

Research update on hop downy mildew and cone diseases

Presented by: Amy Fang Shi

Presented at the Hop Research Twilight Meeting

July 23, 2015

Objectives

- 1) Characterization of hop downy mildew
- 2) Sources of downy mildew inoculum
- 3) Identification of cone diseases

Hop downy mildew



- First appear on basal spikes

Hop downy mildew

- ⦿ Caused by: fungus-like water mold
- ⦿ *Pseudoperonospora humuli*



Hop downy mildew



Hop downy mildew



Objective 1) Characterization

● Hop downy mildew survey

Purposes:

- Whether DM is present in Ontario (location, grower practices, etc.)
- Nine hop yards surveyed in 2014 and four in 2015

Objective 1) Characterization

Hop downy mildew (DM) survey

● In 2014

- Disease pressure was low
- DM was found on 4/9 commercial hop yards and one wild hop cluster
- No damage was caused to cones

● In 2015

- Monitoring four hop yards monthly
- DM was found in 3/4 hop yards
- Severe damage in some hop yards

Objective 2) Sources of inoculum

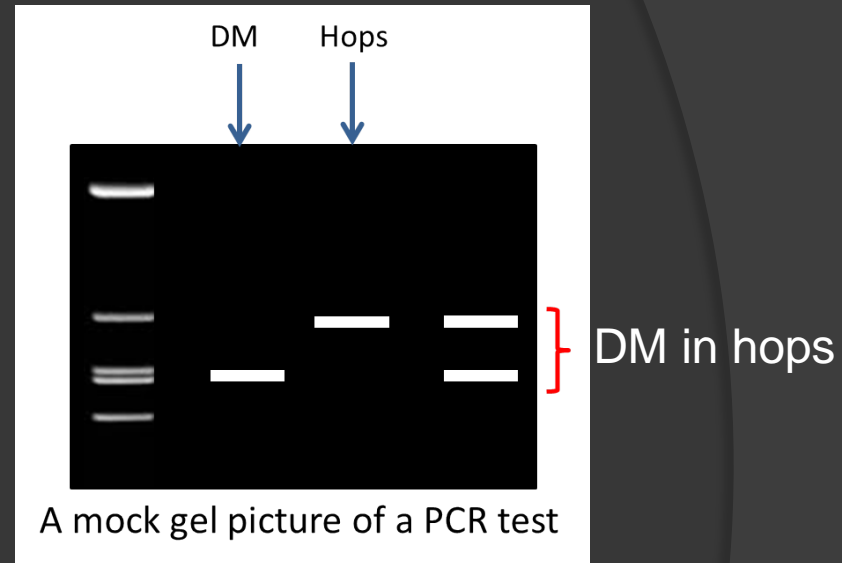
◎ Other hosts?

- Wild hops
 - downy mildew was found in 2014
- Cucumbers
 - cross-infection
 - cucumber downy mildew has been reported in 2015

Objective 2) Sources of inoculum

● Rhizomes?

- Collected rhizomes from growers
- Examined using microscopy and PCR (before symptoms show?)



Rhizome samples:

- Are you expanding your hop yard in 2016?
- We can accept 30-50 samples in total, 5 samples per grower

Objective 3) Cone diseases

- Downy mildew
- Powdery mildew
- Alternaria cone disorder
- Botrytis cone disease
- Cone tip blight (*Fusarium* sp.)

