

Objectives & Rationale

We identified the causal organism of apple bull's eye rot (BER) in the Western Cape and tested the BER control efficacy of registered postharvest fungicides on apples.

Methods

We isolated fungal pathogens causing BER from Elgin and Barrydale in the Western Cape (N=84) and identified the causal species using molecular methods. Then we tested the postharvest fungicides against *N. vagabunda* infection *in vivo* by applying formulations of fludioxonil or pyrimethanil either as dip, drench or through thermofogging.

Key Results

All eightyfour fungal isolates causing BER in the Western Cape were confirmed to be *Neofabraea vagabunda*. The fludioxonil dip application at the registered dose (299 mg/L) resulted in the lowest BER incidence (16% on 'Fuji' and 'Cripps Pink'). Fungicide residues were below the 5.0 mg/L MRL for fludioxonil with 2.5 mg/kg on 'Fuji' and 4.7 mg/L on 'Cripps Pink'. The second most effective treatment application was the fludioxonil drench, which resulted in varying BER incidences on the two apple cultivars of 26% ('Fuji') and 57% ('Cripps Pink'), respectively. Thermofogging using fludioxonil did not sufficiently reduce BER incidence (53% on 'Fuji' and 71% on 'Cripps Pink'). Pyrimethanil did also not give sufficient control of BER when applied either as dip (82-100%), drench (71-100%) or thermofogging treatment (41-81%). Residues measured between 0.04 mg/kg and 2.5 mg/kg pyrimethanil, significantly lower than the MRL of 15 mg/kg. Weather data indicated an increased risk for bull's eye rot with 6 rain events in the month before harvest.

Conclusion and Discussion / Recommendation

Currently registered fungicide fludioxonil can significantly lower BER infection caused by *N. vagabunda* in the Western Cape. Nevertheless in the light of fungicide resistance management the application of a single fungicide is not recommended, thus further work must commence to investigate potential synergistic effects of fungicide combinations as well as formulations of pyrimethanil that would allow a higher amount of residue deposited on fruit, which would be required for effective BER control.