

# CANADIAN PHYTOPATHOLOGICAL SOCIETY ANNUAL MEETING

JULY 4-8, 2022

*“Harnessing the phytobiome for sustainable plant health”*

## PROGRAM SCHEDULE

All in Pacific Daylight Saving Time - Vancouver (GMT-7)

<b>MONDAY JULY 4, 2022</b>	
<b>7:30 – 8:00</b>	<b>Introduction/Welcome</b>
<b>8:00 – 9:30</b>	<b>Key Note Speaker Dr. Julia Vorholt</b>
<b>9:30 – 10:00</b>	<b>Break</b>
<b>10:00 – 13:00</b>	<b>CPS AMOM</b>
<b>13:00 – 13:30</b>	<b>Break</b>
<b>13:30 – 14:30</b>	<b>SESSION 1 – DISEASE ETIOLOGY</b>

<b>TUESDAY JULY 5, 2022</b>	
<b>7:30 – 9:30</b>	<b>Symposium – Dr. Filion, Dr. Grünwald, Dr. Haney</b>
<b>9:30 – 9:45</b>	<b>Break</b>
<b>9:45 – 12:00</b>	<b>SESSION 2 – HOST-PATOGEN INTERACTIONS</b>
<b>12:00 – 12:30</b>	<b>Break</b>
<b>12:30 – 14:00</b>	<b>SESSION 3 – HOST-PATOGEN INTERACTIONS</b>

<b>WEDNESDAY JULY 6, 2022</b>	
<b>7:30 – 9:30</b>	<b>SESSION 4 – HOST-PATHOGEN INTERACTIONS</b>
<b>9:30 – 9:45</b>	<b>BREAK</b>
<b>9:45 – 11:00</b>	<b>SESSION 5 – HOST-PATHOGEN INTERACTIONS</b>
<b>11:00 – 11:15</b>	<b>BREAK</b>
<b>11:15 – 12:30</b>	<b>SESSION 6 – DIAGNOSTICS</b>
<b>12:45 – 13:15</b>	<b>BREAK</b>
<b>13:15 – 15:00</b>	<b>SESSION 7 – DIAGNOSTICS</b>

<b>THURSDAY JULY 7, 2022</b>	
<b>7:30 – 9:30</b>	<b>SESSION 8 – DISEASE CONTROL</b>
<b>9:30 – 9:45</b>	<b>Break</b>
<b>9:45 – 12:00</b>	<b>SESSION 9 – DISEASE CONTROL</b>
<b>12:00 – 12:30</b>	<b>Break</b>
<b>12:30 – 13:15</b>	<b>SESSION 10 – DISEASE CONTROL</b>
<b>13:15 – 14:30</b>	<b>SESSION 11 – PATHOGEN BIOLOGY</b>

<b>FRIDAY JULY 8, 2022</b>	
<b>8:00 – 9:00</b>	<b>SESSION 12 – PATHOGEN BIOLOGY</b>
<b>9:00 – 9:15</b>	<b>BREAK</b>
<b>9:15 – 11:00</b>	<b>SESSION 13 – DISEASE/PATHOGEN EPIDEMIOLOGY</b>
<b>11:00 – 11:30</b>	<b>BREAK</b>
<b>11:30 – 12:15</b>	<b>STUDENT COMPETITION &amp; PHOTO CONTEST AWARDS</b>
<b>12:15 – 12:30</b>	<b>ADJOURN</b>
<b>12:30 – 14:00</b>	<b>STUDENT SOCIAL</b>

**MSc – SC: MSc Student Competition**

**PhD – SC: PhD Student Competition**

## MONDAY JULY 4, 2022

**7:30 – 8:00**      **Welcome Address**

**Dr. Jose R. Urbez-Torres**  
**Dr. Lone Buchwaldt**  
**Dr. Tom Forge**  
**Dr. Gurcharn Singh Brar**

**8:00 – 9:30**      **Key Note Speaker Presentation**

**Moderator: Dr. Guus Bakkeren**

**Dr. Julia Vorholt** - ETH Zurich, Institute of Microbiology, Switzerland  
*The leaf microbiota: disassembling and rebuilding to explore plant microbe interactions*

