

Investigating fungi associated with panicle dieback in avocado

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Panicle dieback in avocado orchards (2019)



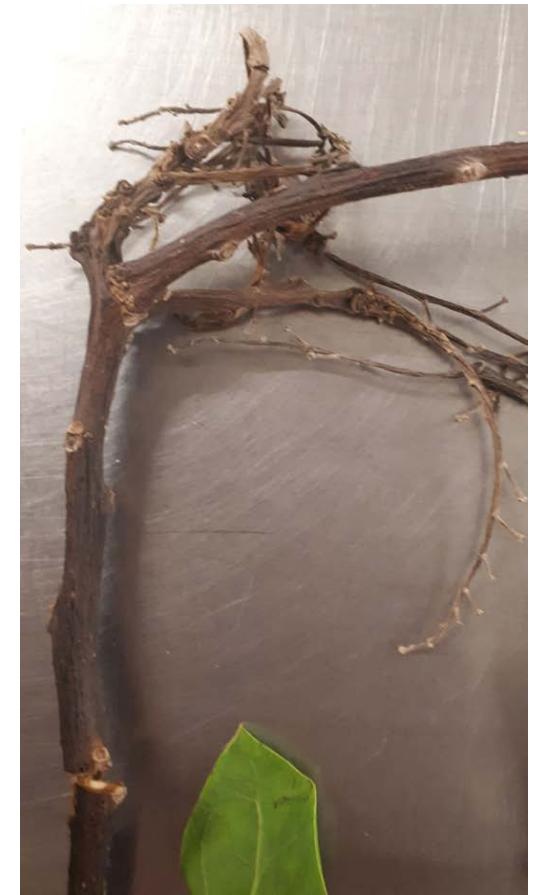
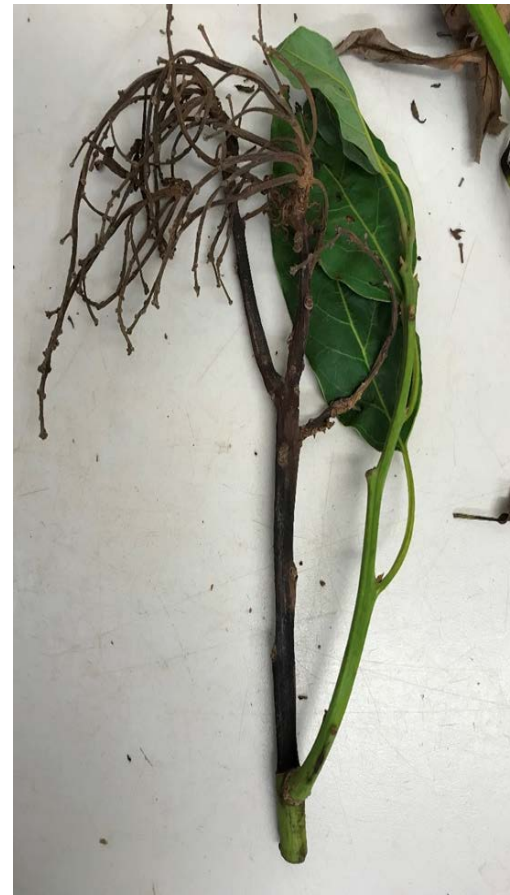
Photo: Grower/agronomist




