Optimising
Irrigated Grains

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Local Trial Results

Damian Jones ICC

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Promoting irrigated agriculture

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Irrigation Research & Extension Committee

Project Partners

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SOUTHERN GROWERS

RiverinePlains

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Durum Wheat
Nitrogen Rate and Timing Trial

2 rates in addition to the co-operators N strategy

4 timings starting at GS30

Needed 100 kg N/ha at booting to achieve DR1 but was it worth it?

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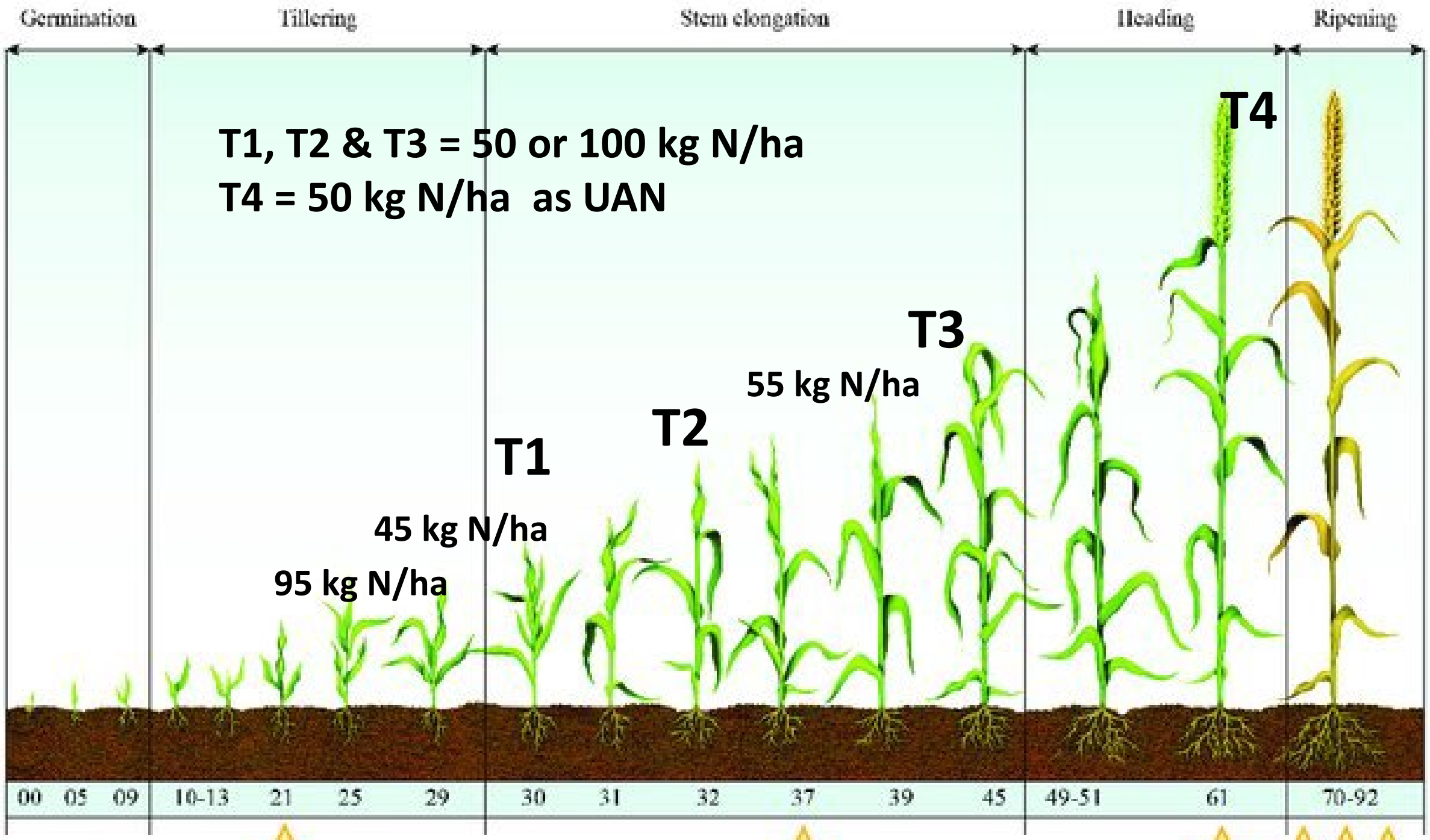
Germination
Tillering
Stem elongation
Heading
Ripening
T1, T2 & T3 = 50 or 100 kg N/ha
T4 = 50 kg N/ha as UAN
T4
T3
55 kg N/ha
T2
T1
45 kg N/ha
95 kg N/ha
00 05 09 10-13 21 25 29 30 31 32 37 39 45 49-51 61 70-92