**9:30 – 10:00**      **Break**

**10:00 – 13:00**      **CPS AMOM**

**13:00 – 13:30**      **Break**

**13:30 – 14:30**      **SESSION 1 – DISEASE ETIOLOGY**

**Moderators: TBD**

- 13:30**      **Z.K. PUNJA, K. WANG, L. NI, S. LUNG AND L. BUIRS.** *Symptomology and prevalence of Hop Latent Viroid on greenhouse grown cannabis (*Cannabis sativa* L.) plants.*
- 13:45**      **S.F. SHAMOUN, K. RUFF, N. FEAU, G. BRADLEY, C. HALLDORSON, AND A. COSTER.** *Root and soil-borne oomycetes and fungi associated with western white pine (*Pinus monticola*) mortality in British Columbia's seed orchards.*
- 14:00**      **M.N. ISLAM, O. MOLINA, R. KUTCHER, AND X. WANG.** *Crop rotation affects the structure and diversity of soil pathogenic and non-pathogenic microbial communities*
- 14:15**      **J.L. MacDONALD, K.D. HANNAM, AND H. XU.** *Signs and symptoms of sudden apple decline in British Columbia, impacts on tree physiology, and the potential role of environmental stressors.*

## TUESDAY JULY 5, 2022

7:30 – 9:30

### CPS SYMPOSIUM

*“Tweaking the phytobiome for sustainable plant health”*

**Moderators: TBD**

**7:30**

**Dr. Martin Filion** – Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu Research Centre, Québec, Canada.

*“A functional tailored inoculation approach for plant-beneficial Pseudomonas spp. promoting sustainable plant health”*

**8:00**

**Dr. Niklaus J. Grünwald** – USDA Agricultural Research Service, Corvallis, Oregon, USA.

*“Novel computational and genomic approaches to understand oomycete emergence”*

**8:30**

**Dr. Cara Haney** – Department of Microbiology and Immunology, University of British Columbia, Vancouver, Canada.

*“Mechanisms in plant regulation of rhizosphere microbiota”*

**9:00**

**Round Table Discussion**

9:30 – 9:45

**Break**

9:45 – 11:45

### SESSION 2 – HOST-PATHOGEN INTERACTIONS

**Moderators: TBD**

**9:45**

MSc - SC

**V. FETTERLEY, D. GILBERT, K. GAURAV, H. S. CHAWLA, G. GERARD, S. HOLDEN, H. R. KUTCHER, X. CHEN, P. HUCL, B. B. H. WULFF, C. J. POZNIAK, S. ARORA AND G. S. BRAR.** *Summoning the ancestors: using an Aegilops tauschii diversity panel to improve stripe rust resistance in wheat.*

**10:00**

MSc - SC

**S. LI, H. KAUR, C. JAYASINGHEGE, D. REINECKE, AND J. OZGA.** *Characterization of clubroot disease development in Arabidopsis auxin receptor mutants, and peat-based and partially-hydroponic assay systems*

**10:15**

MSc - SC

**H. LIU, H. KAUR, S.E. STRELKOV, S.F. HWANG, AND J.A. OZGA.** *Transcriptome analysis of rutabaga (Brassica napus) cultivars indicates that the indole glucosinolate pathway may play a role in inducing plant defense against clubroot disease.*

**10:30**

MSc - SC

**E.J.R. MARCHETTA, K. YOSHIOKA, W. MOEDER, E. DÉZIEL AND C.D.M. CASTROVERDE.** *Temperature regulation of plant-rhizobacteria interactions within the soil-rhizosphere-rhizoplane interface.*

**10:45**  
MSc - SC                    **R. SALIH, J.-D. COTÉ, AND E. P.ÉREZ-LÓPEZ.** *A hydroponic based system to phenotype the clubroot pathogen.*

**11:00**  
MSc - SC                    **Y. ZHANG.** *Quantitative trait locus (QTL) mapping of aggressiveness in Fusarium graminearum, causing Fusarium head blight in durum wheat*

**11:15**  
MSc - SC                    **S.G. CHESNEY, B.D. GOSSEN, J. ROBSON, AND M.R. MCDONALD** *Type of soilless mix influences the development of clubroot (Plasmodiophora brassicae).*

**11:30**  
MSc - SC                    **S. SINGH AND G.S. BRAR.** *Fusarium head blight (FHB) resistance in 'Paragon/Watkin 1190580' bi-parental mapping population.*

**11:45 – 12:30**    **BREAK**

**12:30 – 14:00**    **SESSION 3 – HOST-PATHOGEN INTERACTIONS**

**Moderators : TBD**

**12:30**  
PhD - SC                    **G.A. DIAZ CRUZ AND D.R.D. BIGNELL.** *Regulation of nigericin and geldanamycin biosynthesis in Streptomyces sp. 11-1-2 by N-acetylglucosamine.*

