Is April the best sowing opportunity for wheat or are there other opportunities with barley and oats?

Raj Malik and Jeremy Curry, DPIRD

GRDC UPDATES

GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Context & aims

- Early sowing in April is becoming a norm in Western Australia and wheat is preferred choice
- Are there any other options e.g. barley or oats?

- **The answer is “YES”**

Key Findings

Q 1. Which cereal option is best for April sowing?

A. **Barley was higher yielding and more profitable** than wheat and oats at all sowing times (mid-April to late May).

Q 2. Which is the best variety to grow at April sowing?

A. Barley: generally no significant difference between barley varieties although grade and quality will provide points of difference.

Oats: Bannister, Williams and Kojonup are the best option for April sown oats.

Wheat: Mid-long maturity (Trojan, Cutlass, Magenta etc.) have the highest yield in the absence of frost. For frost prone areas, winter or very long spring wheats flower latest and give best chance of avoiding frost.

The trials

9 trials 2015 - 2017

2015 2 species - barley and wheat (6 var of each) at Dandaragan, Katanning and Gibson (EDRS)

2016 3 species - barley, oats and wheat (6 var of each) at Northam (Muresk), Katanning and Gibson

2017 3 species - barley, oats and wheat (6 var of each) at Northam (Muresk), Lake Grace and Gibson

3 times of sowing (TOS)

TOS1 mid-April (13 -16 April)

TOS2 early-May (2 -7 May)

TOS3 late-May (25 - 27 May)

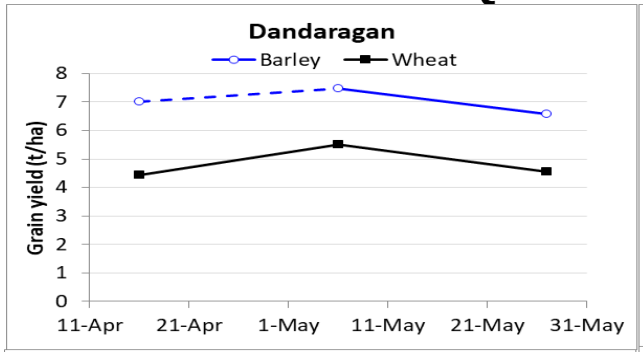
Design

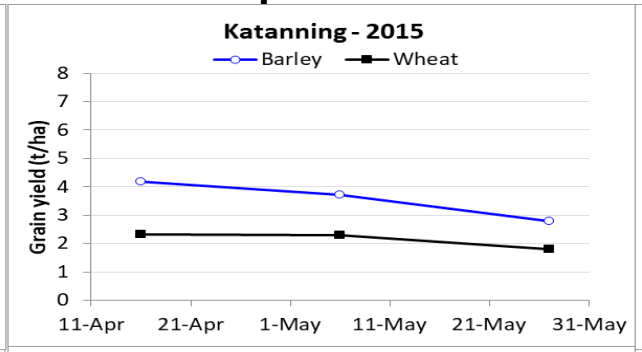
3 reps, 6 banks

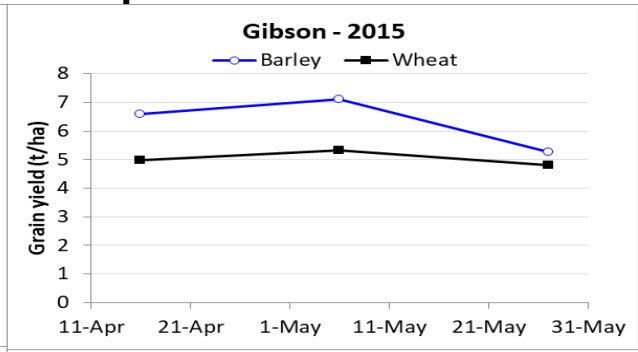
TOS/species/varieties

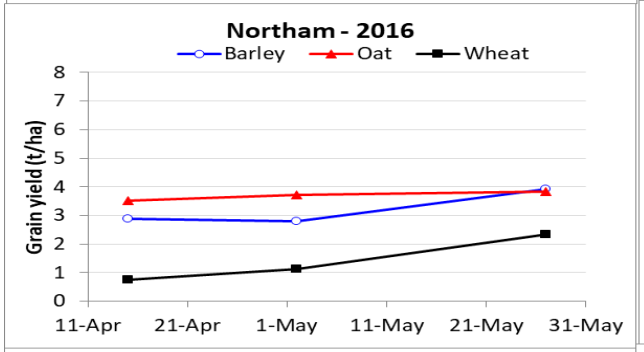
Barley	Oats	Wheat
Compass	Bannister	Cutlass
La Trobe	Carrolup	Mace
Flinders	Kojonup	Magenta
Granger	Yallara	Trojan
Rosalind	Durack	Whistler/Wylah
Urambie	Williams	Yitpi

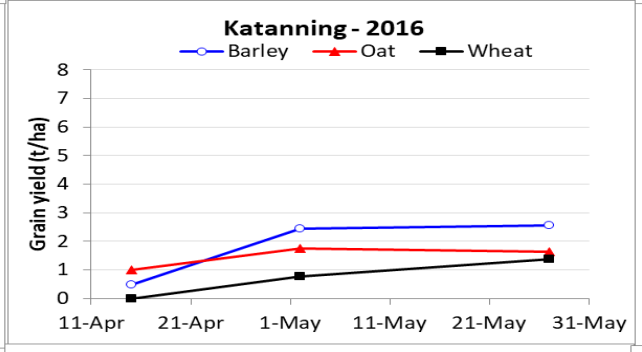
Question 1 - Which species is ideal for mid-April?

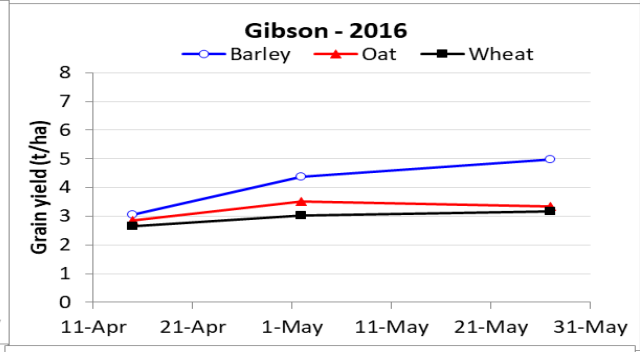


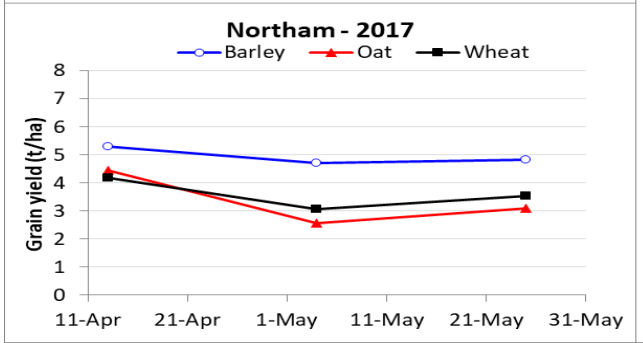


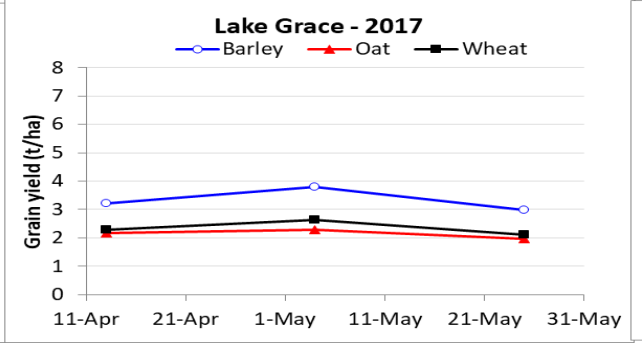


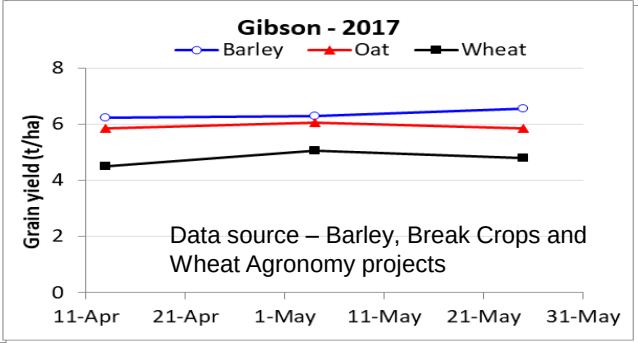












Question 2 - Which species is higher yielding for mid-April sowing?

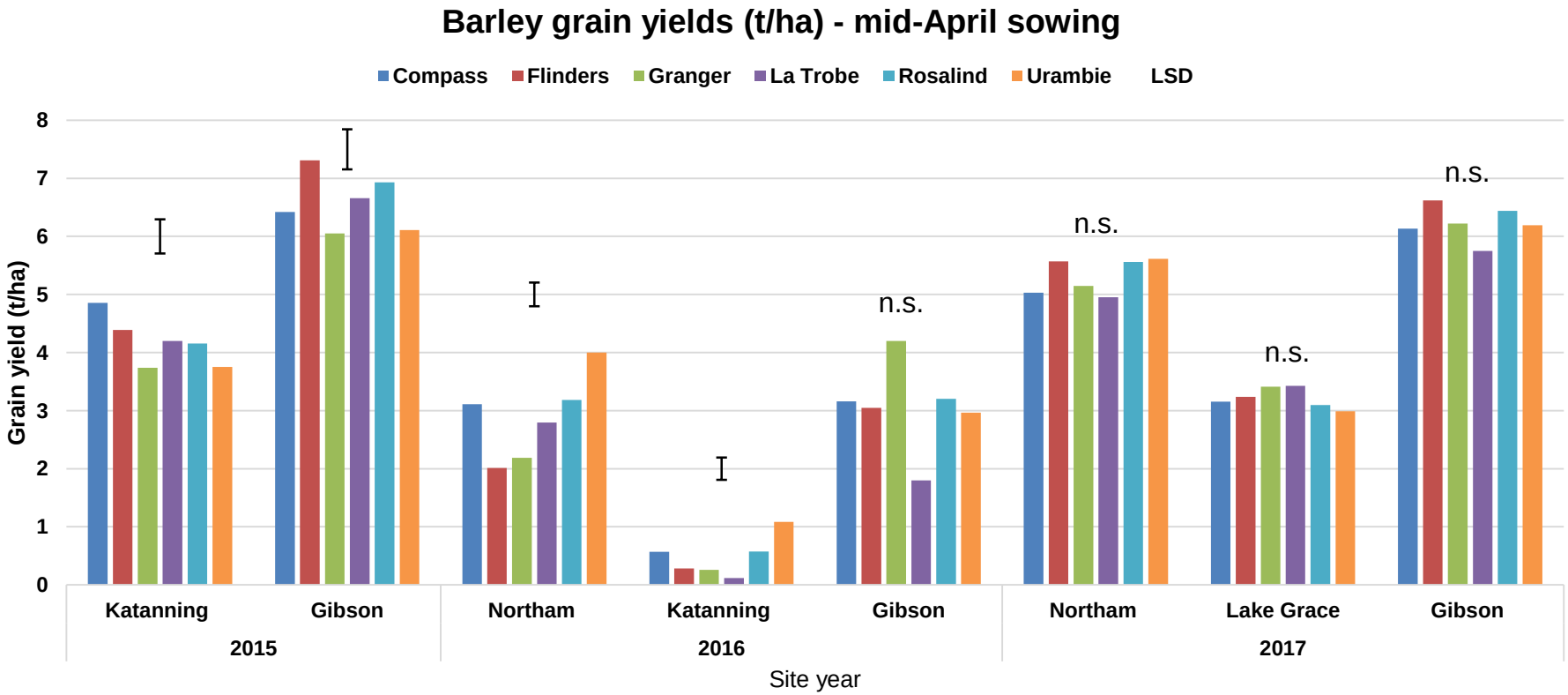
Barley is higher yielding than wheat and oats

Grain yield (t/ha) of barley higher or less than wheat and oats

Year	Location	Wheat		Oats	
		Overall	mid-April sowing	Overall	mid-April sowing
2015	Dandaragan	>2.2	>2.6	-	-
	Katanning	>1.4	>1.9	-	-
	Gibson	>1.3	>1.6	-	-
2016	Northam	>1.8	>2.1	<0.5	<0.6
	Katanning	>1.1	>0.5	>0.4	<0.5
	Gibson	>1.2	>0.4	>0.9	>0.2
2017	Northam	>1.3	>1.1	>1.6	>0.8
	Lake Grace	>1.0	>0.9	>1.2	>1.1
	Gibson	>1.6	>1.7	>0.4	>0.4

Data source – Barley, Break Crops and Wheat Agronomy projects

Question 2 - Which variety of barley or oats is ideal for mid-April sowing?



Department of Primary Industries and Regional Development

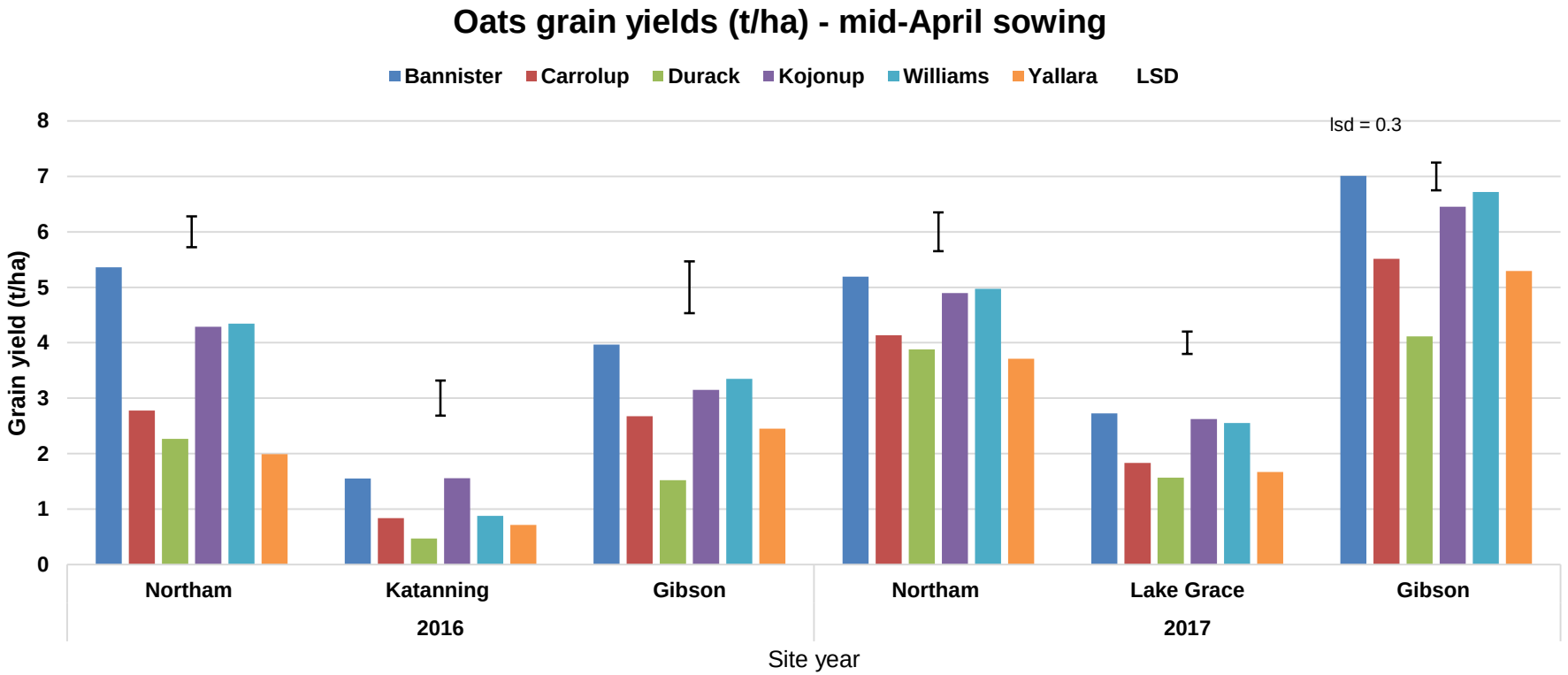
Tactical Break Crop Agronomy Project (DAW00227)

GRDC

Data source – Barley, Break Crops and Wheat Agronomy projects

GRDC UPDATES

Question 2 - Which variety of barley or oats is ideal for mid-April sowing?



Data source – Barley and Break Crops Agronomy projects

Question 3 - Which species or variety is more profitable for mid-April sowing?

Barley is more profitable than wheat and oats

Net returns ($/ha) of barley higher than wheat and oats in 2017

Location	Wheat		Oats	
	Overall	mid-April sowing	Overall	mid-April sowing
Northam	>285	>214	>465	>303
Lake Grace	>192	>238	>342	>375
Gibson	>186	>253	>133	>117

Data source – Barley and Break Crops Agronomy projects

Key Messages

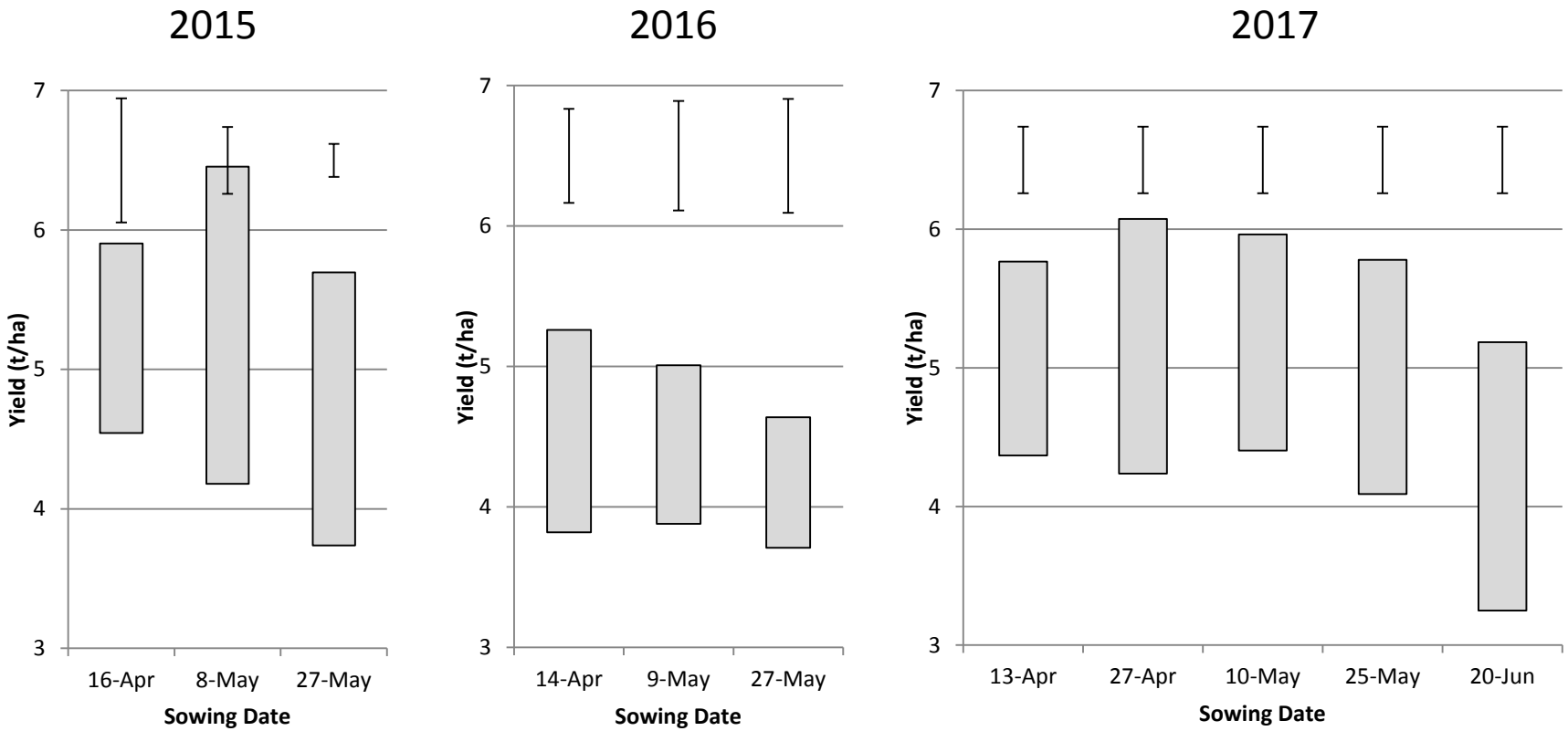
Barley was higher yielding and more profitable than wheat and oats at all sowing times (mid-April to late May).

For April sowing, generally there was no significant difference in yield among barley varieties, although grade and quality risk provide points of difference.

Bannister, Williams and Kojonup are the best option for April sown oats


Photo by Grant Stainer

Gibson



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Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

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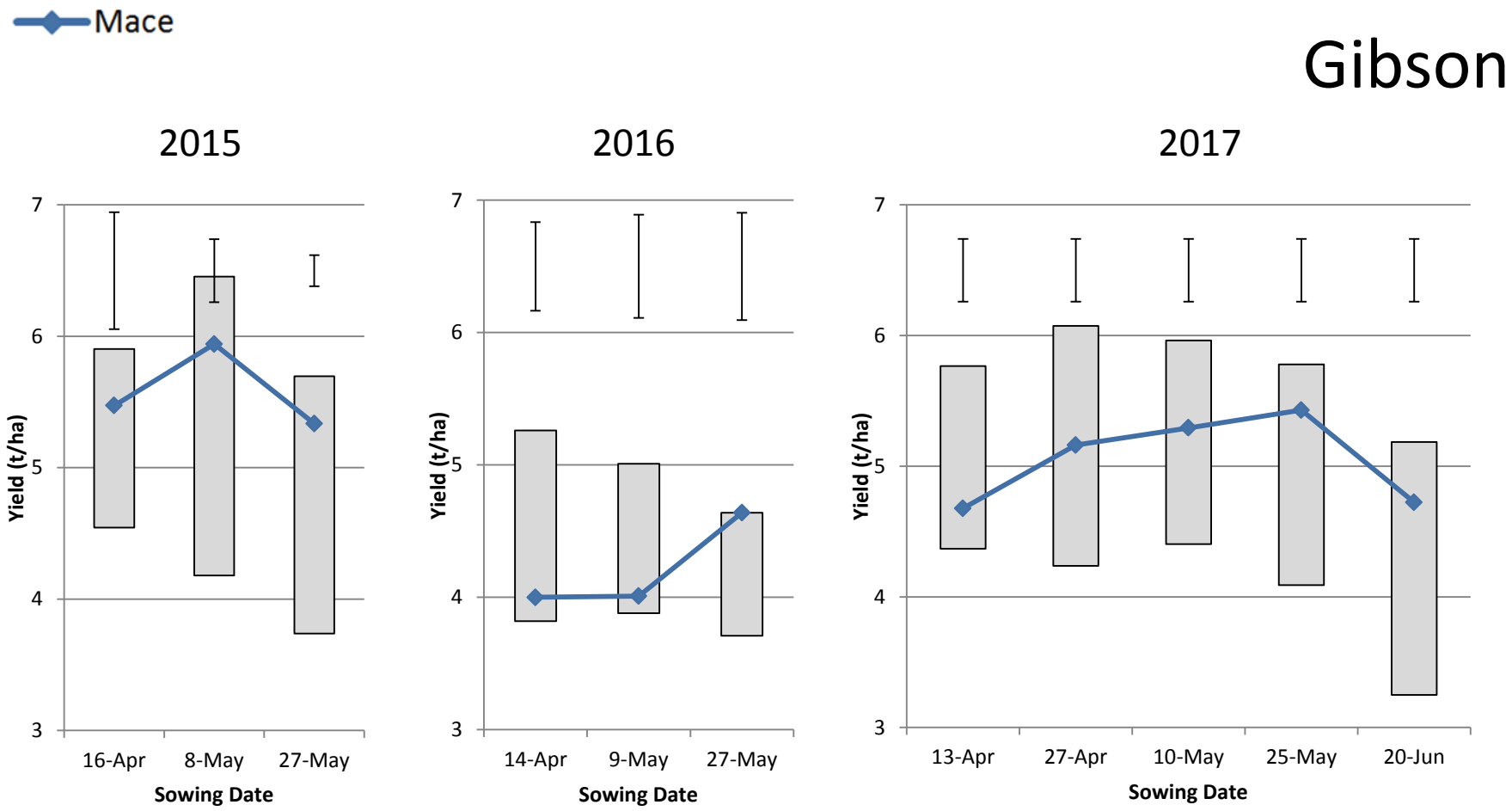

