

Department of Primary Industries and Regional Development
 GRDC
 GROWING BETA CAROTENE & DEVELOPMENT COOPERATION

Sclerotinia control strategies Challenges and opportunities

Ravjit Khangura and the National Canola Pathology Team

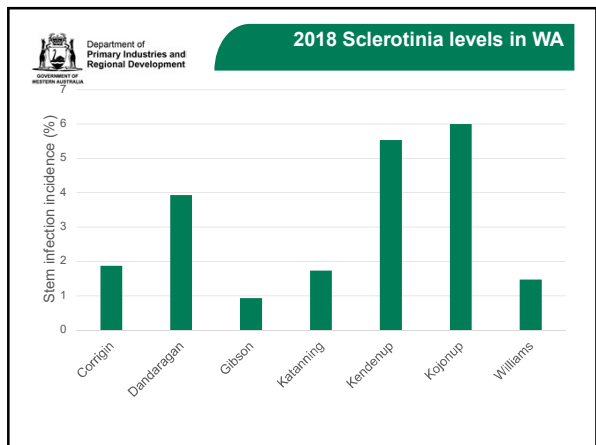
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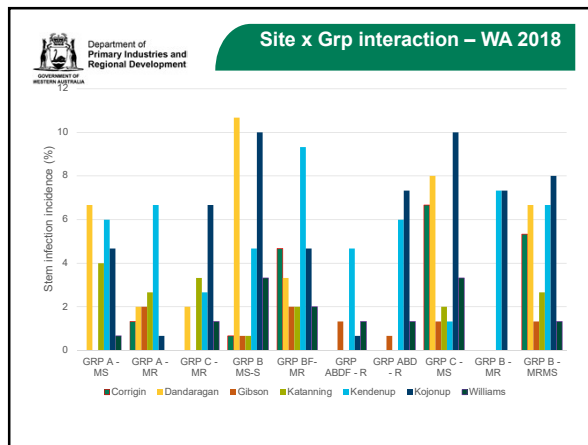
Outline

- Sclerotinia in 2018
- Current Research
 - Cultural management
 - Fungicide timing
 - Basal infections
 - Environment and disease
- Key messages

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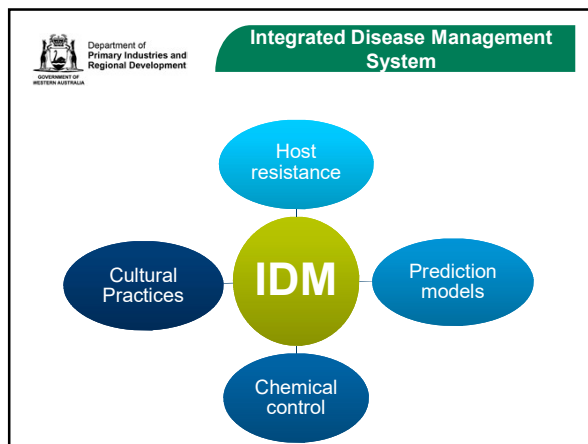
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2018, Sclerotinia lesions

Percentage plants with infection

| | ATR-Bankia | ATR-M&B | ATR-Singru | BAGP5000 | DC500 | HYG1030 | HYG1030+PENG | HYG1040 | Pioneer Start | Pioneer Start+PENG | Tornado | Turbid | Totals |
|-------------|------------|---------|------------|----------|-------|---------|--------------|---------|---------------|--------------------|---------|--------|--------|
| | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems | Stems |
| WA | 2 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 18 |
| Border Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Corrigin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dandaragan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Gibson | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kalanning | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kendenup | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kojonup | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Williams | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 36 | 36 | 32 | 40 | 32 | 35 | 23 | 34 | 56 | 28 | 24 | 76 | 46 |

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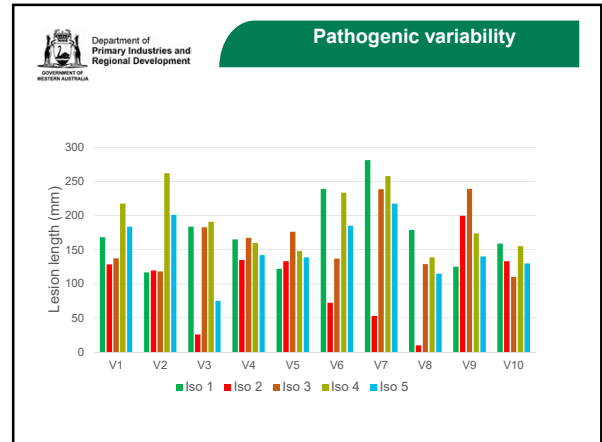


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Challenges in Breeding for Resistance to Sclerotinia

- ❖Lack of adequate and definitive sources of resistance
- ❖Lack of efficient and reliable screening techniques
- ❖Field screening cumbersome
- ❖Pathogenic diversity
- ❖Difficulty in identifying multiple genes