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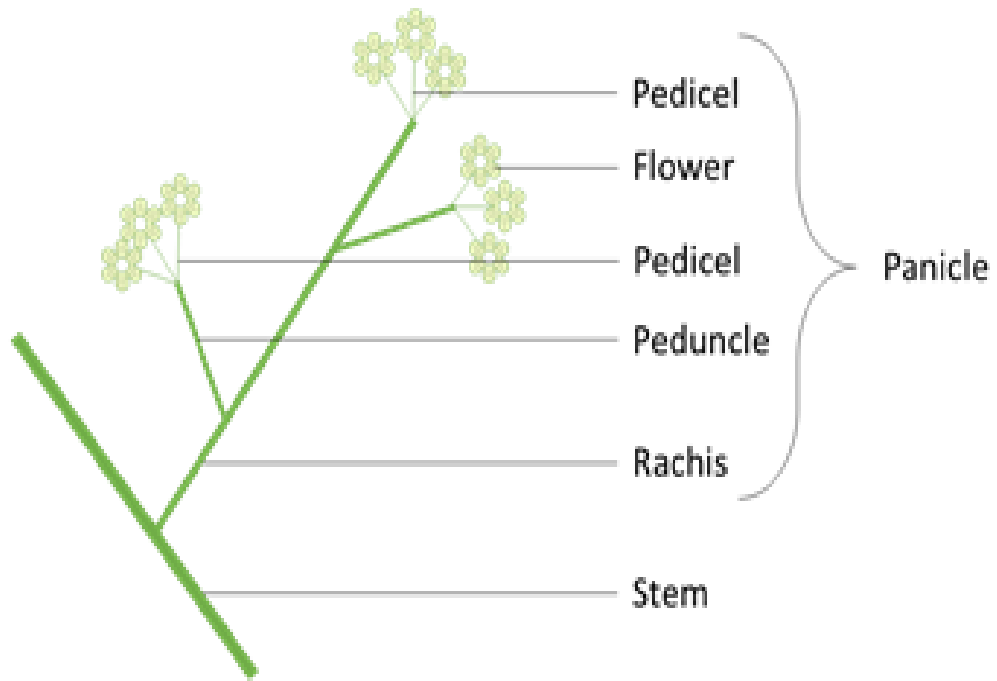
Panicles with blight and dieback symptoms (2019)



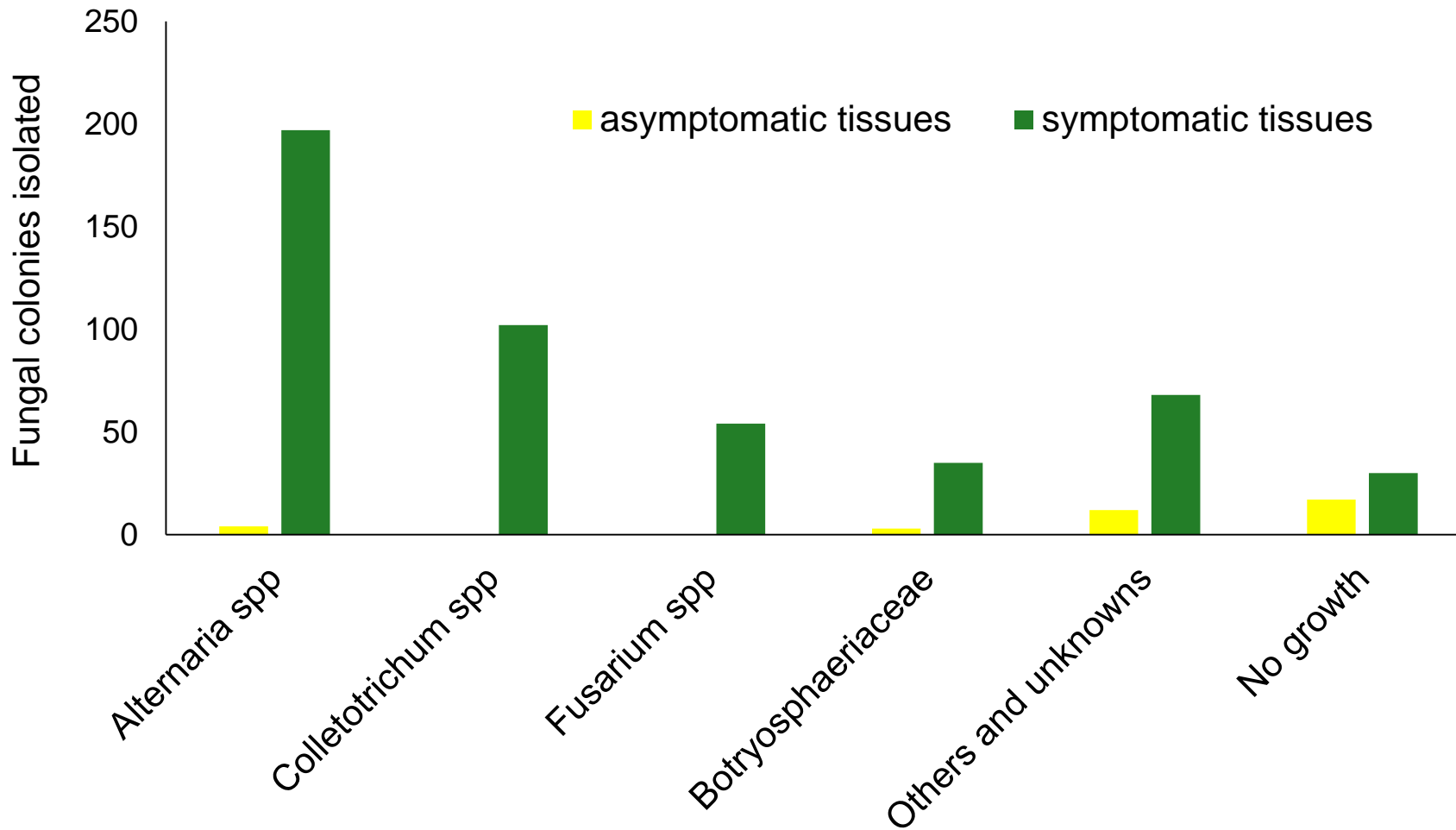
Reports from growers/agronomists Spring 2019

