GRDC
Grains Research Update

Hybrid vs OP canola: which one wins and where?

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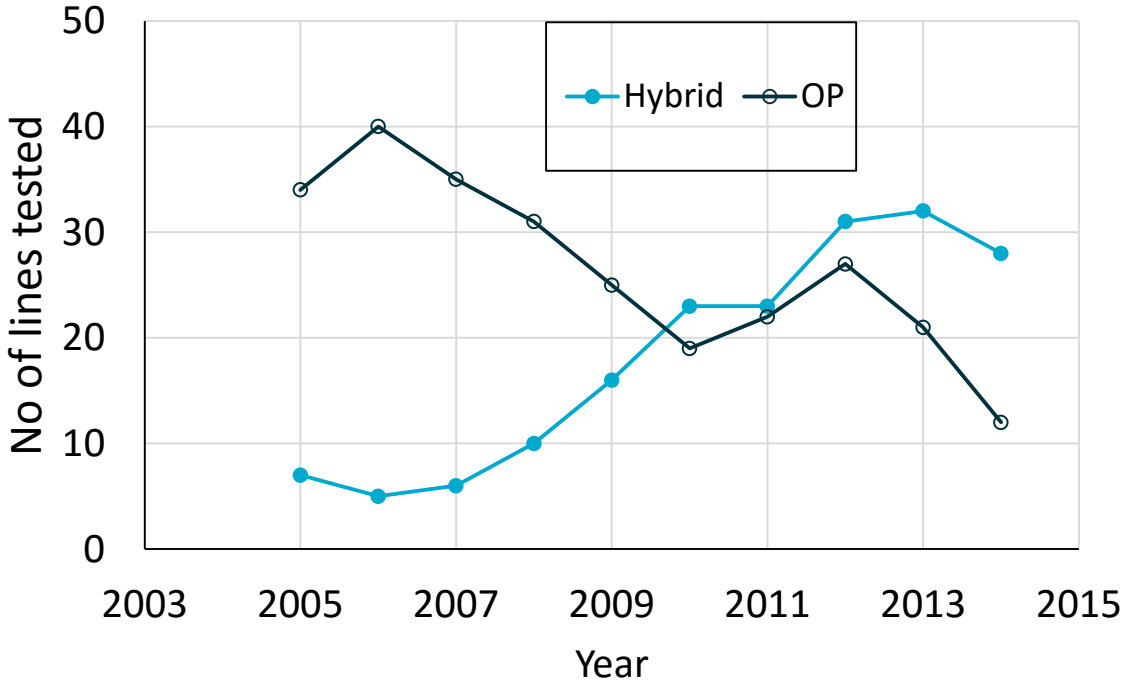
Background



- Area: 1.8 – 2 million ha
- Production: 3 million tonnes annually.
- Open-pollinated TT dominates the industry (80% OP TT in WA).
- Breeding activity: hybrid breeding increase dramatically and OP drops off.
- Disconnection between breeders and growers

Questions to answer

- How does hybrid and OP canola perform in different environment (low, medium and high rainfall zones)?
  - Which one wins in terms of yield?
- Hybrids vs OPs: which one make more money?
- Where and at what yield should you to grow hybrid and OP canola?
- Do we still need OP TT canola?

Methods

- 2 years field experiments across the rainfall zones of WA (Merredin, Cunderdin and Kojonup)
- 20 varieties (TT, RR, CL, CV)
- Low and high N levels

- NVT trials across southern Australia
- Varieties tested at > 20 locations were included in the analysis.

