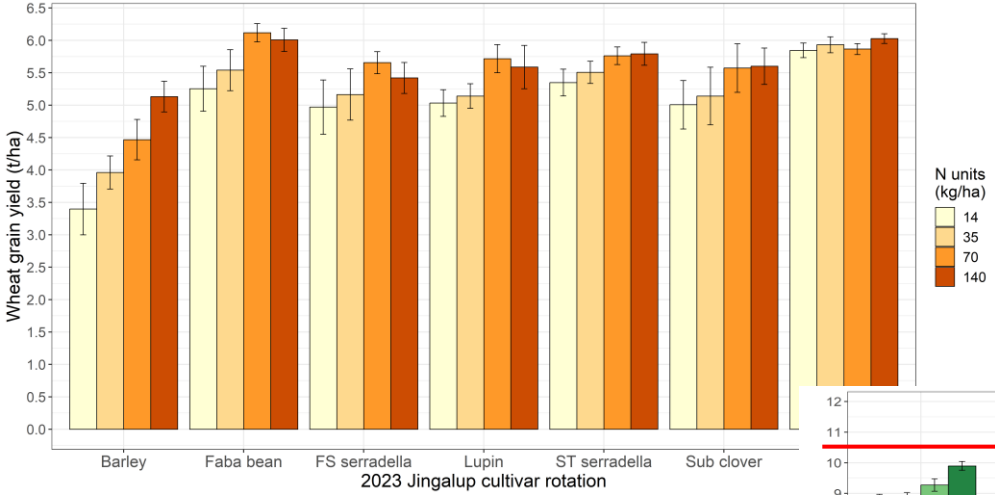
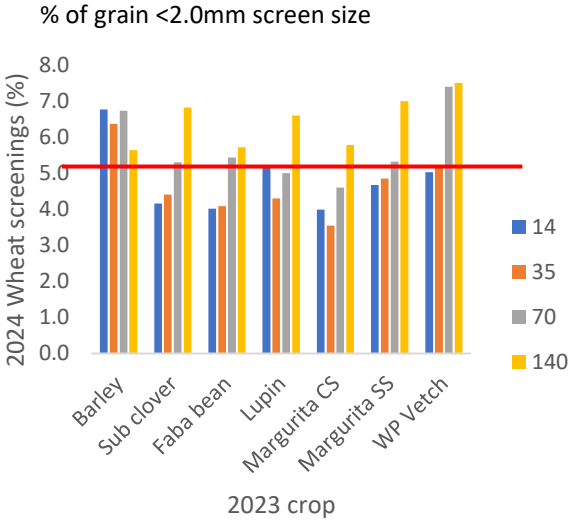
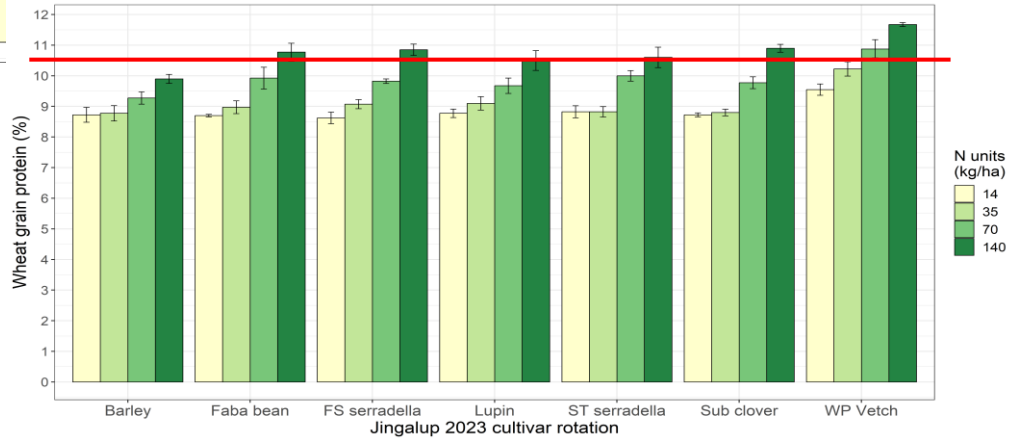
HALO

