

PULSE AGRONOMY AND BREEDING UPDATE

Mark Seymour and Stacey Hansch



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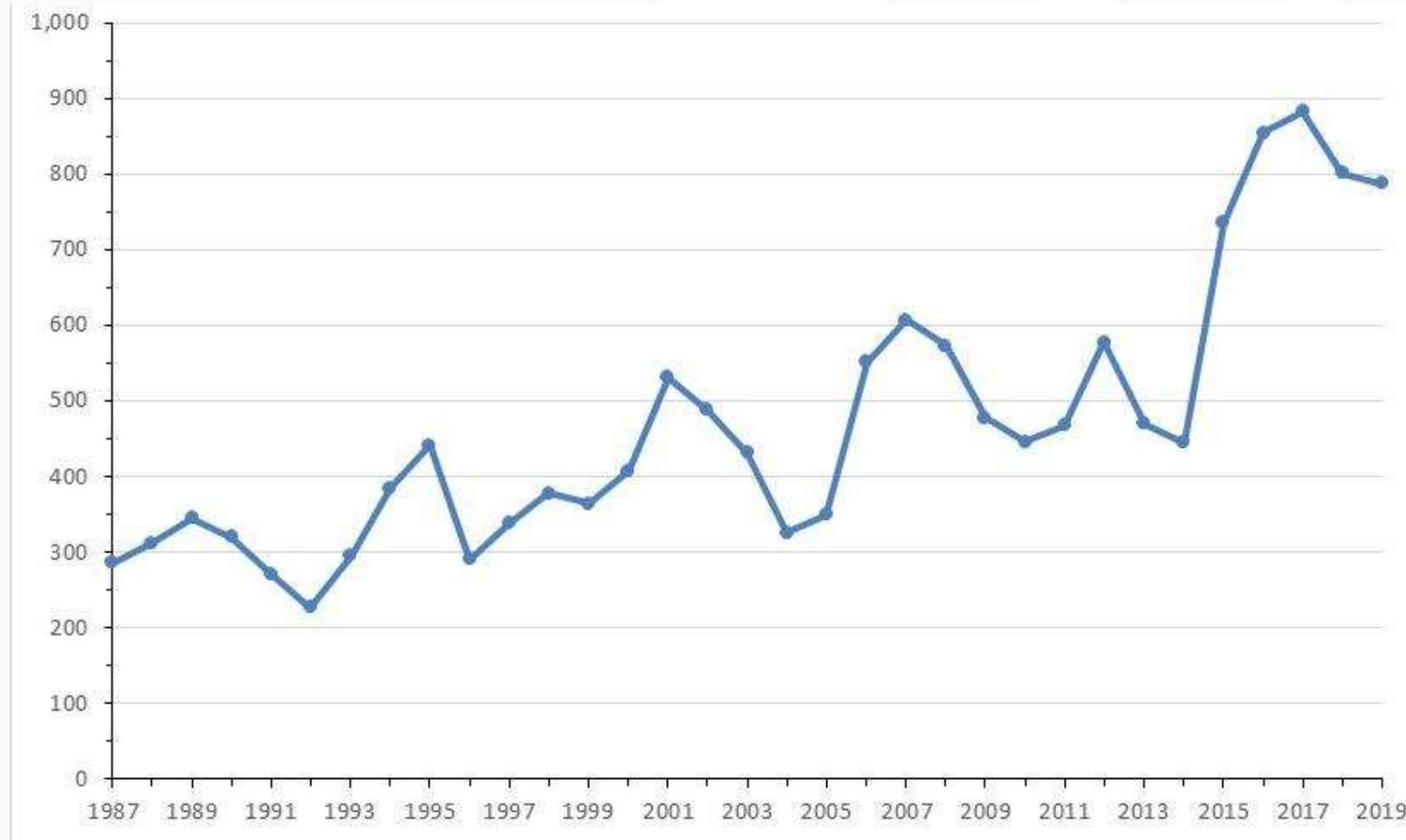
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GOVERNMENT OF
WESTERN AUSTRALIA

Chickpea prices (\$/t)