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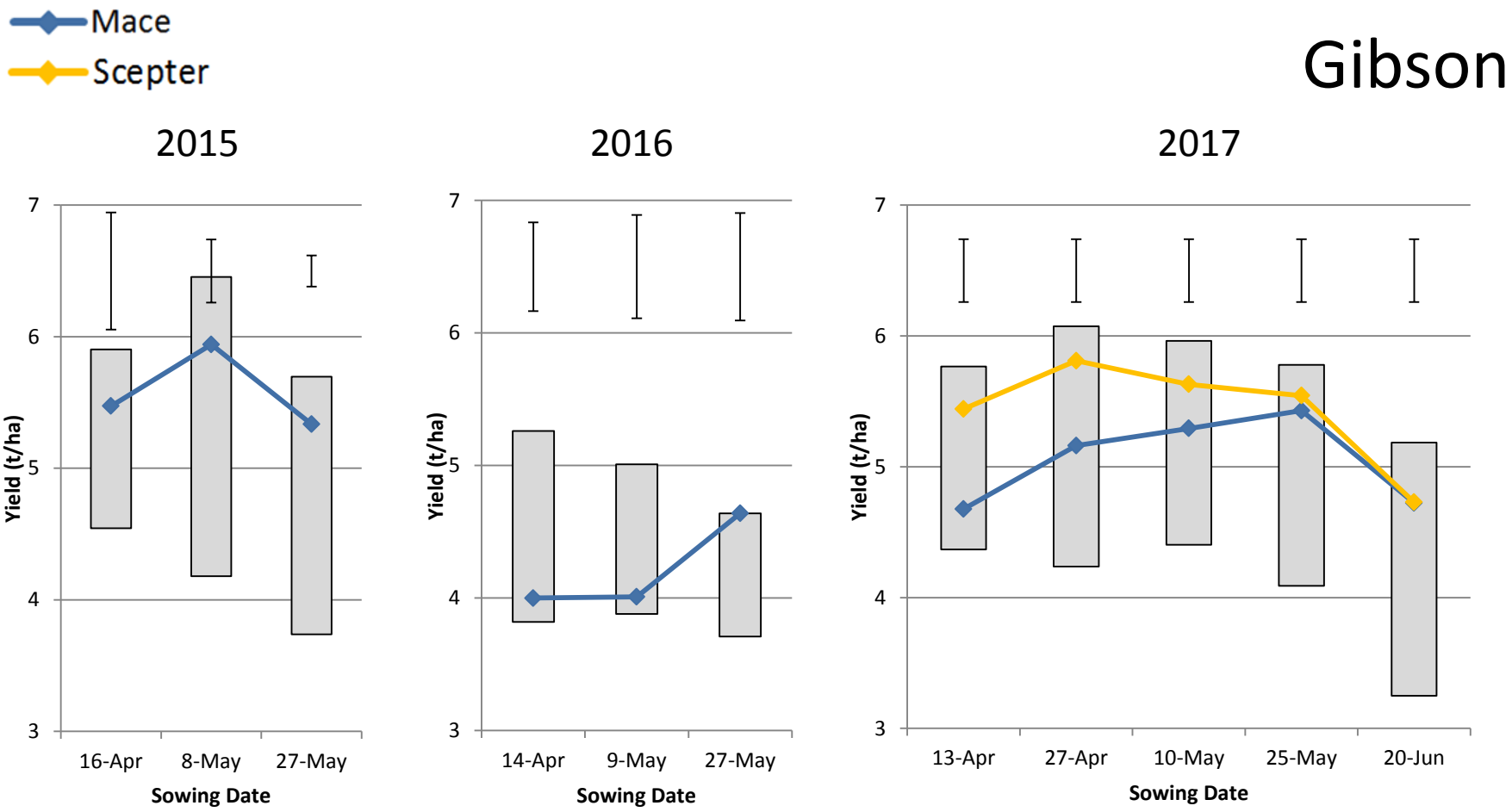

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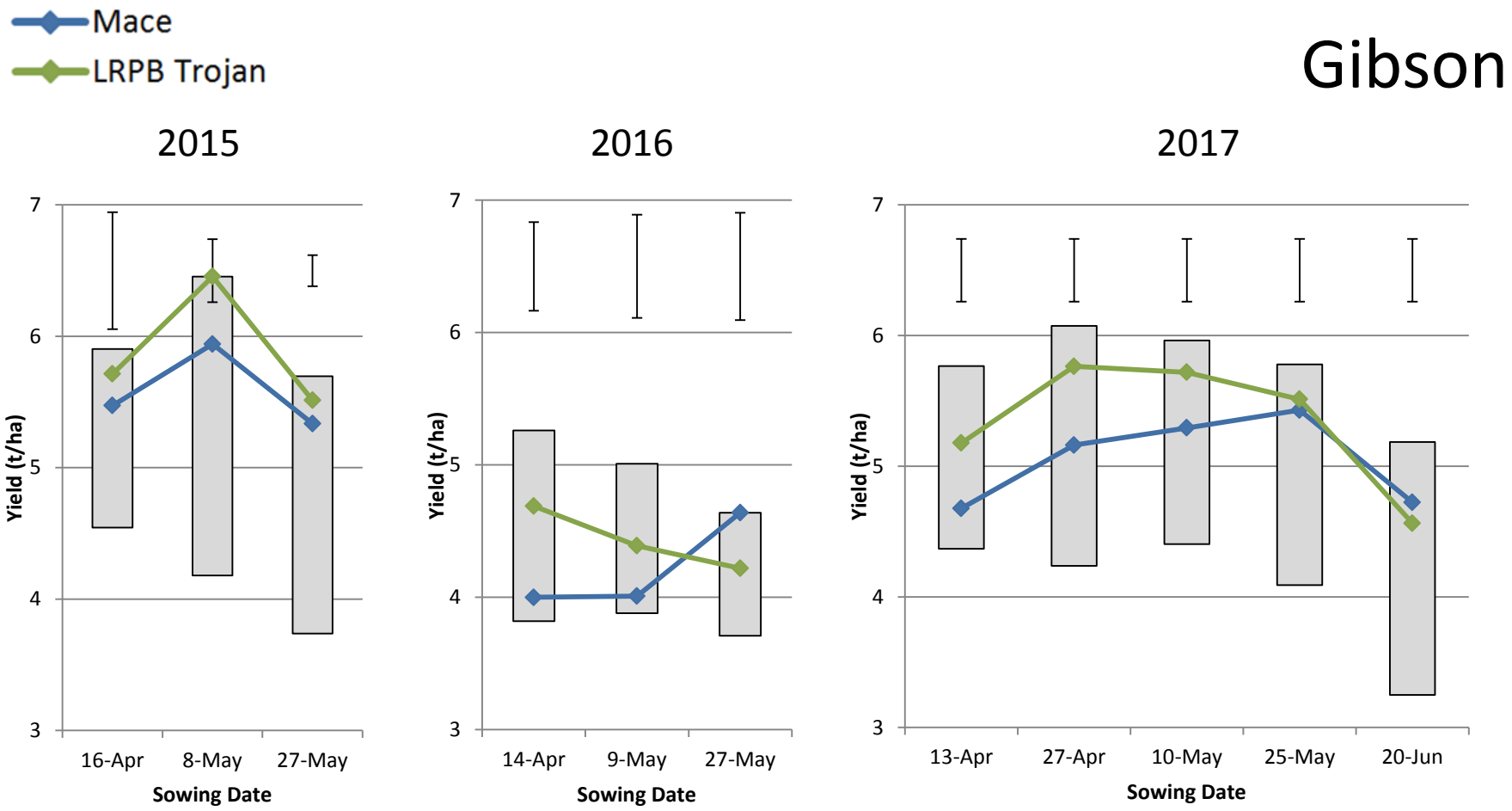

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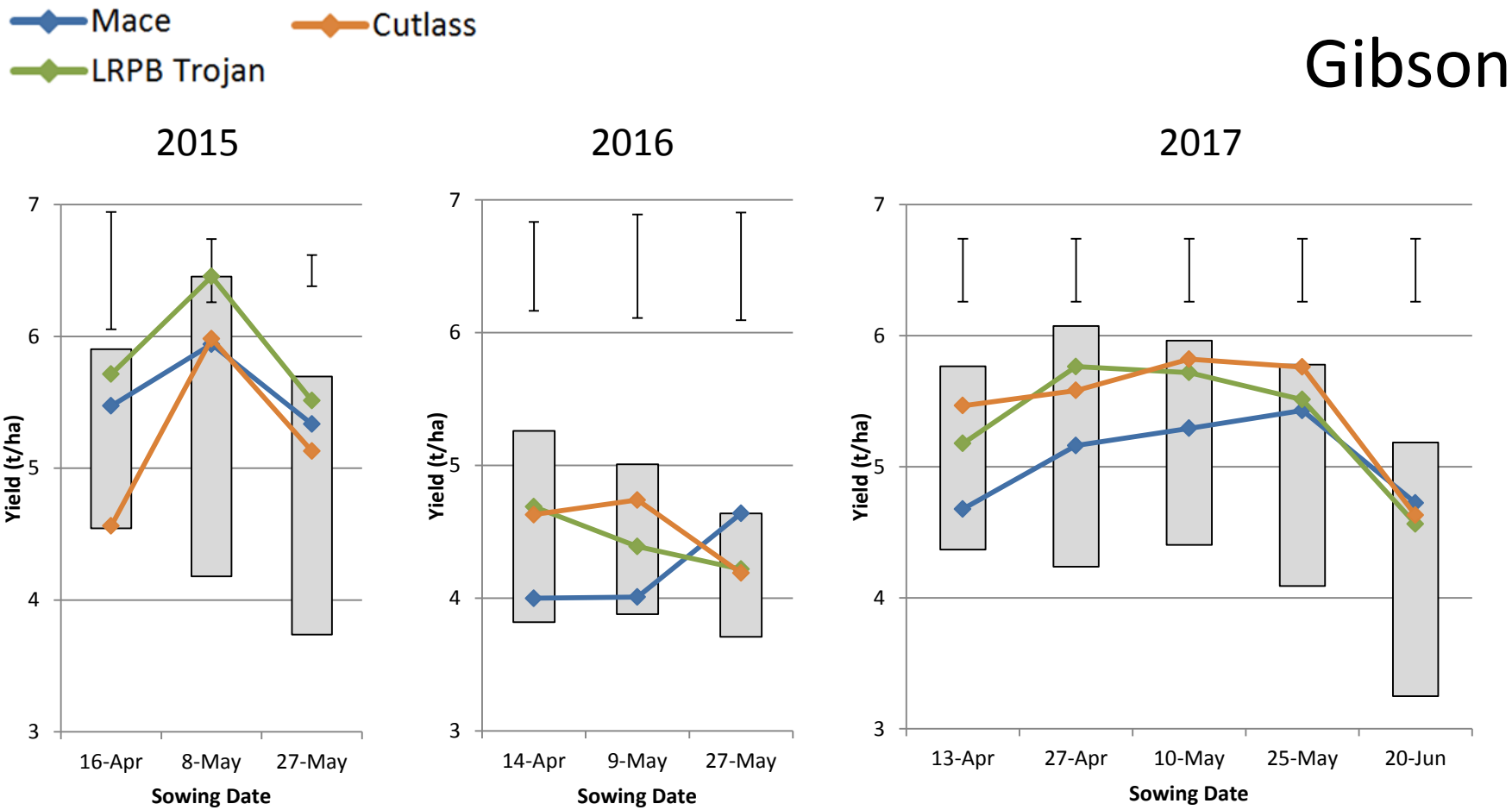

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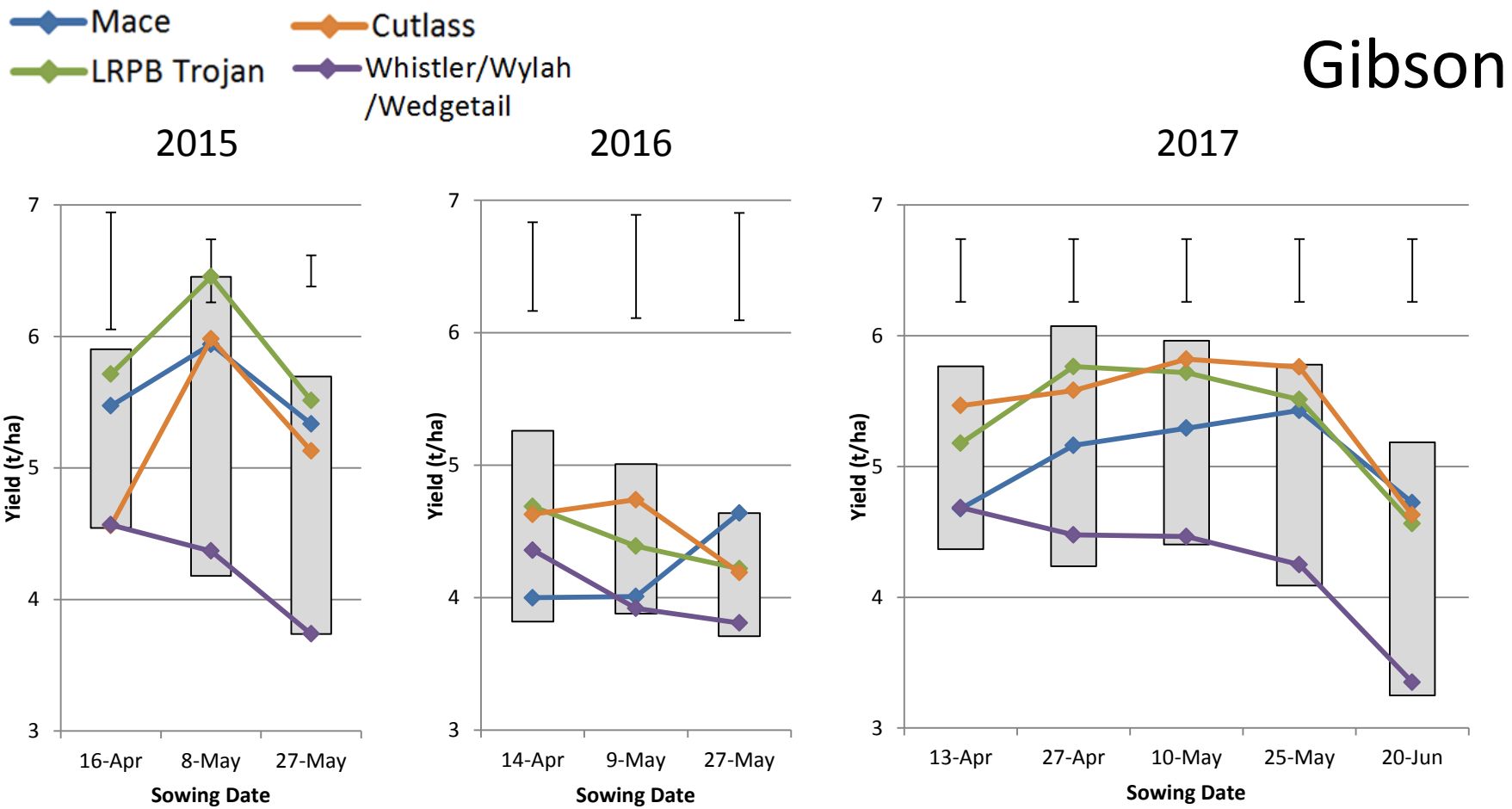

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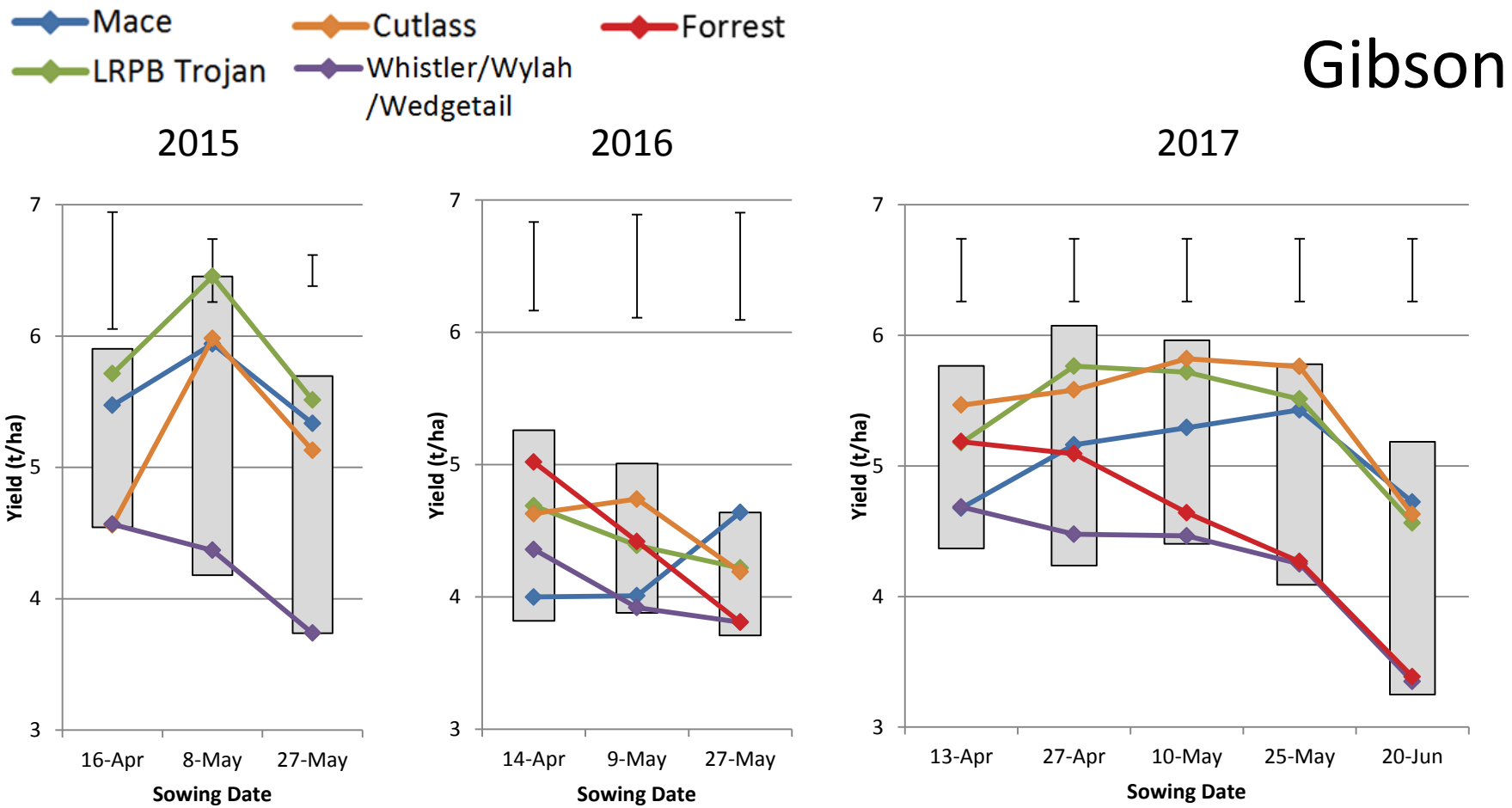

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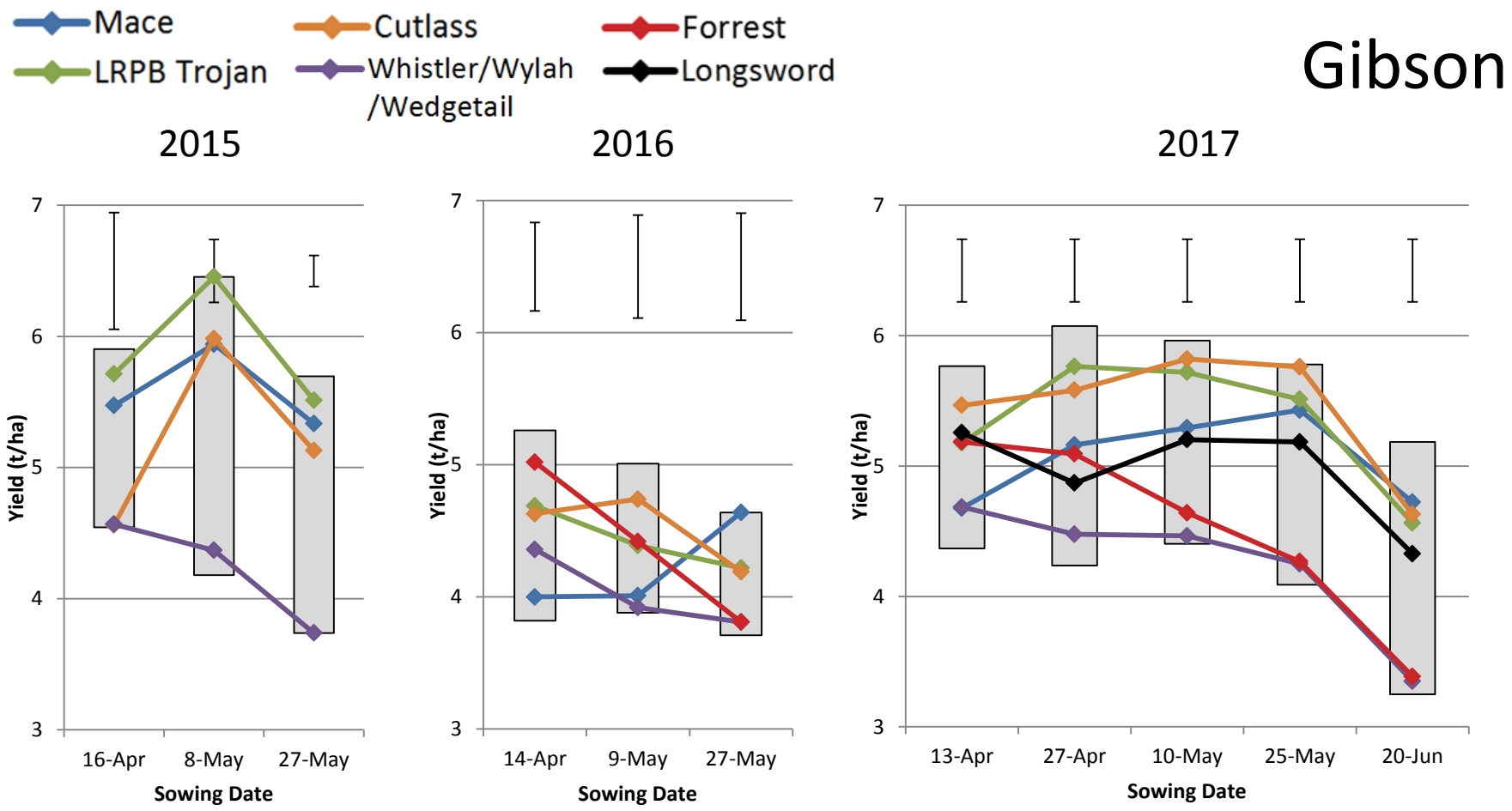

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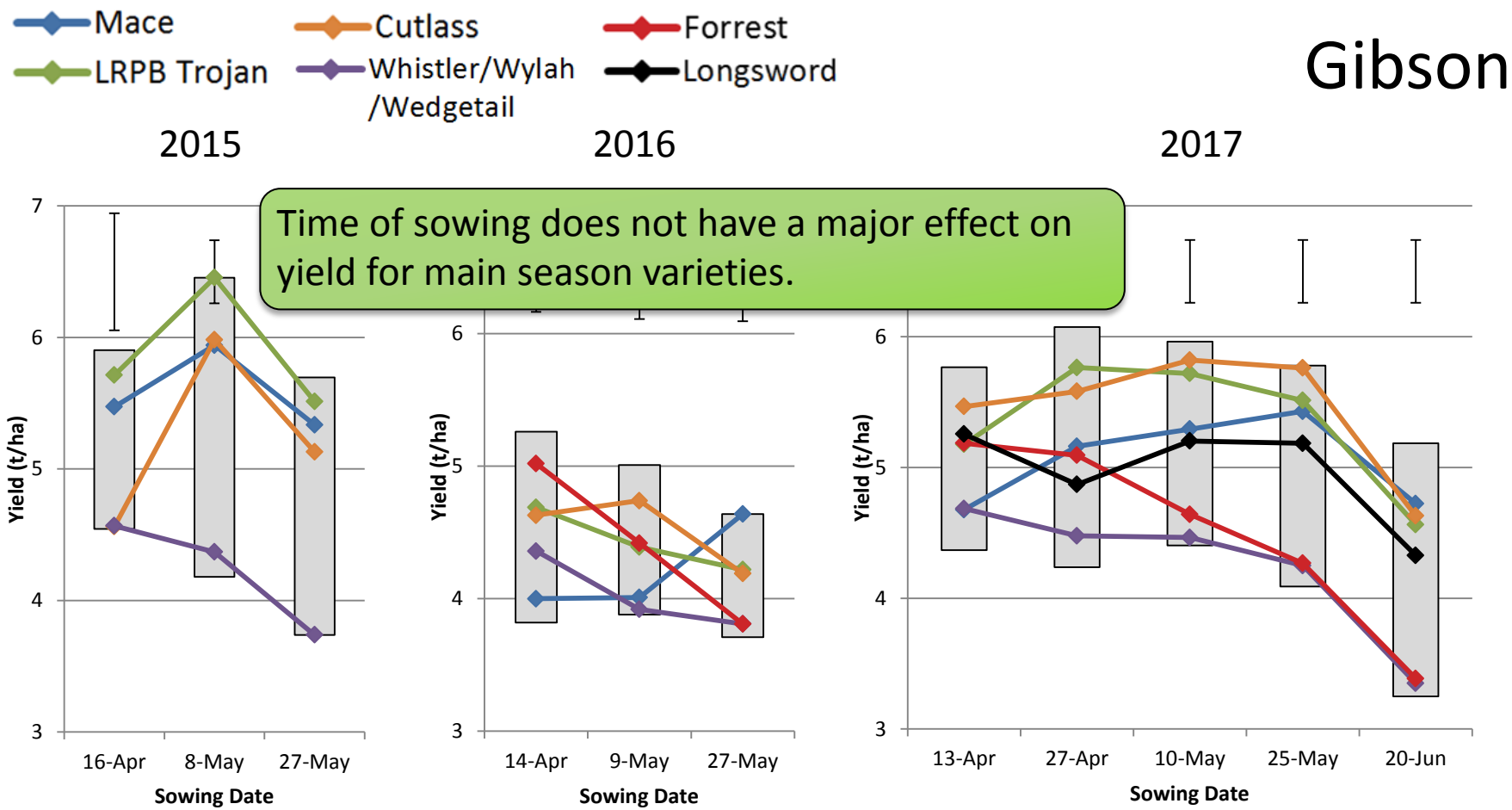