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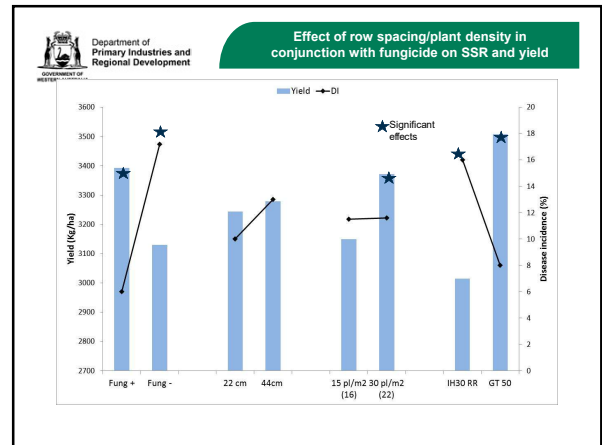


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Challenges in adopting cultural practices

- Long rotations
 - Limits canola expansion
 - Broad host range
- Seed free of sclerotia
 - No seed certification
- Wide row spacing
 - Ability of plants to produce prolific branching
- Stubble burning/deep burying
 - Sclerotia reside in soil
 - No till/minimum tillage

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Challenges in applying Chemical control measures

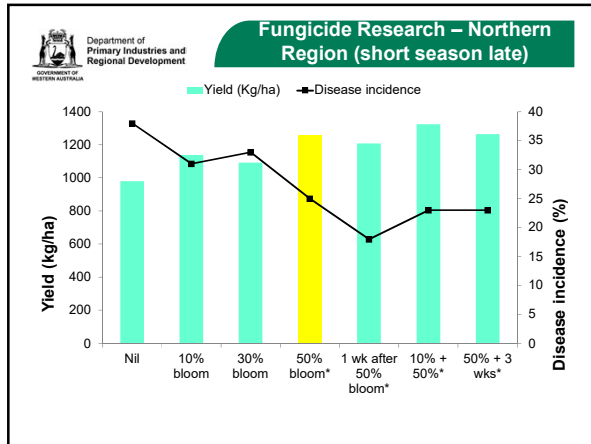
- Too expensive
- Should I or shouldn't I spray?
- When should I spray?
- Risk of developing fungicide resistance
 - Overuse
- Resistance already reported
 - Carbendazim (mbc)
 - dicarboximide

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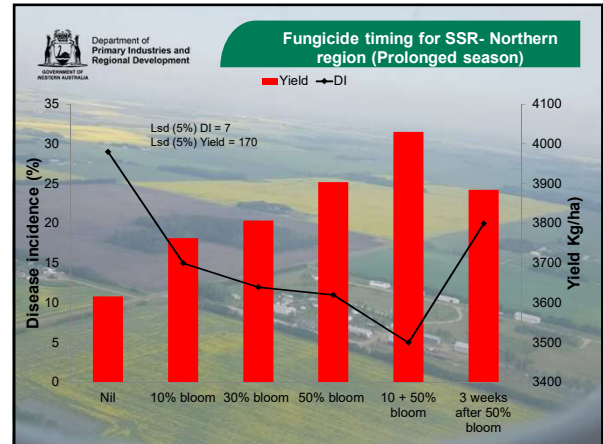
Optimise fungicide timing to manage SSR in canola

- Fungicide efficacy and timing trials
 - ❖Northern region (2010-2017)
 - ❖Central region (2014, 2016)
 - ❖Southern region (2015, 2016, 2017)