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\$788/t

- Wild radish
- Harvest height

Merredin NVT September 12 2019

CICA1521
400mm



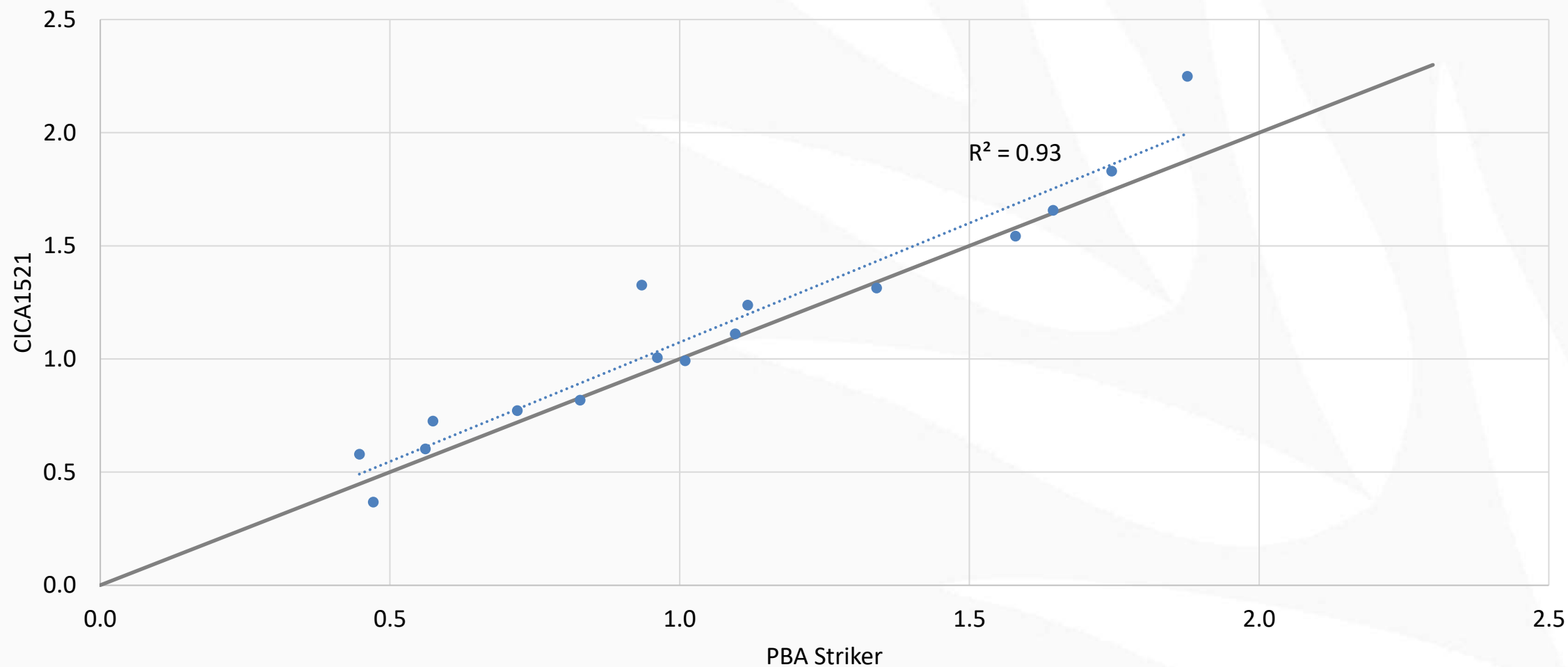
PBA Striker
307mm



2017 to 2019 NVT and S3 Chickpea trials in WA



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WA Long term MET 2015-2019 – Yield group

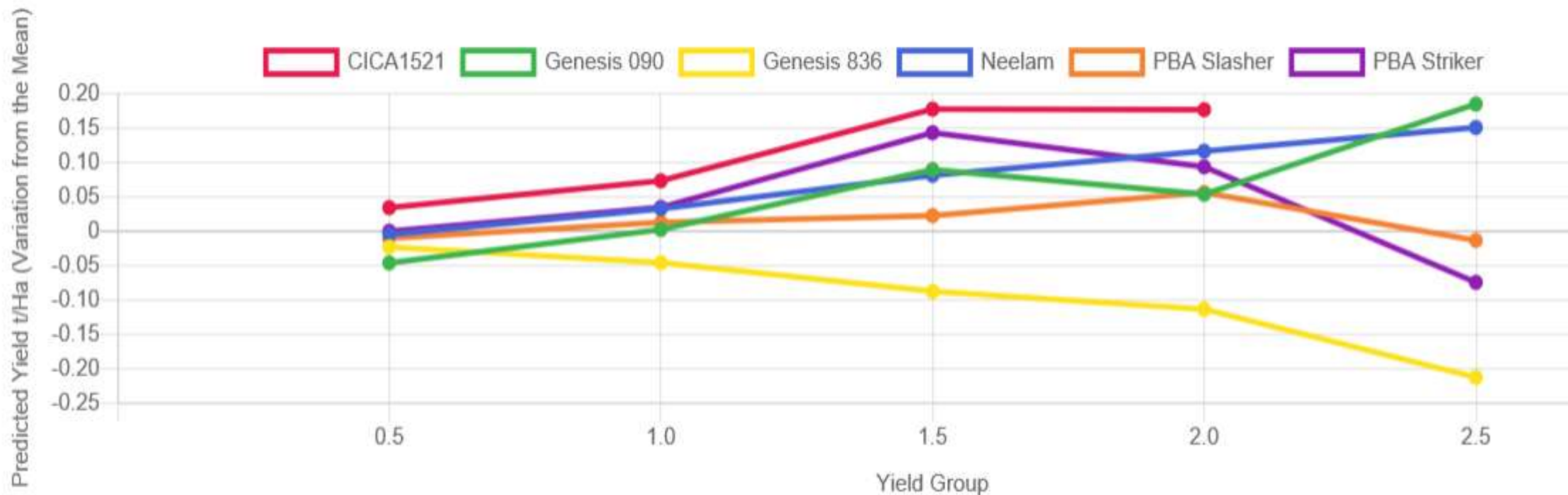
<https://app.nvtonline.com.au/lty/chart/chickpea-desi/wa/agzone1,agzone2,agzone3,agzone4/?lty-type=yield>