**12:45**  
PhD - SC                    **K. HOLLMAN, V.P. MANOLII, S.F. HWANG AND S.E. STRELKOV.** *Characterizing the virulence of Plasmodiophora brassicae on canola with 'second-generation' clubroot resistance.*

**13:00**  
PhD - SC                    **J. HRYCAN, T. FORGE, P. BOWEN, M. HART, AND J.R. ÚRBEZ-TORRES.** *Studding the effect that ring nematode (Mesocriconema xenoplax) has in disease development in young grapevines infected with Phaeoemoniella chlamydospora.*

**13:15**  
PhD - SC                    **S.O. OSADOLOR, M. MAYERHOFER, C. McALLISTER, R. PEERY, L.I. ZAHARIA, S. DANG, J.E.K. COOKE.** *Comparative molecular responses in lodgepole and jack pines showing differential resistance to infection by Cronartium harknessii reveals a non-canonical defense response to biotrophic rust fungi.*

**13:30**  
PhD - SC                    **I. SILVA-VALDERRAMA, O. SILVA, J. BOULÉ, J.R. URBEZ-TORRES AND T.J. DAVIES.** *Predicting pathogens' virulence: linking host breadth and pathogenicity of the Botryosphaeriaceae fungal family in grapevines (Vitis vinifera).*

**13:45**  
PhD - SC                    **E.R.M. STORFIE, L. GALINDO-GONZÁLEZ, S.F. HWANG, AND S.E. STRELKOV.** *Identification and characterization of candidate effectors common to the resistance-breaking pathotypes 3A and 5X of Plasmodiophora brassicae.*

**WEDNESDAY JULY 6, 2022**

**7:30 – 9:15      SESSION 4 – HOST-PATHOGEN INTERACTIONS**

**Moderators: TBD**

- 7:30**  
PhD - SC      **Y. WANG, S.E. SRELKOV, R. FREDUA-AGYEMAN, AND S.F. HWANG.**  
*Exploring resistance to *Verticillium longisporum* in Brassica genotypes.*
- 7:45**  
PhD - SC      **L. WU, R. FREDUA-AGYEMAN, S.E. STRELKOV, K.-F. CHANG, S.-F. HWANG.**  
*Identification of novel genes associated with partial resistance to *Aphanomyces* root rot in field pea by BSR-seq analysis.*
- 8:00**  
PhD - SC      **S. SUN, Y. ZHANG, C. HERRFURTH, I. FEUSSNER, AND G. BAKKEREN.**  
*Investigating the NHP-dependent SAR pathway in common hexaploid wheat; options for broad-spectrum disease reduction?*
- 8:15**  
PhD - SC      **H.T. YU, S.F. HWANG, R. FREDUA-AGYEMAN AND S.E. STRELKOV.**  
*Host range of *Fusarium proliferatum* isolate from canola and evaluation of the reaction of Brassica genotypes*
- 8:30**  
PhD - SC      **S. SONG, Z. MORALES MOREIRA, X. ZHANG, A.C. DIENER, AND C.H. HANEY.**  
*PSKR1 helps recruit *Pseudomonas fluorescens* to the plant rhizosphere microbiome.*
- 8:45**  
**G.A. DIAZ-CRUZ, K. TAHLAN AND D.R.D. BIGNELL.**  
*Geldanamycin and nigericin are phytotoxic microbial specialized metabolites with a potential role in mediating plant-pathogen interactions.*
- 9:00**  
**N. ATABAKI, M. KALISCHUK, B. MÜLLER, D. PRÜFER AND L. KAWCHUK.**  
*Amplified disease resistance through a cell-surface immunity Ve receptor heterocomplex.*

**9:15 – 9:45      BREAK**

**9:45 – 11:00      SESSION 5 – HOST-PATHOGEN INTERACTIONS**

**Moderators: TBD**

- 9:45**  
**C. JIACHENG, W. CHEN, N. JINGBAI, C.W. RODNEY, H. LAWRENCE AND L. XIANG.**  
*Transcriptome profiling of tomato plants infected by potato zebra chip pathogen '*Candidatus Liberibacter solanacearum*': virulence and pathway analysis.*