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Results

Co-operator: 6.0 t/ha DR2 (11% protein)

Additional N did not increase yield

Two ‘successful’ treatments:

100 kg N/ha at GS43: 6.0 t/ha DR1 (13.4% protein)

50 kg N/ha at GS69: 5.1 t/ha DR1 (13.1% protein)

All other treatments failed to reach DR1 (<13% protein)

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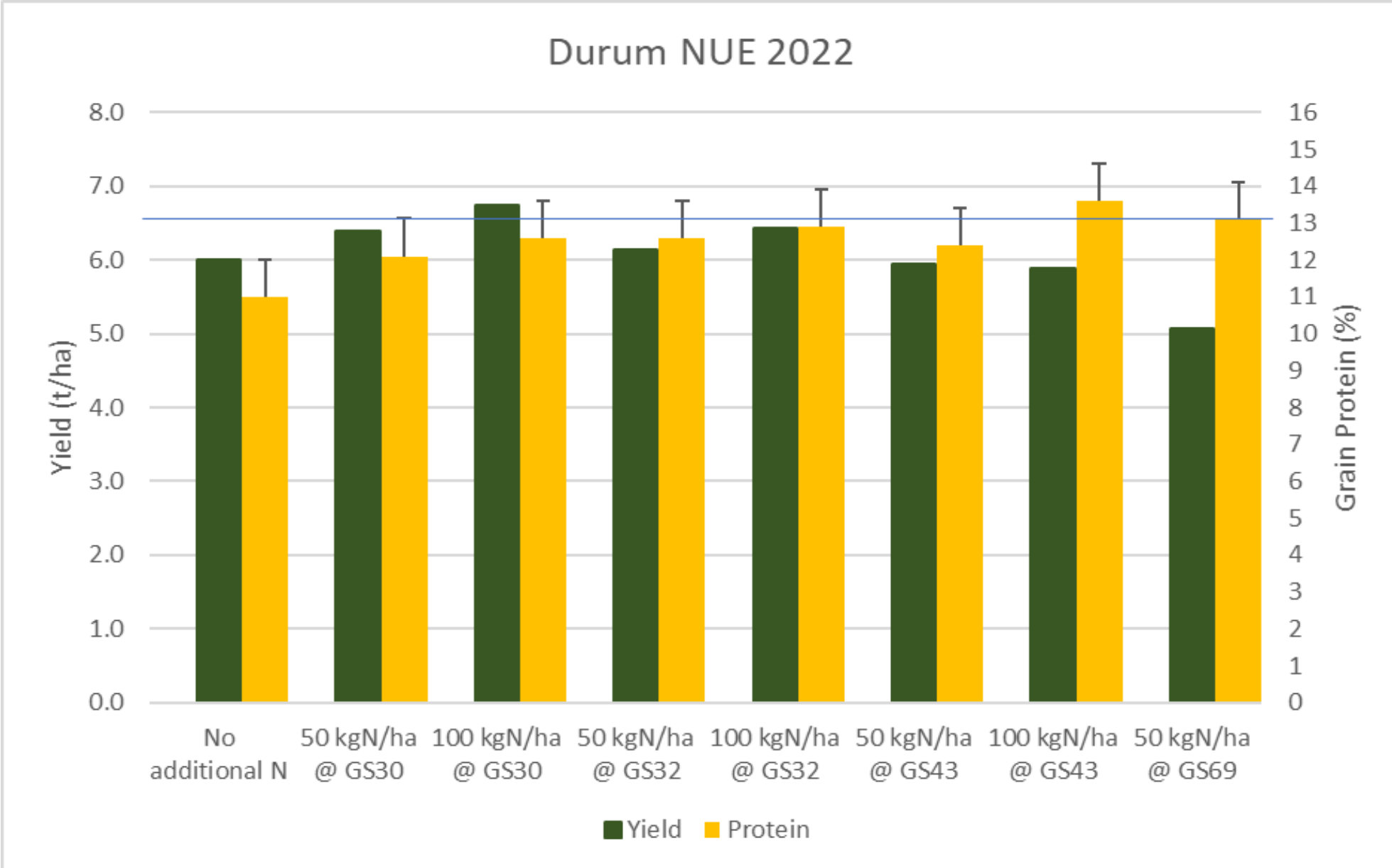