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Average Me 0.41 0.87 1.35 1.88 2.17

Number of Tr 3s 11 5 6 1

Ascochyta ratings



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	WA	SA/VIC strain
CICA1521	MS	S
PBA Striker	MS	S
Neelam	MSMR	MS
Gen836	S	S
Gen090	MR	MS

- Aggressive ascochyta strain has NOT been found in WA
- Budget for at least 2 fungicide sprays
 - First at 6 to 8 weeks after sowing
 - perhaps earlier if using S variety
 - Second at canopy closure (if wet!)
- Monitor crop and decide on follow up sprays based on yield potential and disease risk

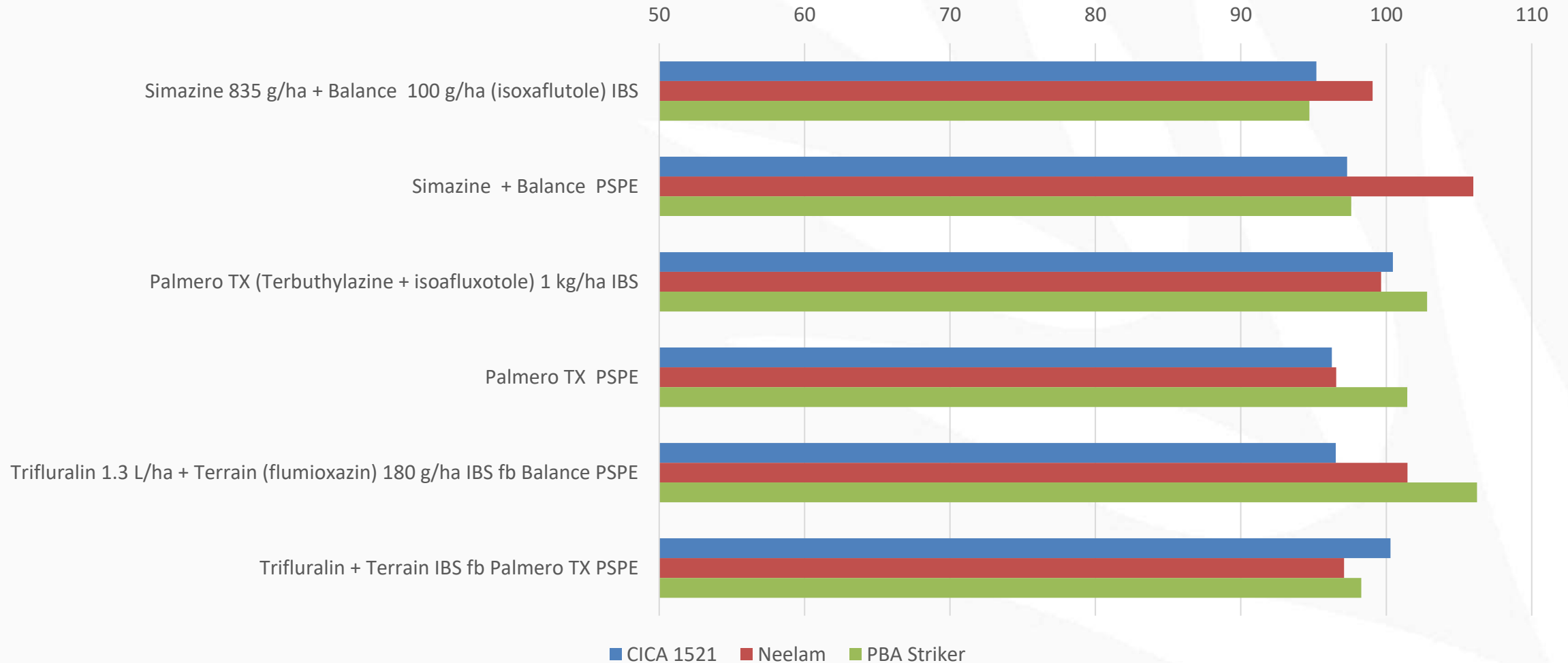
19GE38 Dongara Chickpea germplasm x herbicide