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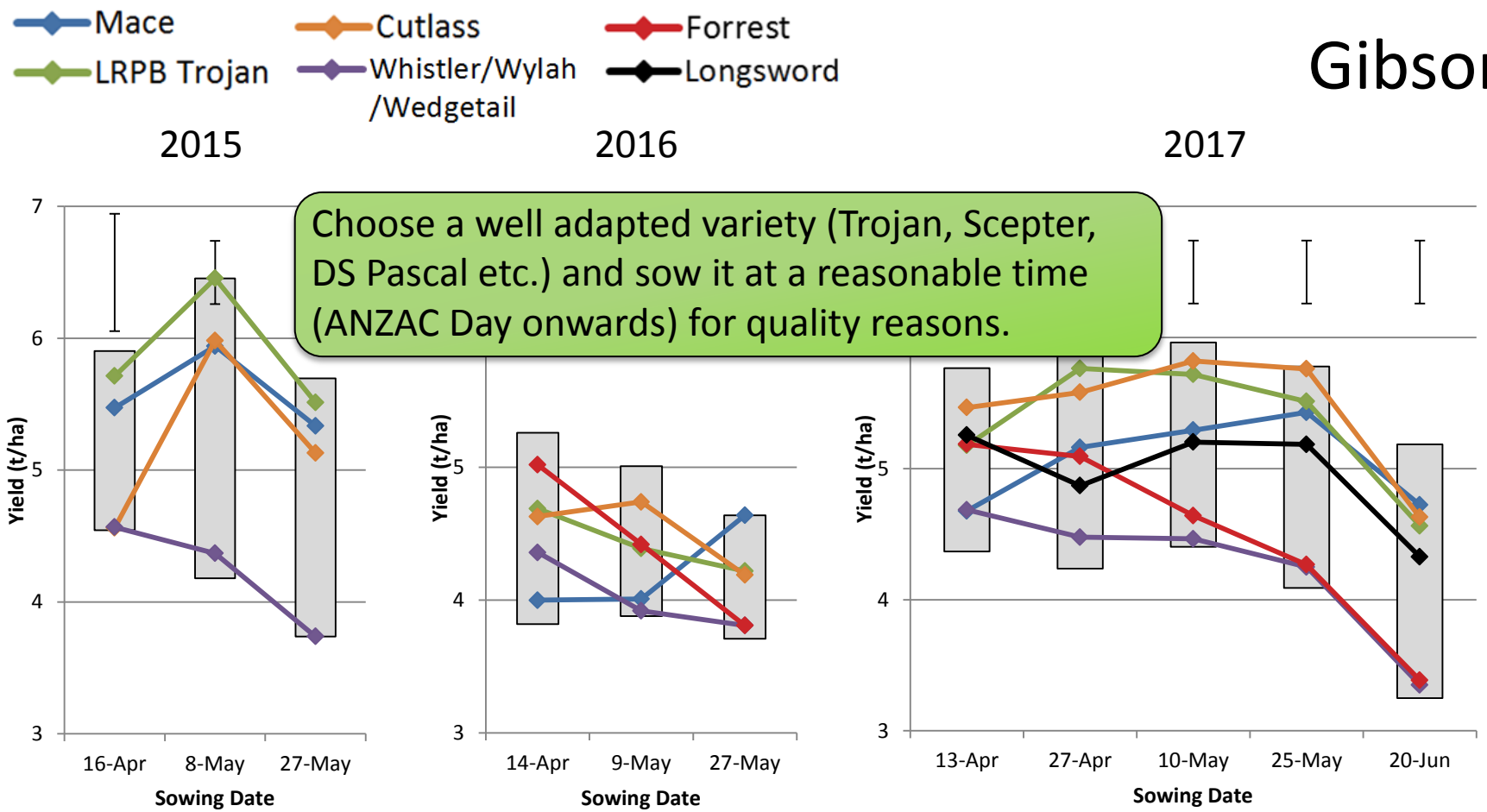

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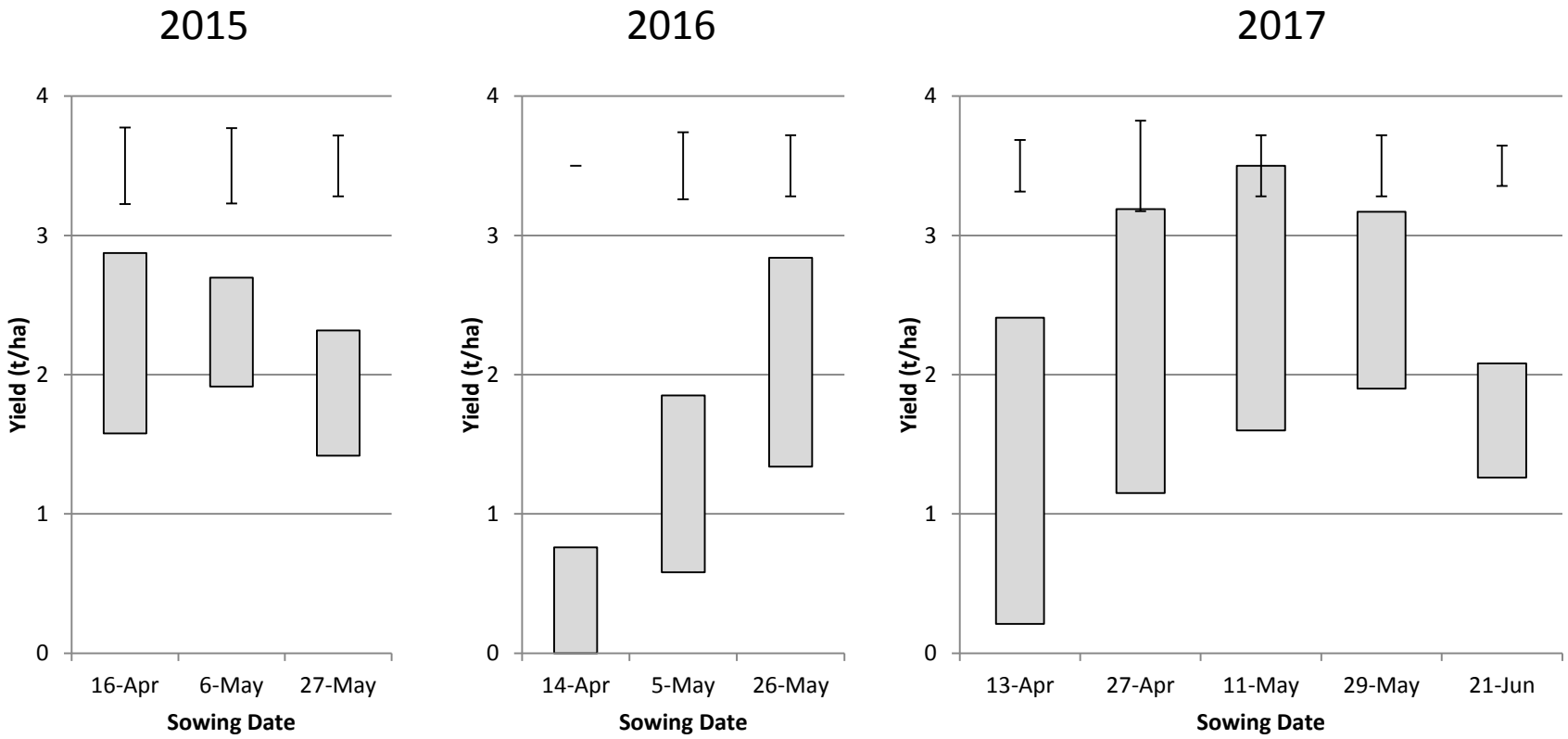

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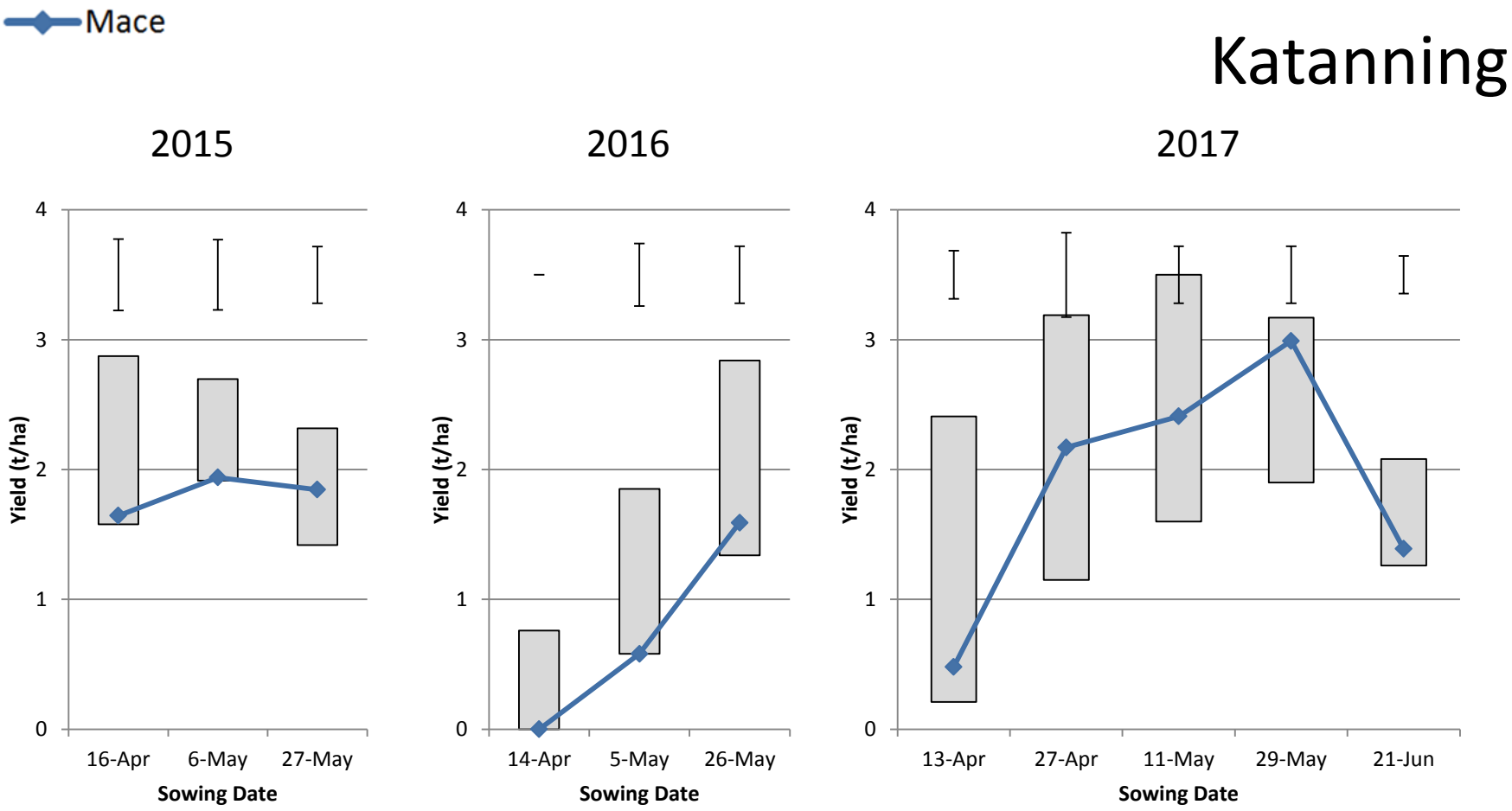

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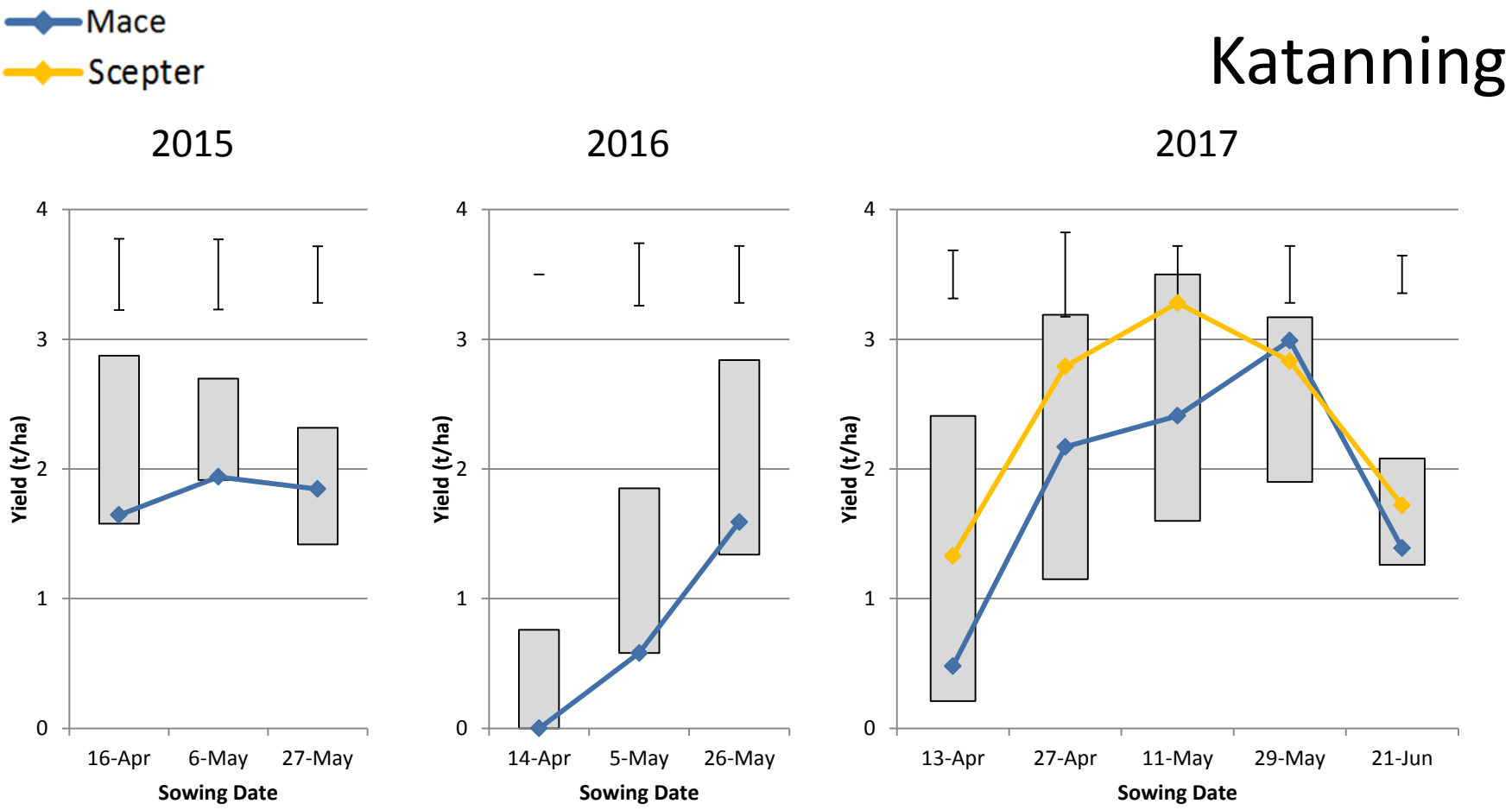

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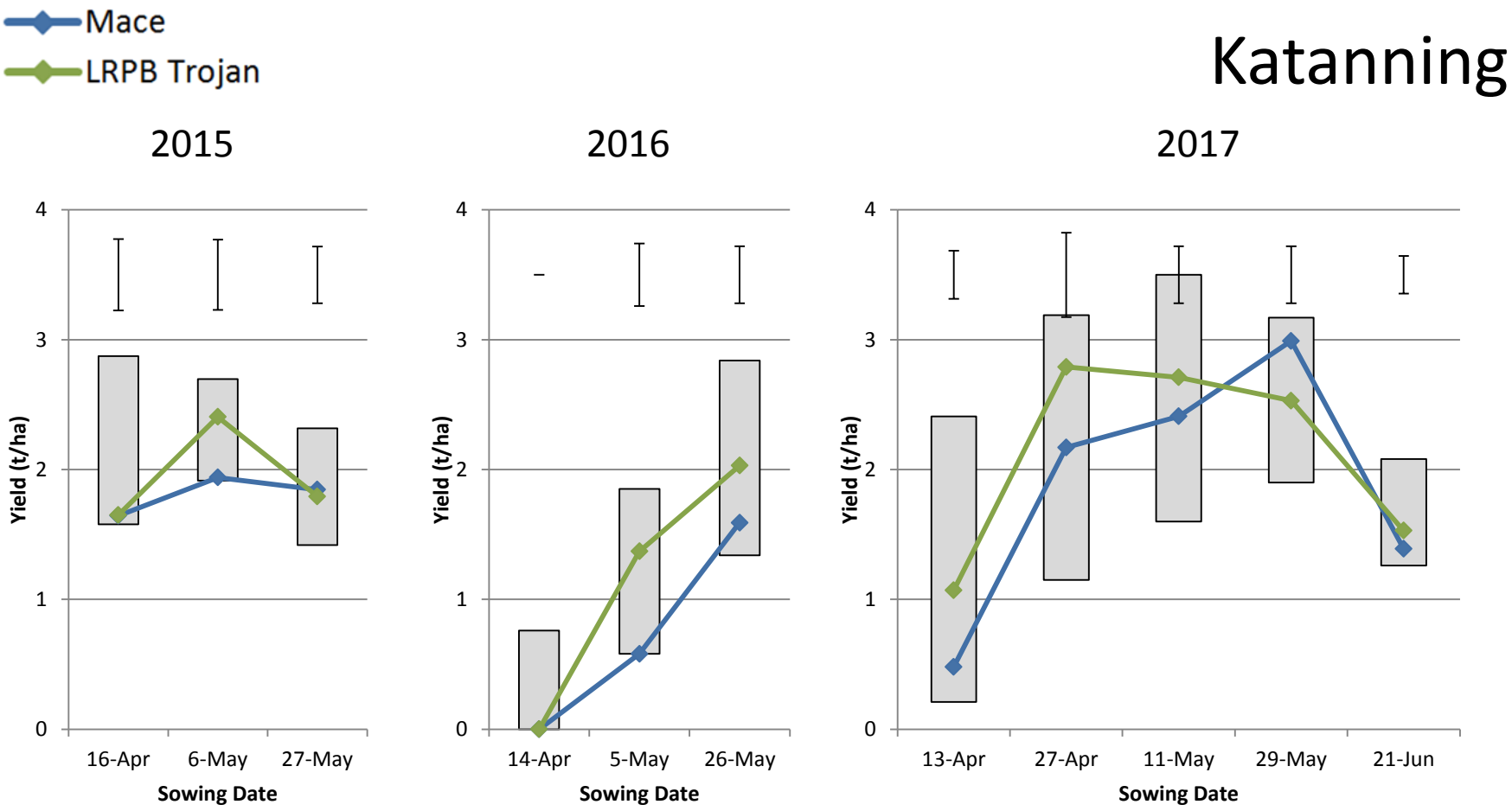

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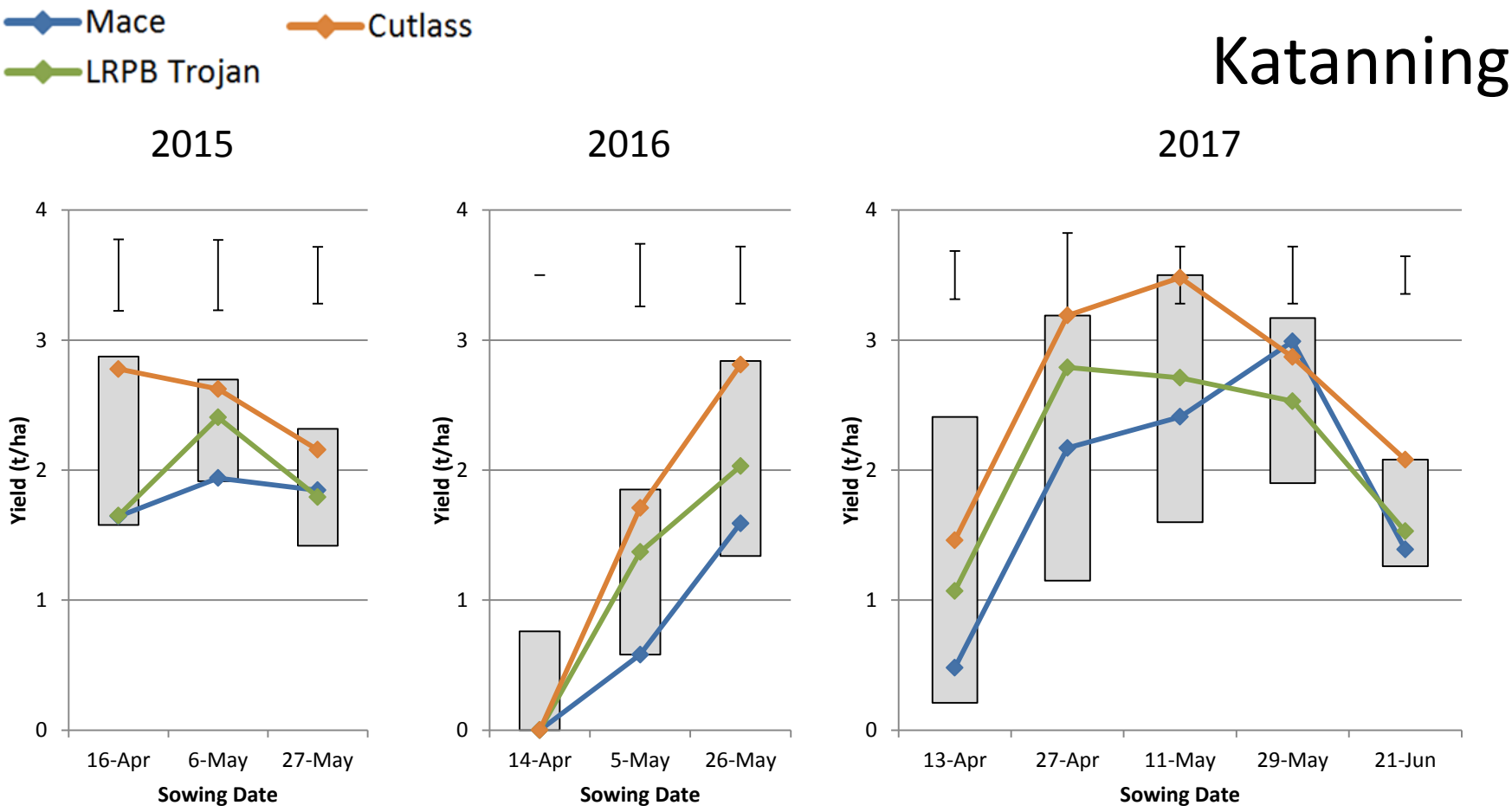

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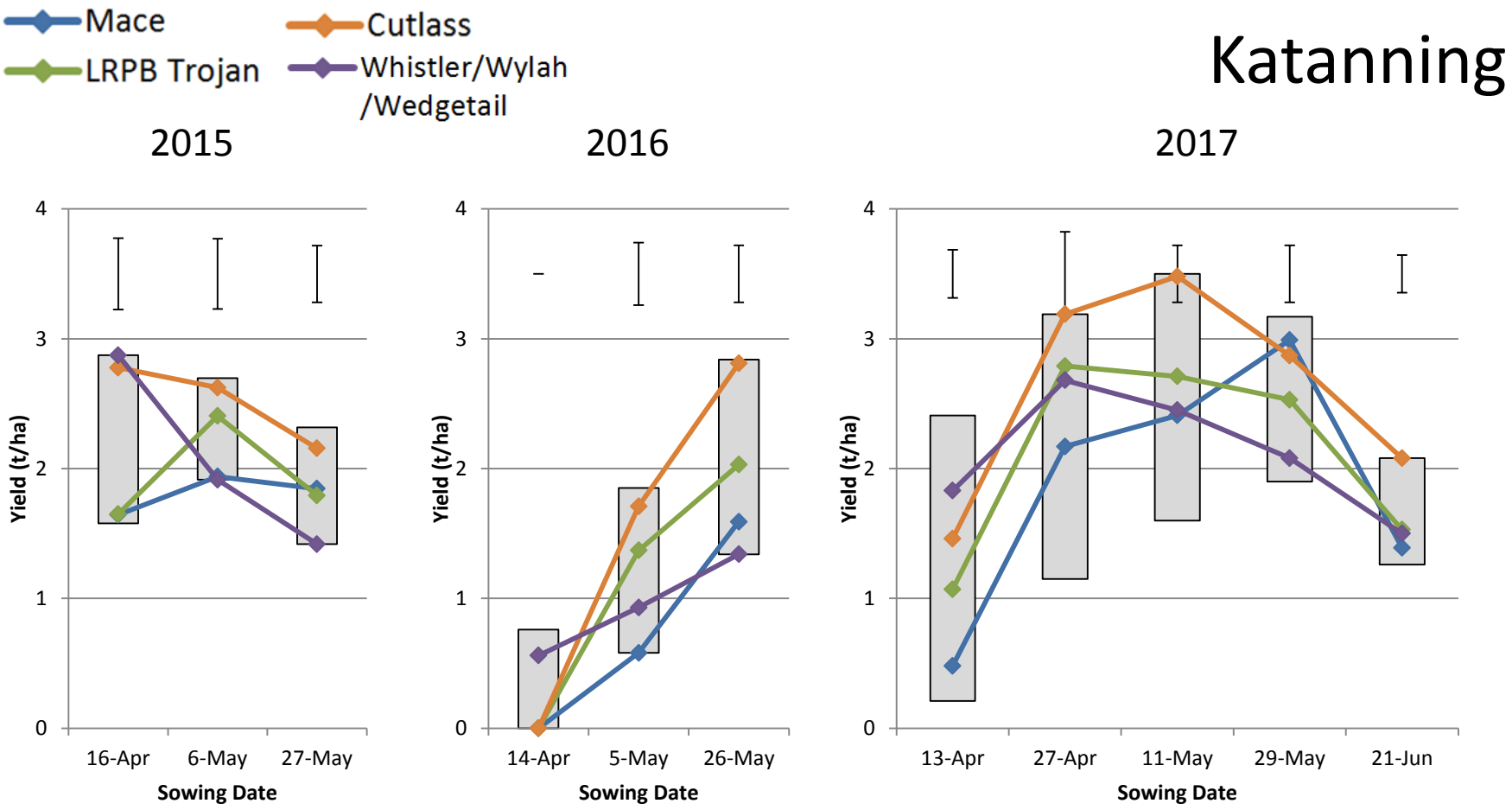

