

2013
International Clubroot
Workshop

June 19 - 22, 2013
Delta Edmonton South (**Royal/Imperial Rooms**)
Edmonton, Alberta CANADA

Wednesday, June 19, 2013

2:00 - 5:00 pm Registration
6:00 - 9:00 pm Wine and Cheese Reception; Poster Set-up and Display

Thursday, June 20, 2013

7:00 – 8:00 am Buffet Breakfast; Poster Set-up and Display

Session 1

Chair: Dr. Curtis Rempel

8:00 – 8:25 am Dr. Siddika Mithani, Agriculture and Agri-Food Canada
Opening Address
8:25 – 9:10 am Dr. Geoffrey R. Dixon, University of Reading, United Kingdom
Clubroot – A Biological and Agricultural Challenge Worldwide
9:10 – 9:25 am Dr. Curtis Rempel, Canola Council of Canada
Clubroot and the Importance of Canola in Canada
9:25 – 9:55 am Dr. Stephen Strelkov, University of Alberta
Pathology and Epidemiology of Clubroot in Canada

9:55 – 10:25 am Morning Break

Session 2

Chair: Dr. Geoff Dixon

10:25 – 10:55 am Dr. Elke Diederichsen, Freie Universität Berlin
Clubroot in Europe
10:55 – 11:00 am Dr. Malgorzata Jędrzycka, Polish Academy of Sciences
Current Incidence of Clubroot on Oilseed Rape in East Europe
11:00 – 11:30 Dr. Ann-Charlotte Wallenhammar, Swedish University of Agricultural
Sciences
*Clubroot, a Permanent Threat to Swedish Oilseed Rape
Production*
11:30 – 12:00 pm Dr. Yueqiu He, Yunnan Agricultural University
*Research Status of Clubroot Disease of Cruciferous Crops in
China*

Thursday, June 20, 2013

- 12:00 – 1:00 pm Buffet Lunch
- Session 3** **Chair: Dr. Mary Ruth McDonald**
- 1:00 – 1:20 pm Dr. Jutta Ludwig-Müller, Technische Universität Dresden
Hormone Signaling During the Development of the Clubroot Disease in Arabidopsis thaliana Roots
- 1:20 – 1:40 pm Dr. Habibur Rahman, University of Alberta
Breeding for Clubroot Resistance at the University of Alberta
- 1:40 – 2:00 pm Dr. Fengqun Yu, Agriculture and Agri-Food Canada
Identification of Clubroot Resistance Genes and Development of Clubroot Resistant Canola Germplasm
- 2:00 – 2:20 pm Dr. Genyi Li, University of Manitoba
Mapping Clubroot Resistance Genes in Chinese Cabbage and ECD Accessions of Brassica rapa
- 2:20 – 2:35 pm Afternoon Break
- Session 4** **Chair: Clinton Jurke**
- 2:35 – 3:05 pm Dr. Gary Peng, Agriculture and Agri-Food Canada
Integrated Management of Clubroot on Canola with Crop Rotation, Cultivar Resistance, and Fungicides/Biofungicides
- 3:05 – 3:35 pm Dr. Sheau-Fang Hwang, Alberta Agriculture & Rural Development
Management of Clubroot on Canola in Western Canada
- 3:35 – 4:05 pm Dr. Bruce Gossen, Agriculture and Agri-Food Canada
Environmental parameters that Affect Clubroot Risk on the Canadian Prairies
- 4:05 – 4:15 pm Dr. George Clayton, Agriculture and Agri-Food Canada
Closing remarks
- 4:15 – 5:30 pm Poster Session; Coffee; Closing Remarks; Adjourn

Friday, June 21, 2013

- 7:00 – 8:00 am Buffet Breakfast
- Session 1** **Chair: Dan Orchard**
- 8:00 – 8:30 am Jo-Ann Hall, Alberta Agriculture and Rural Development
Opening Address
Clubroot Video
- 8:30 – 10:00 am Dr. Ron Howard, Alberta Agriculture and Rural Development
Evaluating Methods for Cleaning and Disinfesting Equipment Contaminated with Clubroot
Paul Muyers, Solid Ground Solutions Ltd.
Agricultural Industry Perspective
Andrea Bullinger, Encana
Petroleum Industry Perspective
Shannon Leggo, ATCO Electric
Construction Industry Perspective
Sean Hannigan, Swift Environmental
Custom Equipment Cleaning and Decontamination

