Field Scale Disease Management

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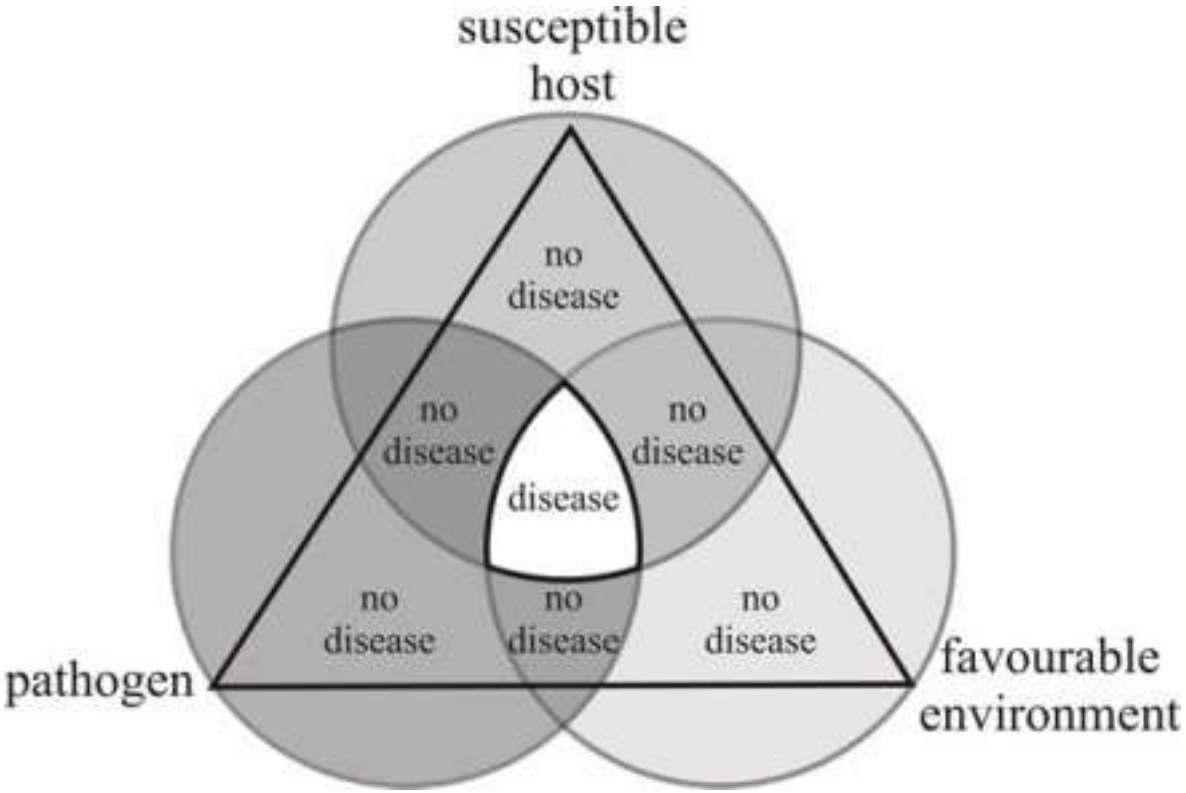
Disease Triangle



http://www.plantpath.wisc.edu/PDDCEducation/MasterGardener/General/Slide2.htm

General Disease Prevention

Sclerotinia infection of soybean

- Assess threat of disease development
- Watch for rain using precipitation forecasts
- Check for dew on your shoes
- Place your hand in the crop canopy to check for moisture wetness in late morning or early afternoon
- Do days warm up so you do not need a sweater? (evaporation of leaf surface wetness)
- Will a sheet of plywood fly out of your hands like a kite? (evaporation of leaf surface wetness)

What disease threats do we face?