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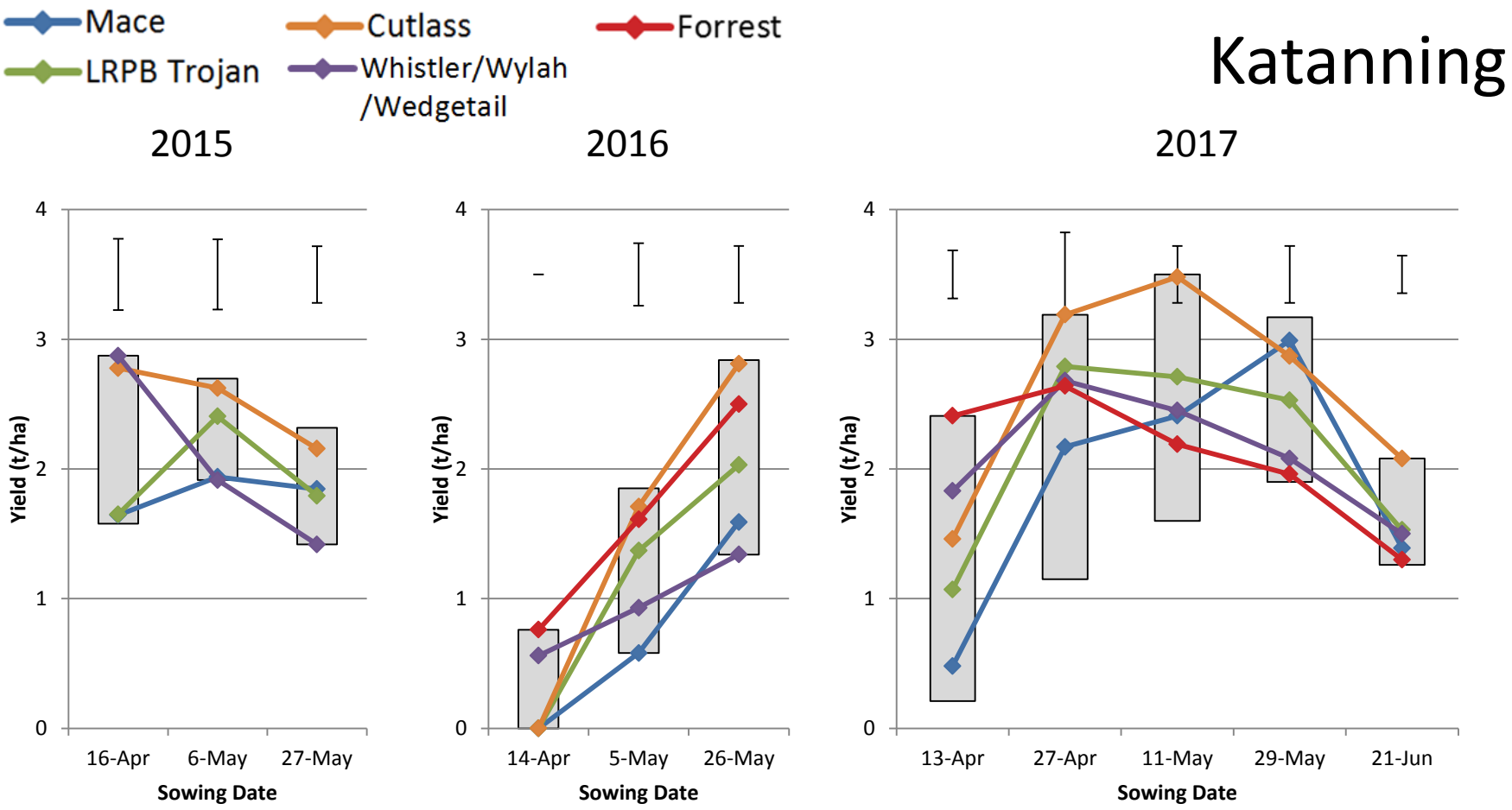

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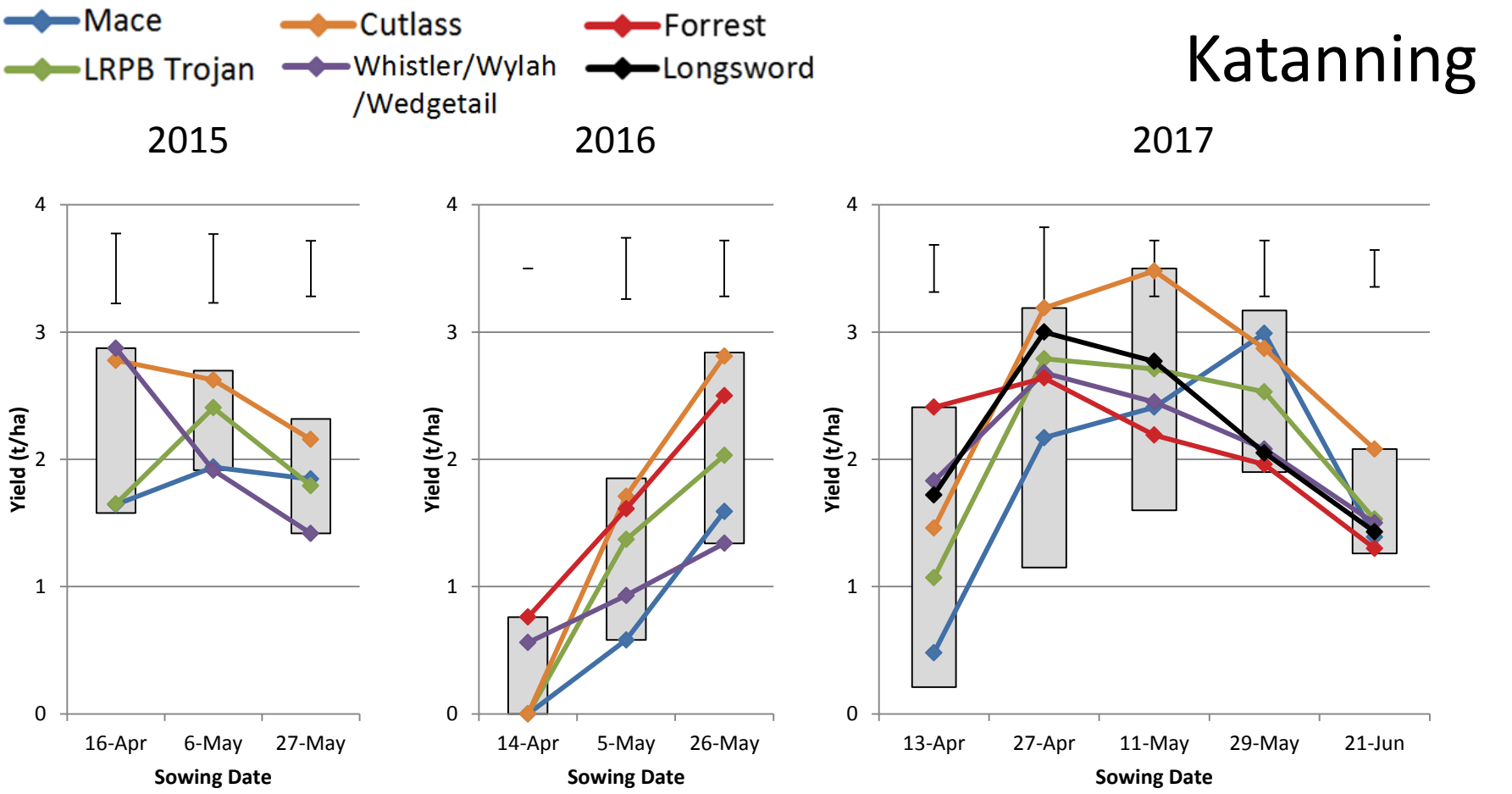

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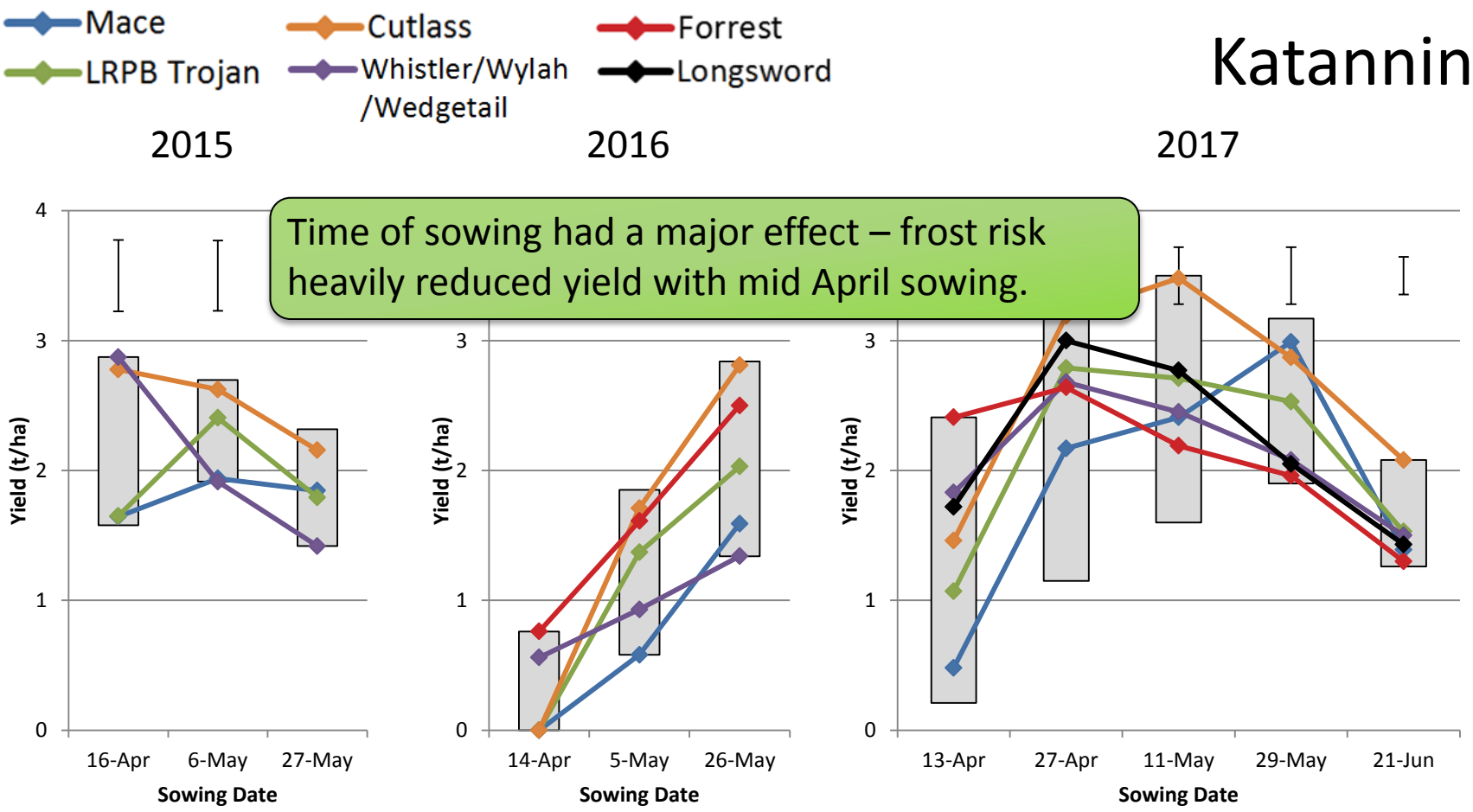

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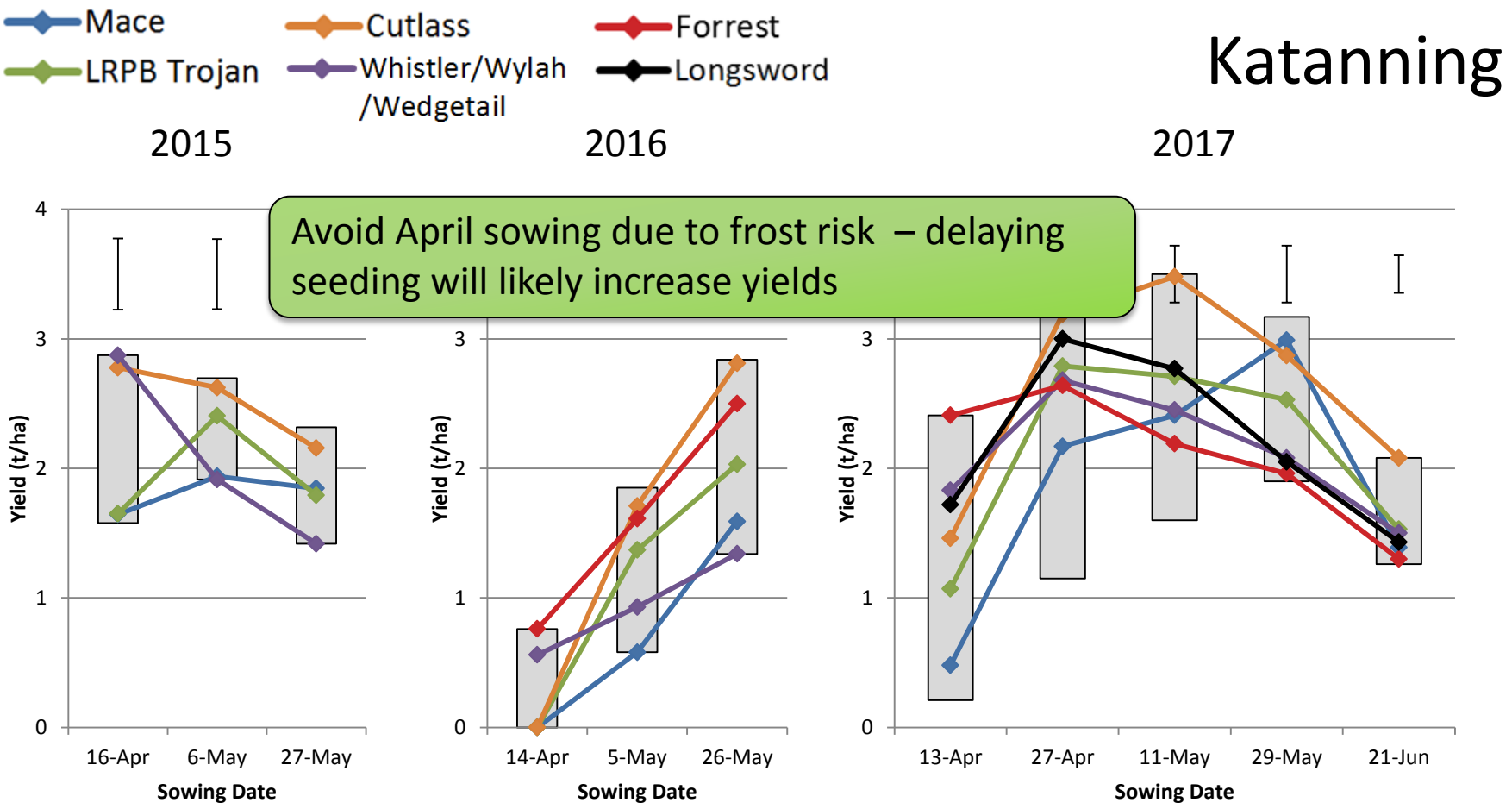

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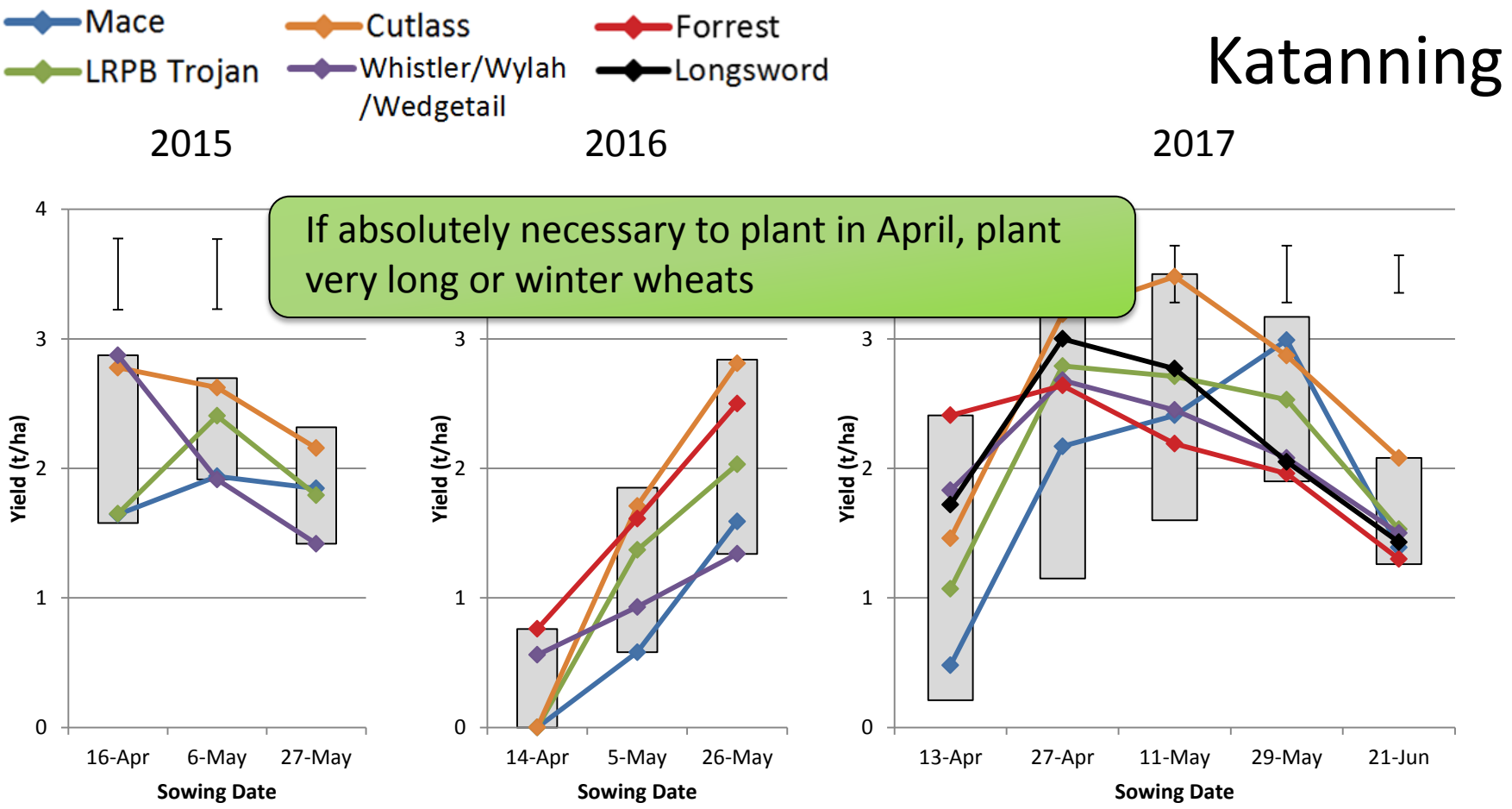

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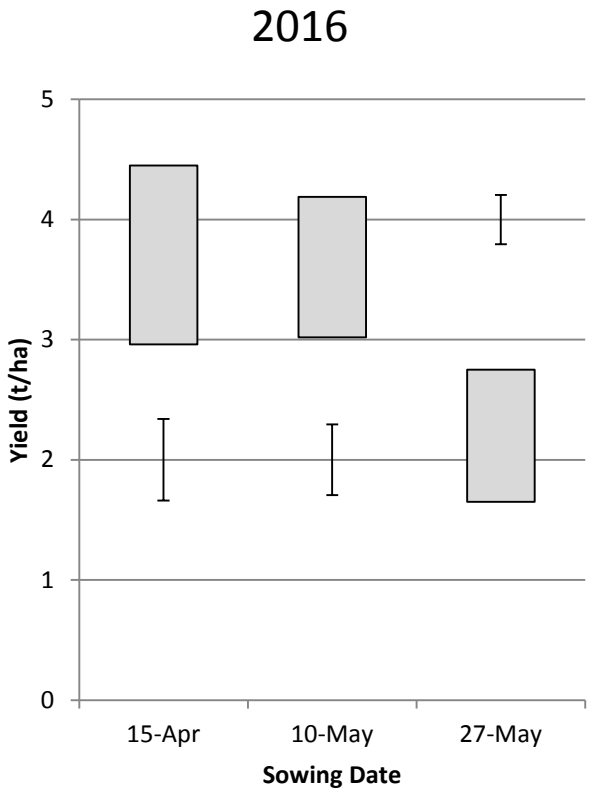

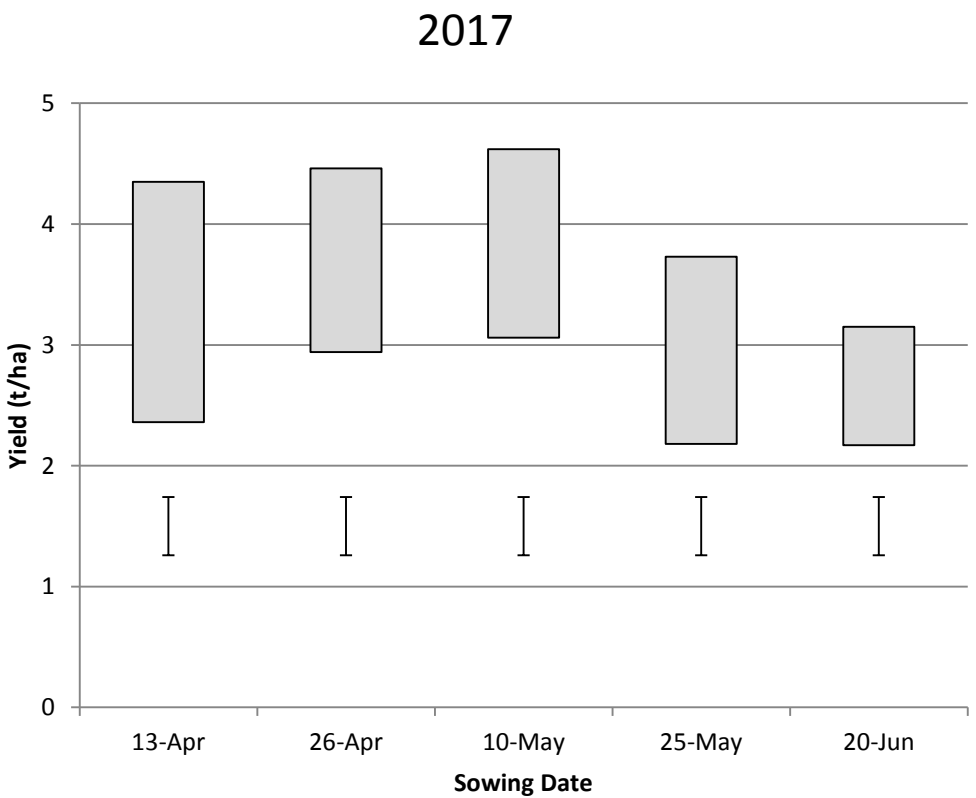

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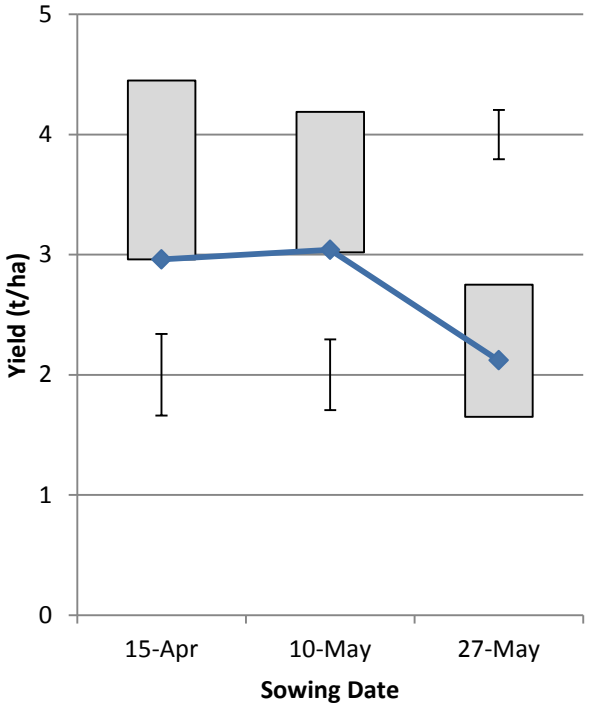
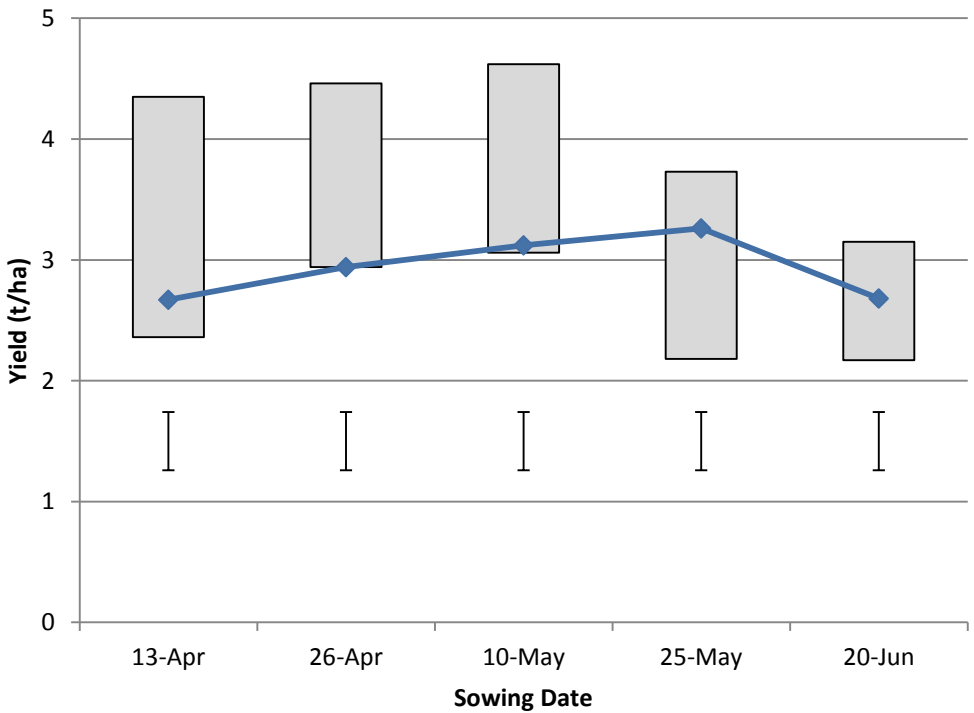
Mace

2016



2017



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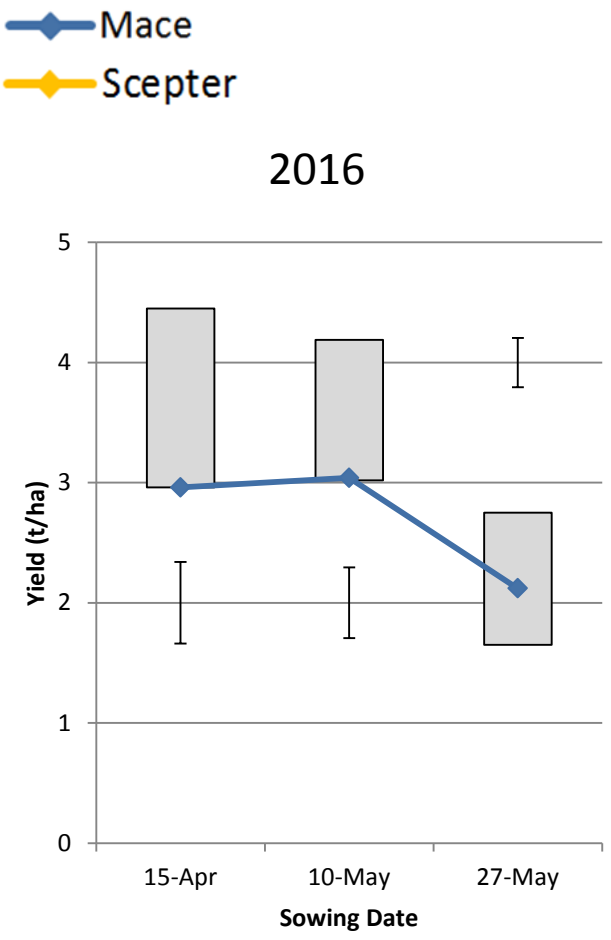

