The SA Macadamia Industry and Control of Husk Rot

B A R R Y  C H R I S T I E
GREEN FARMS NUT COMPANY
Macadamia Production vs Price

Production (tons Dry In Shell*)
Farm Gate Price (R/kg kernel)

- 10 000 20 000 30 000 40 000 50 000 60 000
- R - 50.00 100.00 150.00 200.00 250.00 300.00
- R -
Historical Global Macadamia Production

- **AUSTRALIA**
- **SOUTH AFRICA**
- **KENYA**
- **USA**
- **GAUTEMALA**
- **MALAWI**
- **OTHER**

**QUANTITY (MT IN SHELL)**

- **1995**
- **1996**
- **1997**
- **1998**
- **1999**
- **2000**
- **2001**
- **2002**
- **2003**
- **2004**
- **2005**
- **2006**
- **2007**
- **2008**
- **2009**
- **2010**
- **2011**
- **2012**
- **2013**
- **2014**
- **2015**
- **2016**
- **2017**
2017 WORLD TREE NUT PRODUCTION (KERNEL BASIS)

- Almonds: 29.6%
- Cashews: 18.8%
- Walnuts: 20.8%
- Pistachios: 14.0%
- Pecans: 3.0%
- Brazil Nuts: 0.3%
- Macadamias: 1.2%
- Hazelnuts: 11.7%
- Pine Nuts: 0.5%
Typical symptoms of anthracnose husk rot

Stilbella husk rot
Host

Pathogen

Environment

Disease
Causes

- *Colletotrichum gloeosporioides*
- *Phomopsis / Diaporthe* spp.
- *Stilbella* spp (Australia), South Africa?
- Possibly more species?
Epidemiology

- Presence: *C. gloeosporioides* has a wide host range
- *C. gloeosporioides* require wet conditions for more than 12 h, 15-27 °C (20 °C optimal).
- When does infection occur on nuts?
  - Latent infections >> disease when trees are stressed
- Possibly distributed and infection enhanced by hemipteran pests
Link between flower diseases and husk rot?
Causal Agent

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“In conclusion, the causal agent of macadamia husk rot in South Africa remains unknown. In depth phylogenetic analyses, including more gene regions, of Diaporthe species present within macadamia orchards in South Africa need to be performed. In addition, pathogenicity trials of these species needs to be conducted in order to confirm the causal agent of the disease. Sampling and analysis of healthy and diseased nut should be performed from November onwards in order to study disease progression and the role of Calonectria in macadamia husk rot.”
General Information

• Husk rot severity was 100-170 days post anthesis with a peak at about 135 days (Akinsanmi et al., 2016)

• Infection when nuts are pea-size (Zanelle Mufamadi – unpublished MSc)

• Infection enhanced by insect damage
Control (cultural)

- Remove ALL stick tights
- Remove ALL old nuts from orchard floor
- First compost husks before applying as mulch
- Prune to allow air flow and increase spray penetration
- Keep trees stress free
- Control pests
Control (chemical)

Registered for husk rot control on macadamias:
- Pyraclostrobin + Boscalid (Bellis)
- Difenoconazole + Azoxystrobin (Amistar Top) - Anthracnose

Registered on macadamia (not husk rot):
- Cyprodinil (Chorus)
- Difenoconazole (Score)
- Azoxystrobin (Ortiva)
- Chlorothalonil (Bravo)
- Plant Acids (Kanguard 940)
Summary

Host
- Resistance breeding
- Keep trees stress free
- Pruning

Pathogen
- Orchard hygiene
- Chemical control of pathogen
- Pest control

Environment
- Cannot control
- Keep an eye on weather predictions (cool, wet conditions = disease)
Need More Research!