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So, was DR1 worth it?

6 t/ha of DR2 @ $570/t = $3420/ha income

6 t/ha of DR1 @ $600/t = $3600/ha or an extra $180/ha

But

100 kg N/ha = $260/ha (Urea @$1200/t) or a $80/ha loss

50 kg N/ha (UAN) = $550/ha loss

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Conclusion I

We can grow irrigated durum wheat successfully and achieve DR1 if required.

High yield does require high N inputs to achieve the high protein levels required.

N budgeting: Starting soil N would be essential

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Conclusion II

A considerable portion of the N required can be sourced from the appropriate rotation.

At the end of the day, the most profitable strategy will be determined by the price differentials between the durum grades and the cost of the nitrogen inputs.

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Chickpeas
Disease Management Trial

2019 – wet April, dry winter

2 Varieties: S and MS to ascochyta

3 Strategies: ‘cheap’, ‘expensive’ & untreated

No strategy needed!

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Treatments

	Management Strategy	4-5 weeks post emergence	Pre-Flower	Late Flower
1	Untreated*	Chlorothalonil 720 1.0 l/ha	-	-
2	Cheap	Chlorothalonil 720 1.0 l/ha	Chlorothalonil 720 1.0 l/ha	Chlorothalonil 720 1.0 l/ha
3	Expensive	Veritas 1.0l/ha	Aviator Xpro 600ml/ha	Veritas 1.0l/ha

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Results

	Grain Yield (t/ha)		Grain Size (g/100 s)	
Treatment	PBA Monarch	Genesis 090	PBA Monarch	Genesis 090
Untreated (Control)	1.82	1.90	40.5 a	32.7 b
'Cheap'	1.96	1.96	40.8 a	33.2 b
'Expensive'	2.11	1.84	40.5 a	32.5 b
Yield: p_{var} = 0.427, p_{fung} = 0.458 p_{vxf} = 0.207, lsd_{vxf} = NS, cv% = 10.1				
Grain size: p_{var} = <0.001, p_{fung} = 0.784, p_{vxf} = 0.570, lsd_{vxf} = 2.45, cv% = 4.4				

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Discussion

The intention to repeat the trial in 2021 and 2022.

Wet autumns delayed sowing past the window.

The trial was repeated at Finley and Kerang.

Wetter and much wetter seasons.