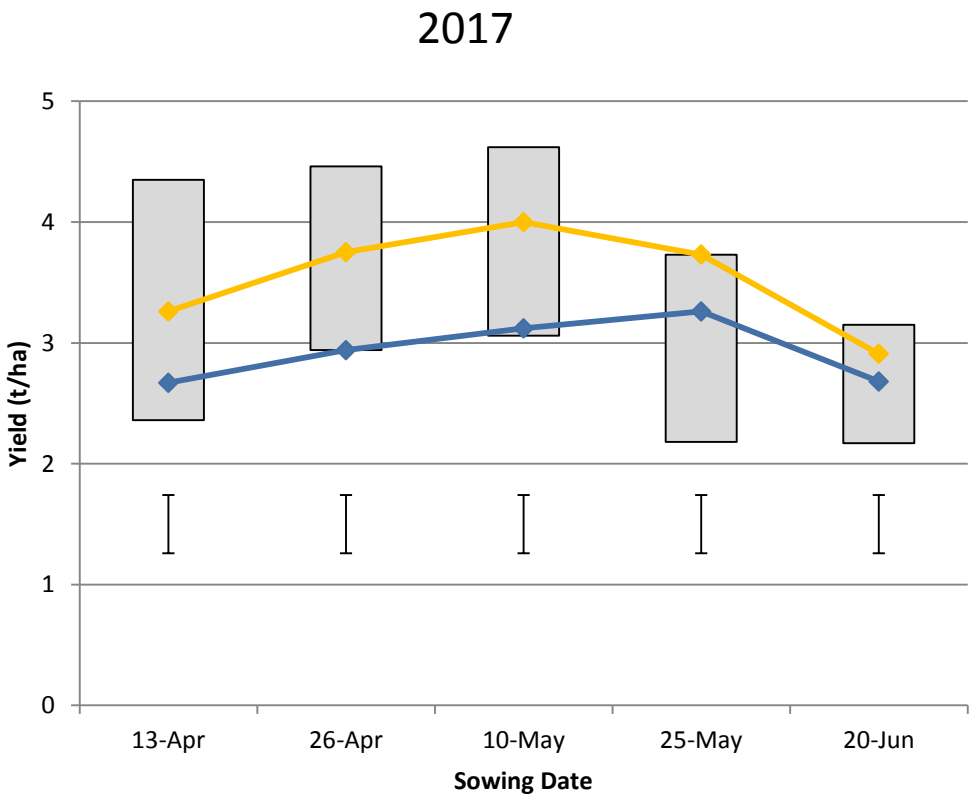

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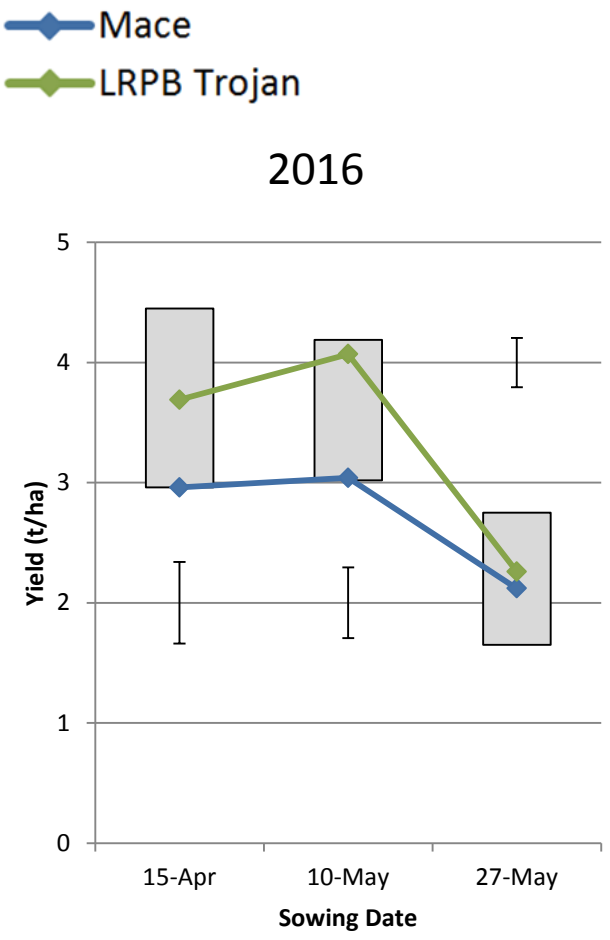

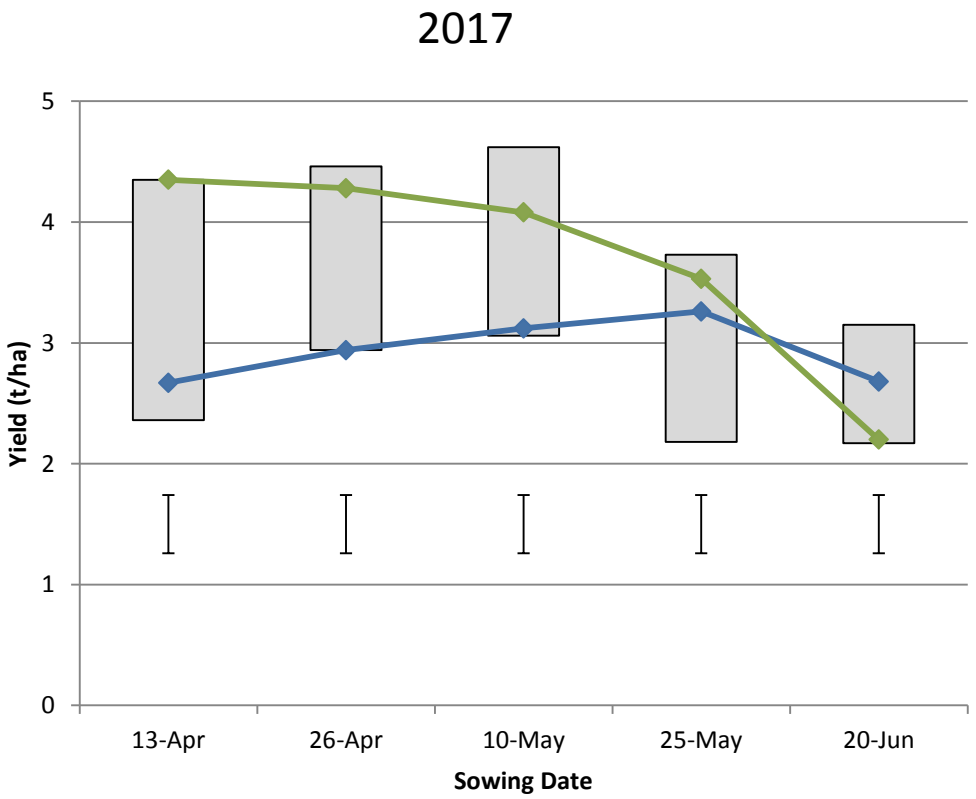

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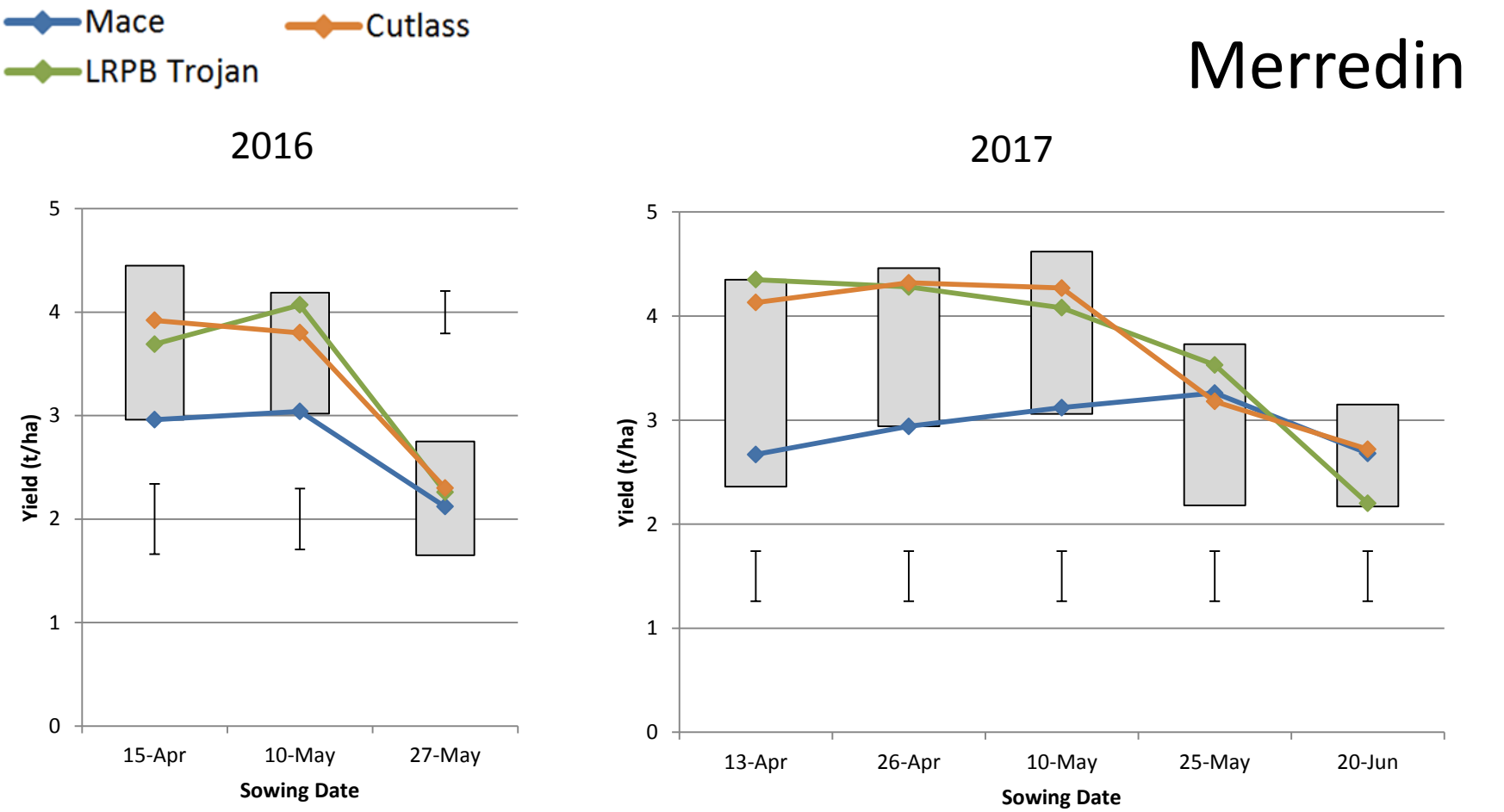

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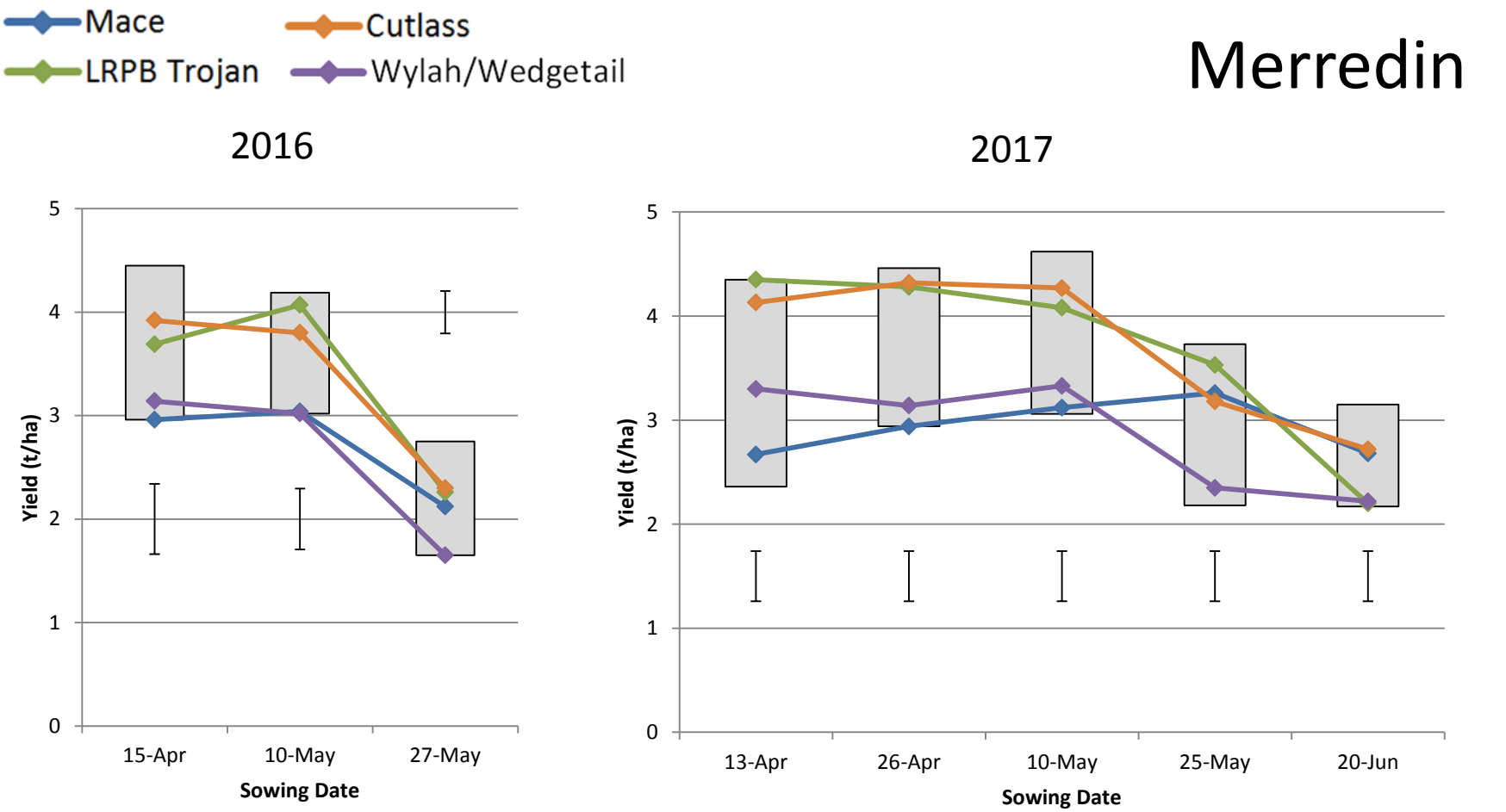

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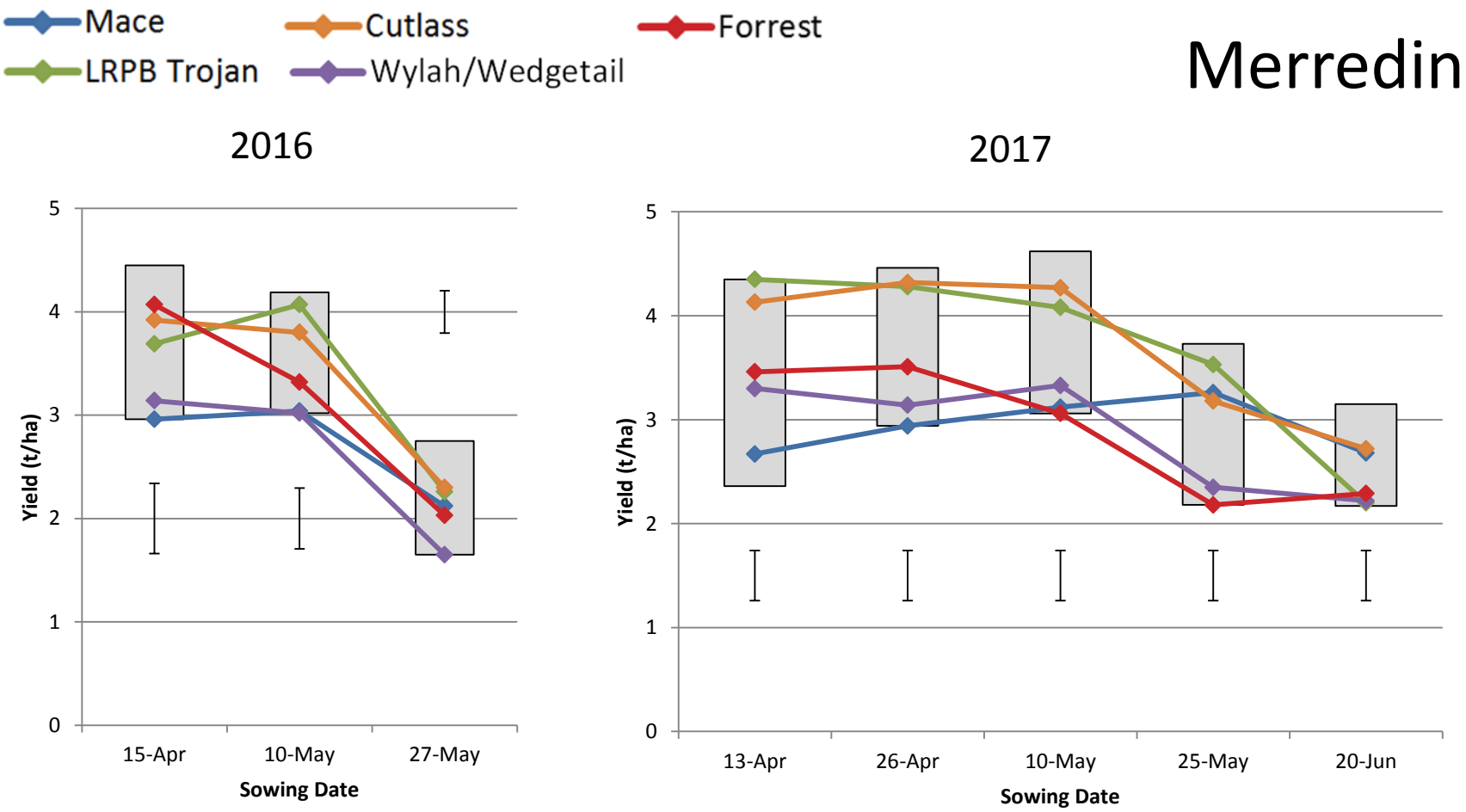

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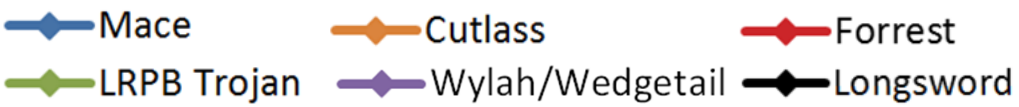
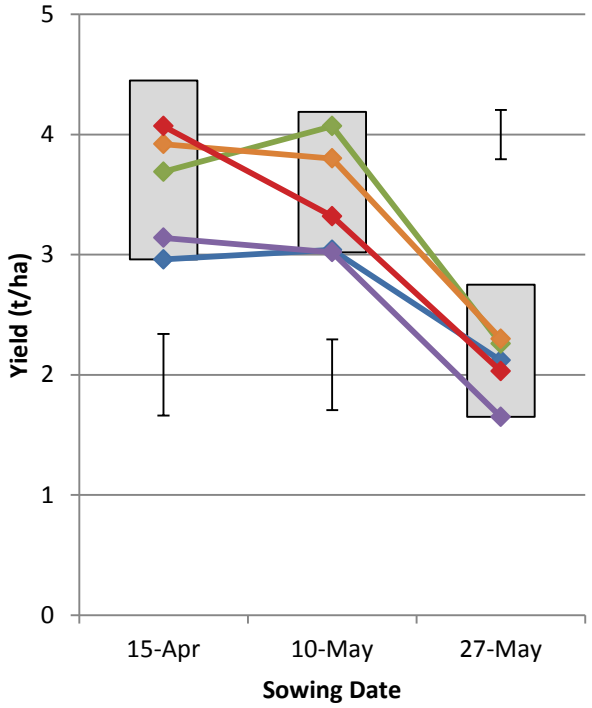


2016



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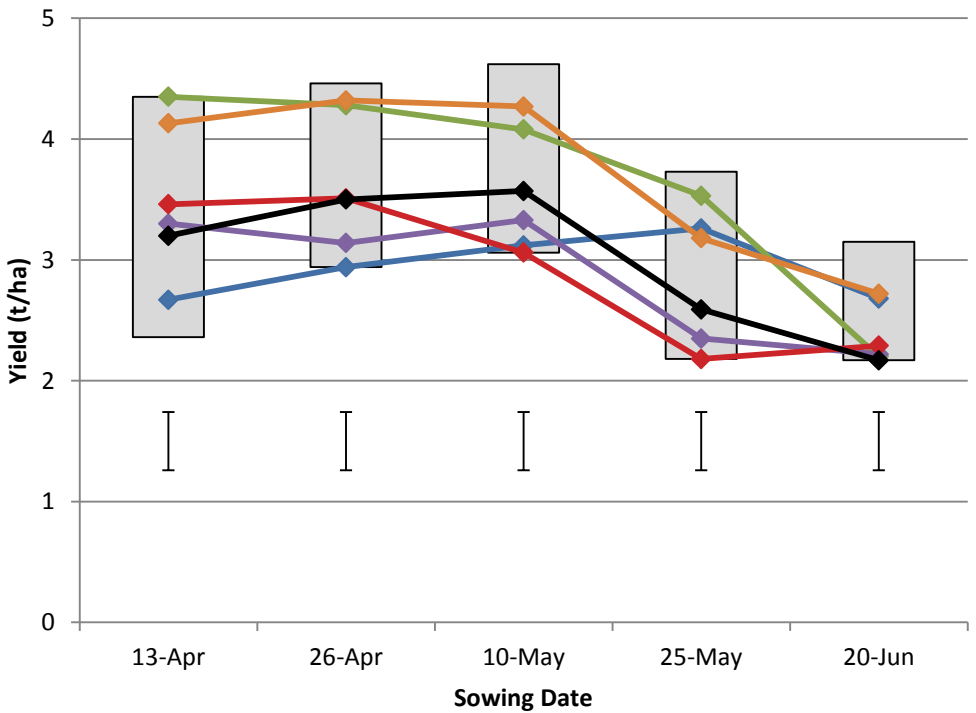
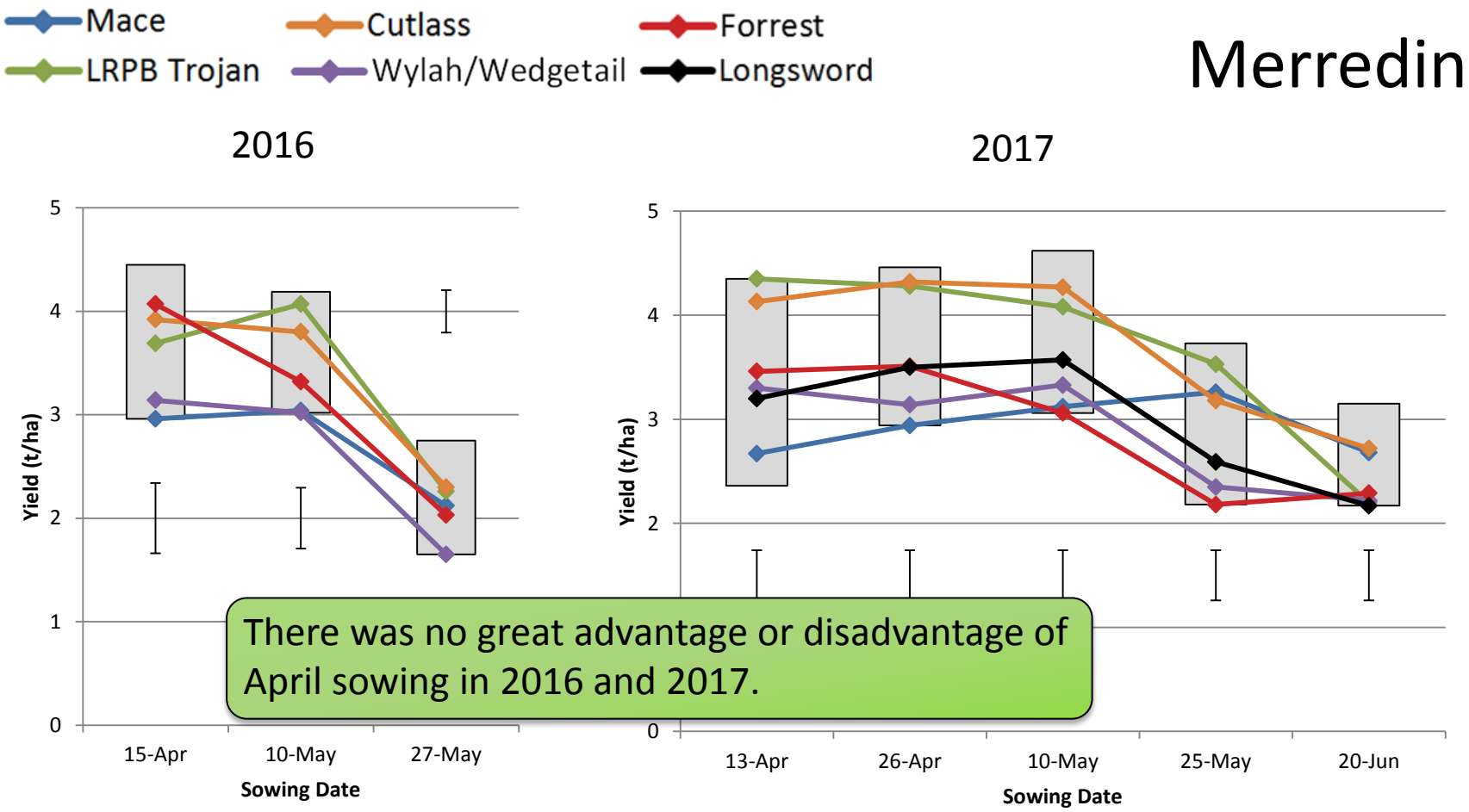


Error bar = LSD ($p<0.05$) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

Merredin

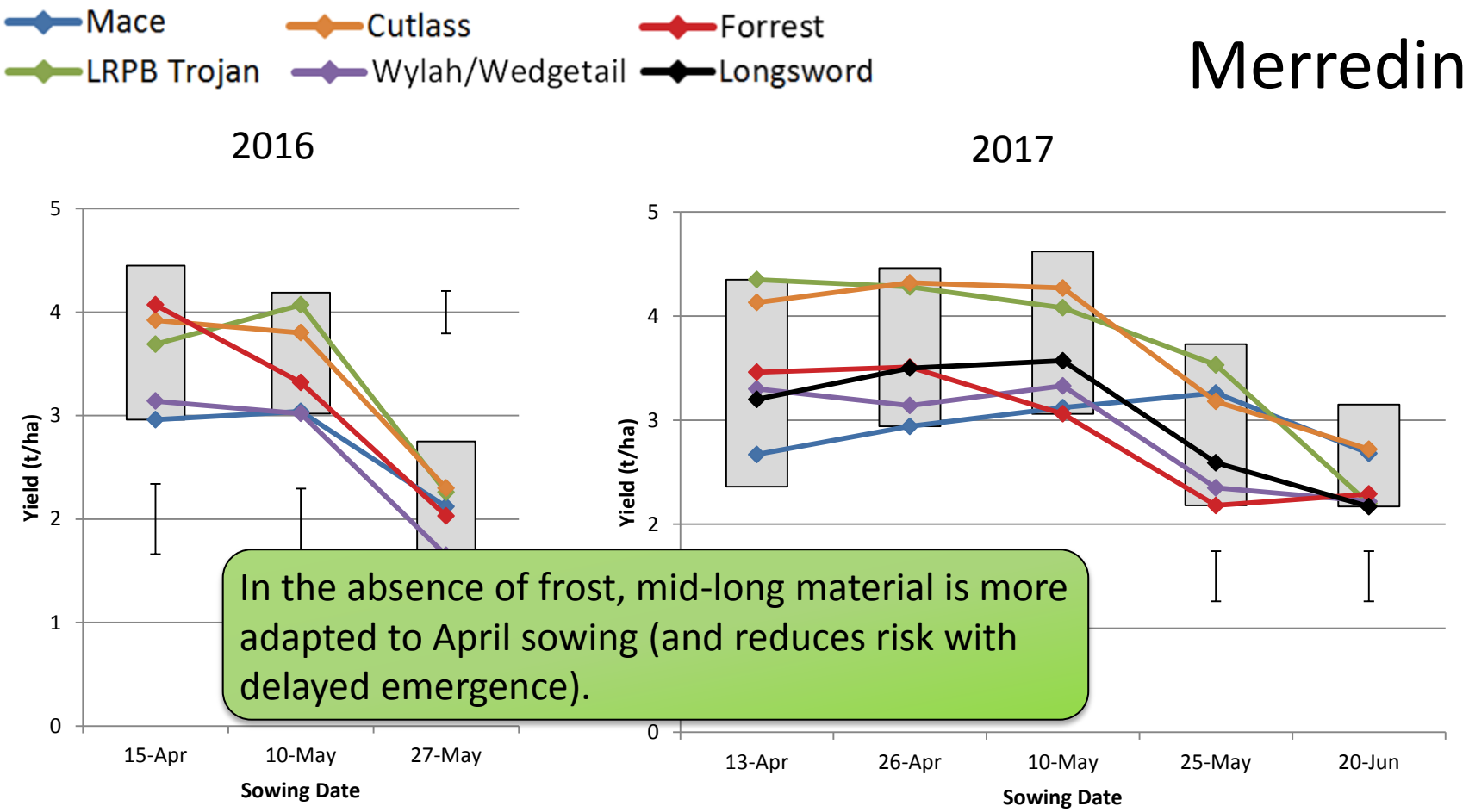


There was no great advantage or disadvantage of April sowing in 2016 and 2017.

