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CASE STUDY: INDUSTRY RESPONSE TO THE LUPIN ANTHRACNOSE INCURSION IN WESTERN AUSTRALIA.

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Lupin anthracnose case study

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OVERVIEW

Anthracnose in lupins, caused by *Colletotrichum lupini*, was first detected in commercial crops in WA in 1996

R&D activities:

- Resistant Varieties
- Seed Testing
- Seed Dressings

GRDC

Grains
Research &
Development
Corporation



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Resistant Cultivar Development

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At the time of the anthracnose outbreak most narrow-leafed lupins were rated MS or worse.

Albus and yellow lupin cultivars were rated VS or S

Field and glasshouse screening soon identified good resistance in narrow-leafed lupin (cv.Wonga and cv.Tanjil)



RESISTANT

SUSCEPTIBLE



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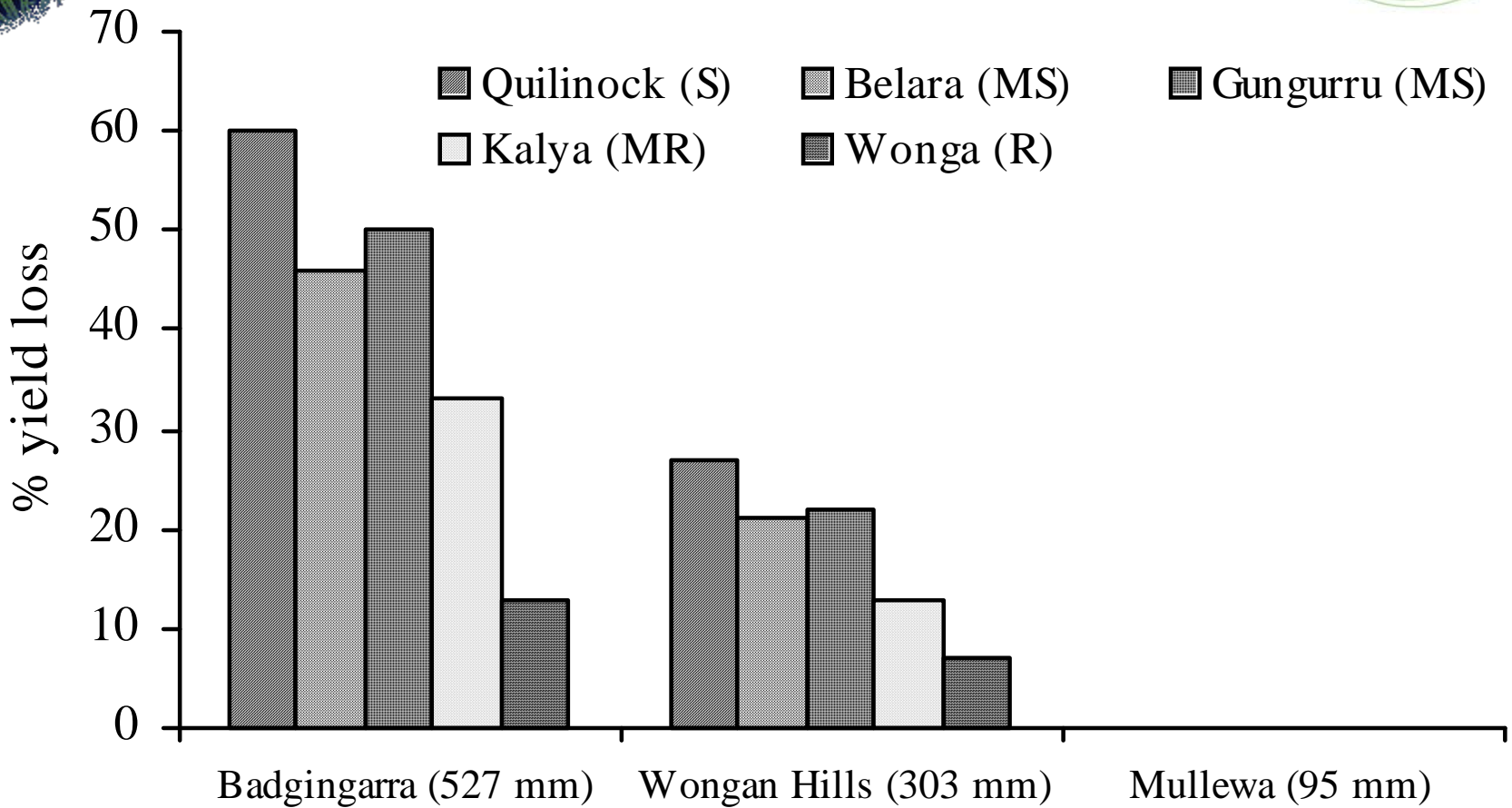


LARGE FIELD TRIAL PROGRAM AT KOJAREENA NEAR GERALDTON



**Kiev
mutant**

Tanjil



Percentage yield losses from 0.5% infected plants across cultivars at three sites with different rainfall

An aerial photograph of a large agricultural field, likely corn, divided into a grid of numerous rectangular experimental plots. The plots show varying degrees of plant health, with some appearing dark green and others showing significant yellowing or browning, indicating different levels of seed infection and yield loss. The field is bordered by a dirt road or path.