- More prevalent in SE QLD in some blocks in 2019 – big yield hit
- Observed in previous years, but not so severe
- Hass and Maluma affected, less severe in Shepard
- More common in determinate flower panicles 
- Not 100% sure of the cause, may be related to tree stress??

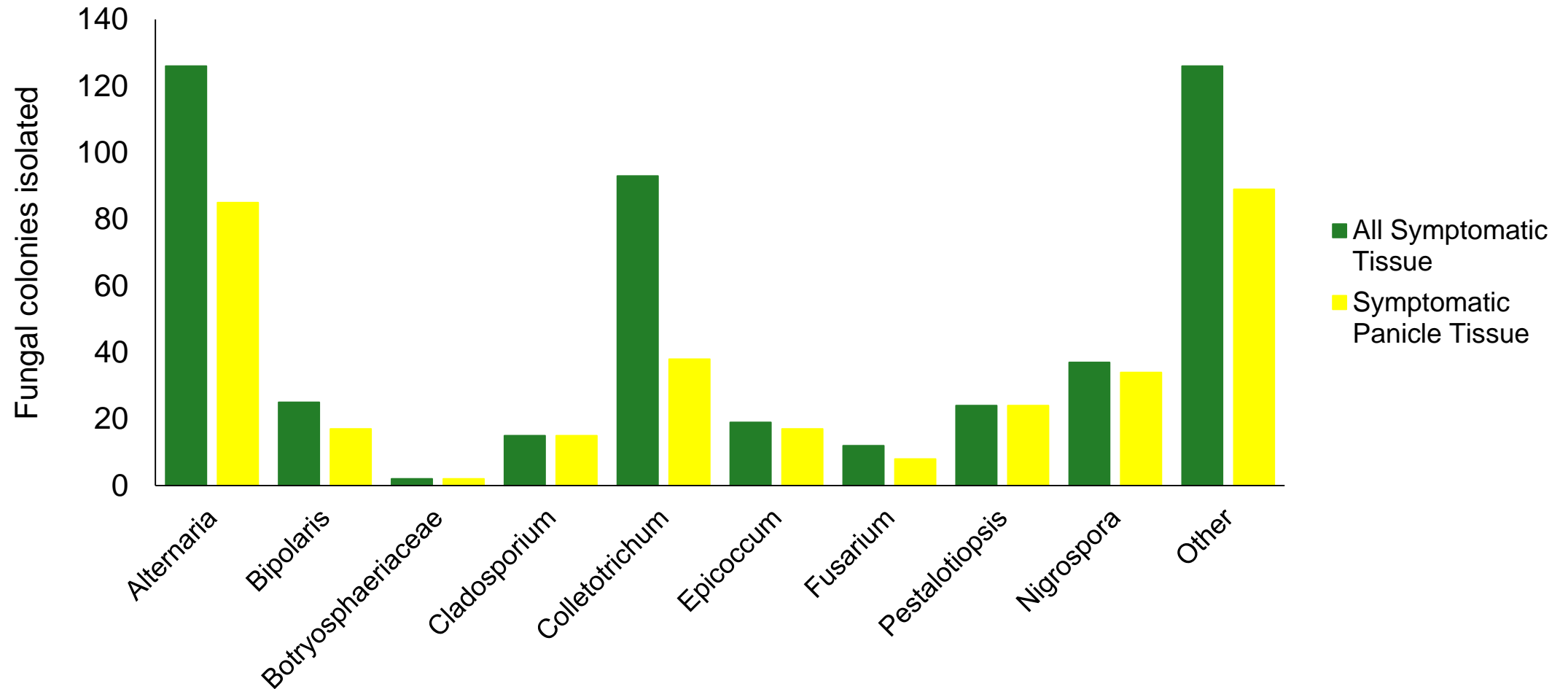
Isolation of associated fungi



Fungal isolations (2019)