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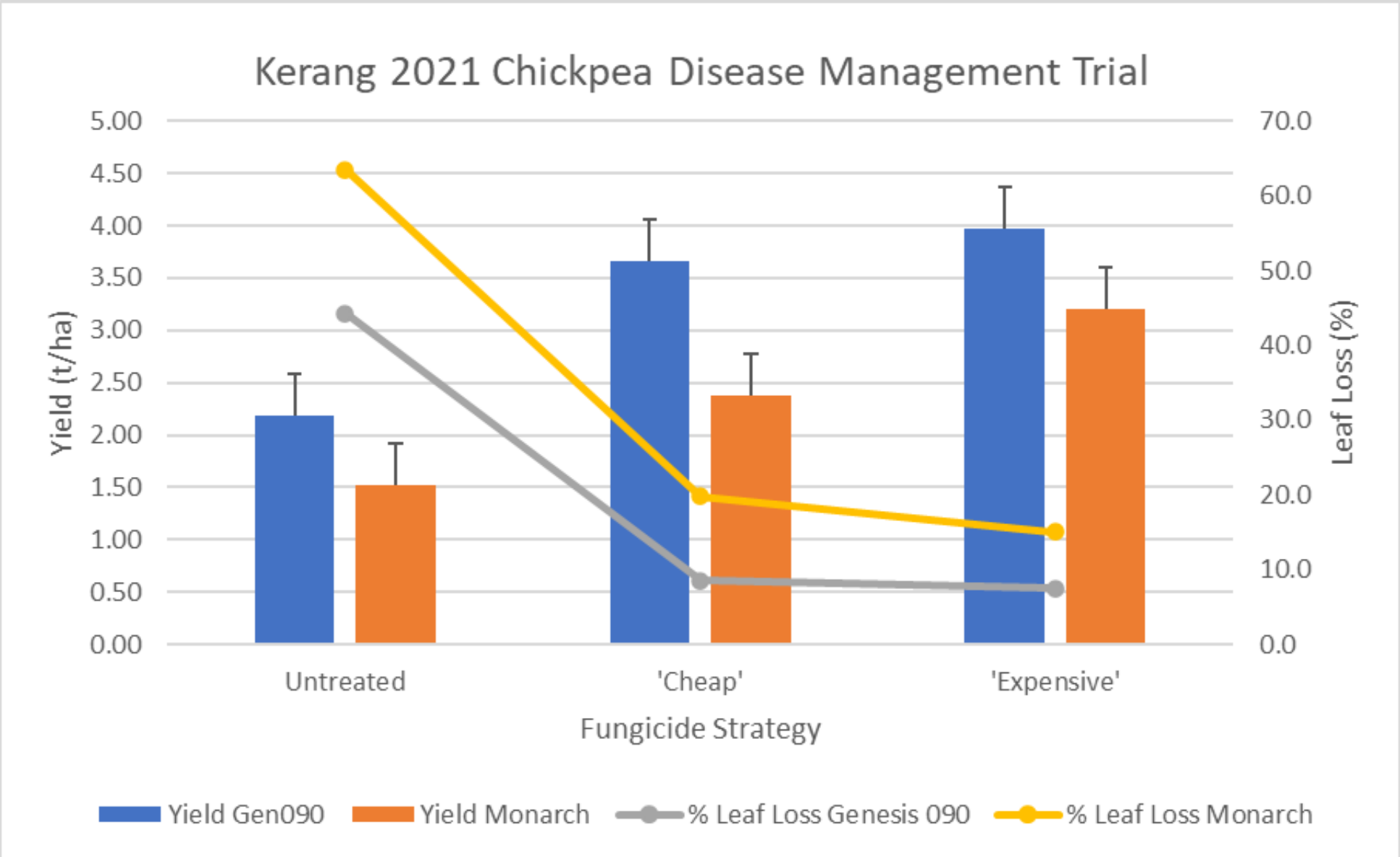

Leaf loss assessed 17 Nov.

