

International Macadamia Symposium 2023



MOVING FORWARD TOGETHER

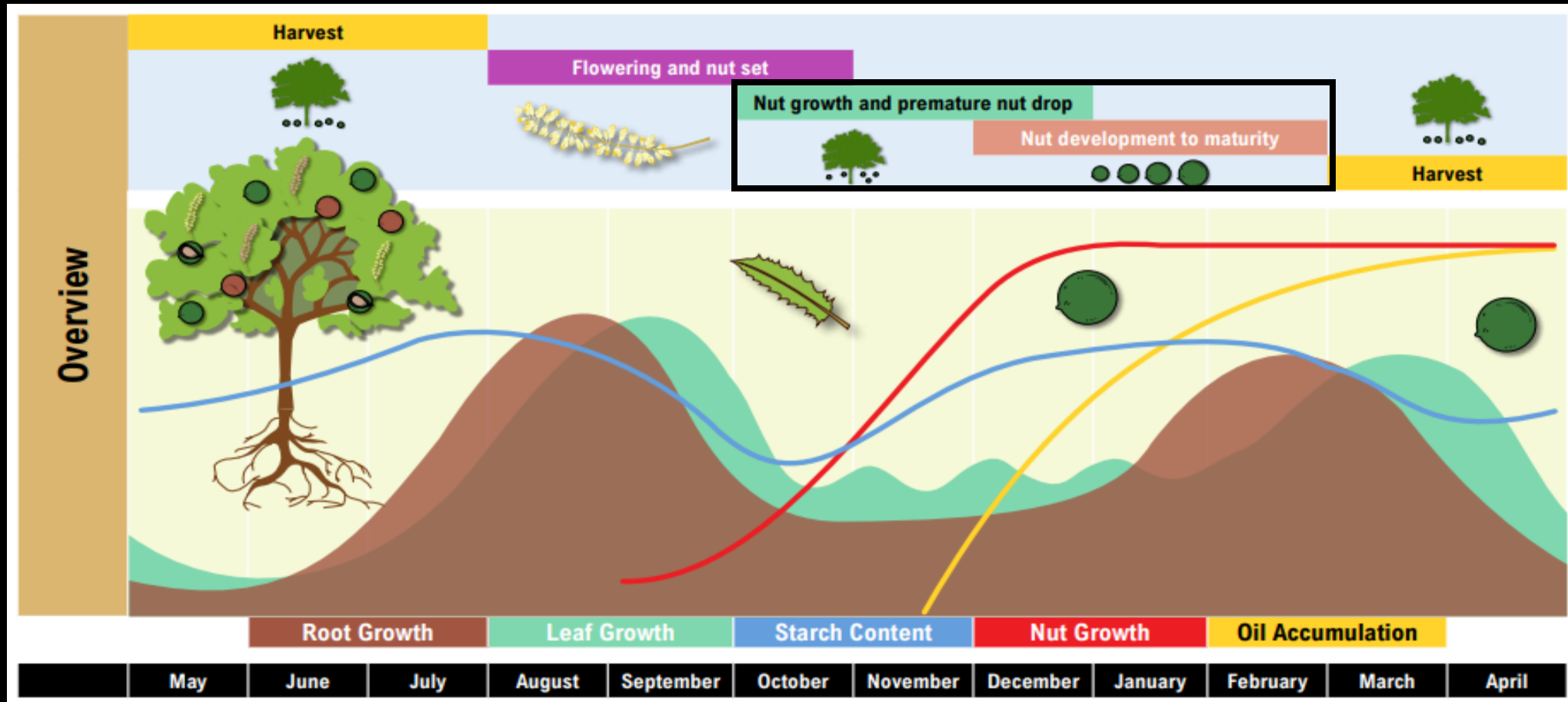
Macadamias South Africa (NPC)  
(SAMAC)



# Managing Husk rot in Macadamia orchards

Gerda Fourie

# Macadamia fruit development



23

# Husk rot symptoms



Fungal disease of the pericarp

Soft, brown to black necrotic lesions

Premature nut drop

Prevent kernel maturation



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# Husk rot causal agents



*Diaporthe* spp.

*Colletotrichum* spp.

*Calonectria pseudoreteaudii*

*Lasiodiplodia*

*Stilbella*

*Phytophthora heveae*



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# Husk rot causal agents



*Diaporthe* spp.

*Colletotrichum* spp.

*Calonectria* spp.