Cereals

- Root rots
- Fusarium head blight
- Blackpoint, leaf spotting and smudge
- Seed borne diseases
- Ergot (wheat and grasses)

Broadleafs

- Root rots
- Blackleg (canola)
- Sclerotinia (canola)
- Ascochyta and Anthracnose (lentil)

Risk Judgement

- Growers focus on higher value crops
- For some irrigation growers, maximizing returns means growing a crop sensitive to sclerotinia 3-4 times over a five year period
- If this cropping sequence occurs together with a high moisture growing season or irrigation, sclerotinia can explode

  e.g. 1999 in lentil at Rosetown (110 mm July rain),
  2016 in lentil at Outlook (195 mm July rain)
- Demonstrates need for integrated disease control (more than one control approach) with sclerotinia and an empty sclerotia body bank

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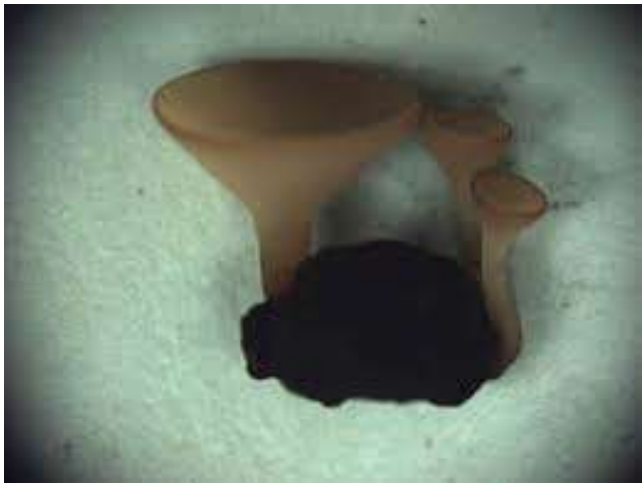
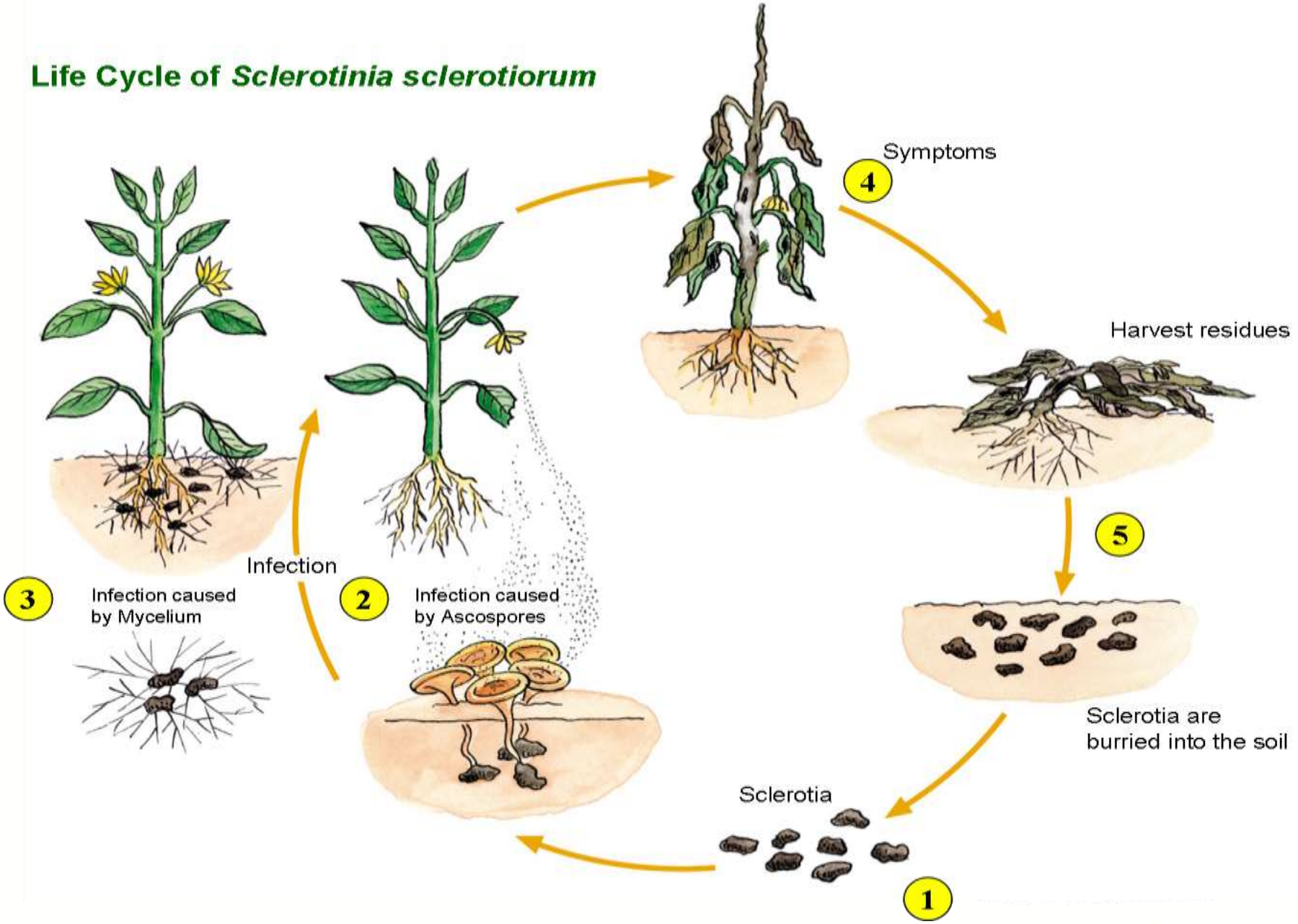
Sclerotinia