- 10:00**      **J.-J. LIU, A. ZAMANY, K. PELLOW, D. NOSHAD AND K. KLIMASZEWSKA.** *Eastern white pine resistance to white pine blister rust conferred by the TIR-NBS-LRR gene PmTNL2.*
- 10:15**      **A. NOVINCAK, R. R. BURLAKOTI, AND J. GRIFFITHS.** *Screening tomato lines for potential resistance to tomato brown rugose fruit virus in Canada.*
- 10:30**      **J.R. TUCKER, A. D. BEATTIE, A.C. WOITAS, C.W. HIEBERT, A. BADEA, AND W.G.D. FERNANDO.** *Genome-wide association mapping of spot blotch in elite Canadian two-row barley germplasm.*
- 10:45**      **J. COOK, J.P.M. HUI, J. ZHANG, M. KEMBER, F. BERRUE, J.Z. ZHANG AND Z. CHENG.** *Production of quorum sensing-related metabolites and phytoalexins during Pseudomonas aeruginosa-Brassica napus interaction.*

<b>11:00 – 11:15</b>	<b>BREAK</b>
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<b>11:15 – 12:30</b>	<b>SESSION 6 - DIAGNOSTICS</b>
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**Moderators: TBD**

- 11:15**  
MSc - SC      **O. HAMILA, C.J. HENRY, M.A. HENRIQUEZ AND C.P. BIDINOSTI.** *Automated Fusarium head blight detection and total number of spikelets estimation in multispectral point clouds of wheat using 3D convolutional neural networks.*
- 11:30**  
MSc - SC      **J.B. PEPIN, E. GIROUX AND G.J. BILODEAU.** *Advanced pre-screening of grain and oilseed using long read sequencing for bio-surveillance of phytopathogens.*
- 11:45**  
MSc - SC      **E. MCNAB AND T. HSIANG.** *A Novel Field kit to Detect DMI Fungicide Resistance in Claviceps jacksonii.*
- 12:00**  
MSc - SC      **A. RETHER, E. MCNAB, T. HSIANG.** *Comparison of an amended agar assay vs. a microplate assay for assessing fungicide sensitivity.*
- 12:15**  
PhD - SC      **J. BEUTLER, T. LI, AND G. S. BRAR.** *Xanthomonas translucens isolation from barley seeds complicated by ubiquitous coinfection with Pantoea spp.*

<b>12:30 – 13:15</b>	<b>BREAK</b>
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<b>13:15 – 14:45</b>	<b>SESSION 7 -DIAGNOSTICS</b>
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**Moderators: TBD**

- 13:15**  
PhD - SC      **U. ILYAS, M.N. RAIZADA, M. KALISCHUK, L. DU TOIT, AND M.R. MCDONALD.** *Soil microbiome in relation to the risk of cavity spot on carrots*

- 13:30**  
PhD - SC      **V.J. JAVARAN, A. POURSA LAVATI, P. MOFFETT, AND M.L. FALL.** *Detection of grapevine virome (viruses and viroids) through Nanopore cDNA and direct RNA sequencing technology.*
- 13:45**  
PhD - SC      **A. POURSA LAVATI, V.J. JAVARAN, I. LAFOREST-LAPOINTE AND M.L. FALL.** *An improved and high yielded soil eRNA extraction method to study soil microbiome using Nanopore direct RNA sequencing.*
- 14:00**  
PhD - SC      **J. CHUAN, W. CHEN, L.R. HALE AND X. LI .** *PolyChrome: A bioinformatics toolkit for the detection and classification of phytopathogens based on next-generation sequencing, genomics, and metagenomics.*
- 14:15**      **G. CHARRON, J. YERGEAU, G.J. BILODEAU, P. TANGUAY, C. BEAULIEU, H. VAN DER HEYDEN.** *Identification of Phytophthora europaea as the species responsible for root-rot in Christmas tree productions and development of molecular tools for its detection.*
- 14:30**      **D. RADFORD AND W. CHEN.** *IsPRIMER: a new in silico tool for predicting true coverage and off-target amplicons for metabarcoding primers.*
- 14:45**      **M. MUNAWAR, A.U. RAHMAN, P. CASTILLO AND D.P. YEVTUSHENKO.** *Morphology and molecular profiling of pin nematodes (Paratylenchus spp.) from cultivated areas of southern Alberta, Canada.*