Data analysis

- Finlay-Wilkinson (1963) analysis was used to quantify the yield responses of different HT canola to environment

- Gross margin analysis

$$GM = Yield * canola\ price - fixed\ cost - variable\ cost$$

Variable cost

- N input cost
  - varies with the potential yield.
  - One tonne of canola requires 50 kg N
  - The cost of per unit N is $1
- Seed cost
  - OP seed at $2/kg at seeding rate 4 kg/ha
  - Hybrid seed
- Herbicide cost
  - Vary with herbicide groups
- End point royalty: $5/ton for OP canola

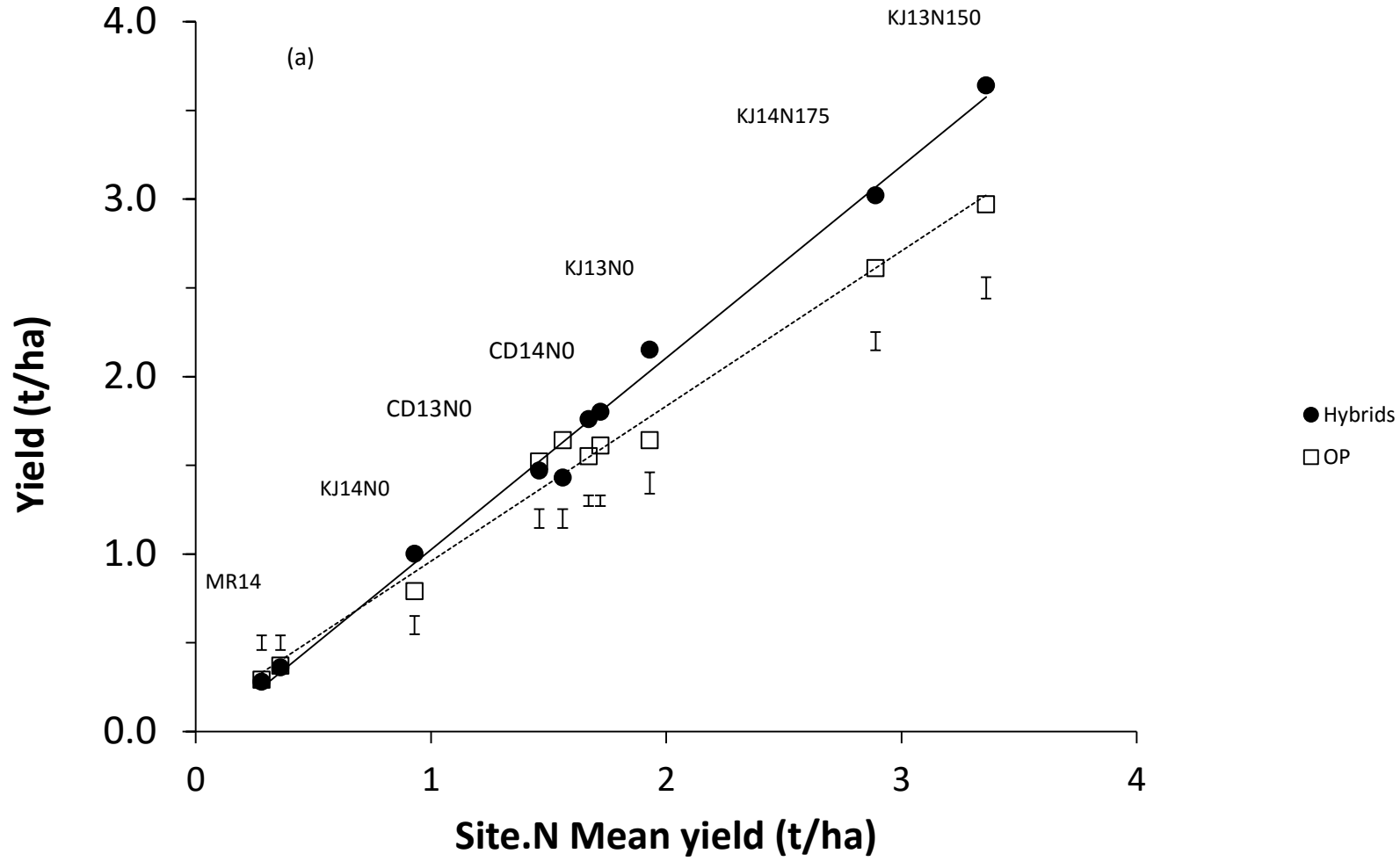
Economic analysis assumptions

Parameter	RR	TT	CL	CV
Seed (OP) ($/ha)*	79	8	8	8
Seed (hybrid) ($/ha)*	79	68	68	68
Herbicide ($/ha)	54	63	95	64
Fixed cost ($/ha)**	146	146	146	146
Grain price ($/ton)	509	523	523	523