*Lasiodiplodia*

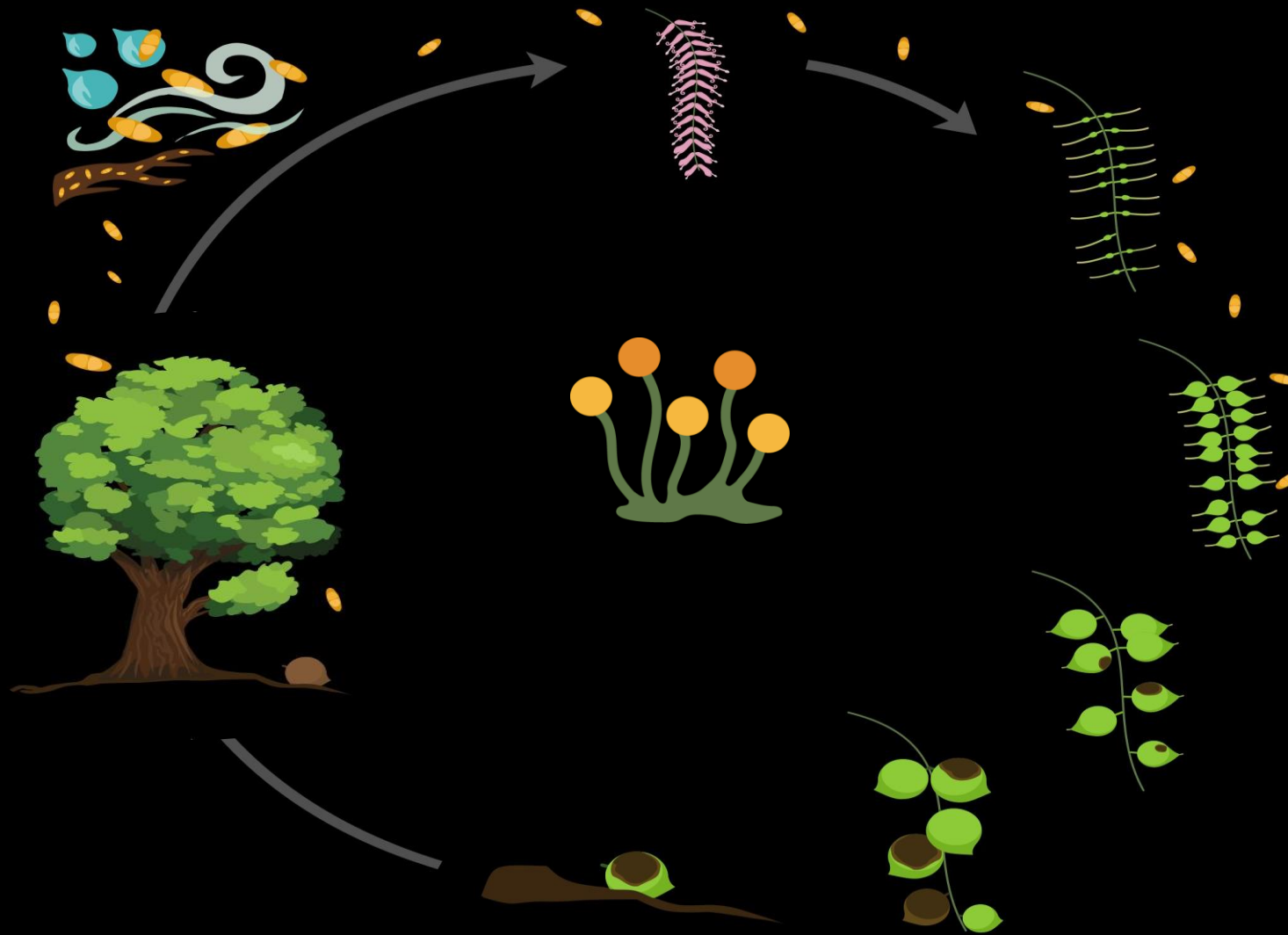
*Stilbella*

*Phytophthora heveae*