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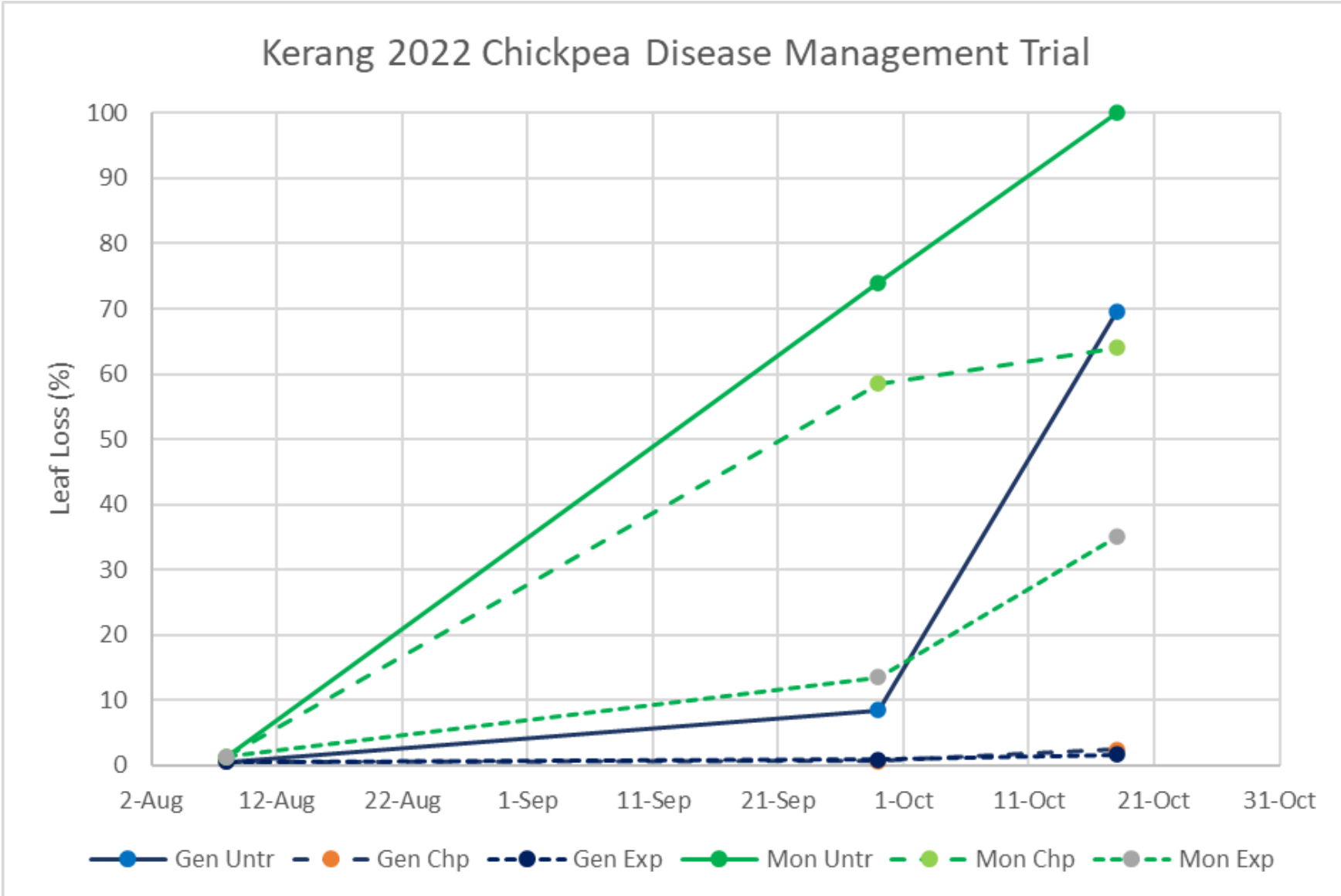

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Conclusion

Check the latest disease ratings for your intended variety

Take into consideration the variety's current disease rating and plan you spray program in response to the season

In a high disease pressure year, a spring strategy would need start in early August and be re-applied on a three-week cycle

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Chickpeas
Inoculation Trial

Site previously grown chickpeas 5 years prior

Inoculant at 3 rates – 10, 20 & 30 kg/ha

40 kg N/ha at either sowing or early podding

High soil N at sowing

Better nodulation but no yield response

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Results – nodulation scoring

Treatment	Nodulation Score	
Nil (Control)	2.15	b
ALOSCA granules 10 kg/ha	2.65	ab
ALOSCA granules 20 kg/ha	2.80	a
ALOSCA granules 30 kg/ha80	3.00	a
N applied at Sowing 40 kg N/ha	1.85	b
N applied at Podding 40 kg N/ha	1.93	b
p = 0.004, lsd = 0.61, cv% = 16.9		