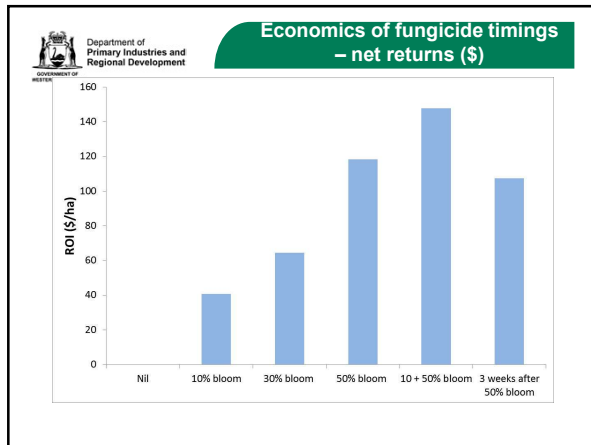
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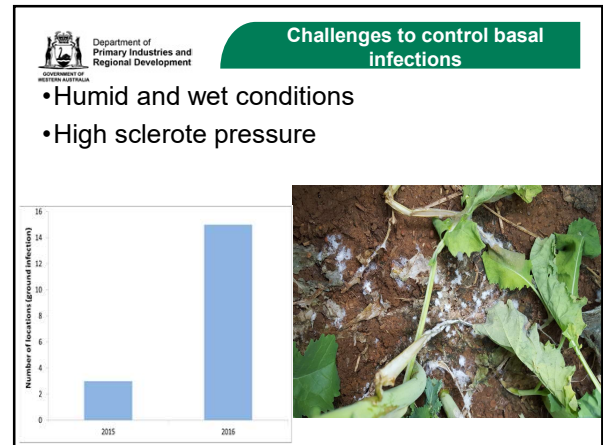
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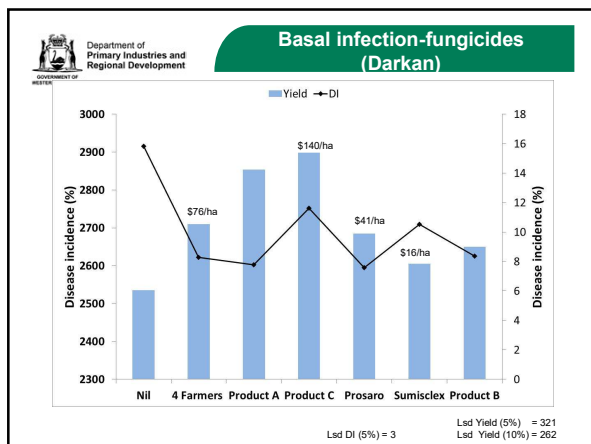
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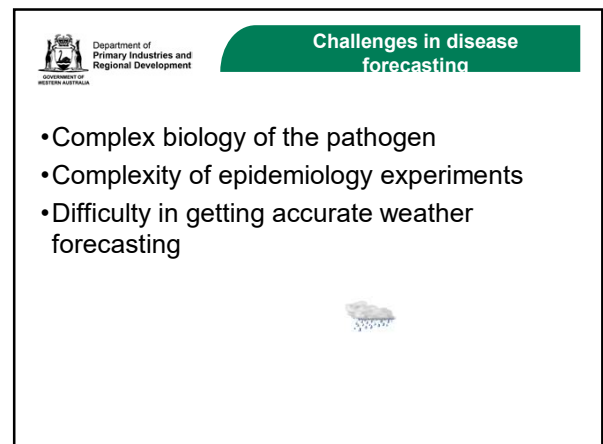
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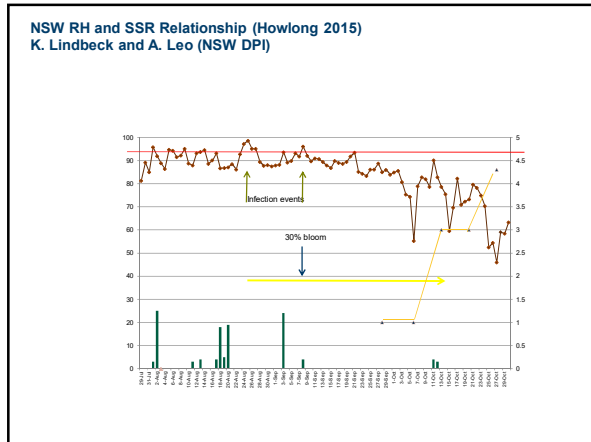
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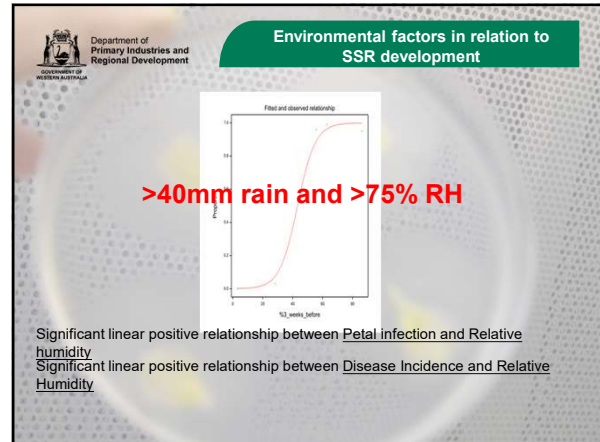
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Challenges and Opportunities (\$)

| | |
|--|---|
| <p>Challenges</p> <ul style="list-style-type: none"> • GRDC Investment • \$200, 000/annum | <p>Opportunities</p> <ul style="list-style-type: none"> • ROI (\$) • 0.2t/ha improvement • 100, 000ha treated • Estimated net returns = \$6.5M/annum |
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Key Messages

- Complexity of the pathogen and lack of genetic resistance pose significant challenges
- Long rotations
- Clean seed
- Fungicides remain the most powerful tool
 - Well timed one spray (ROI \$50-200/ha)
 - Two sprays in prolonged seasonal conditions (\$40-125/ha)
 - Very late spray (-\$21/ha)
- Forecasting will help more judicious use of fungicides
- Spray decision tool (Sclerotinia CM App)

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Acknowledgements

| | | |
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Thank you

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