Alternaria cone disorder

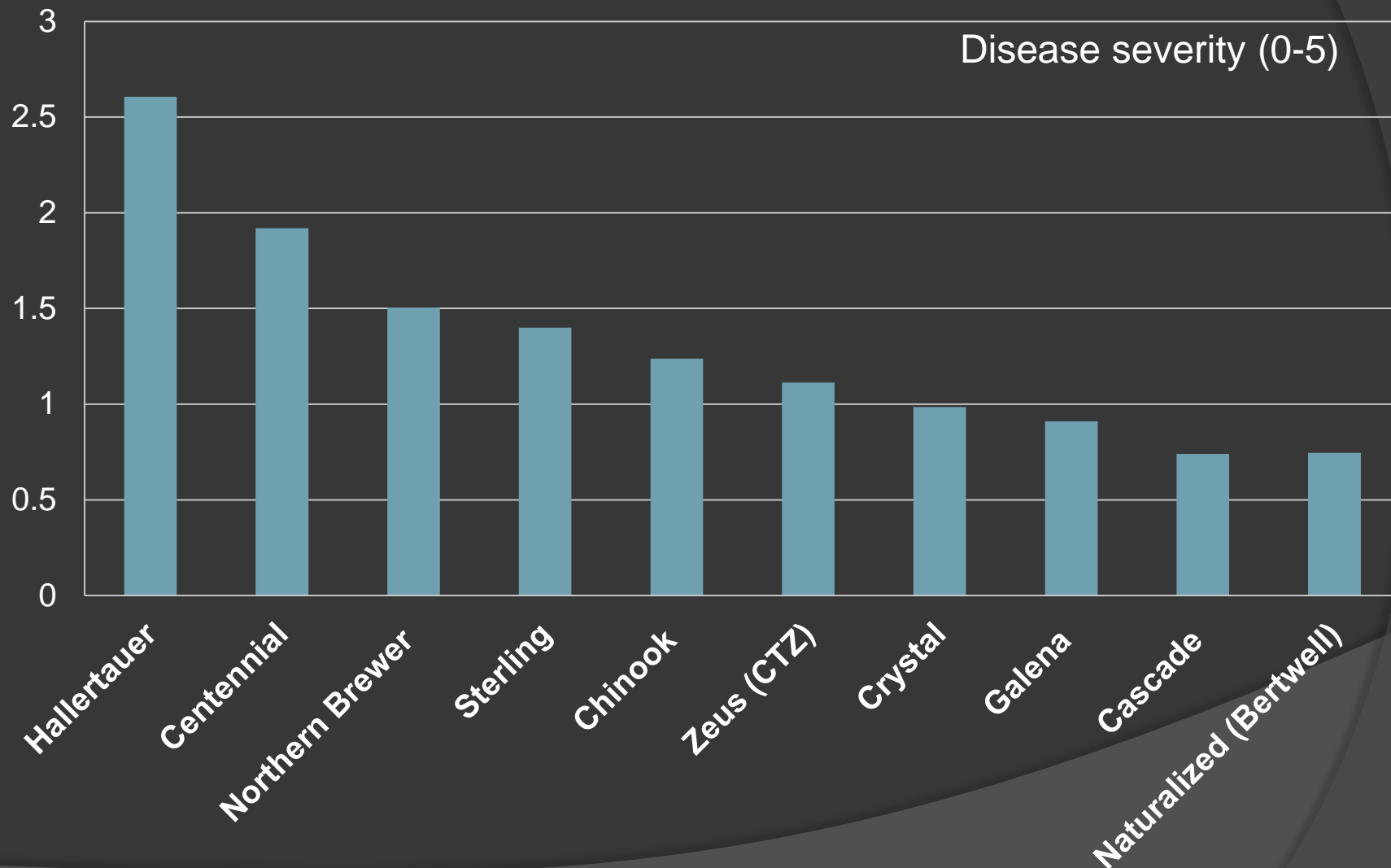


Alternaria cone disorder

Disease severity scale



Alternaria cone disorder in 2014



Acknowledgements

- ◉ Funded by OMAFRA-U of G
- ◉ University of Guelph
 - Dr. Mary Ruth McDonald
 - Cathy Bakker
 - Al Sutherland
 - Candace Mehaffey
- ◉ OMAFRA
 - Dr. Melanie Filotas
 - Evan Elford



UNIVERSITY
of GUELPH

Ministry of Agriculture,
Food and Rural Affairs



Ontario

Thank you!