HARVESTABLE ANNUAL LEGUME OPTIONS







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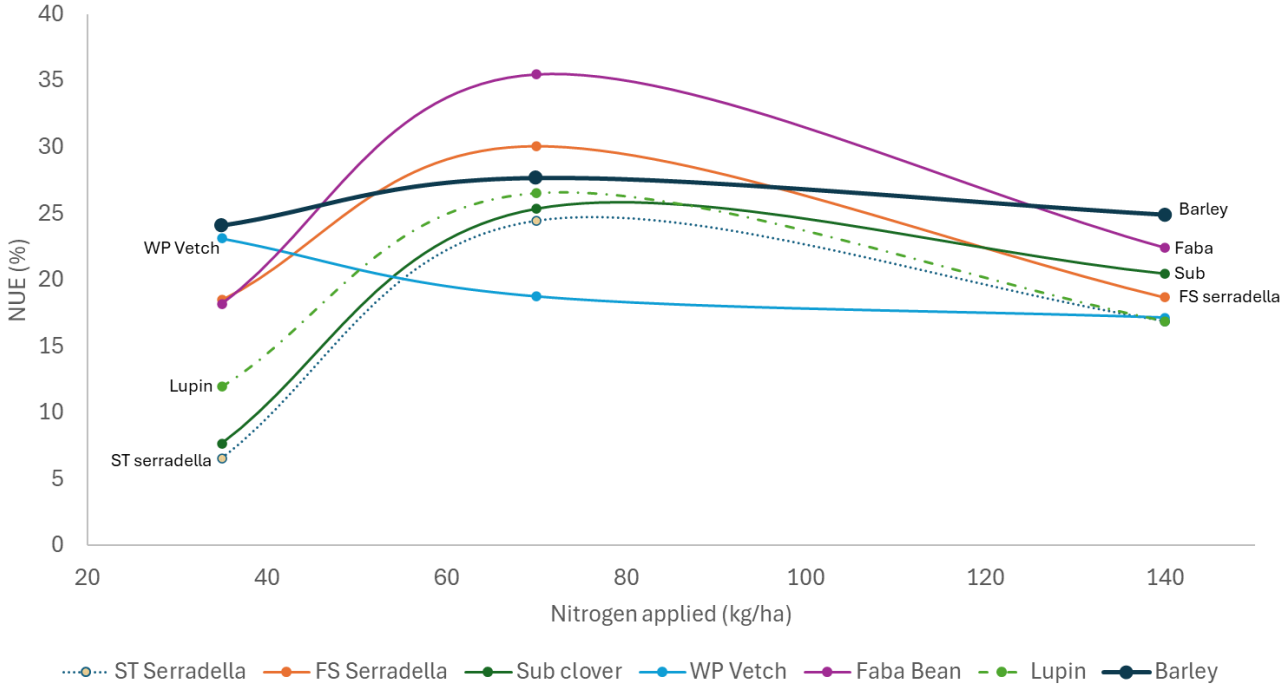
Nitrogen Use Efficiency



HALO
HARVESTABLE ANNUAL LEGUME OPTIONS

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GRDC; GGA Closing the Economic Yield Gap of Grain Legumes

2022 Pulse Yield		Biomass/Brown Manure					Grain			
		tdm	%N	Above ground N	Below ground	N Balance	GY	N%	N in grain kg N/ha	N balance
	Vetch	3155	3.60%	114	28	142	2.4	4.5	108	34
Lupin	NIL inoculation	2090	3.10%	65	25	90	2.03	5.1	104	-14
Lupin	+ inoculation	4094	3.60%	147	57	205	2.88	5.1	147	57

NUE – How doe legumes N?

2023/24 Wheat Yield		Yield (t/ha)	N Recovery (kgN/ha)
Fallow		3.74	61.06
Lupin	G	3.22	55.81
Lupin	BM	4.32	74.27
Vetch	G	2.83	46.85
Vetch	BM	3.90	67.50

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If we are investing in pasture legumes for N only, there is *perhaps* an embedded 70% loss in potential N response.

Does this support an investment?

COGGO; "Managing soil nitrogen, moisture and plant production interactions for increased grain production potential under climatically variable conditions"

COUNCIL OF GRAIN GROWER ORGANISATIONS LTD

COGGO

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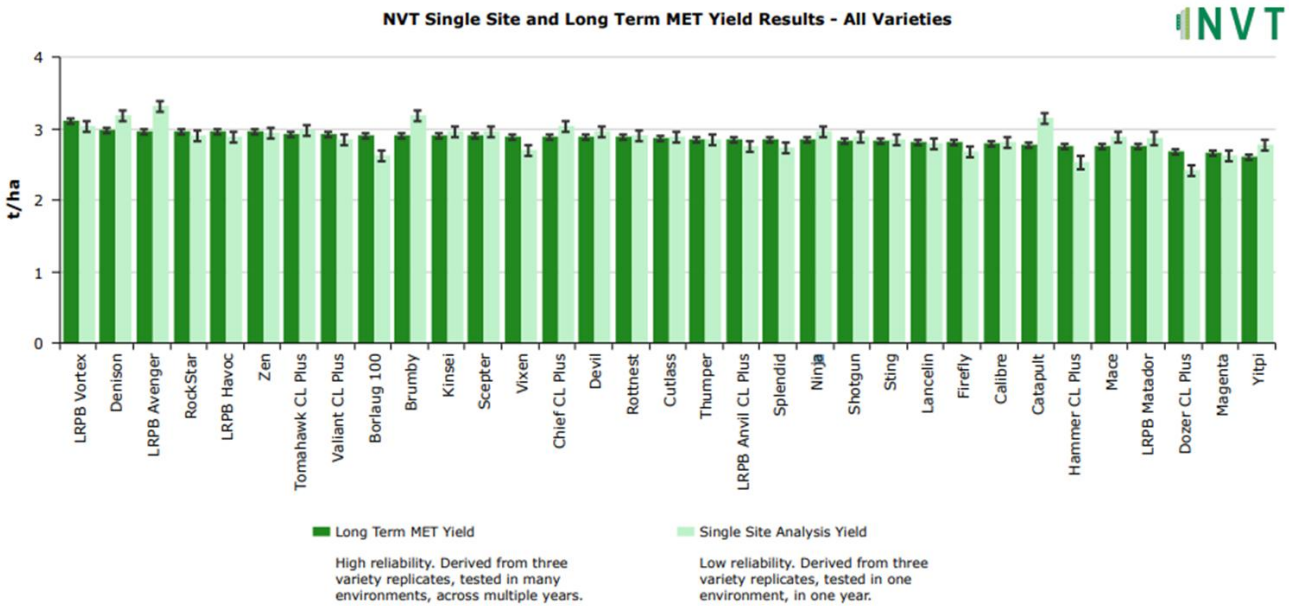
Yuna NVT 2024