- Two modes of infection
  1) Carpogenic germination – apothecia release ascospores which infect blossom petals in canola
  2) Mycelial germination - mycelium from sclerotia bodies germinate and penetrate plant roots in soil

Life Cycle of *Sclerotinia sclerotiorum*



Contans

- Coniothyrium minitans
- Filamentous fungi pathogenic to sclerotinia
- Dark brown
- Aroma like mushrooms
- Resistent to light
- Degraded by high temperature
- Store below 5C

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Contans WG Petri Dish Display – 14 Days after Treatment

Original sclerotia

New sclerotia

Contans Fungi

Indicates treated with Contans

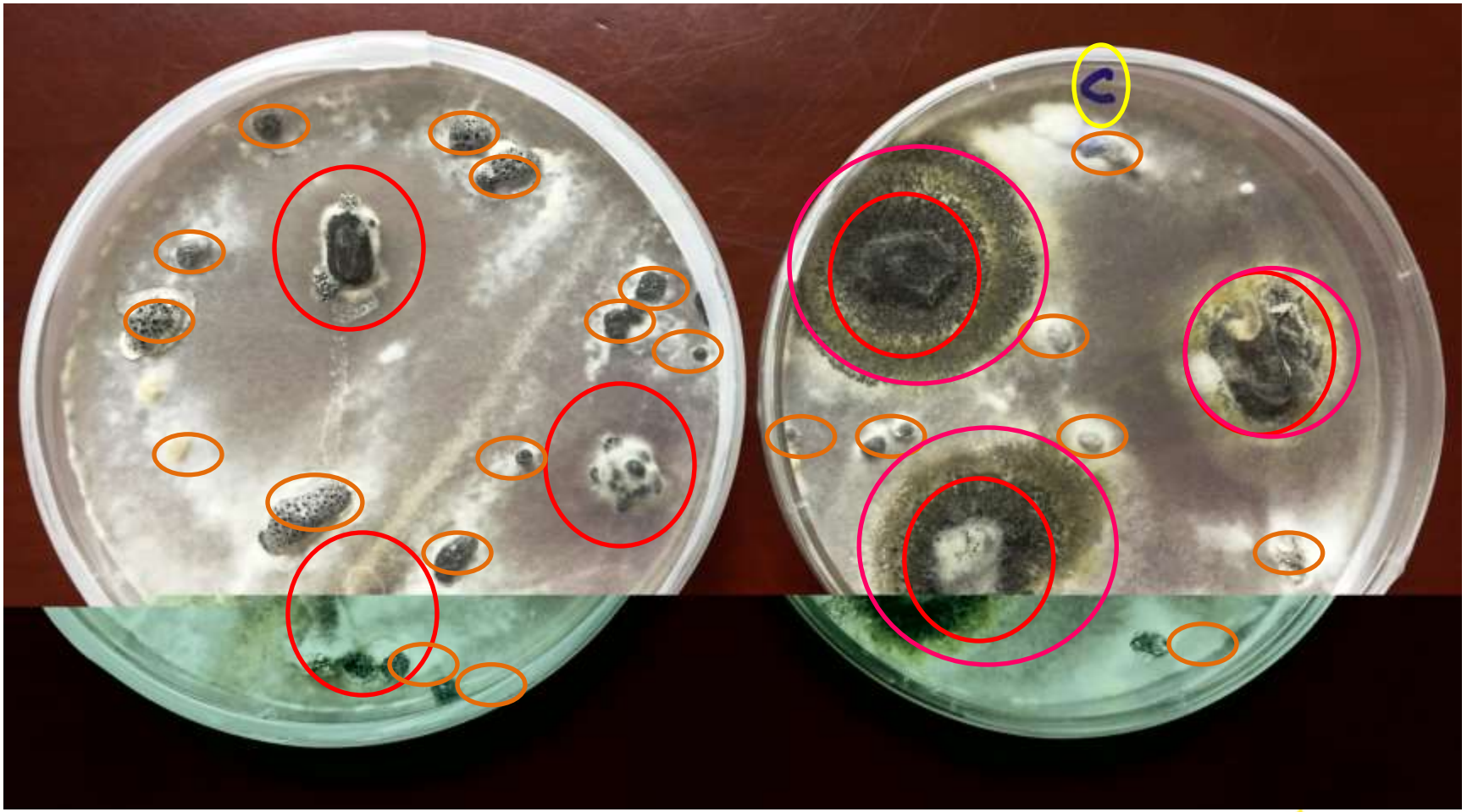
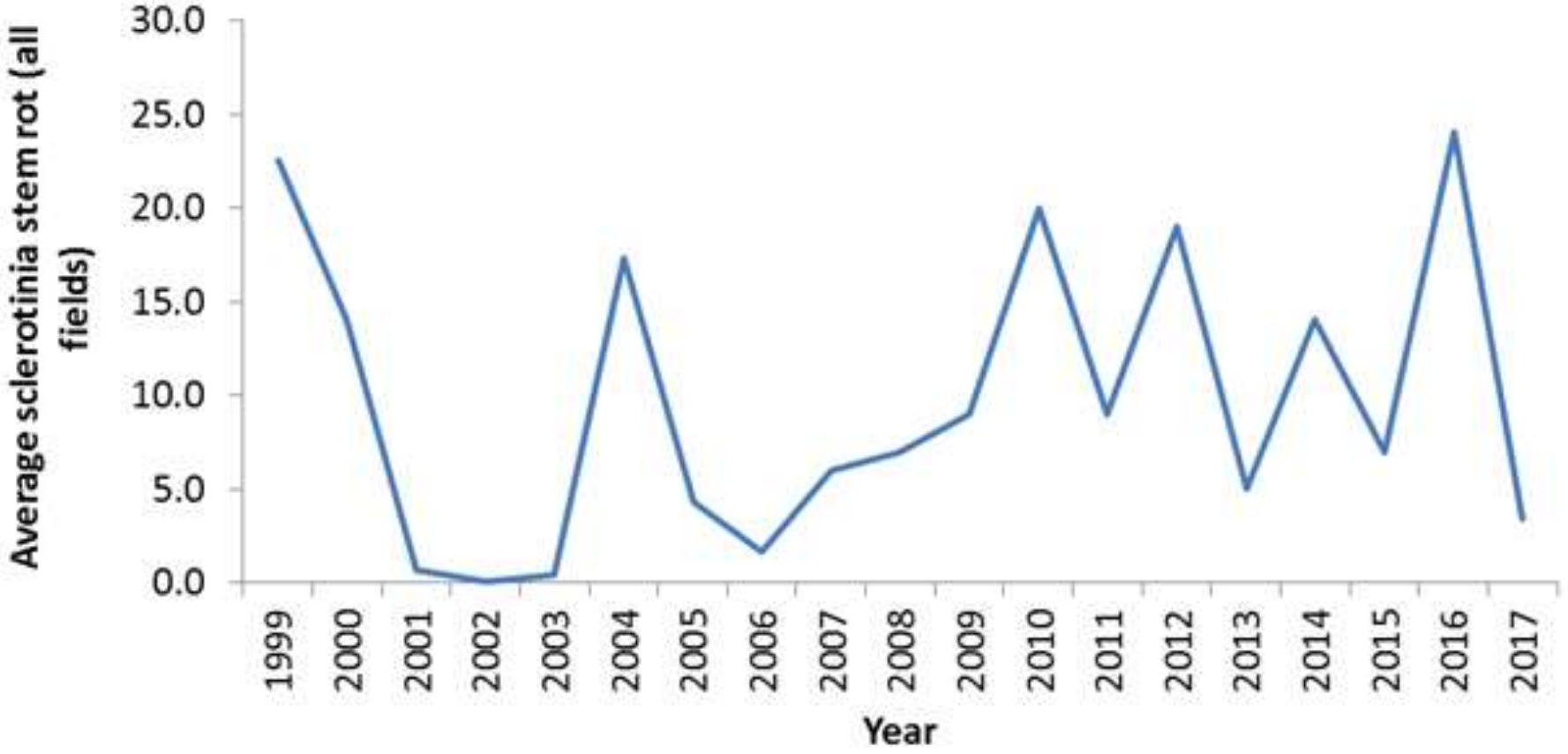