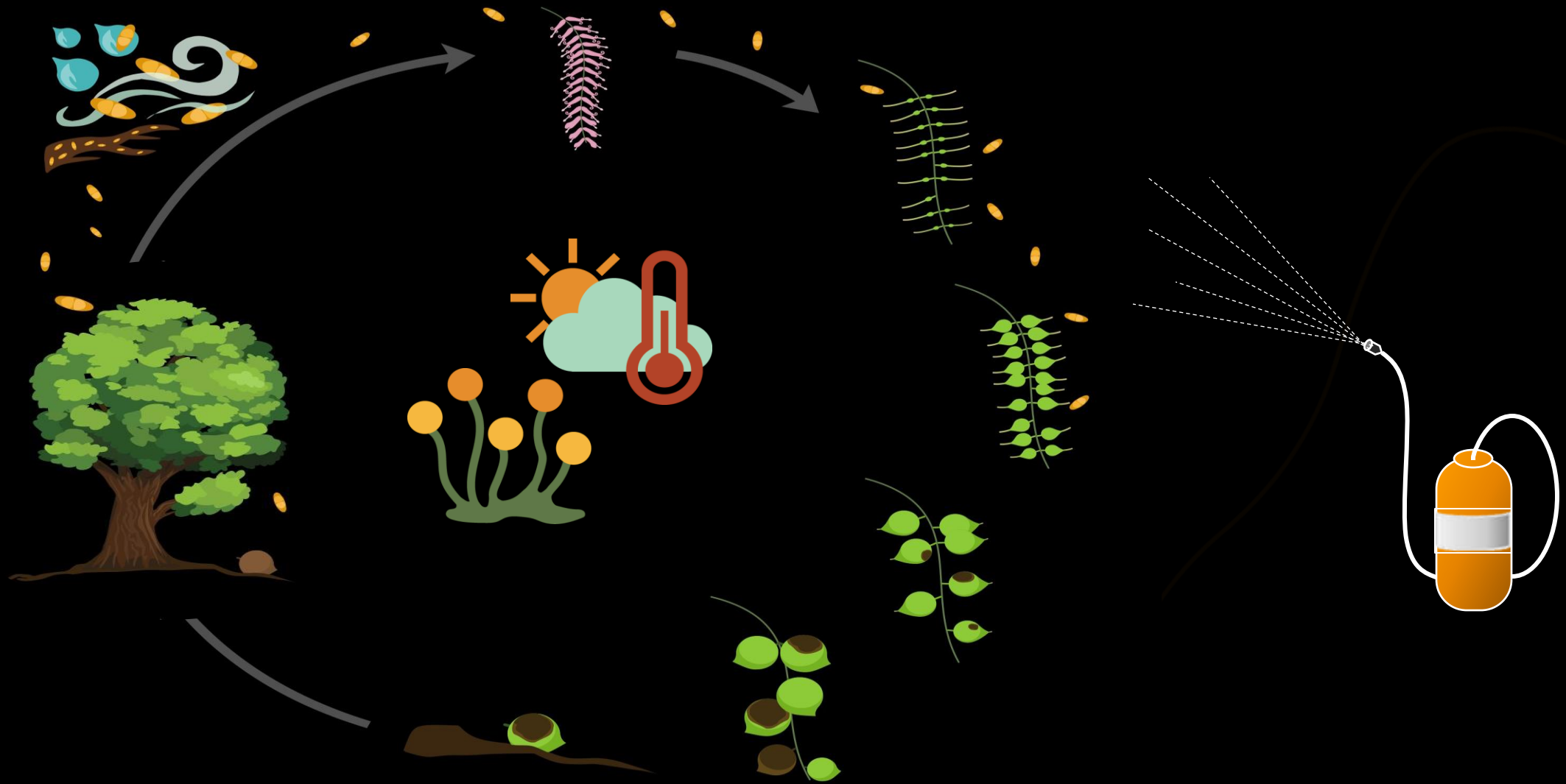


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# Effective management strategy