Friday, June 21, 2013

10:00 – 10:15 am Morning Break

Session 2

10:15 – 11:00 am

Chair: Murray Hartman

Clinton Jurke and Dan Orchard, Canola Council of Canada
Clubroot Management

11:00 – 12:00 am

Maureen Vadnais, Alberta Agriculture and Rural Development
Clubroot Regulation in Alberta

Aaron van Beers, Leduc County

Clubroot regulation in Leduc County

Holly Derksen, Manitoba Agriculture, Food and Rural Initiatives

Clubroot Regulation in Manitoba

Dr. Cecilia Peluola, Saskatchewan Ministry of Agriculture

Clubroot Regulation in Saskatchewan

Discussion

12:00 – 12:45 pm

Buffet Lunch

Session 3

12:45 pm

Tour Lead: Dan Orchard

Assemble in Ballroom for Field Tour

1:00 – 2:00 pm

Transportation to Alberta Agriculture's Crop Diversification Centre – North Research Facility

2:00 – 3:00 pm

Clubroot Nursery Tour

Soil Amendments, Fumigation Treatments, Resistant/Susceptible Varieties, and Dust Traps

3:00 – 3:30 pm

Afternoon Break

3:30 – 5:00 pm

Crop Diversification Centre – North Research Facility Tour and Demonstrations

Sanitation Demonstration, Greenhouse and Lab Facilities Tour

5:15 pm

Transport to Delta Edmonton South Hotel and Conference Centre

Saturday, June 22, 2013

Post-Workshop Tour

Tour Lead: Dan Orchard

9:30 – 9:45 am

Assemble in Ballroom for Farm/Retail Tour

10:00 – 10:30 am

Transportation to local retail

10:30 – 11.30 am

Sturgeon Valley Fertilizers Tour

11:30 – 12:00 pm

Canola Farm Tour

12:00 – 12:45 pm

Lunch at the farm

12:45 – 2:30 pm

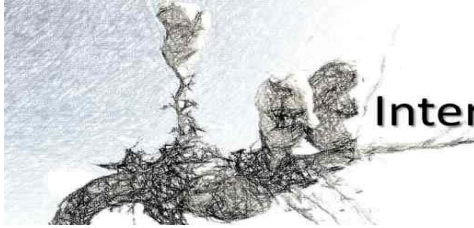
Canola Farm Tour continued

2:30 pm

Transportation to West Edmonton Mall

5:00 pm

Transport to Delta Edmonton South Hotel and Conference Centre



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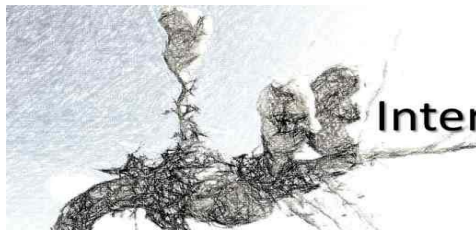


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INTERNATIONAL CLUBROOT WORKSHOP, EDMONTON, ALBERTA, CANADA
JUNE 19 – 22, 2013

POSTER ABSTRACTS

1. **Pathotype reaction in clubroot-resistant canola cultivars in Canada**
A. Deora, B.C. Gossen, and M.R. McDonald
2. **Screening germplasm in *Brassica oleracea* for breeding for resistance to clubroot (*Plasmodiophora brassicae*)**
Yunhua Ding, Liting Zuo, Tingting Yang, Fan Liu, Yuancai Jian, and Lihua Geng
3. ***Plasmodiophora brassicae* resting spore load dynamics in clubroot-resistant canola (*Brassica napus*) cropping systems in Alberta, Canada**
T.W. Ernst, D. Stanton, D.C. Rennie, I. Falak, S.F. Hwang, and S.E. Strelkov
4. **Potential for degree day modeling of clubroot on canola**
T.V. Gludovacz, B.C. Gossen, and M.R. McDonald
5. **Limitations of qPCR to quantify gDNA of *Plasmodiophora brassicae* in young seedlings**
T.V. Gludovacz, B.D. Gossen, and M.R. McDonald
6. **Cost of resistance to *Plasmodiophora brassicae* when inoculum pressure is high**
B.D. Gossen, M.R. McDonald, K. Sharma, A. Deora and G. Peng
7. **Genetics of resistance in rutabaga (*Brassica napus* var. *napobrassica*) to Canadian *Plasmodiophora brassicae* pathotypes**
Muhammad J. Hasan and Habibur Rahman
8. **Breeding of clubroot resistant Ogura CMS New Variety CCR11242 on *Brassica campestris***
Jiangming He, Jingfeng Hu, Xuezhong Xu, Hongli Yang, Qian Wang, Liyan Wu, and Zhimei Tian
9. **Evaluating methods for cleaning and disinfesting equipment contaminated with clubroot**
Ronald J. Howard, Dustin A. Burke, Stephen E. Strelkov, Derek C. Rennie, Carol A. Pugh, Sharon L.I. Lisowski, Michael W. Harding, and Gregory C. Daniels