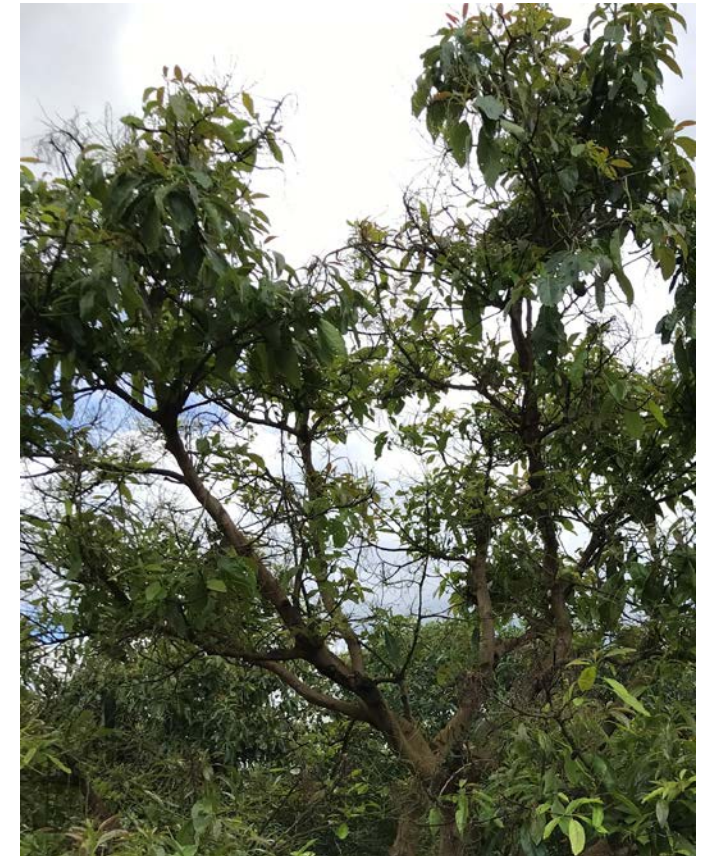
Fungal isolations (2020)



Fungal isolations (2021)



High frequency of *Colletotrichum* consistently isolated from field tissue in Sept - Oct 2021 (early symptoms)



November 2021

Field pathogenicity trials

- Artificially reproducing the symptoms to determine causal organism
- Spore/mycelial suspension inoculation of inflorescences
- Three locations & three cultivars
- Challenges
 - Sun
 - Weather/panicle loss
 - Flowering stage
 - Bag effects?