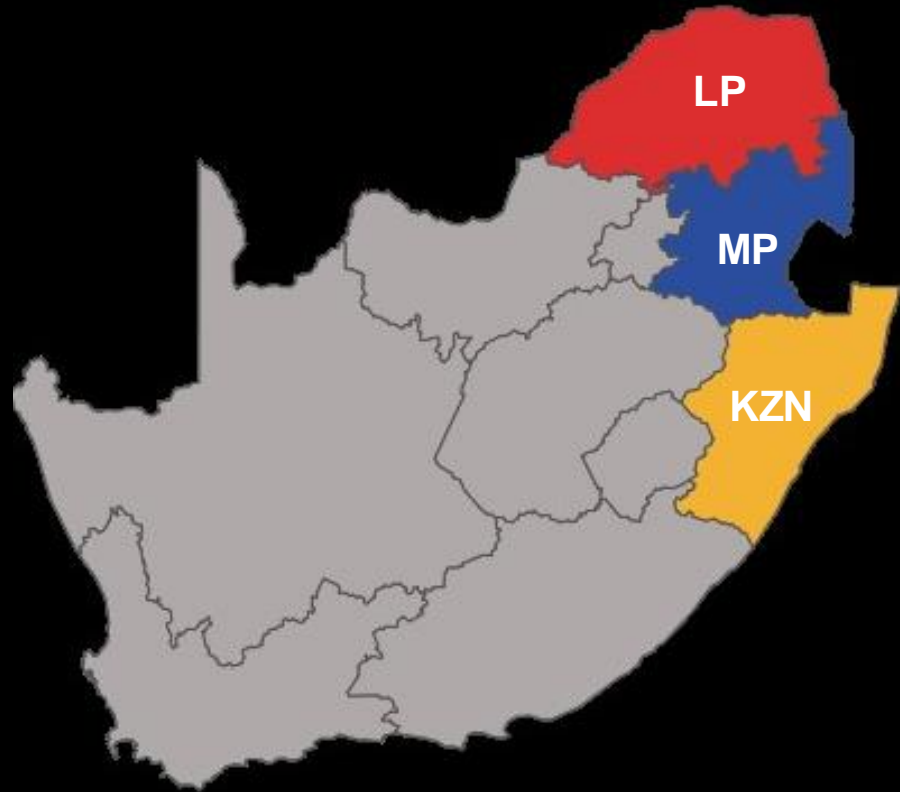



# Effective management strategy





# Sampling strategy



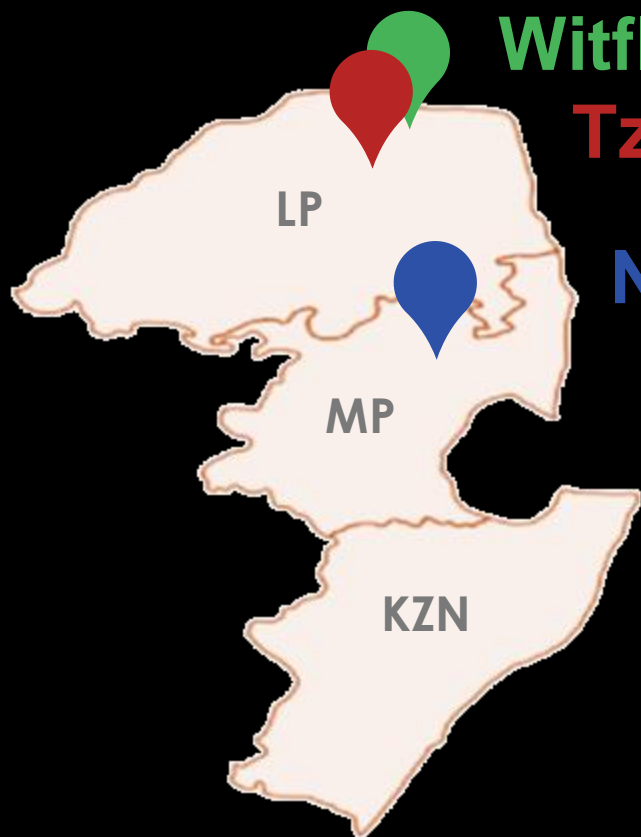
- ✓ **Diseased fruits (all areas)**
- ✓ Early and Late Husk rot
- ✓ Symptomatic and asymptomatic
- ✓ 



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# Calonectria - Calonectria Husk rot (CHR)



Witflag - 788

Tzaneen - 816

Nelspruit – Nelmak 2



No wounding was required for disease

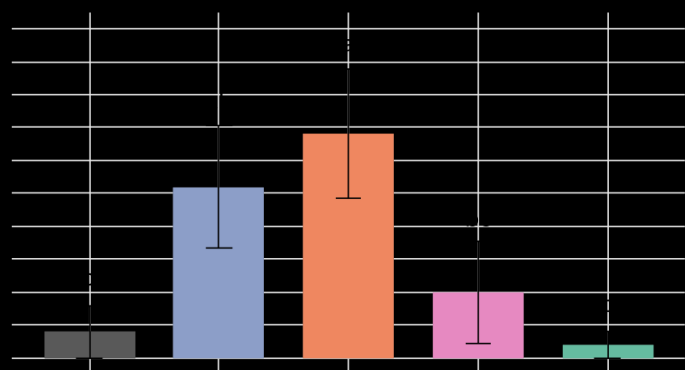
No other HR causal agents present on fruits



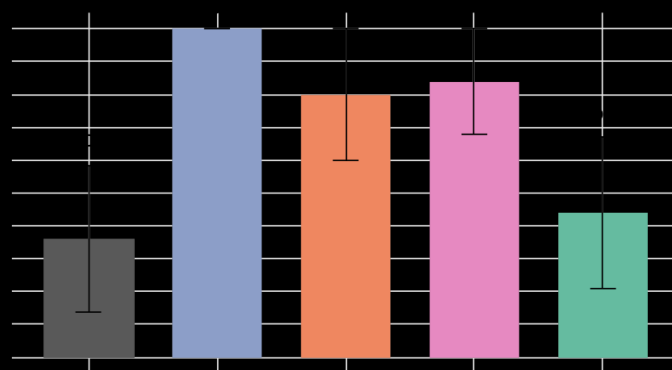
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# Diaporthe – Phomopsis husk rot (PHR)