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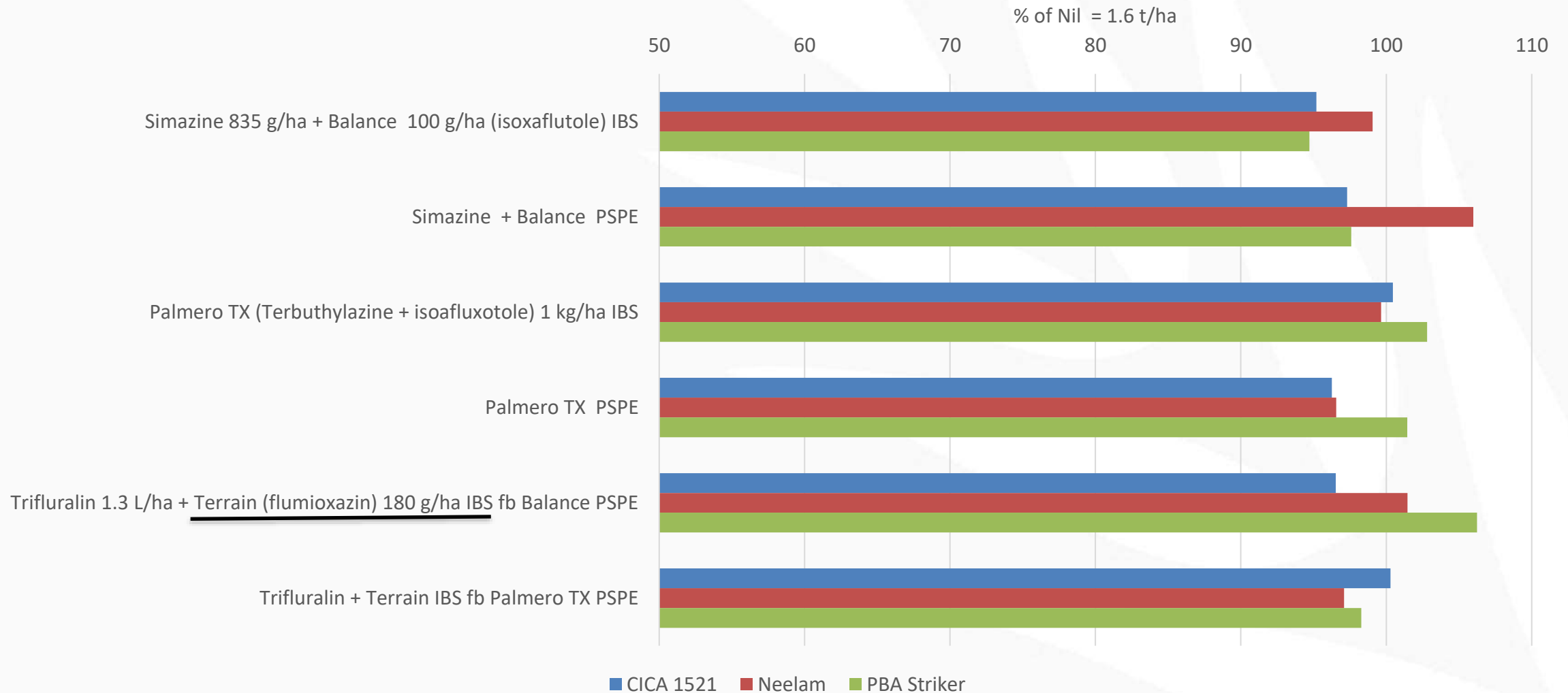
% of Nil = 1.6 t/ha