**HIGHER LEVELS OF SEED INFECTION RESULT IN
HIGHER YIELD LOSS**

**CRITICAL SEED INFECTION
LEVELS CAN BE DETERMINED**

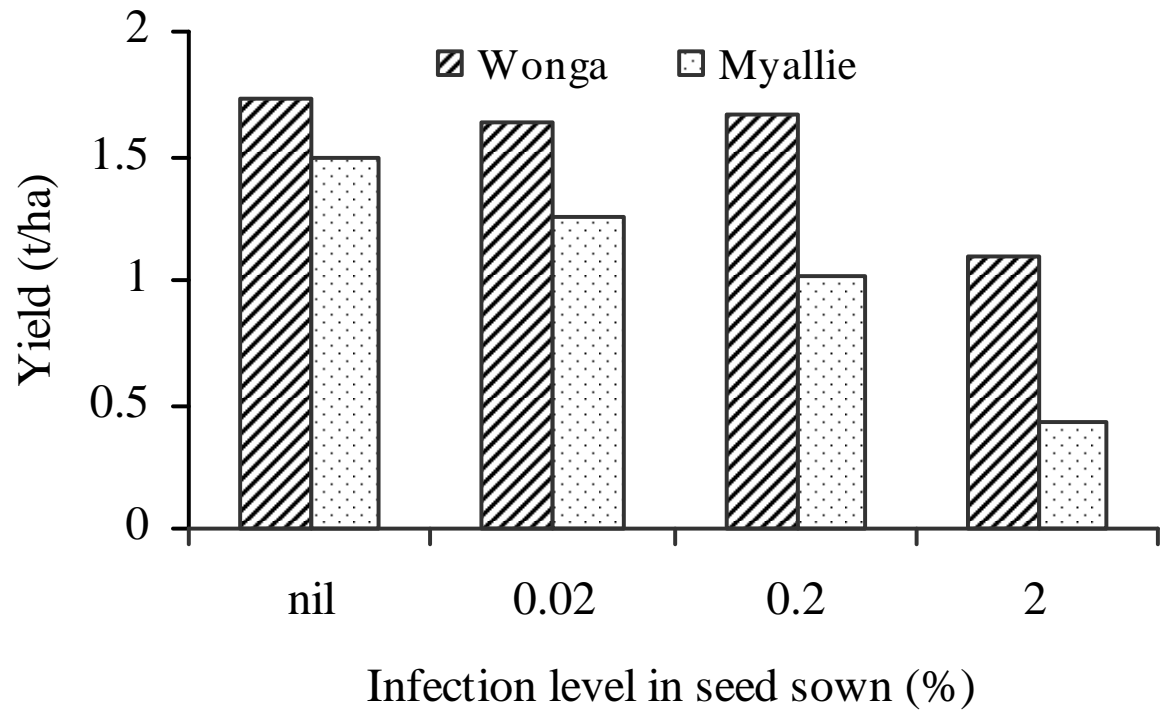


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GROWING OUT TRANSPLANTS





Impact of inoculum level and cultivar resistance on lupin yield

TANJIL

MYALLIE





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SEED TESTING

A Polymerase Chain Reaction (PCR) test became available to growers

Research carried out at CLIMA and SABC



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SEED TESTING

This test was capable of detecting one infected seed in 10,000.

The test was improved over time to become quantitative

Seed infection level estimated based on the quantity of *C. lupini* DNA present



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SEED TESTING

Seed testing became widely utilised as a tool for seed certification

local seed supply

interstate and international seed biosecurity.

Commercially available through Saturn Biotech



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COMMUNICATION WITH INDUSTRY

Planting low risk seed

- Information on safe seed test thresholds was provided based on cultivar and regional environment.

Fungicide seed treatment

Thiram was the recommended fungicide mixed with a dicarboximide for brown spot control.

Seed dressing fungicide was strongly recommended in all parts of the State.

Crop rotation

A single year break was found to be sufficient for stubble borne spores to break down.



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THE GEOGRAPHICAL RISK FACTORS

- The latent period for the disease was shorter and disease incidence and severity greater as temperatures rose from 12°C to 26°C.
- Disease incidence and severity is greater in higher rainfall and warmer environments.



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THE GEOGRAPHICAL RISK FACTORS

- Wild sandplain lupins are endemic in pastures and roadsides in the northern agricultural region of WA and are susceptible to anthracnose.
- As such, they act as a reservoir for the fungus and a source of infection annually.
- Risk was greatest in the high rainfall northern grainbelt

FIELD WALKS WITH GROWERS AND AGRONOMISTS