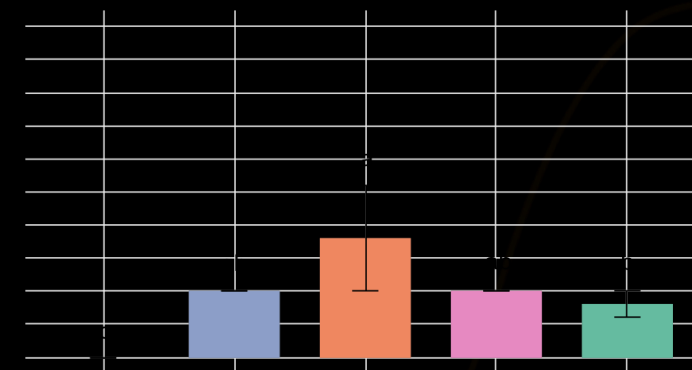
Nelmak 2



695



A4



- *Diaporthe* group 1
- *D. maytenicola*
- *D. velutina*
- *D. macadamiae*

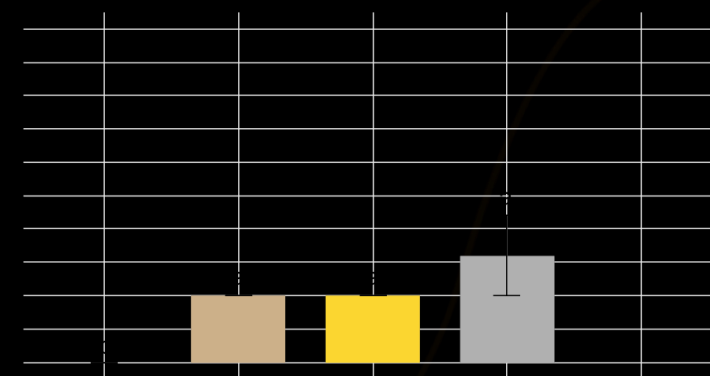
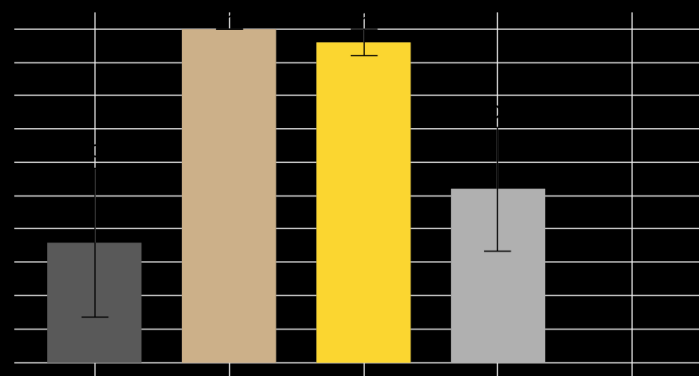
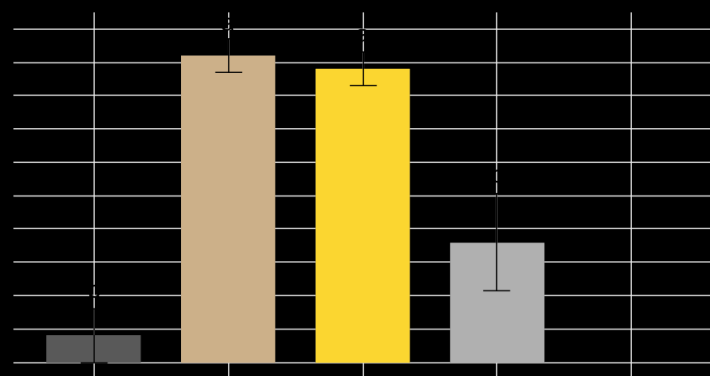


# Colletotrichum – Anthracnose husk rot (AHR)

Nelmak 2

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A4



 *C. siamense*

 *C. theobromicola*

 *C. fructicola*



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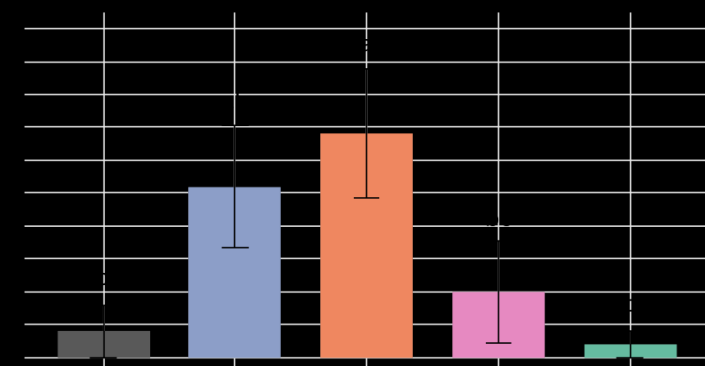
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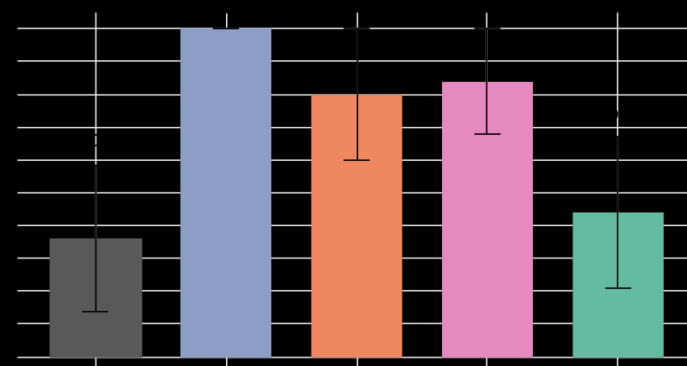
# PHR and AHR pathogenicity trials