Error bar = LSD ($p<0.05$) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

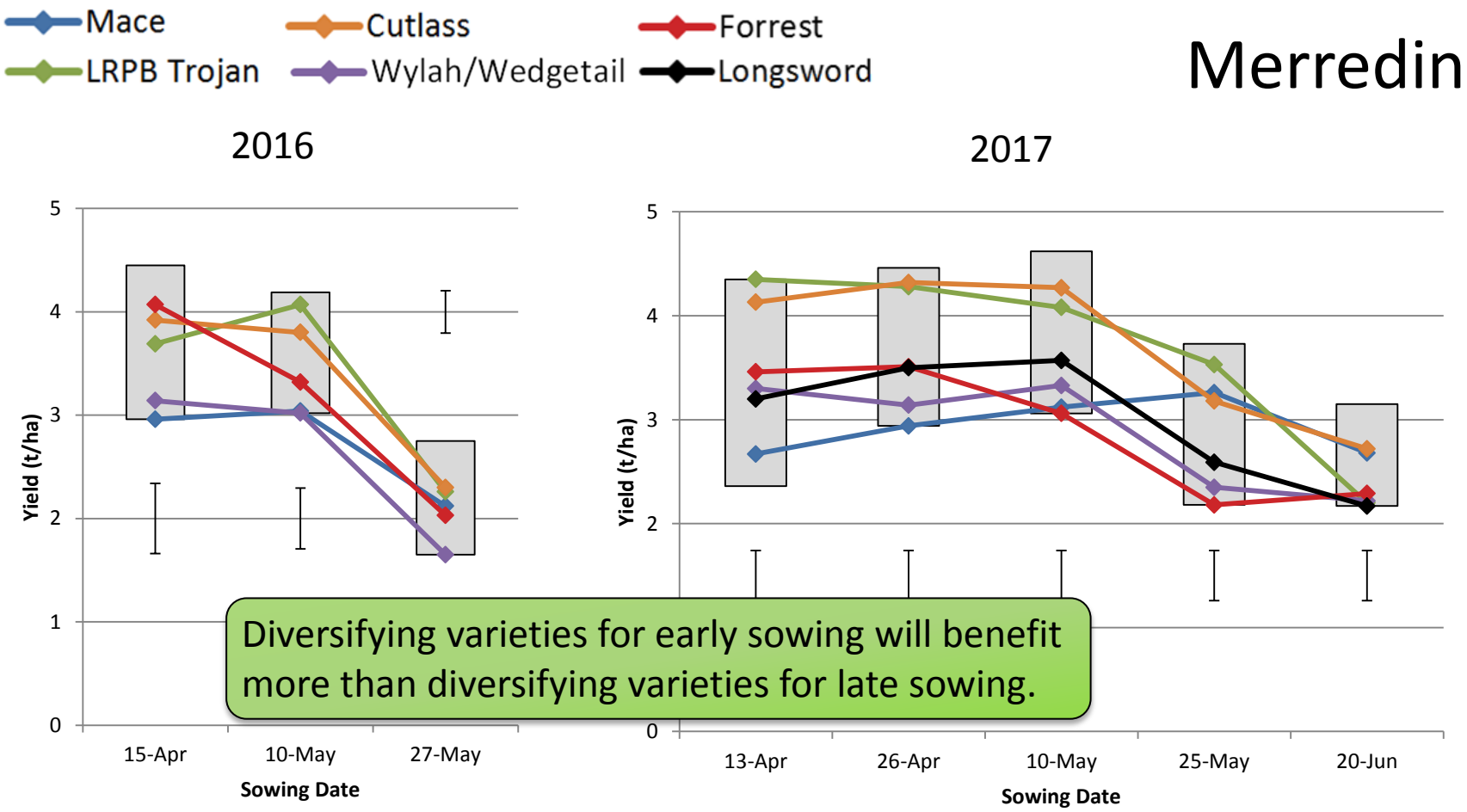
Merredin



Error bar = LSD ($p<0.05$) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

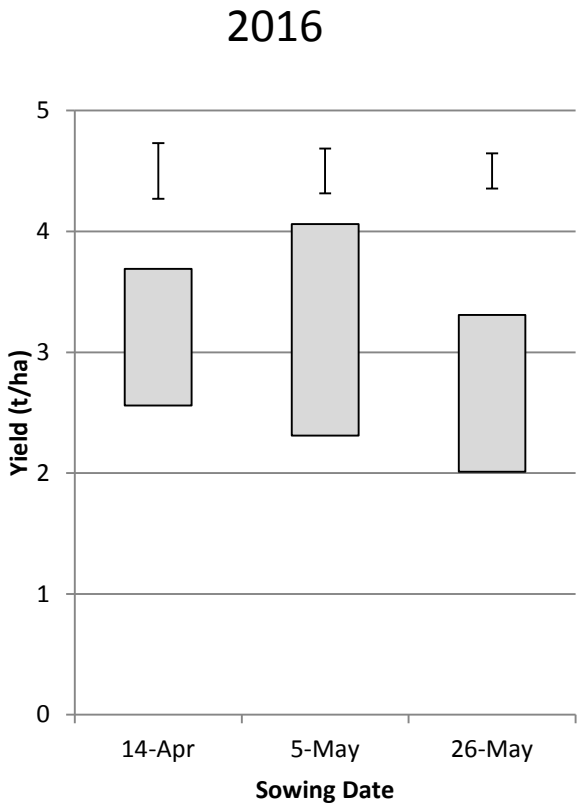
Merredin

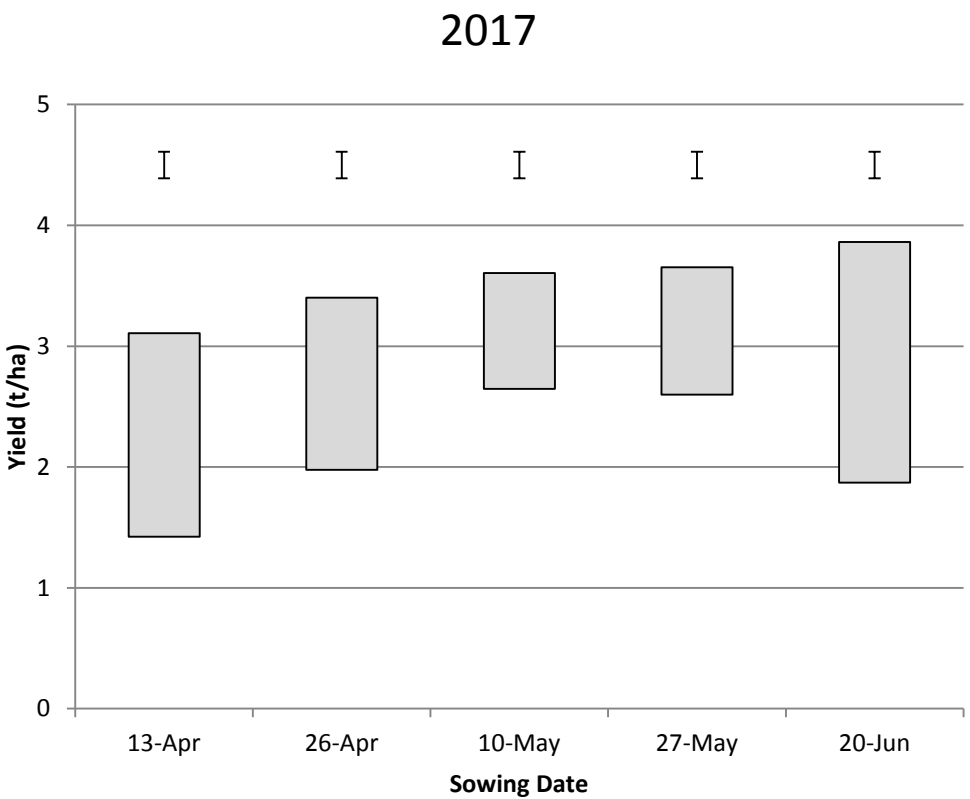


Error bar = LSD ($p<0.05$) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

Mullewa





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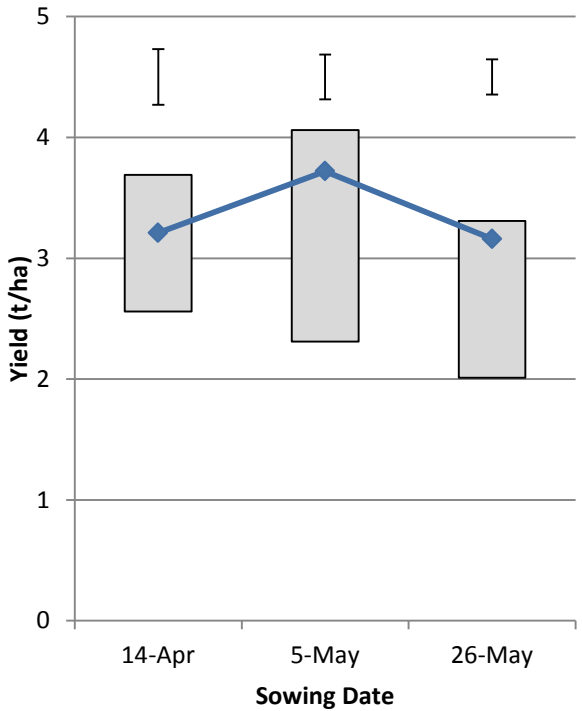
Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

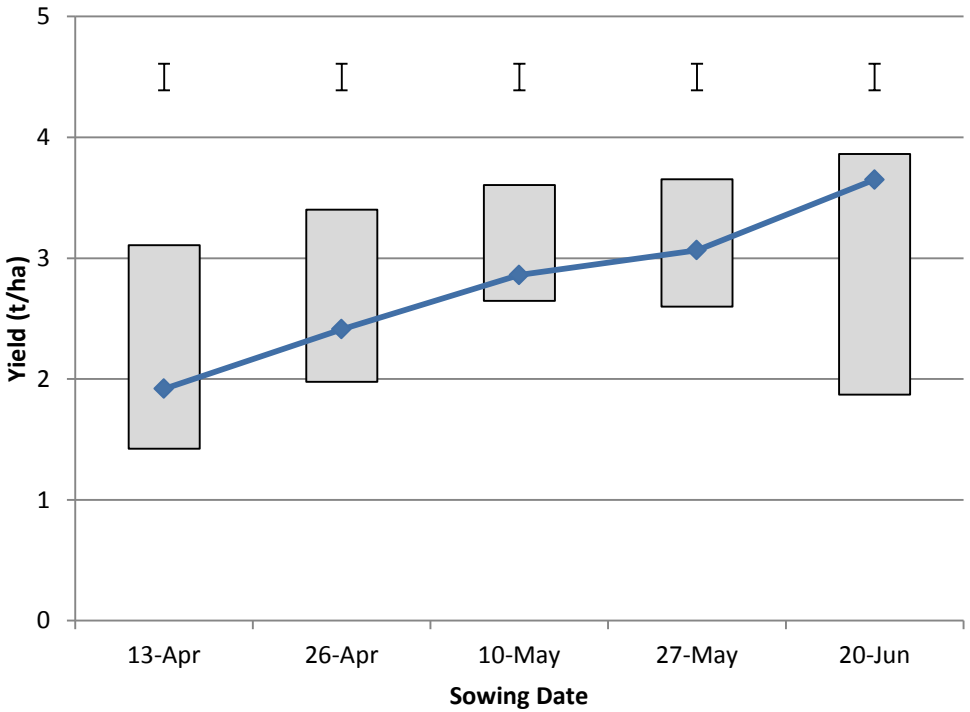
Mace

Mullewa

2016



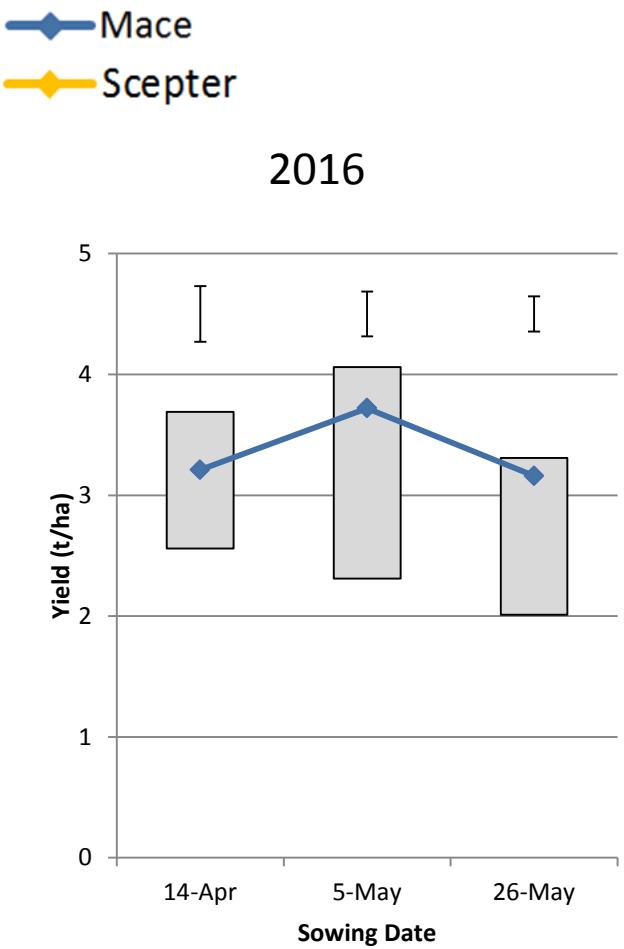
2017

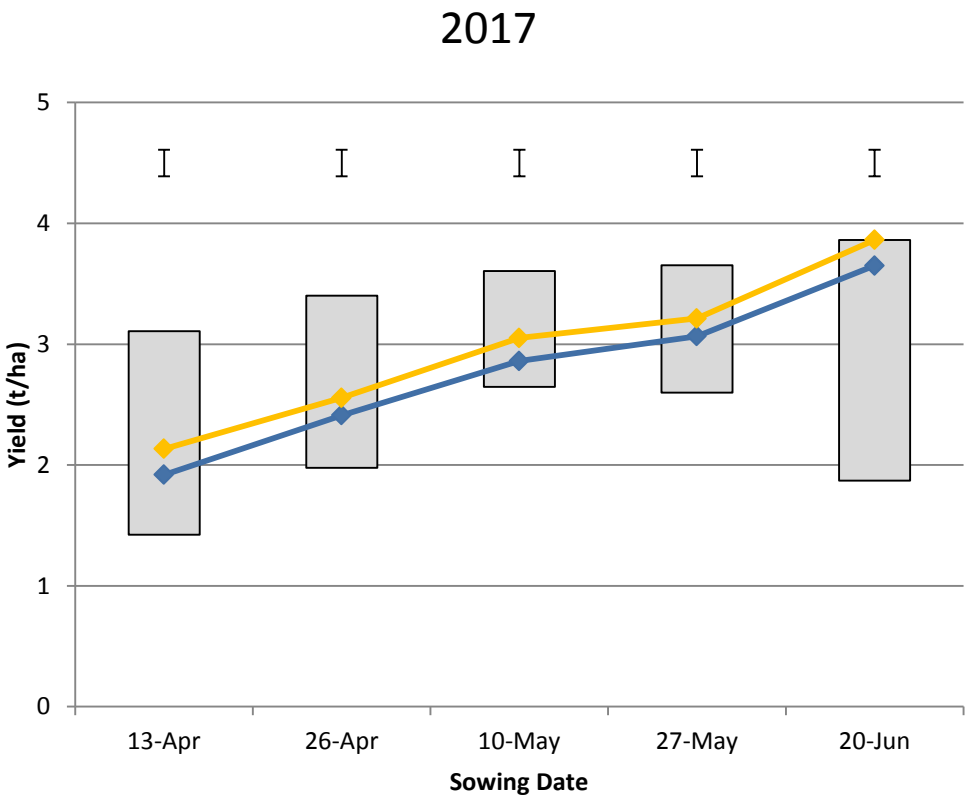


Error bar = LSD (p<0.05) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

Mullewa





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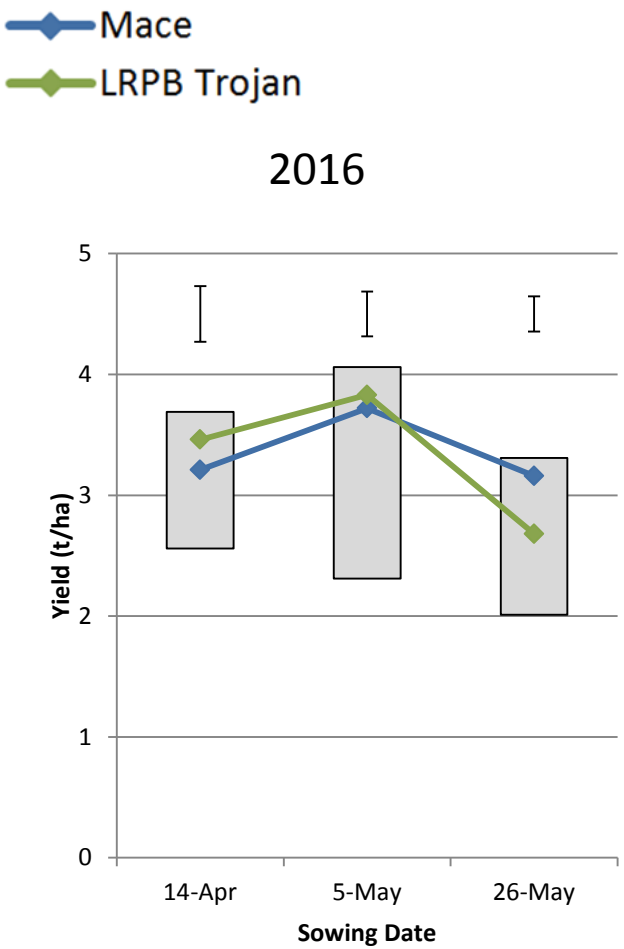
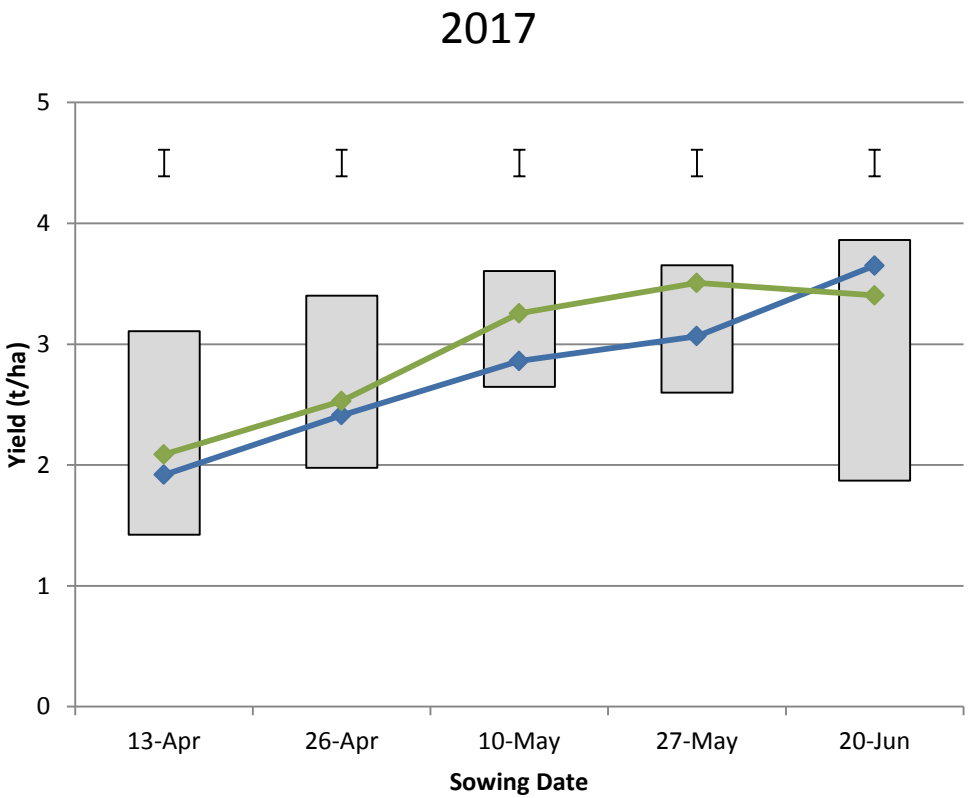
Mullewa





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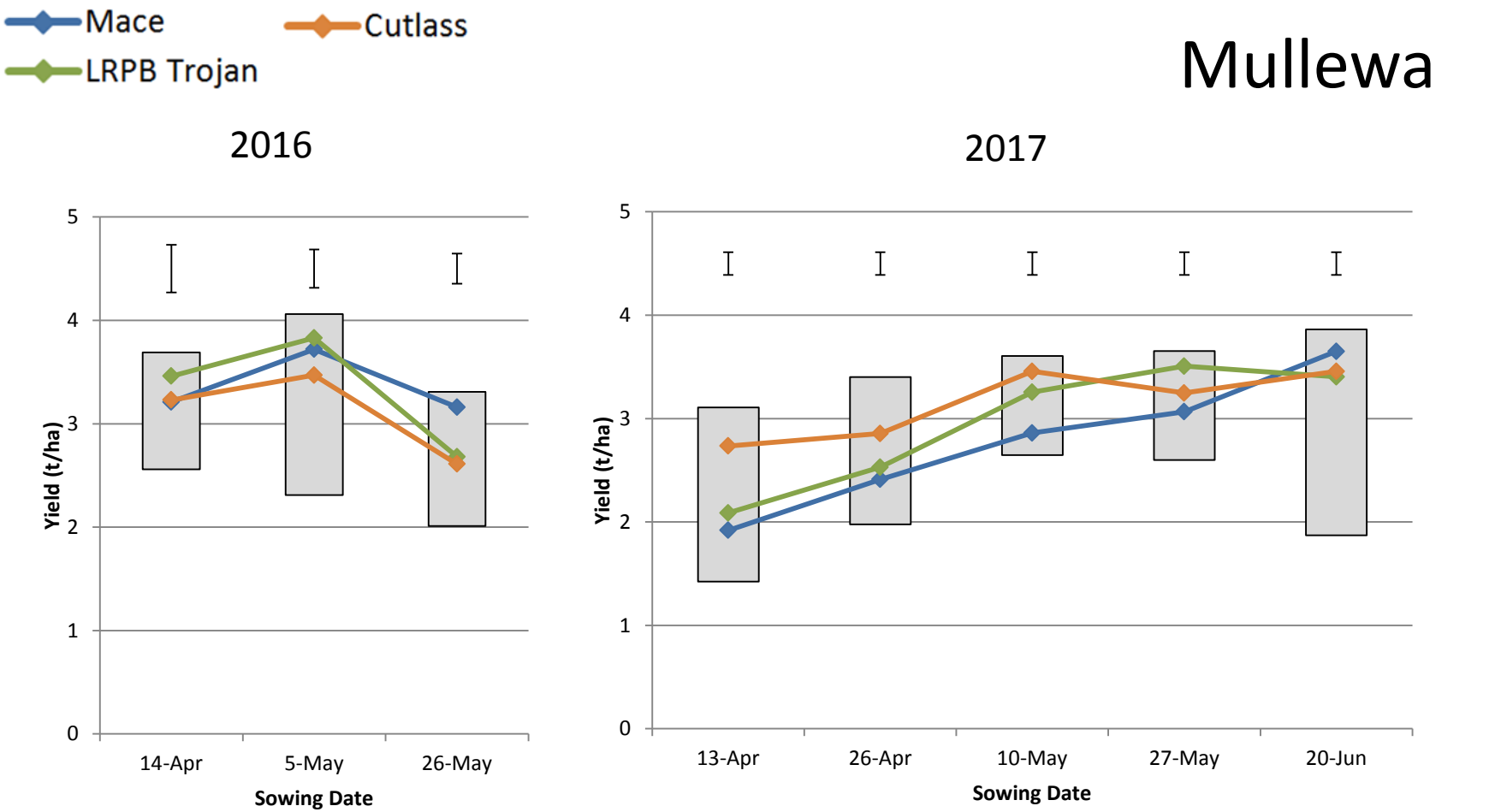
Mullewa