19GE38 Dongara Chickpea germplasm x herbicide



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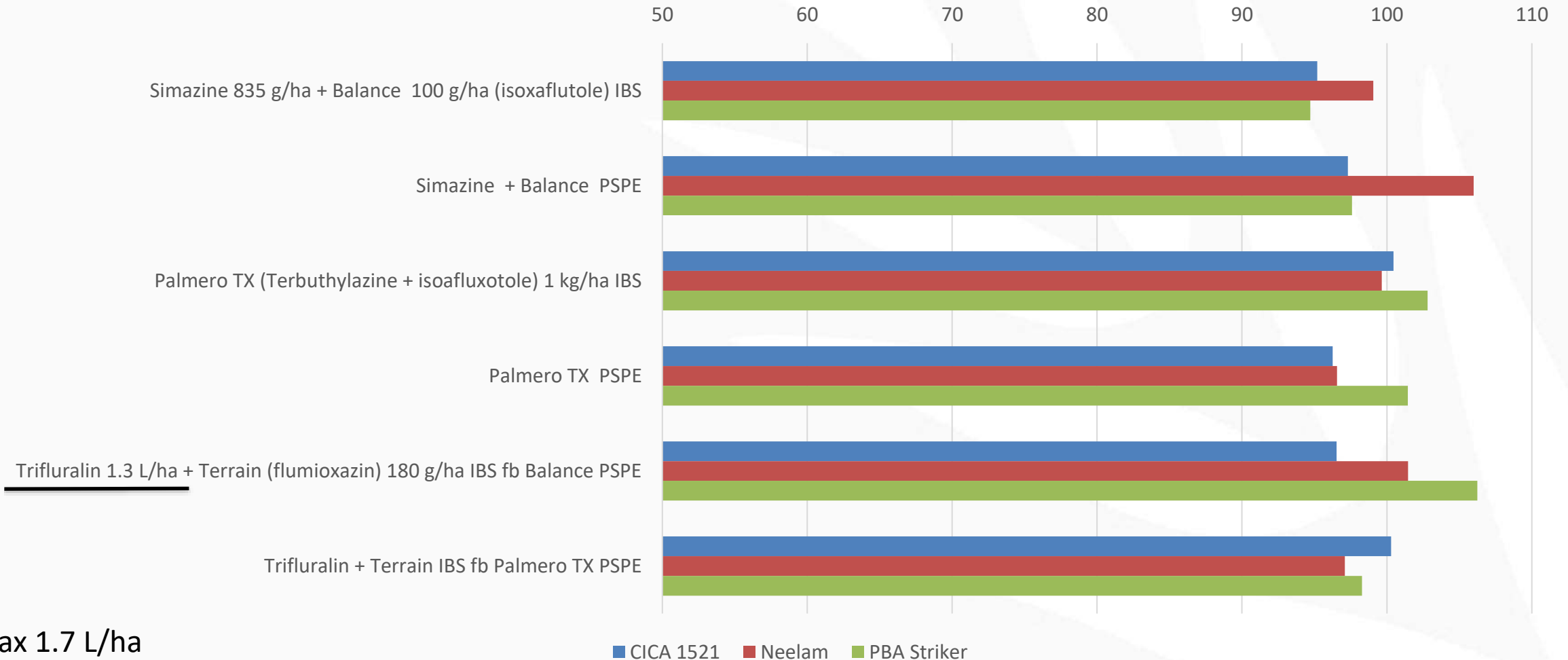
19GE38 Dongara Chickpea germplasm x herbicide



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% of Nil = 1.6 t/ha



Max 1.7 L/ha

Chickpea key messages

- Taller varieties on their way
 - More breeding and variety testing in WA from 2020
- More herbicide options available
- Aggressive ascochyta strain has NOT been found in WA
- Budget for at least 2 fungicide sprays
- Test your seed for germination – it can be low

FABA BEANS



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Frankland 2019

- Host: Simon Hilder
- Sown: 8 May 2019
- GSR: 315mm
- Forrest gravel
- pH: 5.4
- PBI: 370
- 3 rhizobia treatments
- 3 post-emergent herbicides
- 2 varieties
- 2 fertiliser regimes

Rhizobia

Method as per Howieson, J.G. and Dilworth, M.J. (Eds.). 2016. Working with Rhizobia. Australian Centre for International Agricultural Research: Canberra