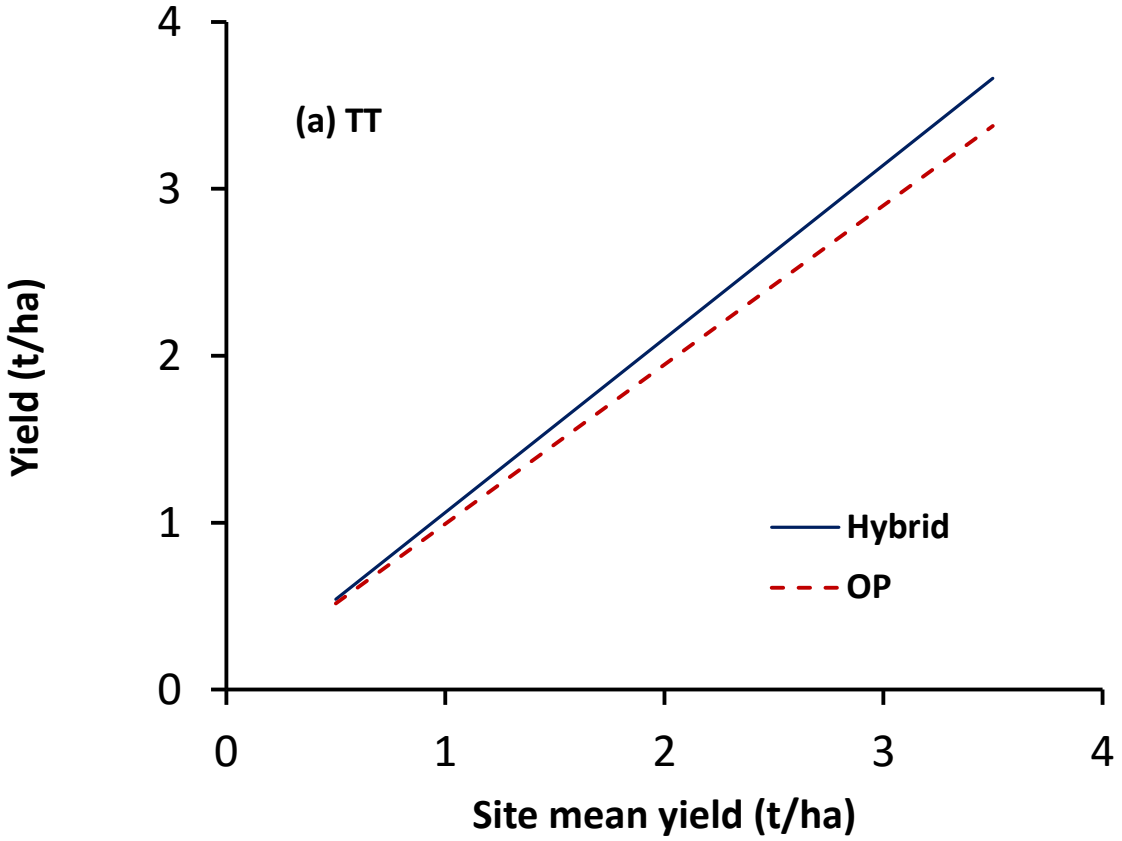
* Seeding rate was assumed at 2.5 kg/ha for hybrid and RR canola and 4 kg/ha for OP canola.