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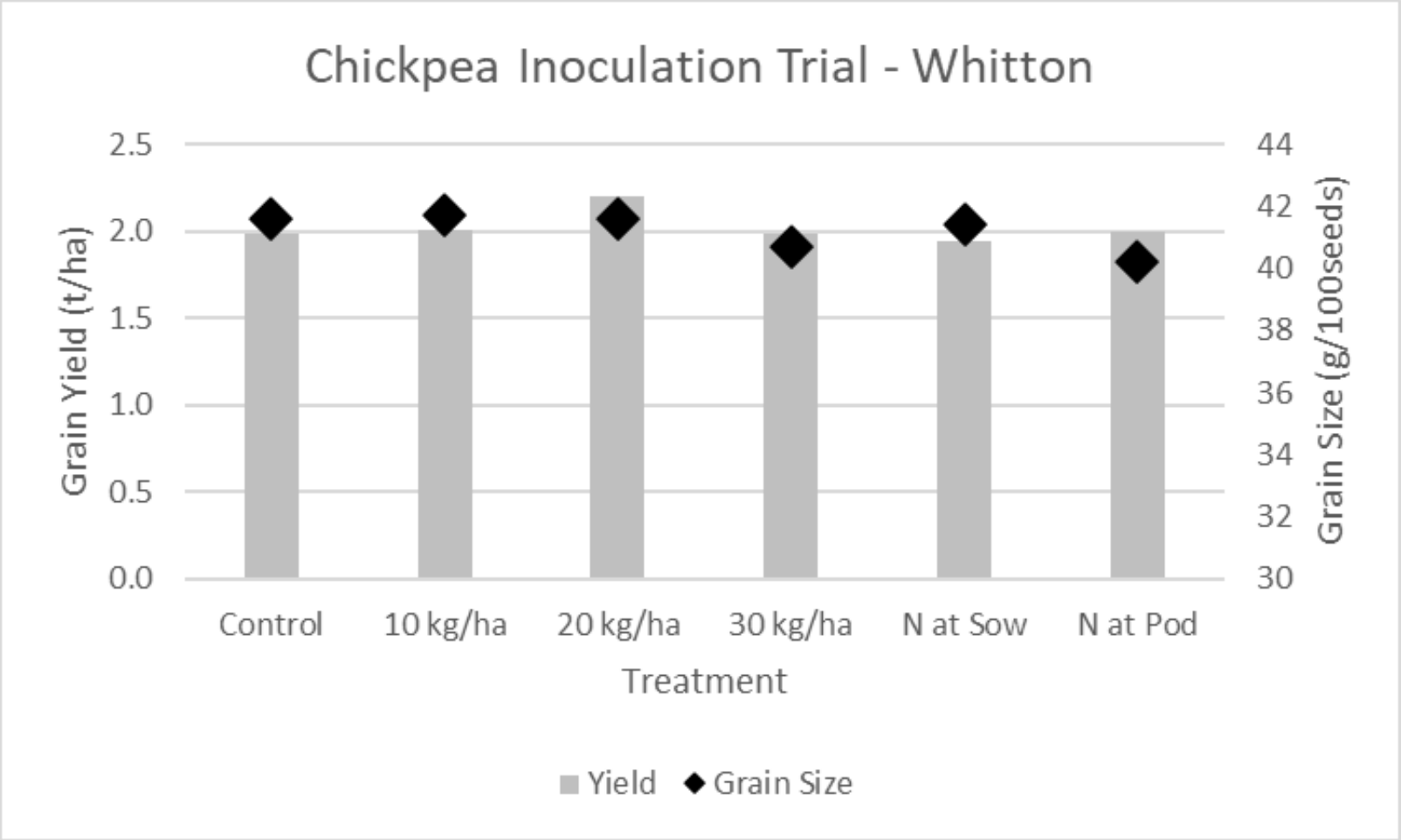
Results - yield



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Conclusion

Chickpea inoculum seems to survive reasonably well in neutral clay soils.

High soil N at sowing probably negated the need for the chickpea plant to fix its own nitrogen

I would still recommend inoculating chickpeas. This ensures the right inoculum & the right numbers.

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Thanks

IREC

Matt Toscan, Cavaso Farming

John de Witt, Whitton

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