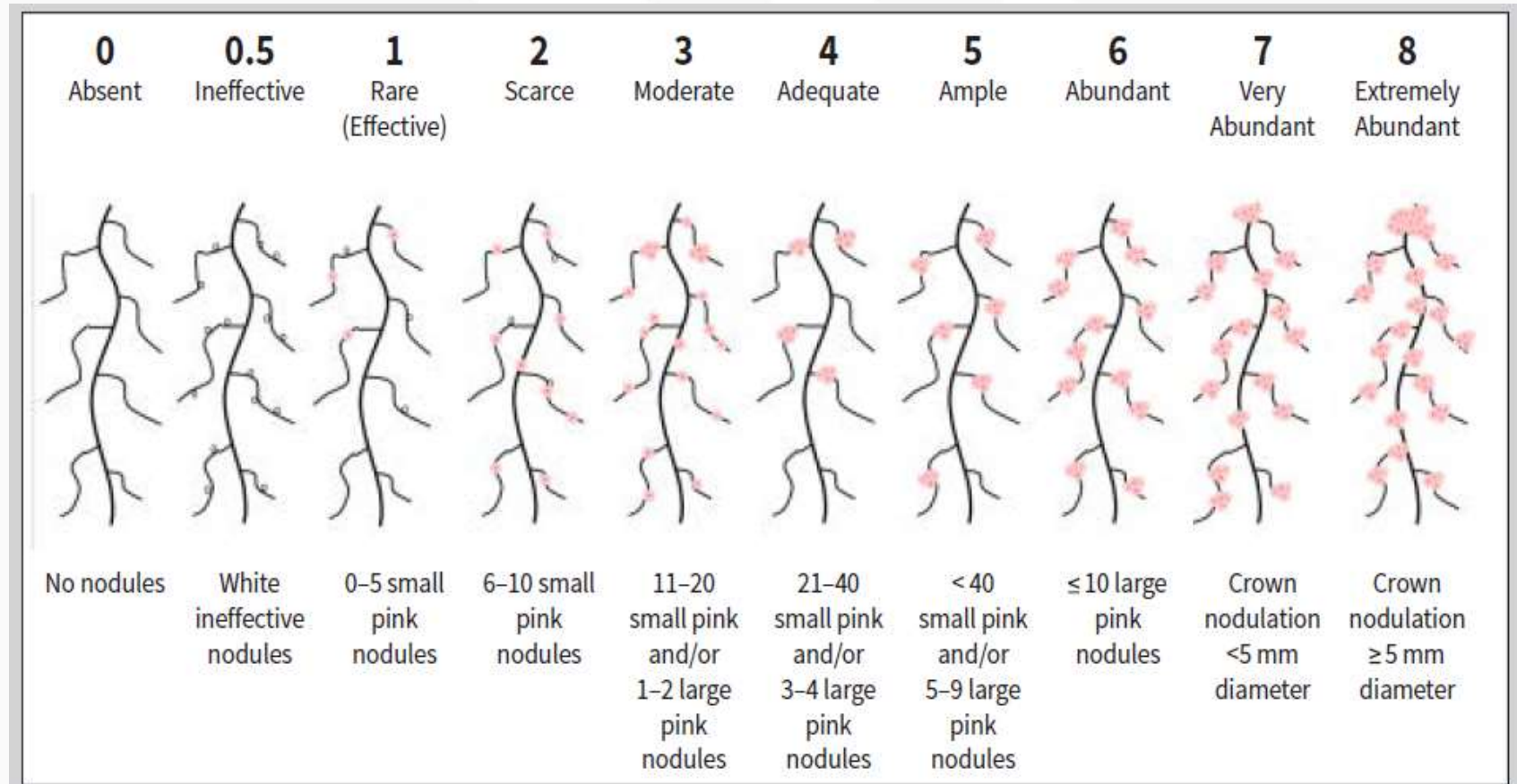
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Standard: WSM1455
250g/100kg seed

Double: WSM1455
500g/100kg seed

Acid tolerant SARDI969
250g/100kg seed



Rhizobia

Method as per Howieson, J.G. and Dilworth, M.J. (Eds.). 2016. Working with Rhizobia. Australian Centre for International Agricultural Research: Canberra



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Standard: WSM1455
250g/100kg seed

Double: WSM1455
500g/100kg seed

Acid tolerant SARDI969
250g/100kg seed

0	0.5	1	2	3	4	5	6	7	8
Absent	Ineffective	Rare (Effective)	Scarce	Moderate	Adequate	Ample	Abundant	Very Abundant	Extremely Abundant
No nodules	White ineffective nodules	0-5 small pink nodules	6-10 small pink nodules	11-20 small pink and/or 1-2 large pink nodules	21-40 small pink and/or 3-4 large pink nodules	< 40 small pink and/or 5-9 large pink nodules	≤ 10 large pink nodules	Crown nodulation < 5 mm diameter	Crown nodulation ≥ 5 mm diameter

Rhizobia



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Standard: WSM1455
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Varieties



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PBA Bendoc

	PBA Bendoc	PBA Samira
Seed size (mg)	590	616
kg/ha	216	284
plants/m ²	28	23

PBA Samira

- PBA Bendoc (2018) high tolerance to some imidazolinone herbicides
- PBA Bendoc smaller seed than to PBA Samira
- PBA Bendoc established better than PBA Samira

Post-emergent herbicide

Applied 18 June at 4 node stage



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Herbicide

Permit/Label info

800 mL/ha Ecopar (20 g/L pyraflufen-ethyl)

Across all faba bean varieties 3-5 leaf

45 g/ha Raptor (700 g/kg imazamox)

Across all faba bean varieties 3-6 leaf

700 mL/ha Intercept (33 g/L imazamox & 15 g/L imazapyr)

Across tolerant faba bean varieties at 2-4 nodes –
PBA Bendoc only



Herbicide damage visual rating

Rated 18 July

Herbicide	Variety			
	Bendoc		Samira	
Ecopar	0	a	5	c
Intercept	0	a	18	d
Raptor	1	ab	3	bc

Rating scale: 0-100

20 = slight damage, discolouration and/or stunting
clearly seen, recovery expected