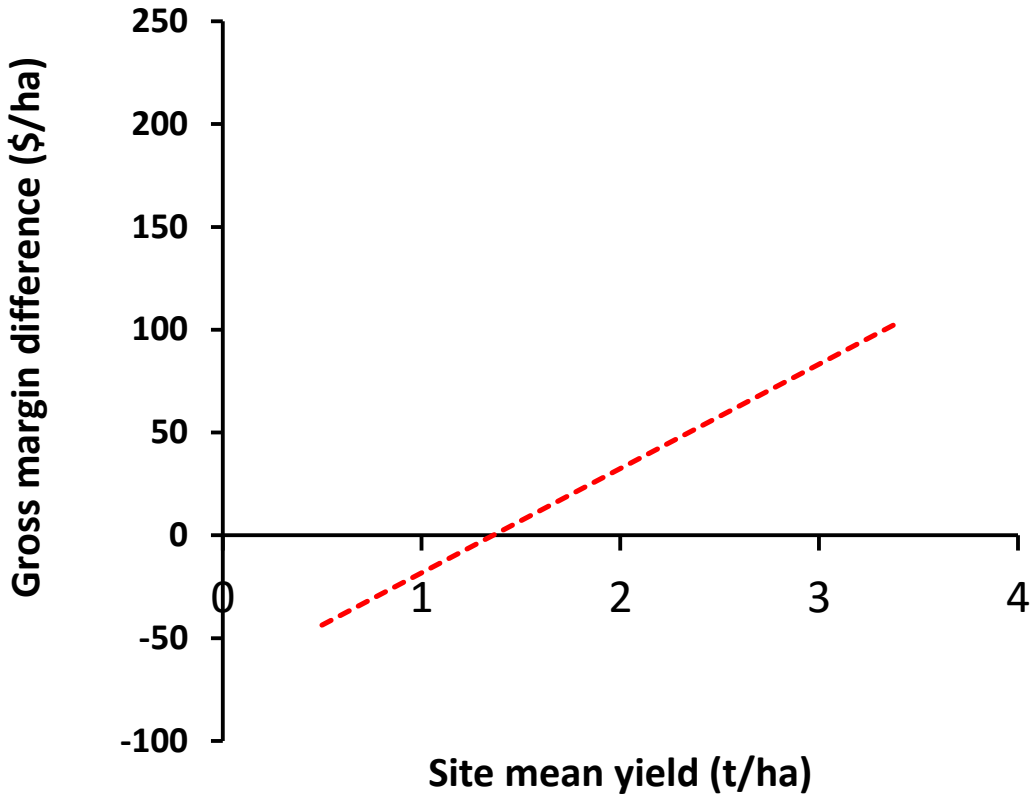
** Fixed costs include allowance for seeding, spraying, swathing, harvesting, labour, freight grains, insurance and interest.