Less susceptible

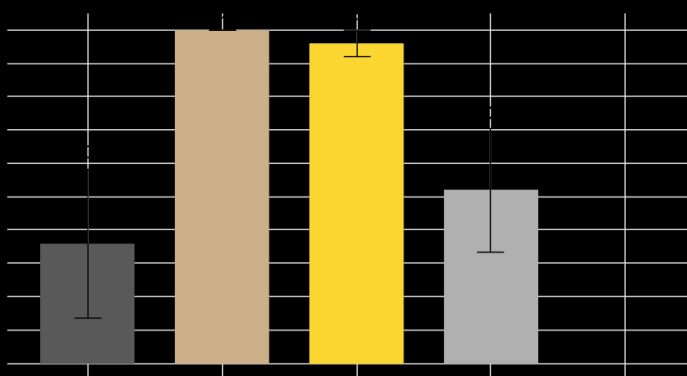
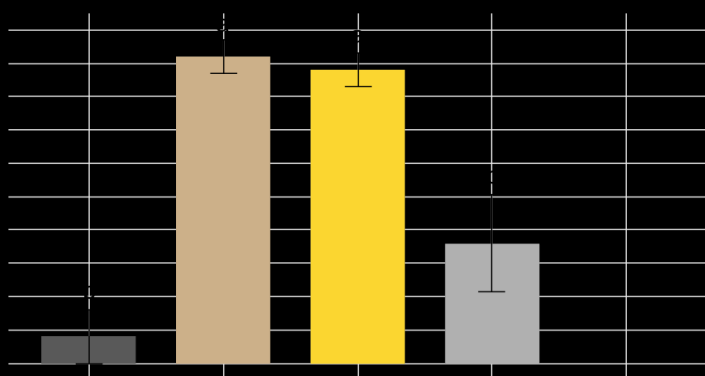
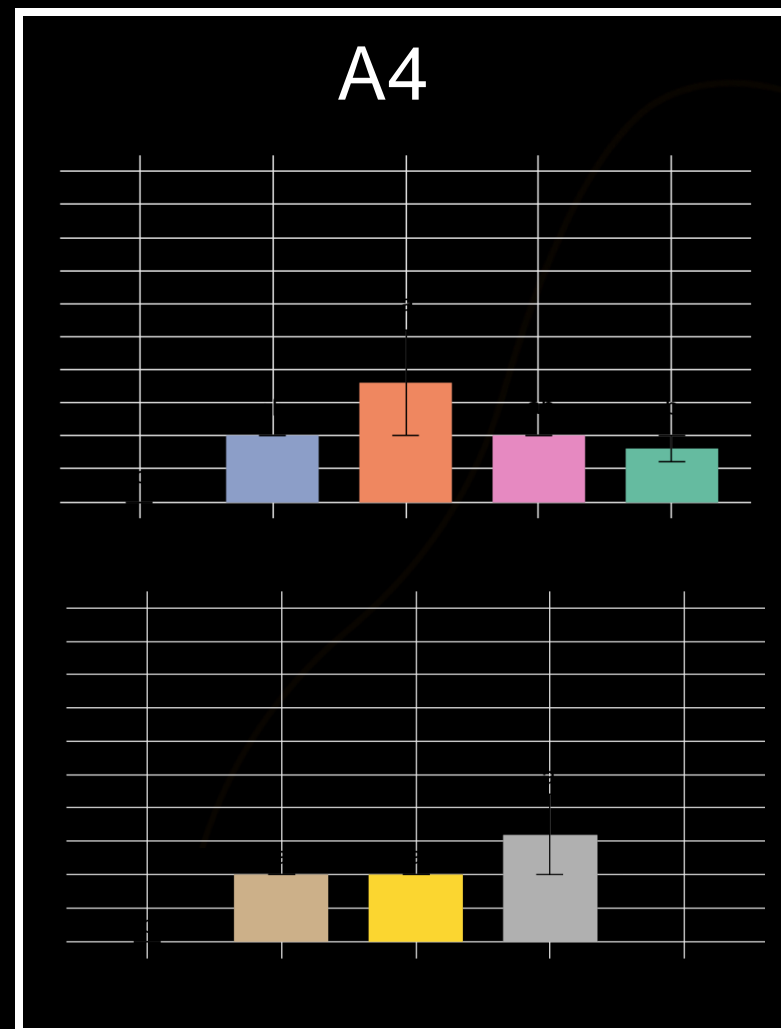
## Nelmak 2