Herbicide damage visual rating

Rated 18 July

Herbicide	Variety			
	Bendoc		Samira	
Ecopar	0	a	5	c
Intercept	0	a	18	d
Raptor	1	ab	3	bc

- Samira + Intercept had less above ground biomass at full flower

Rating scale: 0-100

20 = slight damage, discolouration and/or stunting clearly seen, recovery expected

Yield (t/ha)



Herbicide	Variety			
	Bendoc		Samira	
Ecopar	3.7	c	3.2	b
Intercept	3.8	c	2.8	a
Raptor	3.7	c	3.0	ab

Key findings from experiment

- Bendoc handled all 3 herbicide treatments better than Samira
- Yield loss of up to 1 t/ha on Samira, although symptoms were no longer obvious
- All treatments achieved excellent yields >2.8 t/ha, the best 3.8 t/ha
- Double the rate of standard rhizobia and the acid tolerant strain improved root nodulation compared to the recommended rate of the standard strain

PBA Amberley



PBA Samira



PBA Amberley



Wittenoom Hills,
2016

PBA Amberley



- Best resistance to chocolate spot - MR
- Less necking than most other lines

- Rust resistance – Rated S
 - PBA Bendoc S
 - PBA Samira MR

- Similar to PBA Samira
 - Seed size
 - Ascochyta rating MR/MS
 - PSbMV S
 - No specific herbicide tolerance
 - Similar yields, probably higher potential in environments >3t/ha



Terrain

- 500 g/kg flumioxazin
- Incorporate by sowing
- \$31/ha
- Broadleaf weed suppression/control*
 - volunteer canola, fleabane, Indian hedge mustard, prickly lettuce, wireweed, wild radish and sowthistle
 - * often in mixes

Seed size



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Beware large seed

Check your seeder can handle it

Summary

- Current price over \$500/t
- PBA Bendoc – Group B residues and products containing both imazapyr and imazamox over the top
- PBA Amberley – MR to chocolate spot, similar traits to PBA Samira
- Terrain - Pre-emergent broadleaf weed control
- Reflex – 2021, extended radish control
- Consider doubling rate of peat rhizobia on soil pH <5.5