Hybrids vs OPs



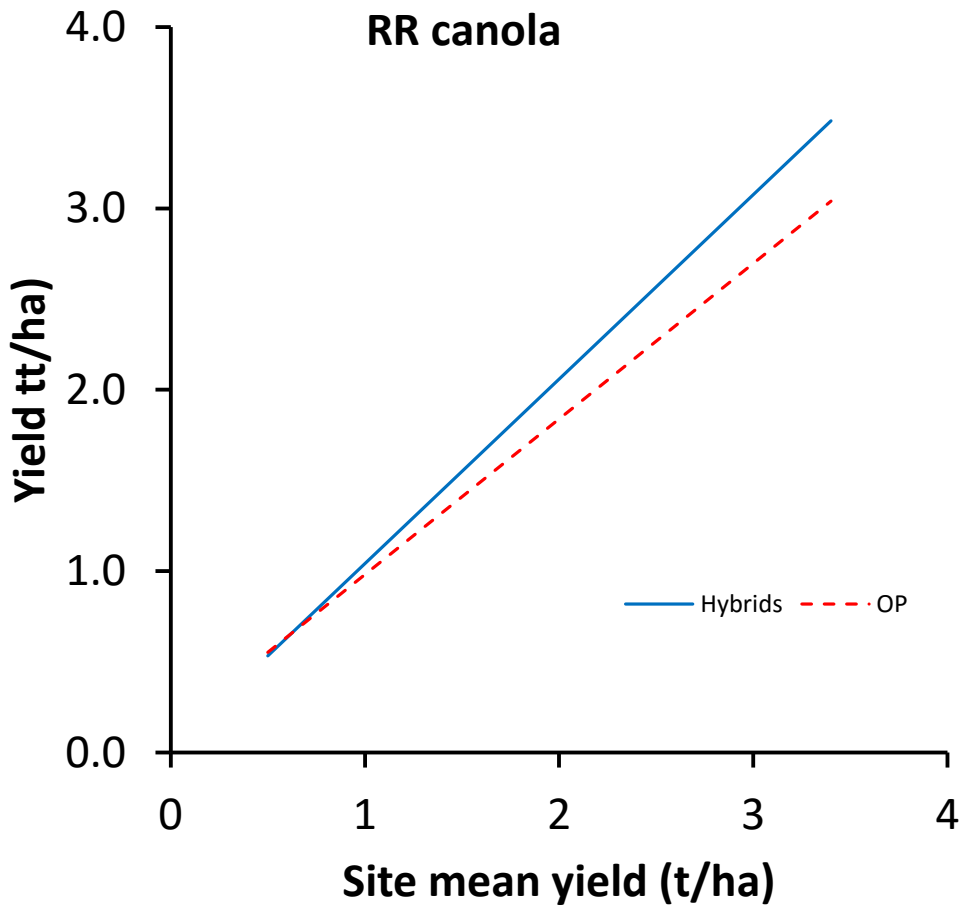
hybrid vs OP TT

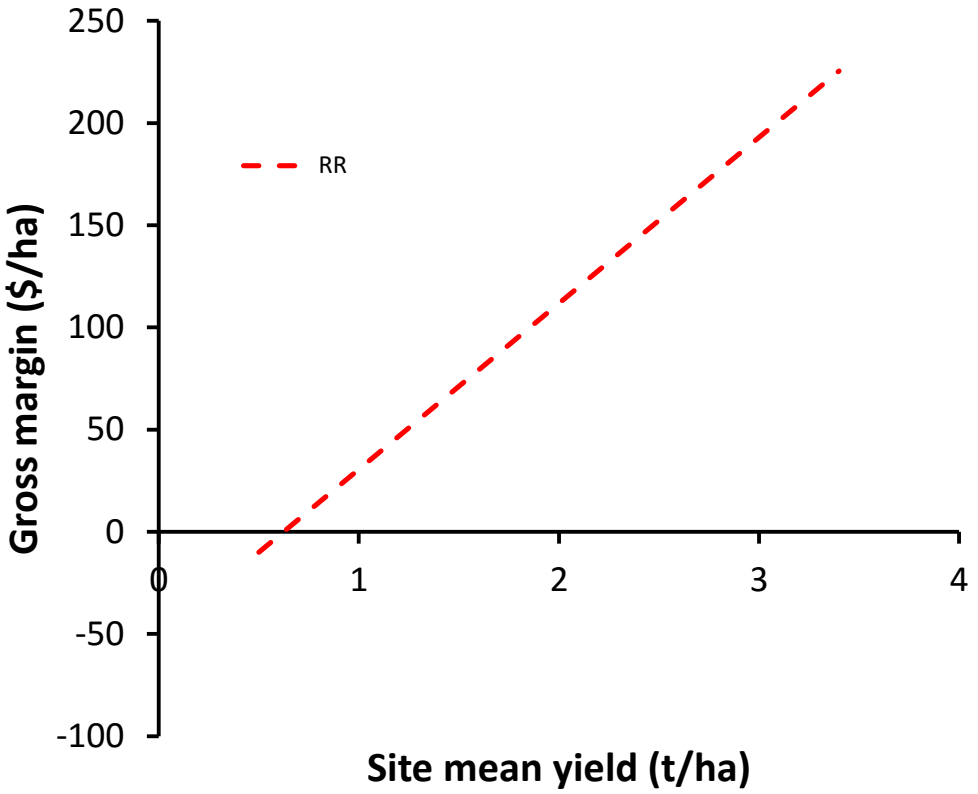




Zhang et al. (2016)