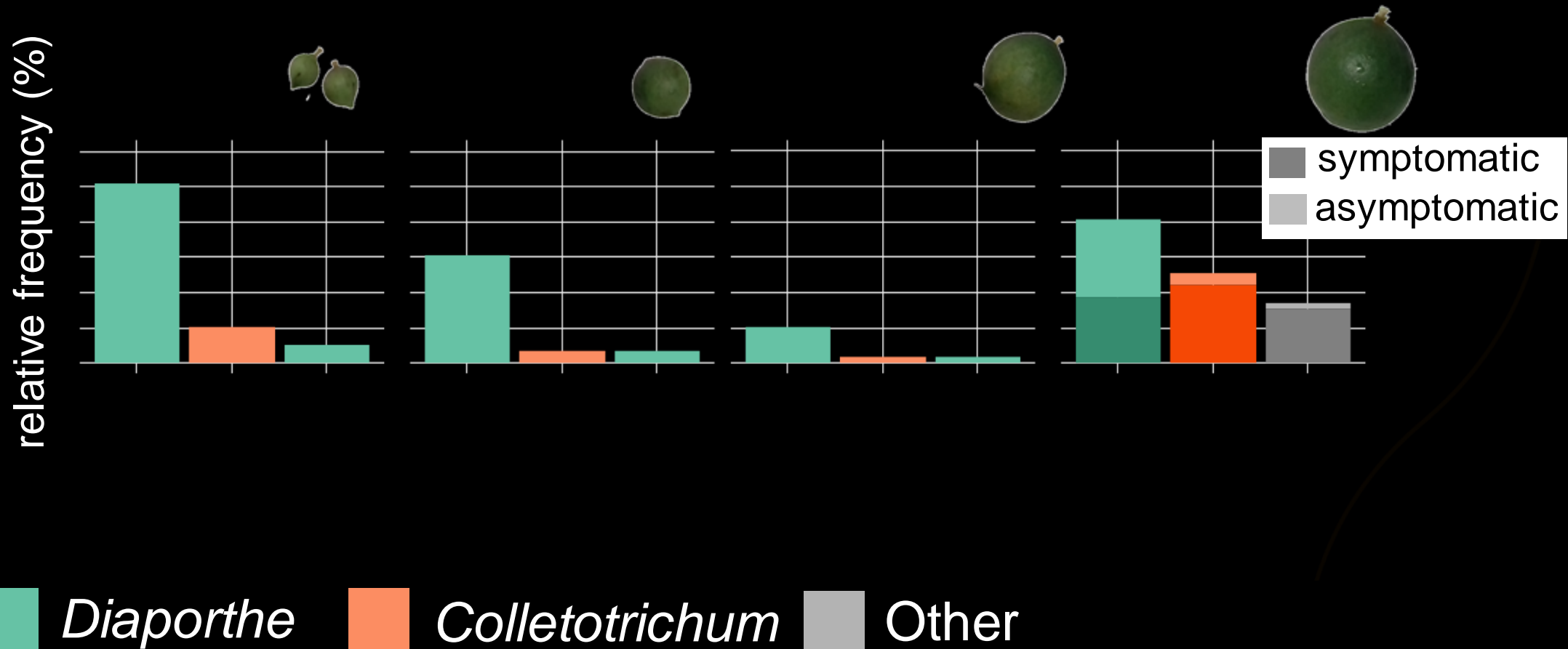
## 695



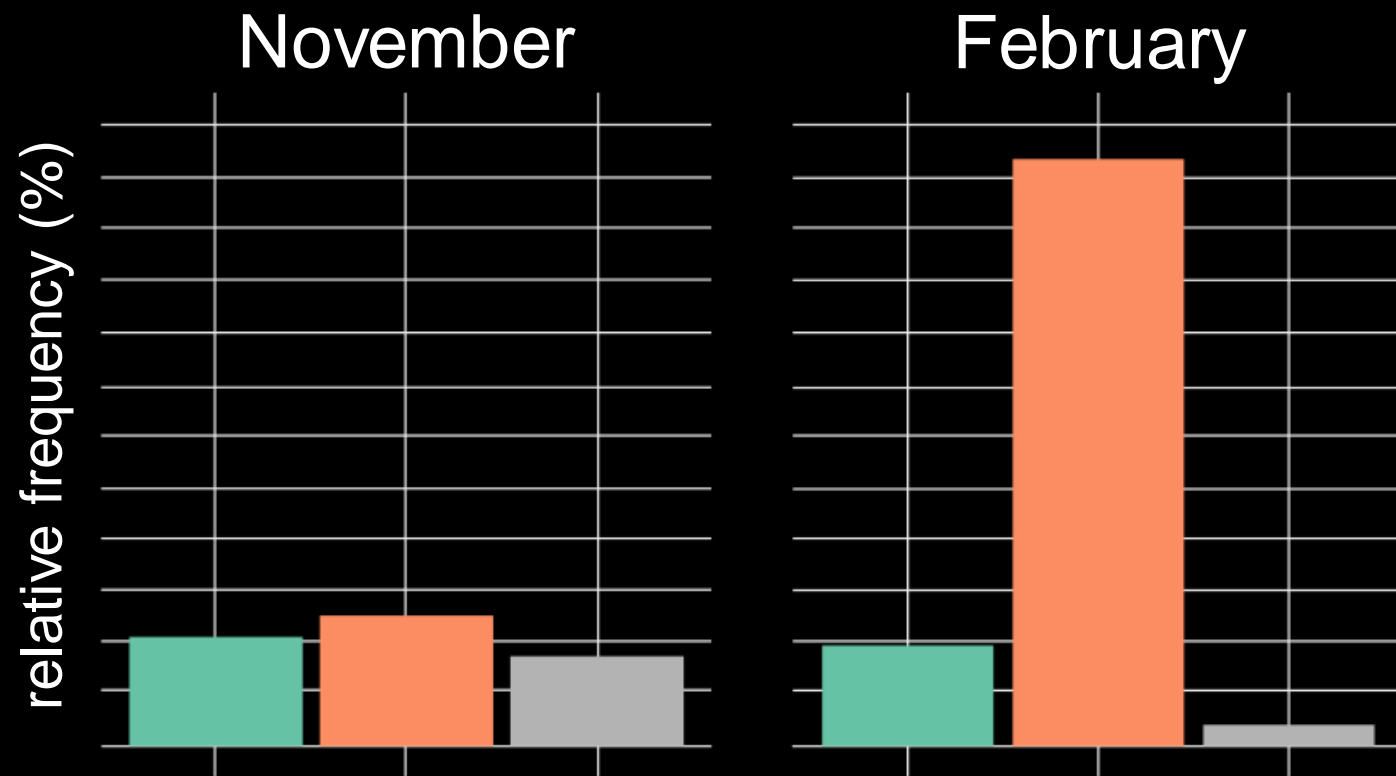
## A4



# Prevalence – fruit developmental stages



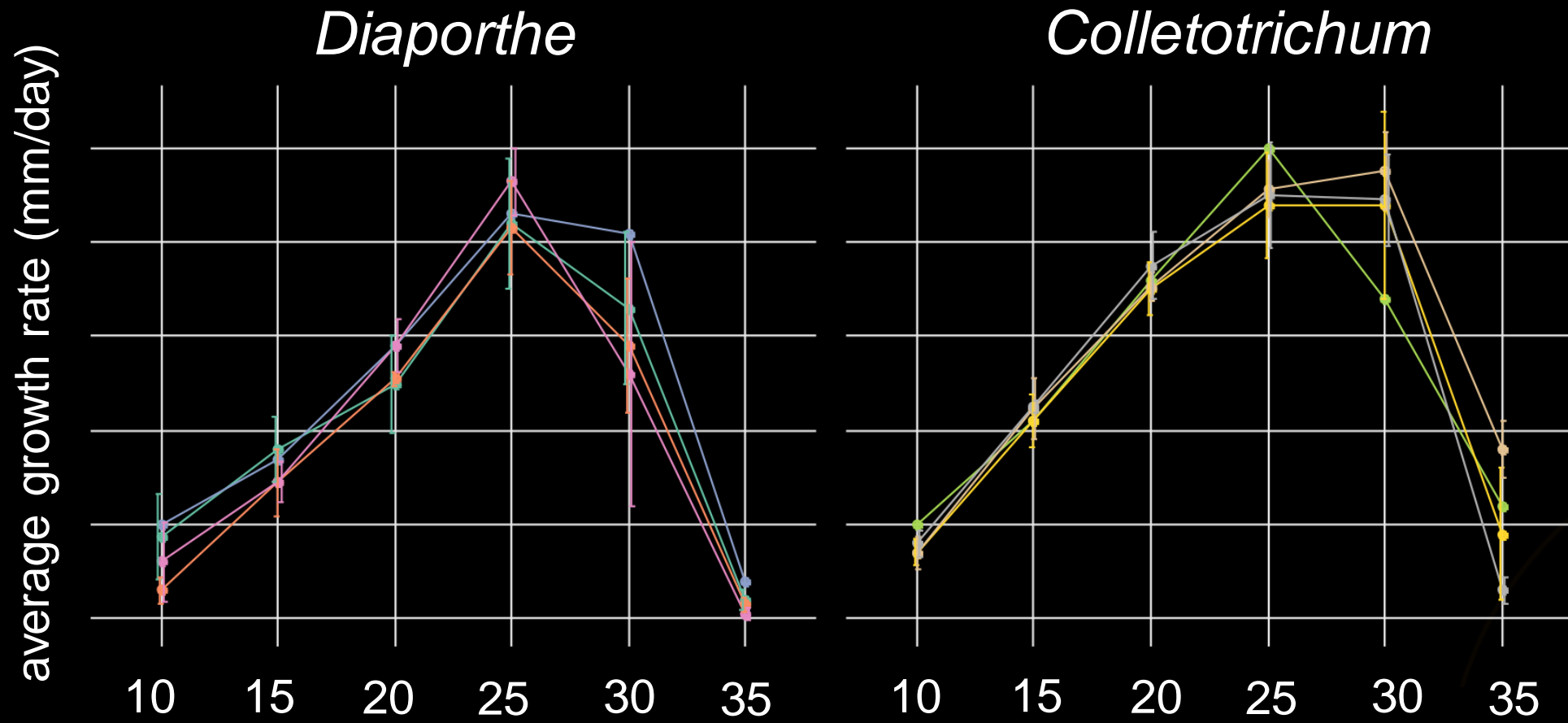
# Prevalence - within a growing season



■ *Diaporthe*   ■ *Colletotrichum*   ■ Other



# Temperature growth study





# Temperature growth study

*Diaporthe*

*Colletotrichum*

*Calonectria*

average growth rate (mm/day)