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POSTER ABSTRACTS

10. **Study of clubroot resistance and Ogura CMS germplasm innovation on *Brassica* spp**
Jingfeng Hu, Hongli Yang, Xuezhong Xu, and Jiangming He
11. **The incidence of *Plasmodiophora brassicae* in agricultural soils in Poland**
Joanna Kaczmarek, Marek Korbas, Janetta Niemann, Ewa Jajor, and Malgorzata Jedryczka
12. **Clubroot in Europe – A survey of *Plasmodiophora brassicae* pathotypes occurring in the main European oilseed rape growing regions**
Wolfgang Lueders, Stefan Abel, Wolfgang Friedt, Doris Kopahnke, and Frank Ordon
13. **Reaction of canola to inoculation with primary and secondary zoospores of *Plasmodiophora brassicae***
M.R. McDonald, D. Sharma, B.D. Gossen, J. Feng, A. Deora, and S.F. Hwang
14. **Search for sources of resistance to *Plasmodiophora brassicae* in *Brassica* mutants and hybrids**
Janetta Niemann, Joanna Kaczmarek, Jan Olejniczak, Andrzej Wojciechowski, and Malgorzata Jedryczka
15. **Clubroot on winter rape (*Brassica napus*) in the Czech Republic**
Veronika Řičařová, Jan Kazda, Evženie Prokinová, Lenka Grimová, Khushwant Singh Sandhu, Petr Baranyk, and Pavel Ryšánek
16. **The distribution, damage, biocontrol and physiological race identification of clubroot in Sichuan, China**
Yulong Peng, Shan Lin, Yun Huang, Yingze Niu, Hong Xiong, Lei Ye, Qin Zhang
17. **The genome of a single-spore isolate of *Plasmodiophora brassicae***
Arne Schwelm, Johan Fogelqvist and Christina Dixelius
18. **Molecular insight into *Plasmodiophora brassicae* pathogenesis in *Brassica napus***
Chad D. Stewart, Yangdou D. Wei and Peta C. Bonham-Smith
19. **Assessment of *Brassica rapa* and *Brassica napus* genotypes for detecting physiologic specialization in populations of *Plasmodiophora brassicae* from Canada**
Stephen E. Strelkov, Tiesen Cao, Victor P. Manolii, and Sheau-Fang Hwang
20. **Evaluation of the impact of crop rotation on clubroot severity in canola in Alberta, Canada**
M. Tabori, T. Cao, V.P. Manolii, S.F. Hwang, and S.E. Strelkov

POSTER ABSTRACTS

21. **Life cycle of *Plasmodiophora brassicae* and auxin homeostasis in plant-*P. brassicae* interaction**
Jiangying Tu, Peta Bonham-Smith, and Yangdou Wei
22. **Field Volunteer destruction strategies to manage clubroot disease**
Nazanin Zamani-Noor
23. **Clubroot (*Plasmodiophora brassicae*) control in the Canadian canola (*Brassica napus*) crop using Vapam as a soil fumigant**
K.A. Zuzak, S.F. Hwang, G.D. Turnbull, V.P. Manolii, and S.E. Strelkov
24. **Reduction of clubroot (*Plasmodiophora brassicae*) symptoms associated with using calcium cyanamide fertilizer Perlka® in field crops**
Hans-Juergen Klasse
25. **Identification and mapping of clubroot resistance genes**
M. Chu, F. Yu, K.C. Falk, and G. Peng
26. **In-field distribution of *Plasmodiophora brassicae* measured using quantitative real-time PCR and the influence of soil physiochemical parameters on disease development**
Ann-Charlotte Wallenhammar, Charlotta Almquist, Mats Söderström, and Anders Jonsson