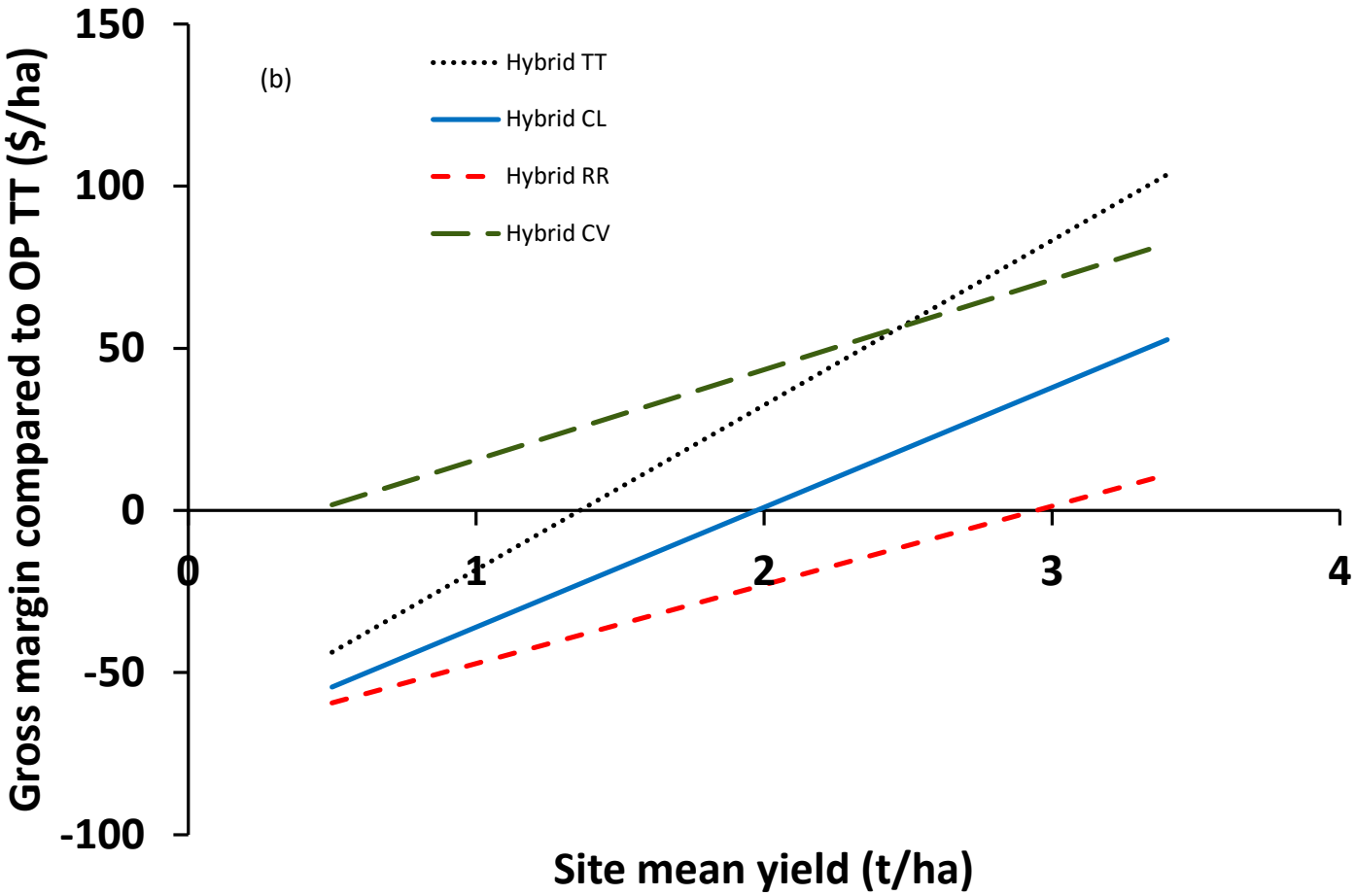
Hybrid vs OP RR



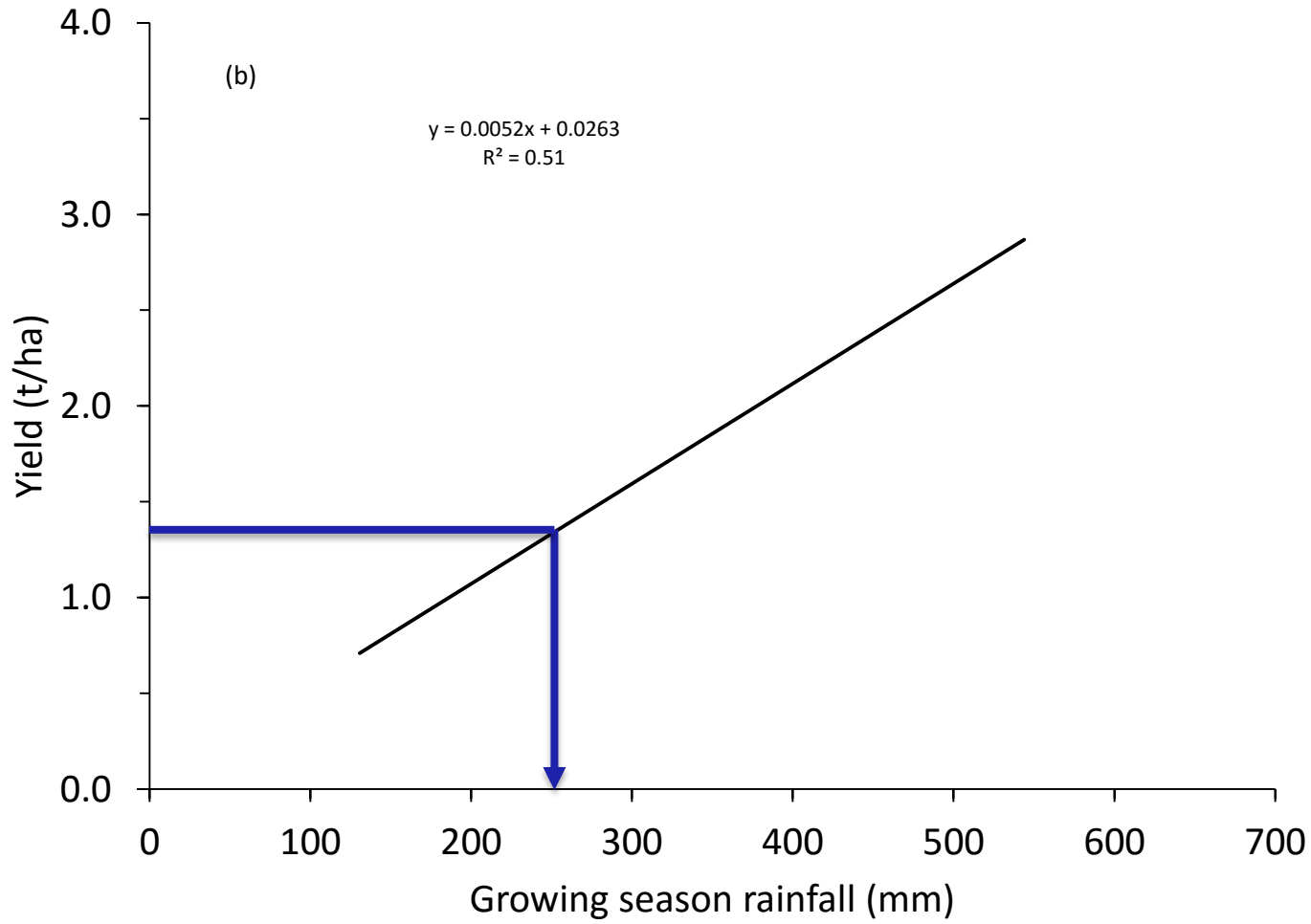


Zhang et al. (2016)

OP TT vs hybrid RR, CV and CL



Relating to the growing season rainfall (April to Oct)



How relevant OP TT canola to the industry?

- 80% of canola grown in WA is OP TT canola
- The current yield is 1.3-1.4 t/ha
- Hybrid TT break-even at 1.25 t/ha
- OP TT canola has played a major role in canola industry and is to stay.
- Breeding companies are moving away from OP TT canola!!!
- Breeding companies need to retain their OP breeding program

Conclusions

- High yielding environment (medium and high rainfall area, > 1.3 t/ha)

Hybrids → Higher yield → More profit

- Low yield environment (< 1.3 t/ha)
  - OP canola can yield as much as hybrids
  - are more profitable

- Breeders should retain OP TT canola breeding for the low yield environment while continuing to breed hybrids for the high yielding environment.

We need OP canola!!!

Thank you

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Questions?

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