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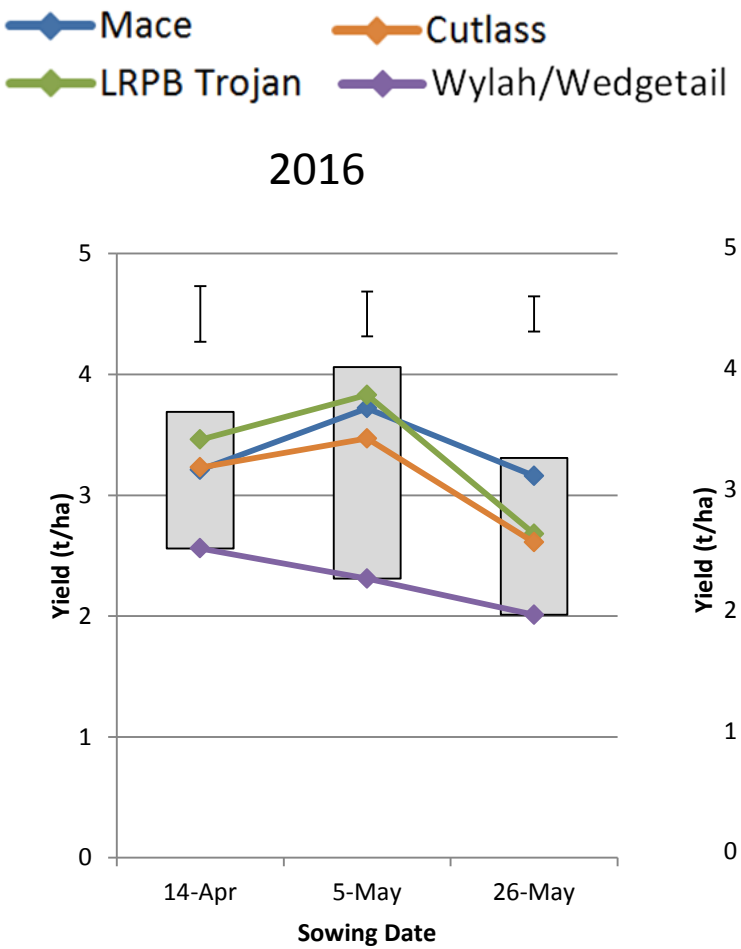

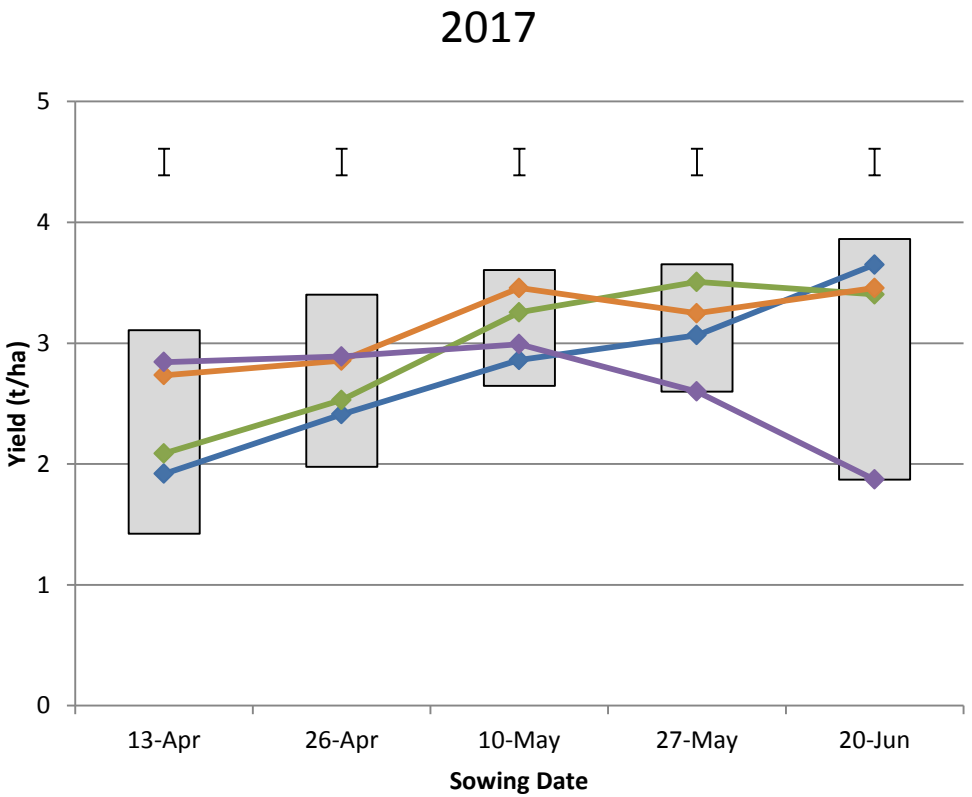

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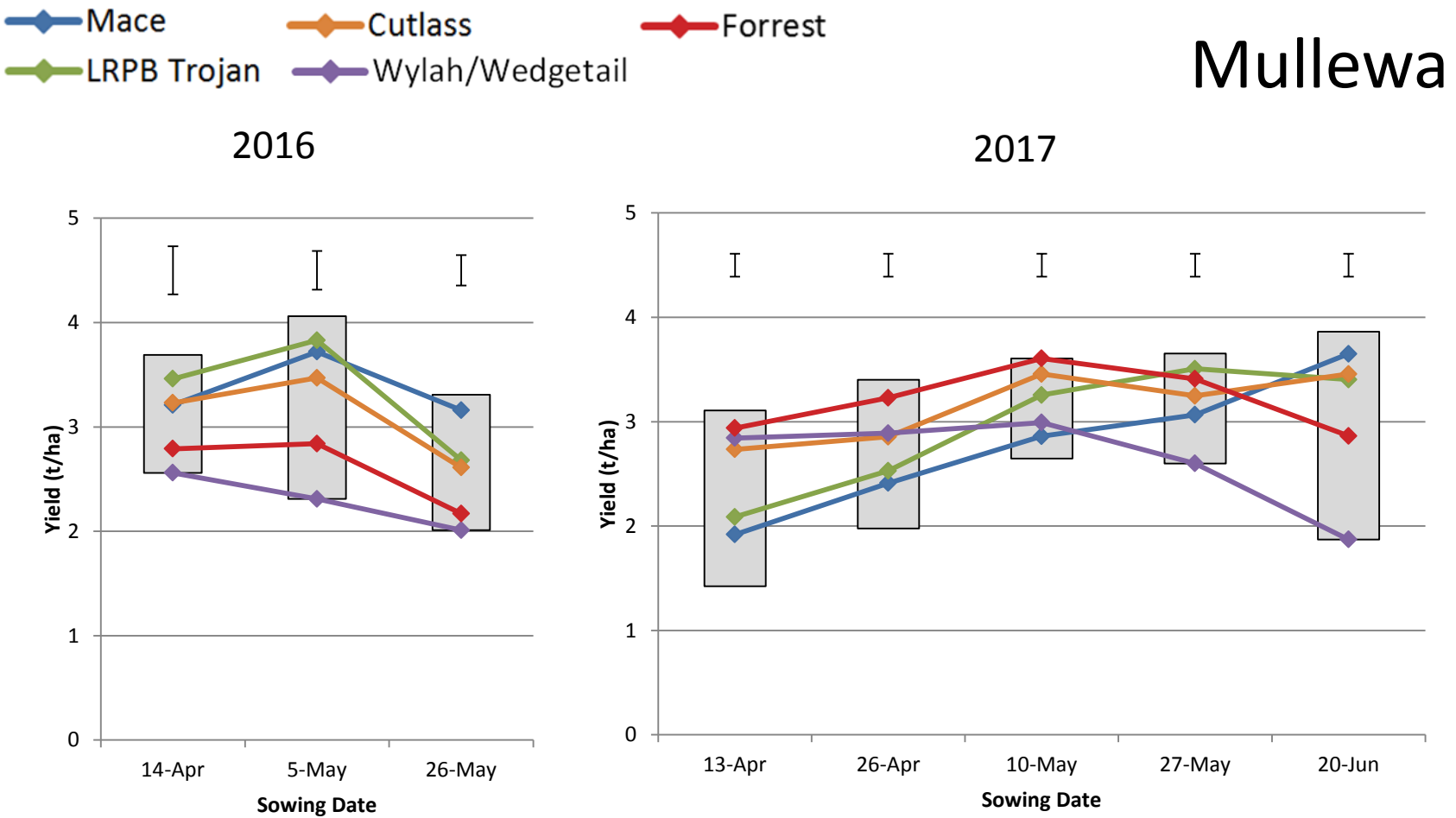

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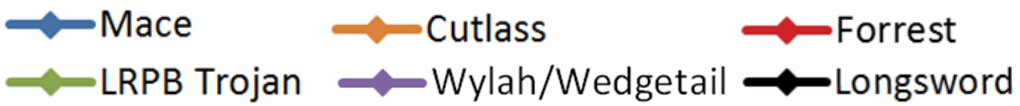

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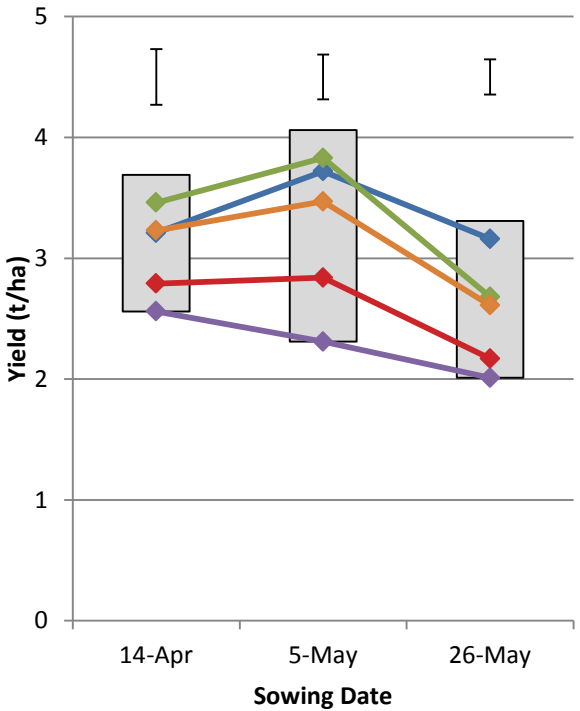

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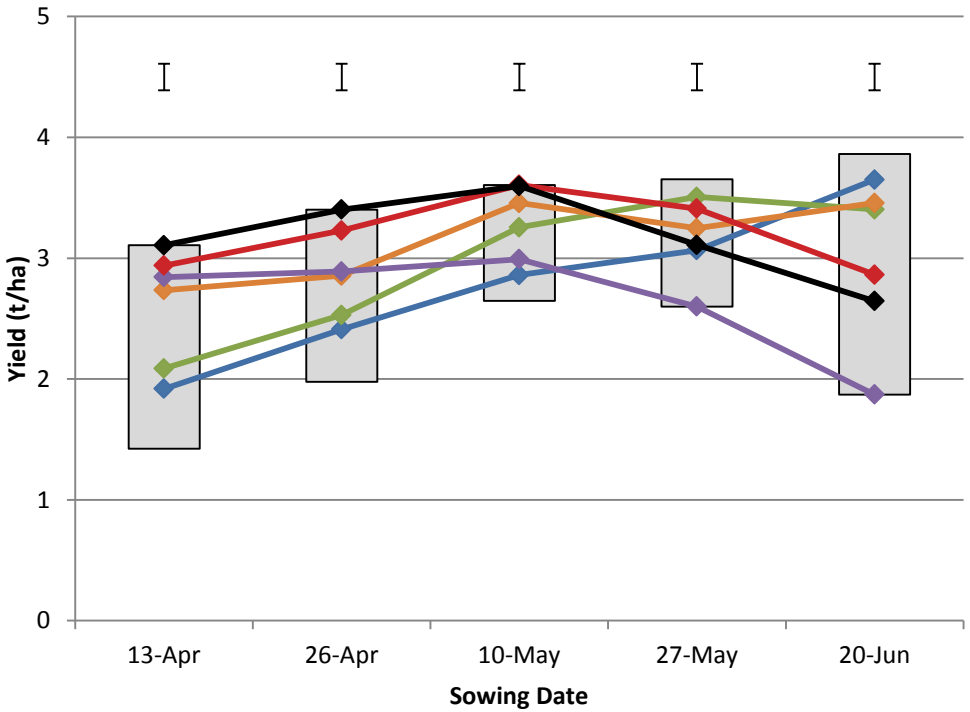

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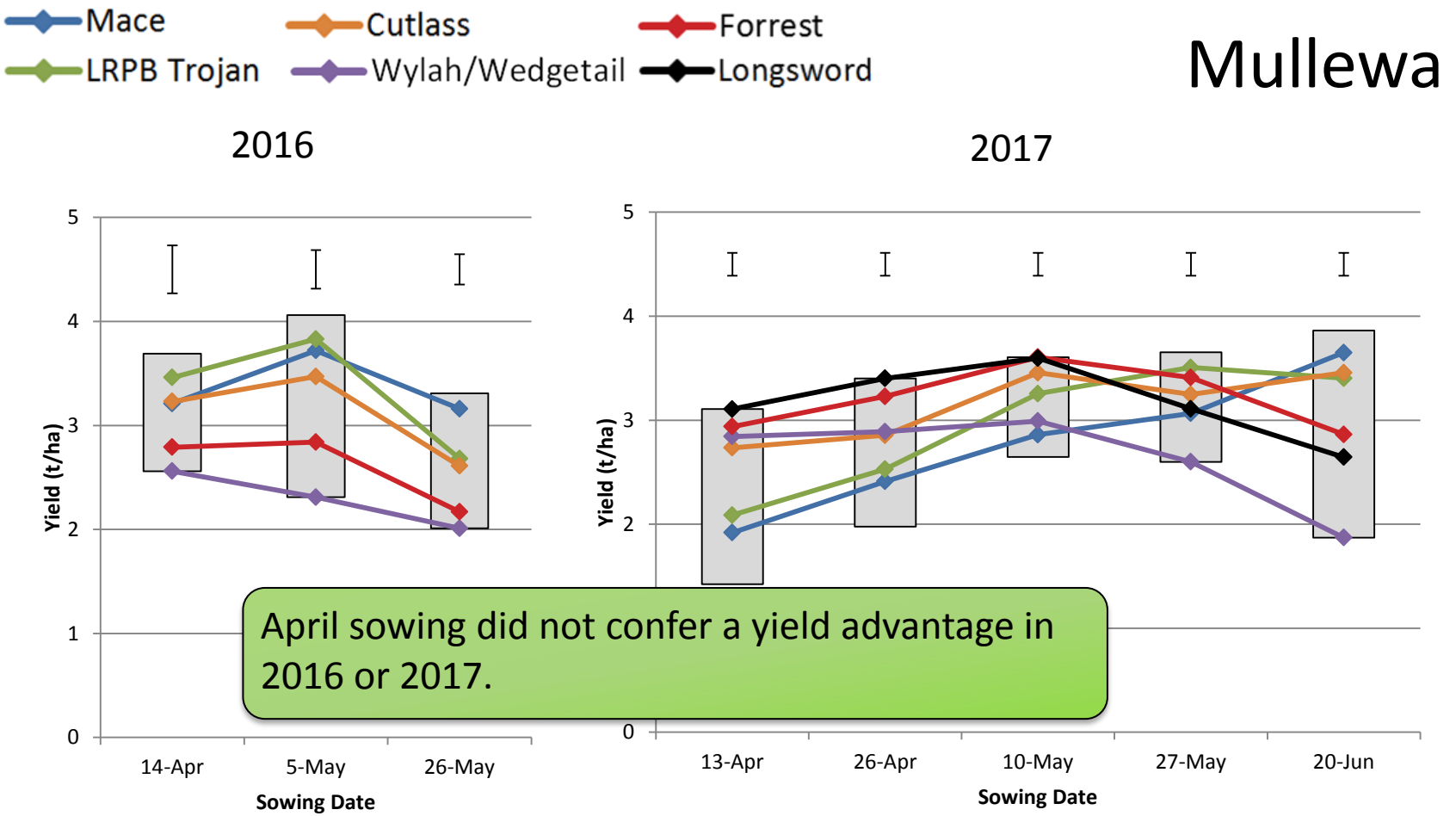
Mullewa



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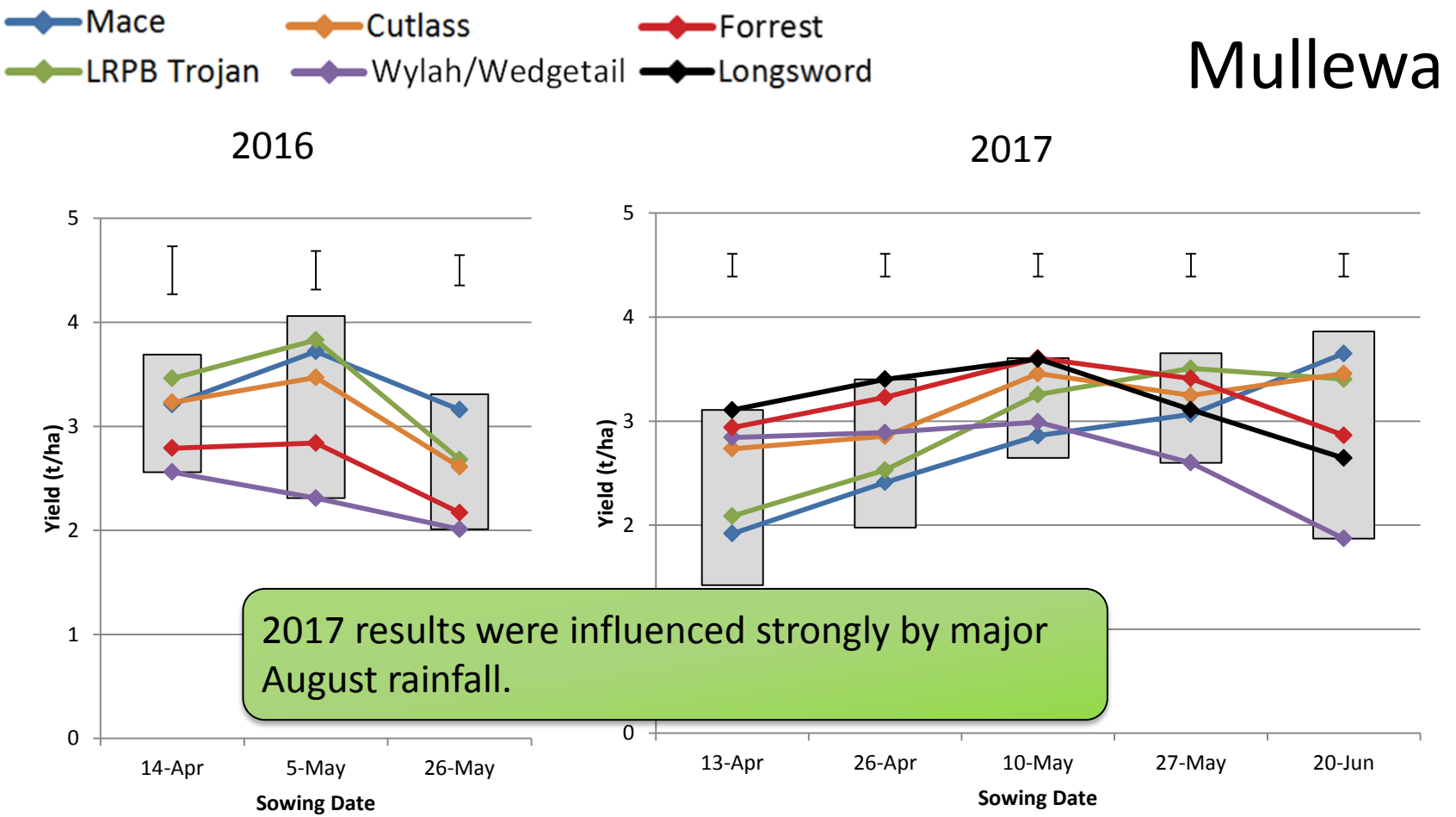
Mullewa



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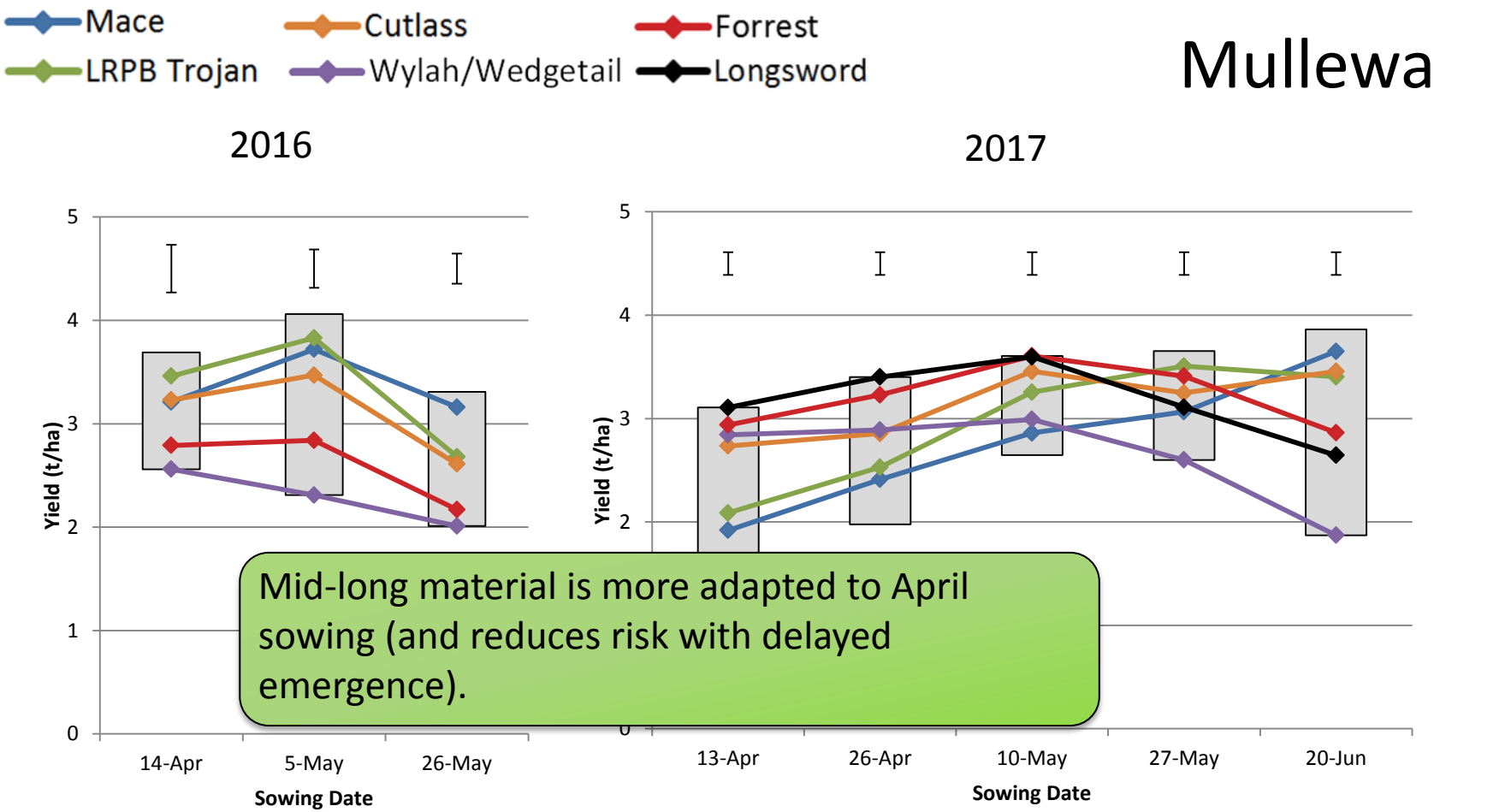
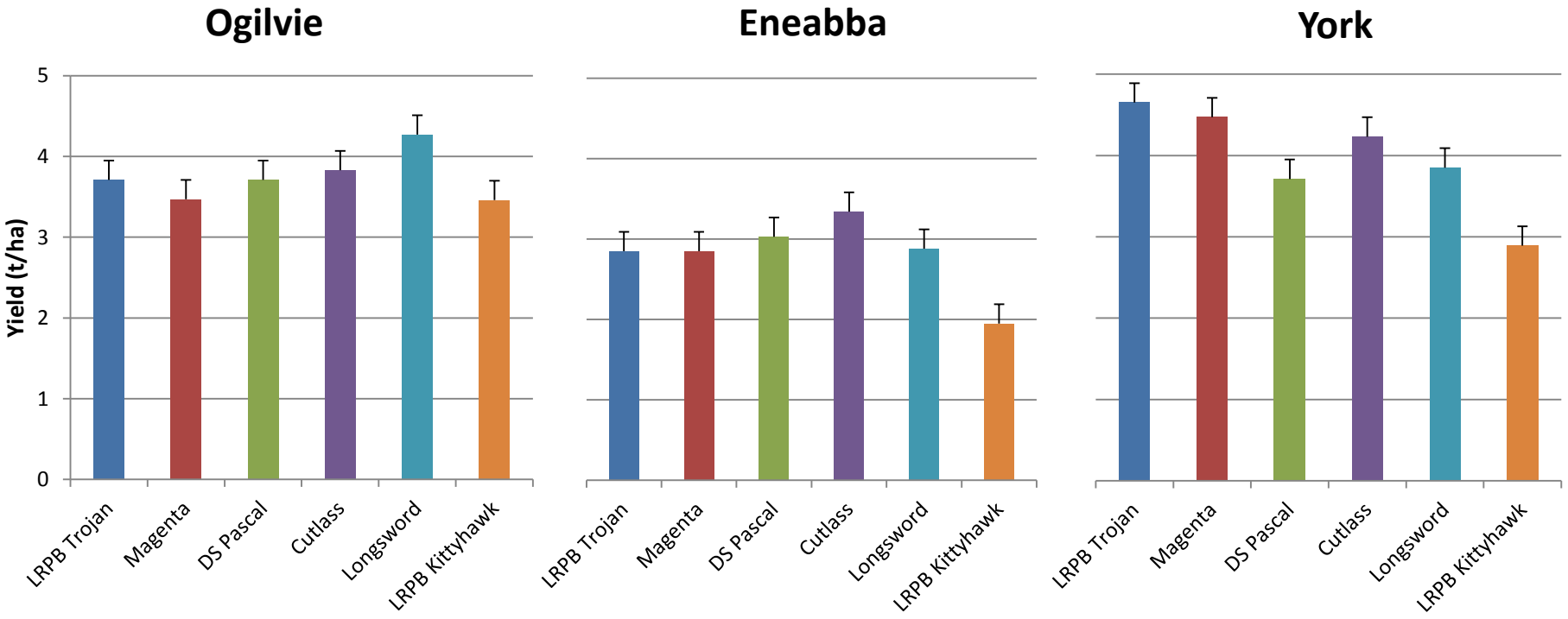
Mullewa



Error bar = LSD (p<0.05) for within TOS.