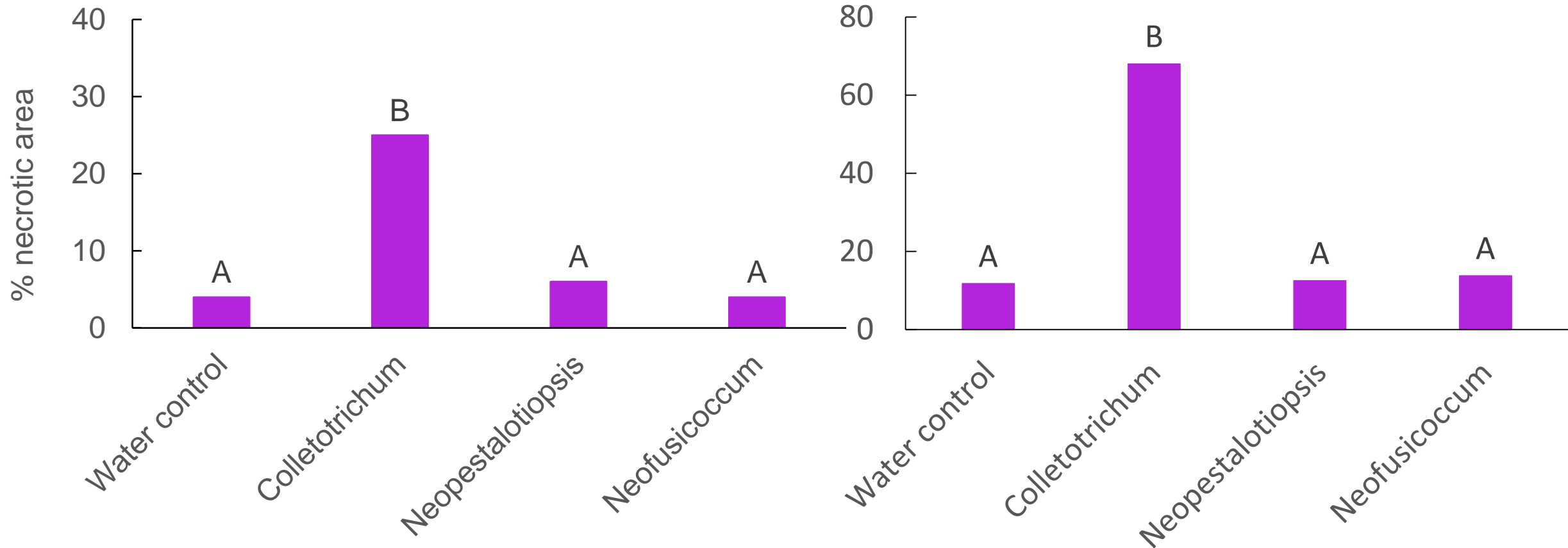


Liz, is this like taking the shopper straight to the tree and bypassing the supermarket?