Photo credit: Dale Ziprick, UAP

Sclerotinia incidence in Canola in Saskatchewan (1999-2017)



Data courtesy Barb Ziesman, Provincial Disease Specialist, Regina

Contans 2017 Strip Trial (lb/ac)

Contans Applied in Spring and Fall of 2016

Treatment (2-3 in. ppt)	Lentil (3.5" irrigation)	Yield Increase (lb/ac)	Dry Bean (8 "irrigation)	Yield Increase (lb/ac)
Contans	2693	125 (5%)	2887	190 (7%)
Without Contans	2568		2697	

Wheat stubble (2016)
Planned for Canola in 2017
Delaro Fungicide 2017
0.6 kg/ac Contans in 2016
0.2 kg/ac Contans in 2017
3.5" Irrigation

Canola stubble 2016)
Planned for Wheat in 2017
Contegra Fungicide in 2017
0.6 kg/ac Contans in 2016
0.2 kg/ac Contans in 2017
8" Irrigation

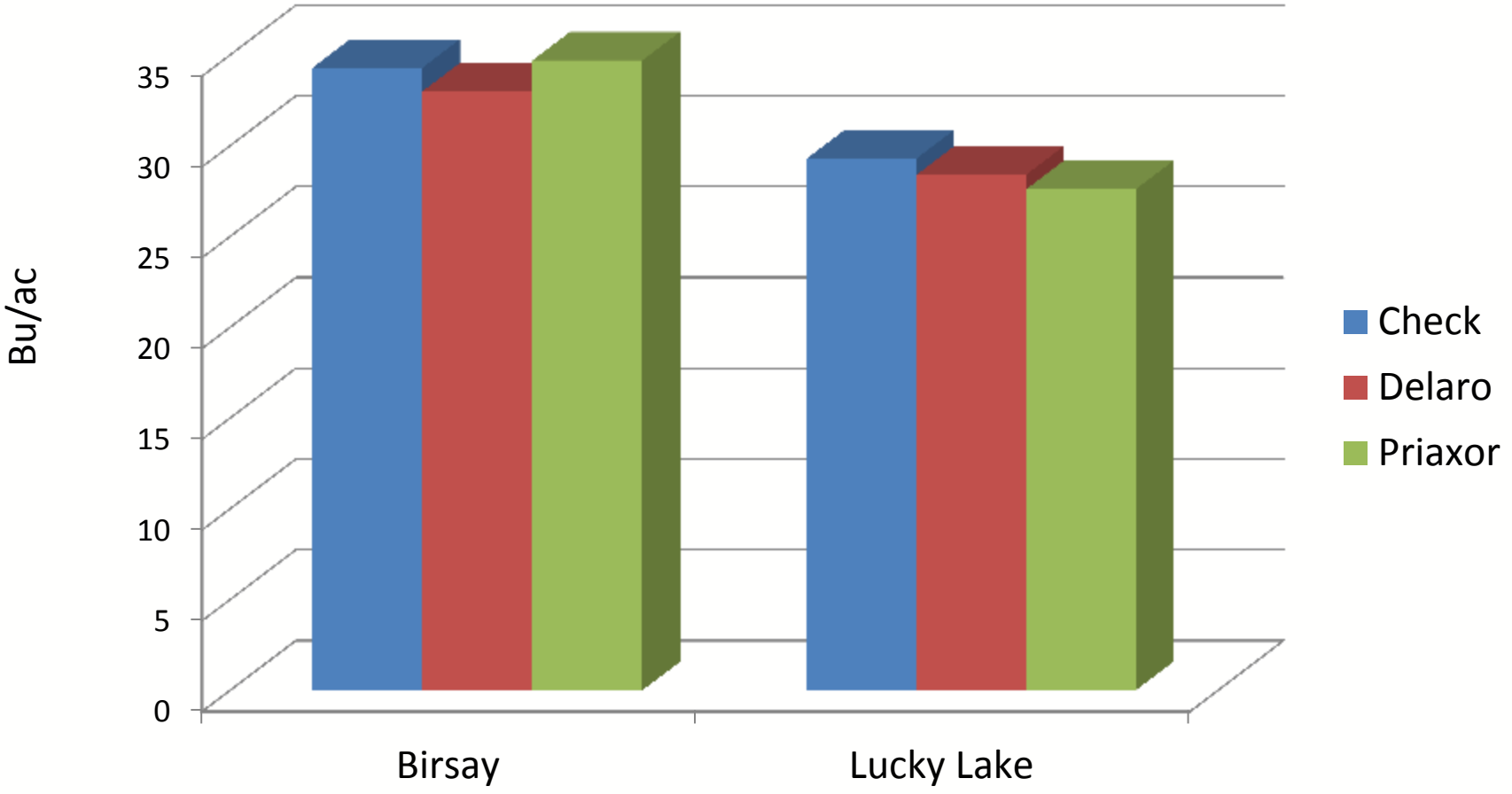
Using Contans

- Apply to soil surface and incorporate with light harrowing in fall following harvest (or spring)
- Pricing approx. $700 / 20 kg bag
- 0.44 – 1.8 lb/ac ($7-28/ac)
- Store in frozen state
- 25% decline in 18 months

Fungicide Application to Irrigated Soybeans 2017

- Sclerotinia in soybeans reported to Ag Knowledge Center in 2016
- 2017 ICDC Demonstrations – Two sites.
- Application at R2 stage
- No response to either fungicide in 2017
- Cooperator Calvin Bagshaw and Kase de Winter
- Bayer CropScience and BASF

2017 Soybean Response to Fungicide



Summary

- Weather variability means prediction of high incidence of sclerotinia years not feasible.
- Using Contans lowers risk because it removes the backlog of infective sclerotia bodies from soil (presence of pathogen)
- Contans fights fungicide resistance in pathogen – different mode of action than foliar fungicides

Photo credit: Barb Ziesman

Acknowledgements

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