# Conclusions



**Calonectria husk rot** confirmed as disease of macadamia fruits in South Africa

Identified pathogenic *Diaporthe* and *Colletotrichum* – but some *Diaporthe* will be endophytes

Confirmed that both *Diaporthe* and *Colletotrichum* spp. can be detected from pea-sized nuts - **latent pathogens**

Generated data that will contribute towards generating climate risk maps

# Acknowledgements



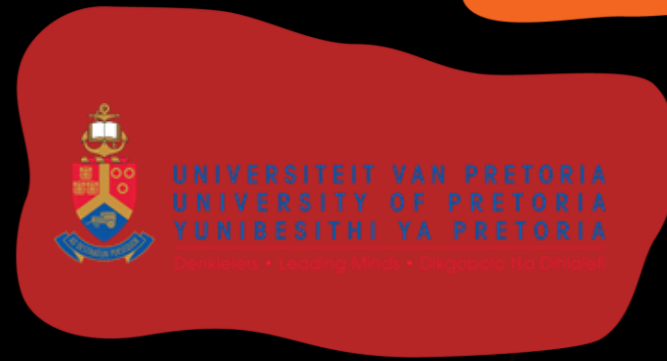
Dee Twiddy



Dr. Arista Fourie-Fouché



Prof. Femi Akinsanmi





QUESTIONS ?