Severity of panicle necrosis after inoculation

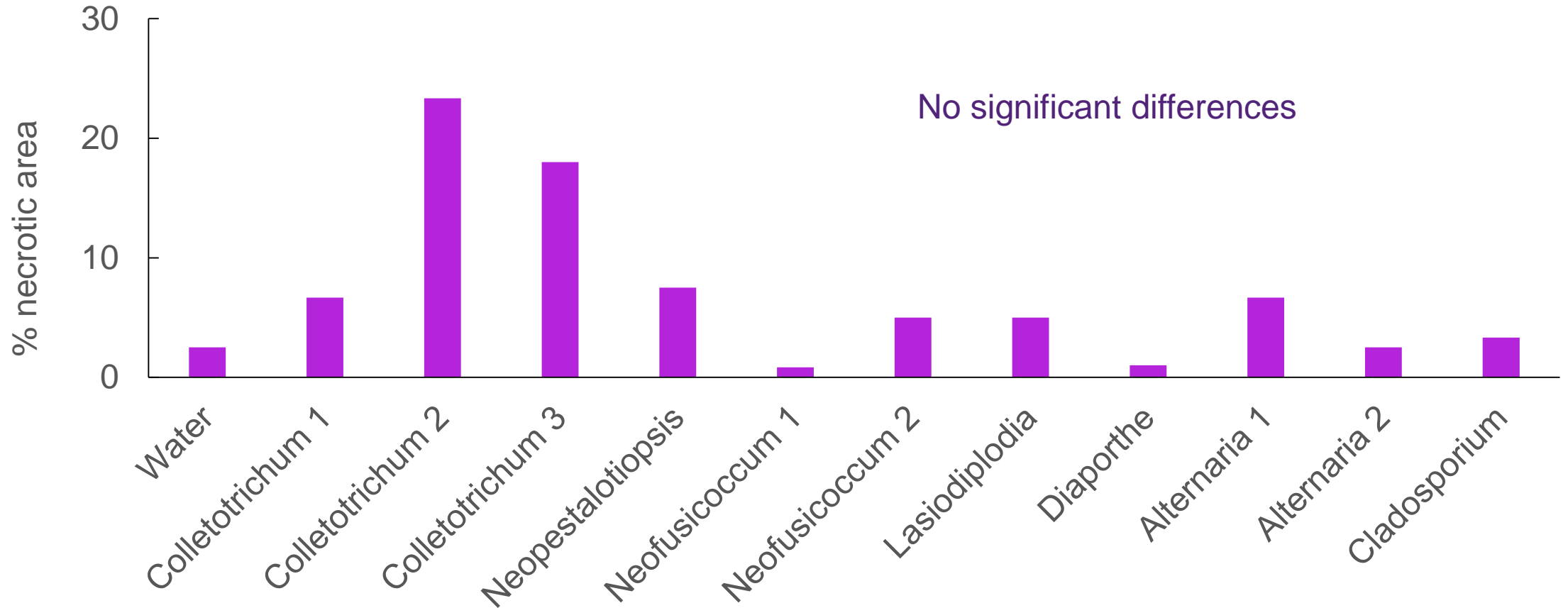
Hass, Ravensbourne, March 2022

Shepard, Maroochy RS, Sept-Oct 2022



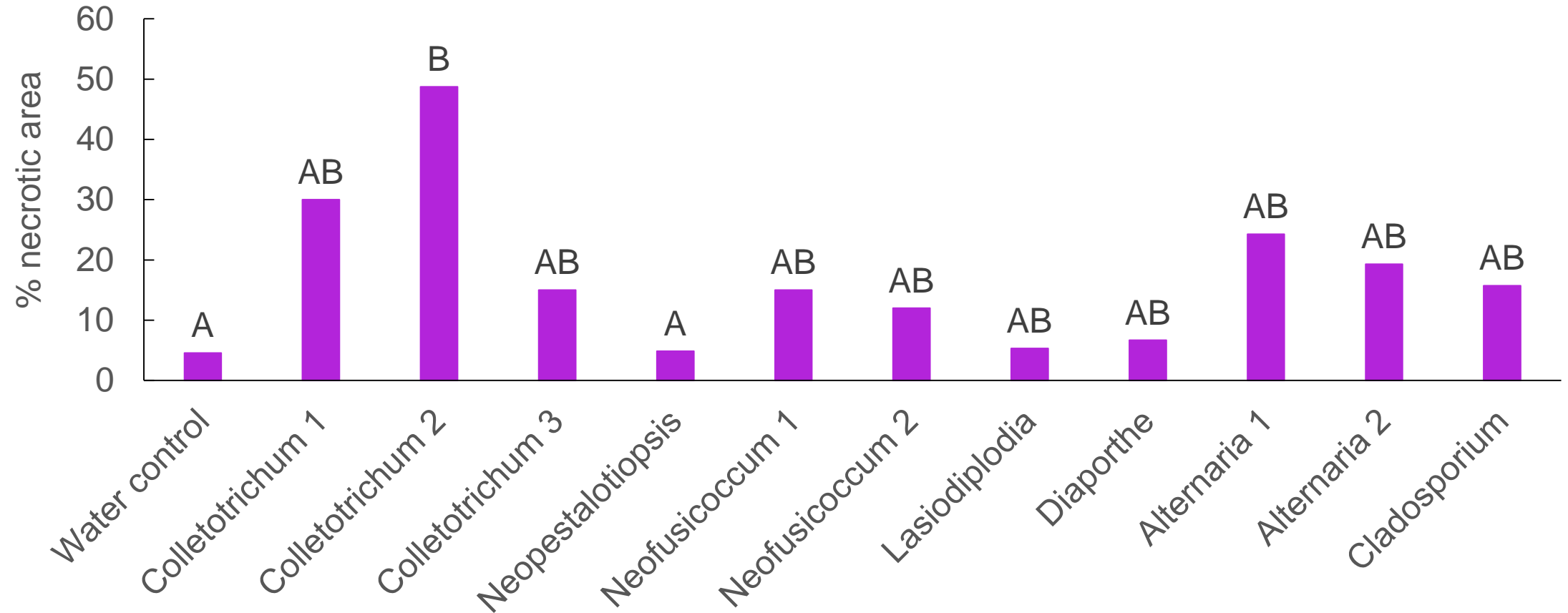
Severity of panicle necrosis after inoculation

Hass, Glasshouse Mountains, September-October 2022



Severity of panicle necrosis after inoculation

Hass, Ravensbourne, November 2022



Field pathogenicity trials – re-isolating inoculated fungi



Water



Colletotrichum

- Fulfilling “Koch’s Postulates”
- *Colletotrichum* consistently caused panicle dieback (necrosis) symptom
- Very high re-isolation of *Colletotrichum*
 - from inoculated panicles
 - from natural infections and panicles inoculated with water or other fungi

Conclusions

- Likely that *Colletotrichum* is a causal agent
- Positive effects of some fungicides applied at flowering and early fruit set on yield (not presented)
- ? Perhaps triggered by drought stress leading up to flowering
- ? Plant nutrition and root volume/health could be a factor (E.g. leaf Ca lower in affected trees)
- ? Dieback “skeletons” are a source of inoculum for fruit infections
- Can be “pruned out” (not presented)



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