Lentil VT Dalwallinu September 10th 2019



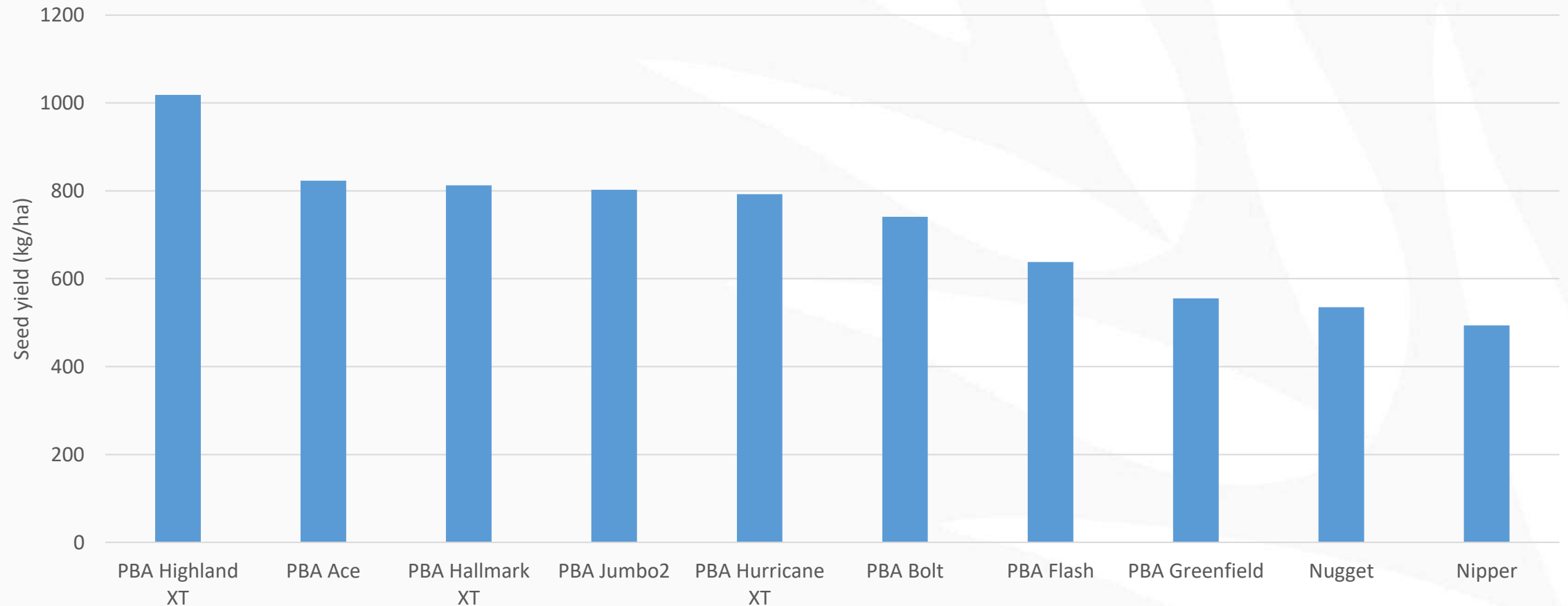
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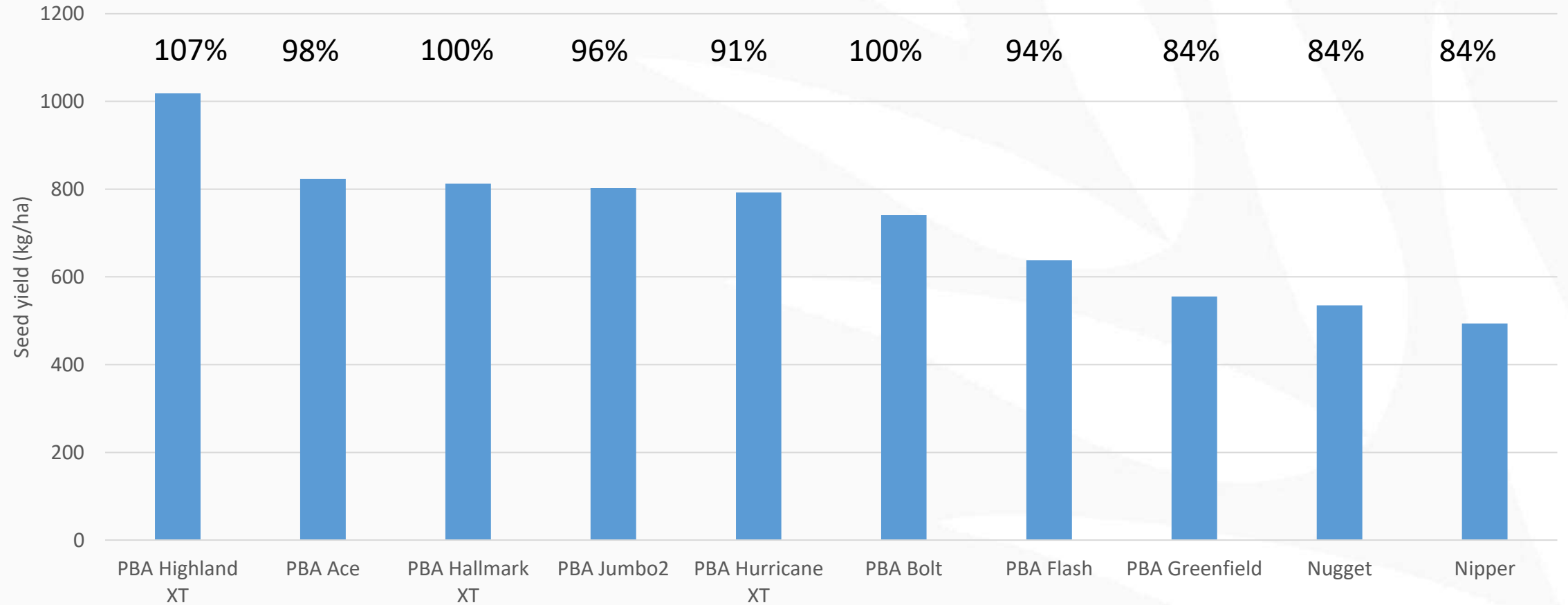
PBA Highland XT hits the mark

Dalwallinnu DPIRD Stage 4 2019, LSD = 168





% of PBA Bolt (2014-19)



Lentil tips

- If Group C damage is an issue consider XT lines and use IMI herbicides
- If you don't want to use IMI - use lowest possible rate of Group C herbicides
- Avoid using Metribuzin on sandy loams or loamy sands
- Budget for fungicide at canopy closure
- Check colour of seed cotyledon before croptopping – pod and canopy colour can be deceiving

Wrapping up

- Breeders have done an excellent job to provide you with better varieties
- Wild radish management is more achievable
- Tips
 - Source seed and talk to marketers early
 - Know your germination rate
 - Double peat rhizobia on low pH soils
 - Can your gear handle beans?
 - Don't croptop too early

Acknowledgements

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- Kristy Hobson (NSW DPI), Ross Ballard (SARDI)
- Project staff - Pam Burgess, Andrew Blake, Stephanie Boyce, Martin Harries, Salzar Rahman, Harmohinder Dhammu and Michelle Sampson
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