Source: B Shackley, J Curry, D Nicol, C Zaicou, DPIRD

WA early season NVT 2017

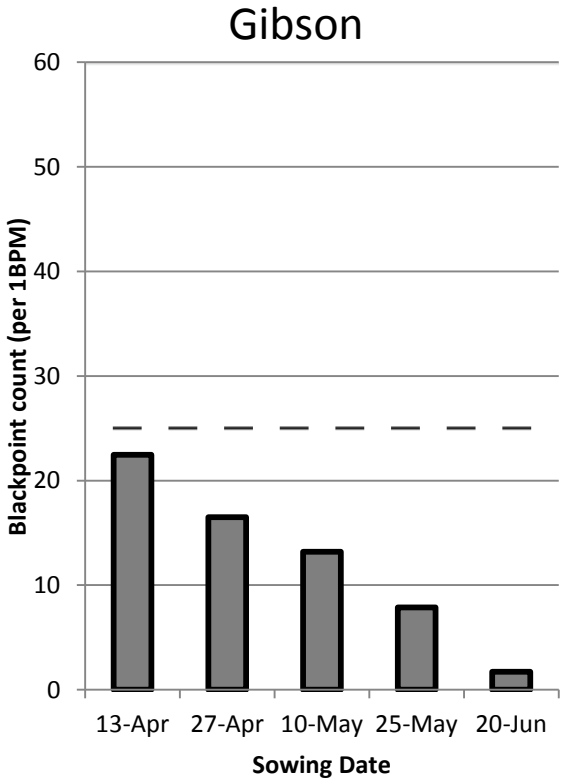


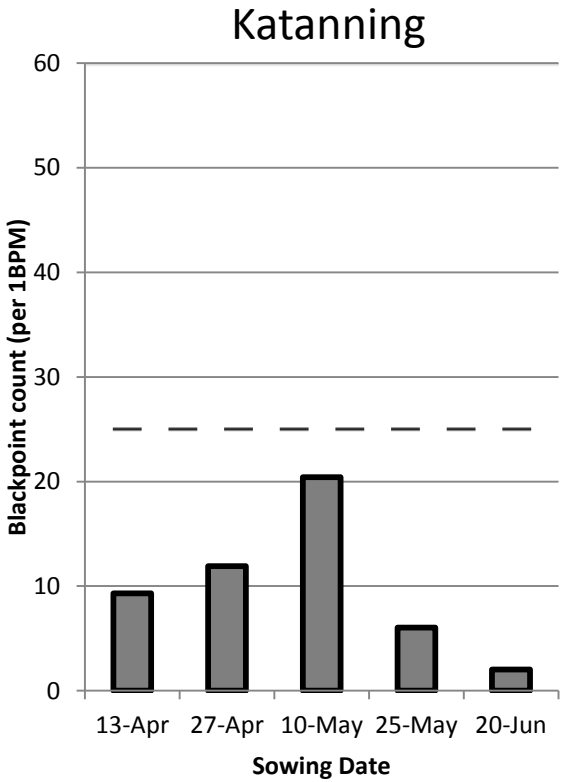
Sown 20th April
Irrigated 23rd April

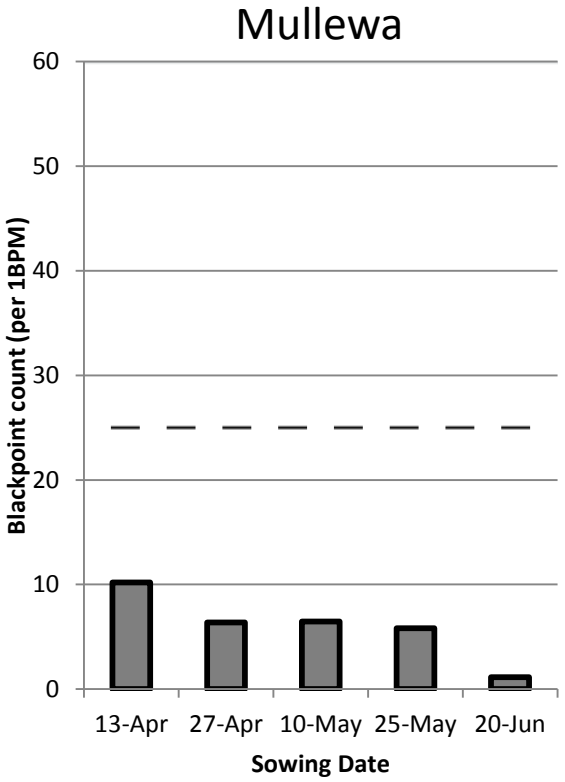
Sown 20th April
into moisture

Sown 24th April
into moisture

2017 Blackpoint

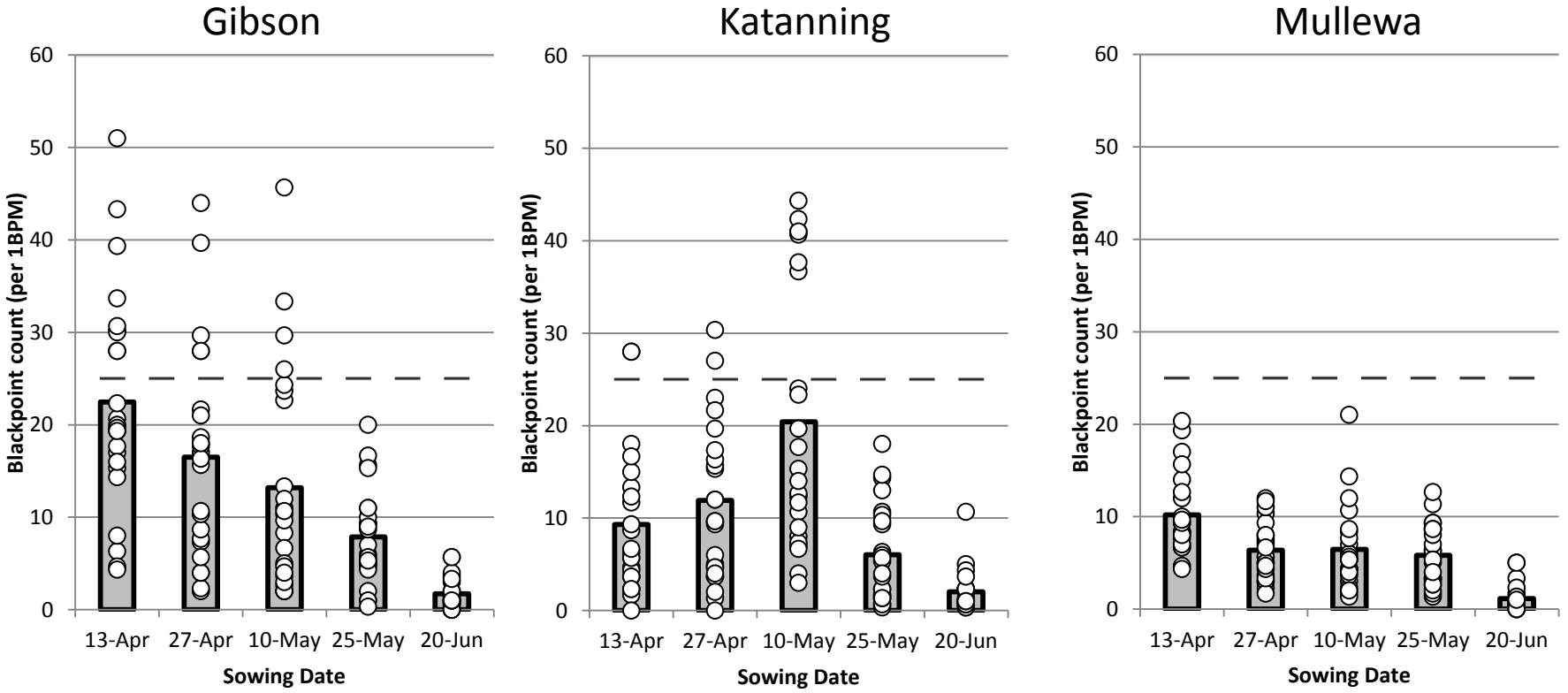






Source: DPIRD Wheat Agronomy

2017 Blackpoint



Source: DPIRD Wheat Agronomy

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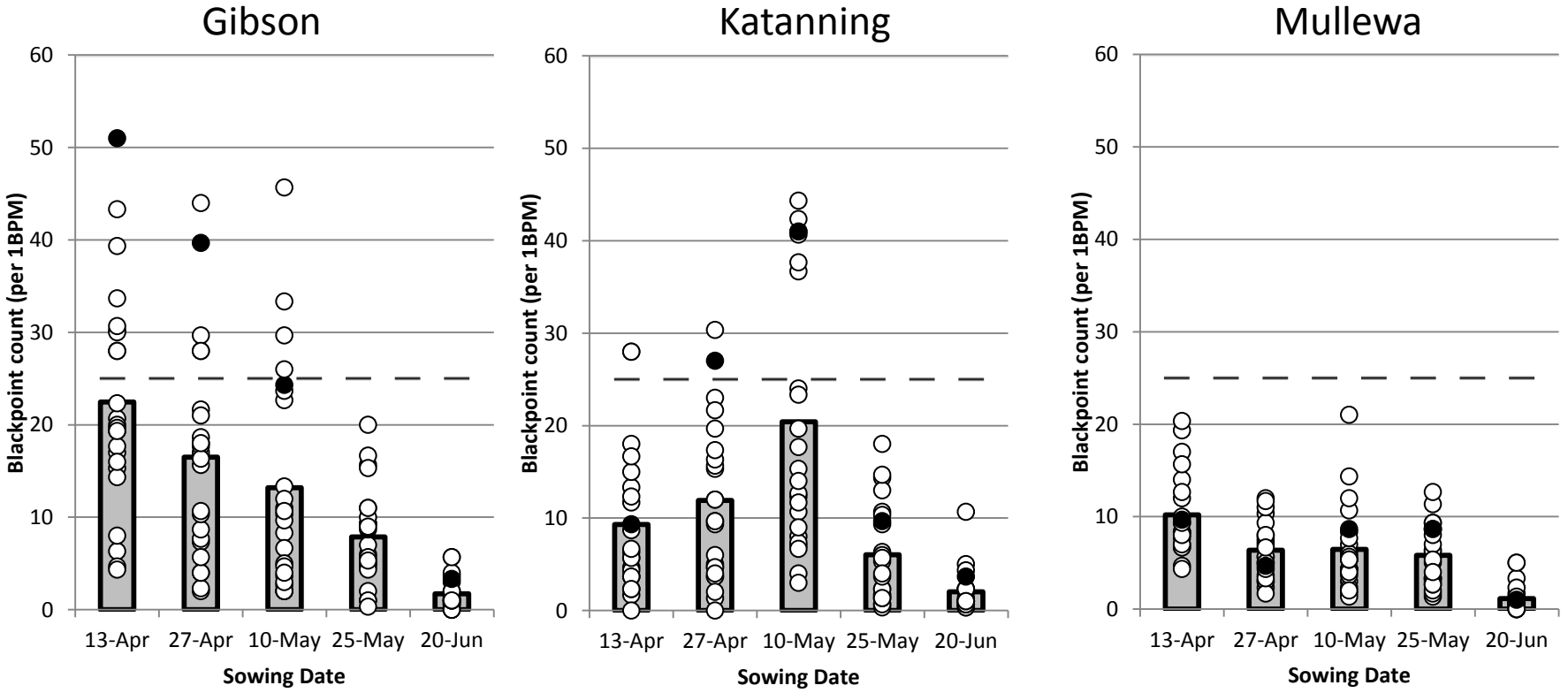

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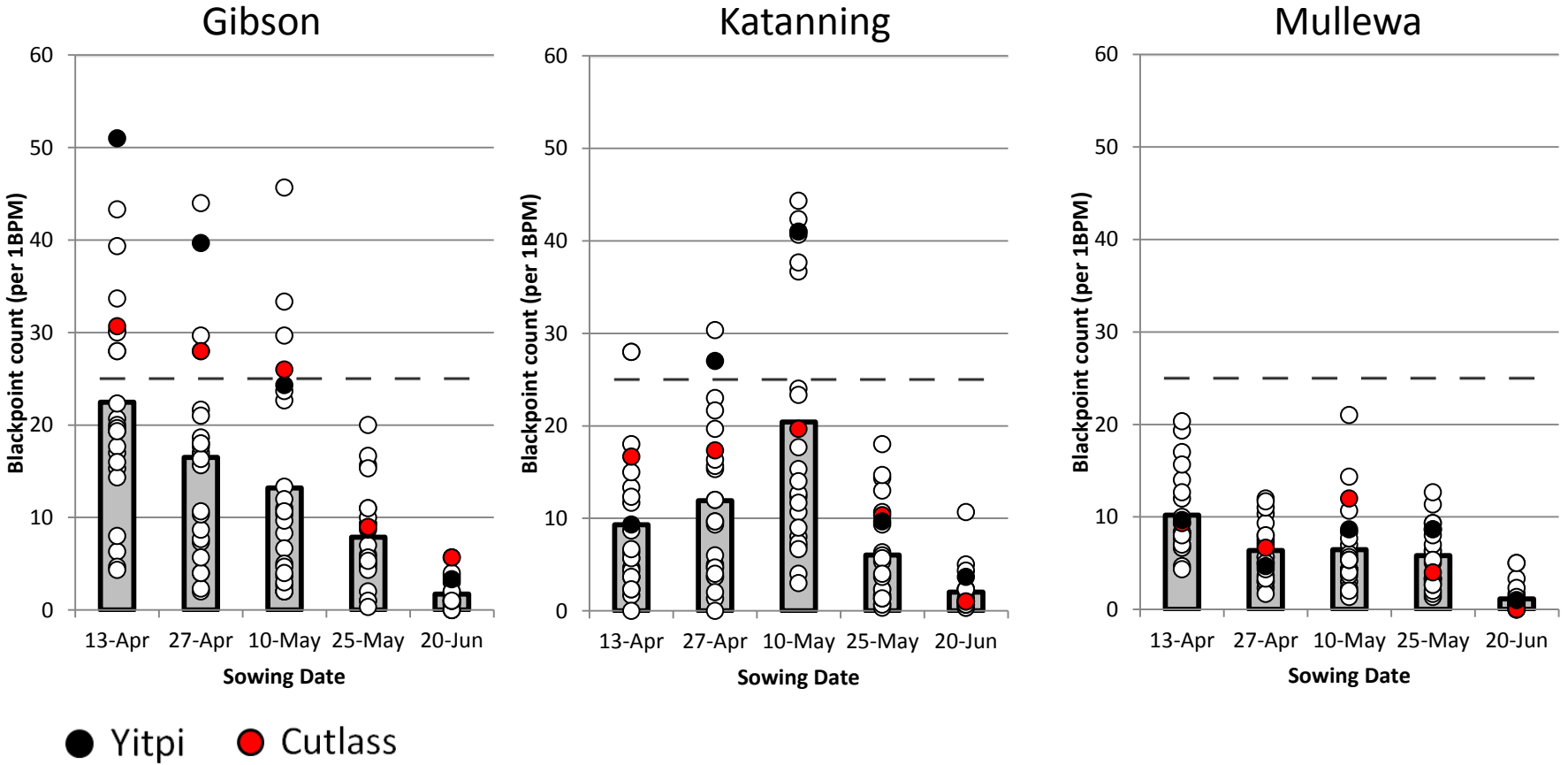
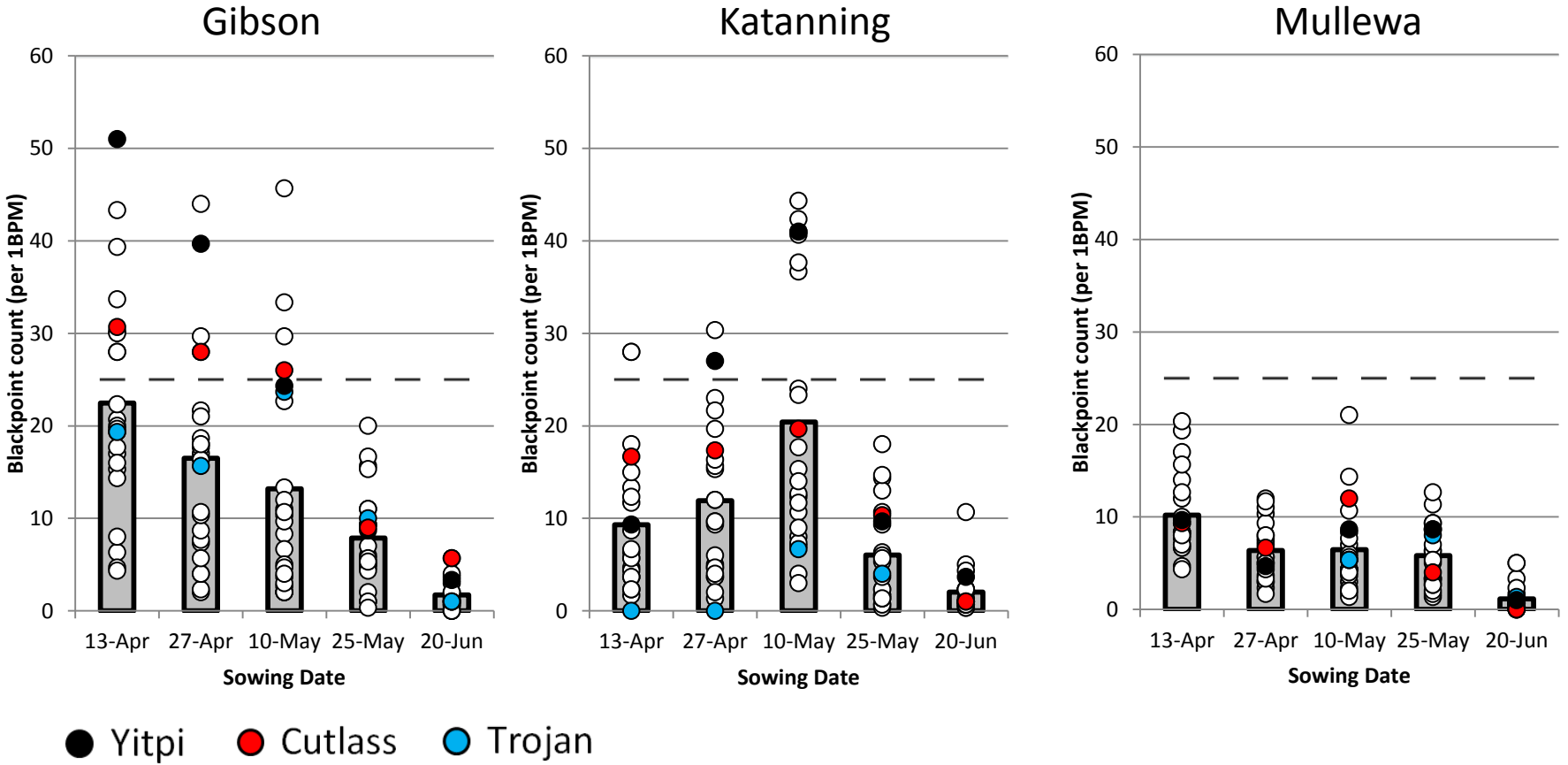
2017 Blackpoint



Source: DPIRD Wheat Agronomy

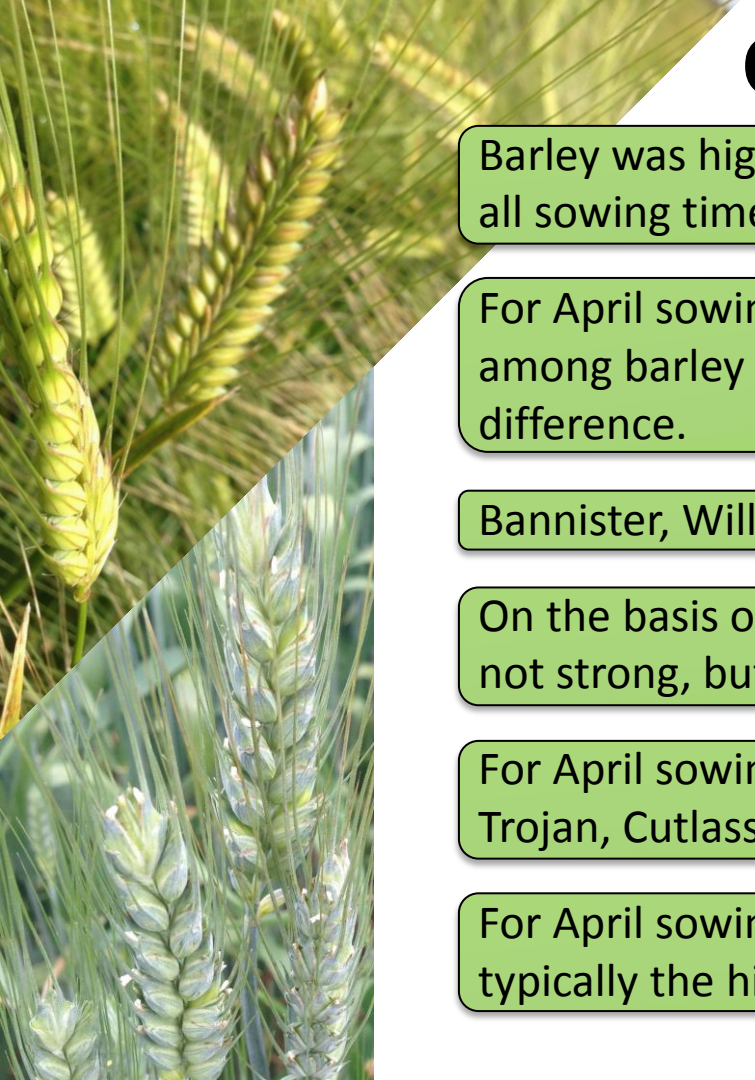
2017 Blackpoint



Source: DPIRD Wheat Agronomy

If I am deadset keen to sow wheat mid-April…

	Major constraint	What to grow	Example
Mullewa	Bolting/Grain filling drought	Mid long	Magenta, Cutlass
Merredin	Frost/grain filling drought	Mid long	Magenta, Trojan, Cutlass Very long spring or winter for frost prone areas
Katanning	Frost	Very long spring or winter	Forrest Longsword Other winter
Gibson	Quality (PHS, BP)	Mid-long	Trojan DS Pascal



Conclusions

Barley was higher yielding and more profitable than wheat and oats at all sowing times (mid-April to late May).

For April sowing, generally there was no significant difference in yield among barley varieties, although grade and quality risk provide points of difference.

Bannister, Williams and Kojonup are the best option for April sown oats.

On the basis of yield and quality, the case for sowing wheat in April is not strong, but varies with location (frost, blackpoint etc.).

For April sowing in low frost risk areas, sow a mid-long (e.g. Magenta, Trojan, Cutlass, Pascal) with favourable agronomics (disease, BP, PHS).

For April sowing in frost prone areas, long spring and winter wheats are typically the highest yielding and give best chance to miss frosts.

Thank you

DPIRD/GRDC co-funded agronomy projects:

DAW00227 – Tactical break crop agronomy in Western Australia
DAW00249 – Tactical wheat agronomy for the West
DAW00224 – Management of barley and barley cultivars in Western Australia

Acknowledgements:
ConsultAg – cost and grain price for gross margin analysis.
DPIRD's Technical Support Units – Esperance, Geraldton, Katanning, Merredin, Northam.
Technical officers – Barley, Break Crops and Wheat Agronomy projects

GRDC UPDATES

2017 barley phenology

17NO21	Muresk		
	TOS1	TOS2	TOS3
Date_sowing	13-Apr	4-May	25-May
Compass	8-Aug	20-Aug	27-Aug
La Trobe	8-Aug	29-Aug	30-Aug
Flinders	9-Aug	20-Aug	28-Aug
Granger	10-Aug	22-Aug	31-Aug
Rosalind	10-Aug	16-Aug	2-Sep
Urambie	8-Aug	27-Aug	11-Sep

17ES17	Lake Grace		
	TOS1	TOS2	TOS3
Date_sowing	13-Apr	4-May	25-May
Compass	20-Jul	21-Aug	6-Sep
La Trobe	18-Jul	22-Aug	5-Sep
Flinders	30-Jul	28-Aug	14-Sep
Granger	18-Jul	27-Aug	9-Sep
Rosalind	26-Jun	18-Aug	10-Sep
Urambie	25-Aug	2-Sep	14-Sep

17ES21	Esperance		
	TOS1	TOS2	TOS3
Date_sowing	13-Apr	4-May	25-May
Compass	19-Jul	9-Aug	26-Aug
La Trobe	12-Jul	14-Aug	25-Aug
Flinders	30-Jul	16-Aug	1-Sep
Granger	20-Jul	12-Aug	28-Aug
Rosalind	24-Jun	2-Aug	19-Aug
Urambie	10-Aug	20-Aug	3-Sep

GRDC UPDATES