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Yield Results

2023 Yield Summary

	Yield (t/ha)	Protein %	Screenings (%<2.0mm sieve)	g/1000 seeds	Seed No. (/m2)	N Recovery (kgN/ha)	Hectolitre Test weight (kg/hl)	N Recovery of flowering N (%)
1 - NIL	3.27	11.55	6.97	20.53	15920.47	60.40	59.91	**77.18**
2 - 25N	3.74	12.25	6.39	20.84	17927.98	73.23	66.43	**81.32**
3 - 80N	4.13	12.95	7.23	24.75	16695.65	85.62	67.67	**109.74**
4 - IRR 25N HD	3.90	12.20	7.64	24.24	16071.06	76.03	65.09	**85.96**
5 - 25N HD	4.07	13.05	7.62	25.38	16031.43	84.96	63.33	**97.91**
6 - 80N HD	3.60	13.45	6.87	19.06	18884.11	77.44	63.58	**92.40**

2024 Yield Summary

	Yield (t/ha)	Protien (%)	Screenings (%<2.0mm sieve)	g/1000 seeds	Seed No. (m/2)	N Recovery (kgN/ha)	Hectolitre Test weight (kg/hl)	N Recovery of anthesis N
1 - NIL	2.57	9.8	2.23	42.18	6086	40.25	80.20	**121%**
2 - 25N	3.68	10.1	1.48	44.76	8230	59.33	80.70	**85%**
3 - 80N	4.74	10.4	1.42	43.96	10773	79.05	81.03	**79%**
4 - IRR 25N HD	3.52	10.3	1.21	43.45	8110	58.07	80.93	**87%**
5 - 25N HD	5.50	10.2	1.26	43.01	12779	89.41	80.93	**109%**
6 - 80N HD	5.41	10.5	1.02	43.50	12442	90.63	80.73	**71%**

2023

- 200mm
- 98% NUE & 4t/ha

25N
150kg/ha wheat

2024

- 530mm
- 202% NUE & 5.5t/ha

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Economics

				2022	2023	2024	2year	2 year Revenue		3 year	
Canola$	750			Vetch	Average	average	production		Costs	Profit	GM P/a
Wheat $	360										
Fixed	105	0	1	0	3.27	2.57	5.84	$ 2,100.65	$ 1,068.00	$ 1,032.65	$ 344.22
Inputs (chem+compound)	135	25	2	0	3.74	3.68	7.42	$ 2,671.03	$ 1,155.50	$ 1,515.53	$ 505.18
OPS	161	80	3	0	4.13	4.74	8.87	$ 3,192.44	$ 1,348.00	$ 1,844.44	$ 614.81
Variables $N	1.75	25	4	0	3.90	3.52	7.42	$ 2,670.80	$ 1,155.50	$ 1,515.30	$ 505.10
Interest rate	0.07	25	5	0	4.07	5.50	9.57	**$ 3,443.47**	**$ 1,155.50**	**$ 2,287.97**	**$ 762.66**
Land Value	4000	80	6	0	3.60	5.41	9.01	$ 3,243.70	$ 1,348.00	$ 1,895.70	$ 631.90
LVR	0.15										

Vetch brown manure worth more than Canola

- **IF production is maximised**
- **IF there is systemic focus on NUE**

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NUE in Pasture Systems

- *ROI/GM of legume pastures up against high input canola*
- *Legume pastures will drive yield and quality in cropping systems*
  - *Feed production becomes embedded in cropping cycles*
- *Improvements in NUE will increase ROI of pasture legume **more** than canola*
- *On-farm cropping systems **must** capitalise on yield potential*

Take home messages; Mixed enterprise 2.0

- Maximise on-farm synergies
    - *Pastures MUST provide more than just sheep feed*
- Choose pastures to suit your system
    - *Pasture legumes to match climate, soil and business capacity – HALO*
- Improvements in NUE will drive value-added pasture adoption
- Value-added pasture adoption will reduce business exposure - ROI
- Intensifying fodder systems
    - *Agronomy and fodder systems to maximise fodder*
    - *Fodder does not have to be pasture*
- Feed security must be a whole-of-business priority
    - *Minimise the burden of keeping animals in condition*

Increase in cropping ha to increase carrying capacity

Thank You

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HALO

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