## THURSDAY JULY 7, 2022

### 7:30 – 9:15 SESSION 8 – DISEASE CONTROL

#### Moderators: TBD

- 7:30**  
MSc - SC      **L. BUIRS, S. LUNG AND Z. K. PUNJA.** *Epidemiology and management of Botrytis cinerea on greenhouse cultivated cannabis (Cannabis sativa L.)*
- 7:45**  
MSc - SC      **J. CLEMENT, M. DELISLE-HOUDE, A. BARRADA, T.A.T. NGUYEN, M. DORAIS AND R.J. TWEDDELL.** *Evaluation of plant biostimulants for their effect on baby leaf lettuce grown in a substrate colonised with Pythium ultimum.*
- 8:00**  
MSc- SC      **A.C. GAHAGAN, D. RADFORD, M. MORRISON, E. GREGORICH, S. ARIS-BROSOU, AND W. CHEN.** *Rotation and tillage shape soil-borne oomycetes communities.*
- 8:15**  
MSc - SC      **E. JOHNSTONE AND A. FOSTER.** *Detecting fungicide resistant isolates of Fusarium graminearum in the Maritimes.*
- 8:30**  
MSc - SC      **I. THIRUGNANASAMBANDAM, T. VUCUREVICH, N. KAV, A. LAROCHE AND J. CHALLIS.** *Optimization of a real-time immunoPCR assay using polyclonal antibodies for early detection of tan spot, fusarium head blight and stripe rust of wheat.*
- 8:45**  
MSc - SC      **L. KING, T. FORGE, P. MUNRO, H. XU, M. JONES.** *The root-lesion nematode, Pratylenchus penetrans, affects early growth and physiology of M.9, G.41 and G.935 apple rootstocks under field conditions.*
- 9:00**  
PhD - SC      **S. SAPKOTA, R.R. BURLAKOTI, AND Z. PUNJA.** *Metalaxyl sensitivity and virulence diversity of Phytophthora rubi population from raspberry in British Columbia.*

### 9:15 – 9:45 BREAK

### 9:45 – 11:45 SESSION 9 – DISEASE CONTROL

#### Moderators: TBD

- 9:45**  
PhD - SC      **A. SHRESTHA AND M.N. RAIZADA.** *Discovery and testing of pollen and silk-associated probiotic microbes from a diversity panel of maize genotypes from across the Americas to combat Fusarium graminearum, responsible for Gibberella ear rot (GER) in corn.*
- 10:00**  
PhD - SC      **M.E.H. THOMPSON, A. SHRESTHA, E. KHALAF, J. RINNE, C. SHEARER, V. LIMAY-RIOS, L. REID AND M.N. RAIZADA.** *Exploring cultured microbes of pollinated maize silks and interactions with Fusarium*

*graminearum* (Schwabe).

- 10:15** PhD - SC **Z. YU, S.F. HWANG AND S.E. STRELKOV.** *The evaluation of calcium cyanamide for clubroot management on canola.*
- 10:30** **C. WIJEKOON, A. SABRA, J. R. TUCKER AND A. BADEA.** *Comparative analysis of phenolic compounds of Canadian barley reveals potential biomarkers related to Fusarium head blight resistance.*
- 10:45** **L. MA, J. GEDAK AND D. HENDERSON.** *Development of an ultra-violet control protocol for powdery mildew in greenhouse cucumber.*
- 11:00** **Z. MORALES MOREIRA, A. BRIGGS, D. THOMS, Y. LIU, J. CHANG, S. SONG, S. HOSSAIN, A. SRINIVAS, A. LIMAN, C. VUCUREVICH, W. ZHANG, S. CHATTERTON, C.H. HANEY.** *Unraveling host-microbiome interactions for root-rot disease suppression in peas.*
- 11:15** **Z.K. PUNJA, C. SCOTT, L. NI AND S. LUNG.** *Efficacy of copper against pathogen growth and disease development on cannabis (*Cannabis sativa* L., marijuana) plants.*
- 11:30** **S. TAHRIRI ADABI AND D. HENDERSON.** *Evaluation of the factors influencing antifungal efficacy of Black Soldier Fly waste product against soil-borne plant pathogens*

<b>11:45 – 12:30</b>	<b>BREAK</b>
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<b>12:30 – 13:15</b>	<b>SESSION 10- DISEASE CONTROL</b>
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**Moderators: TBD**

- 12:30** **C.L. TRUEMAN, J.C. AWREY AND L.L. VAN EERD.** *Evidence that long-term cover cropping suppresses anthracnose fruit rot (*Colletotrichum* spp.) and delays defoliation in processing tomatoes.*
- 12:45** **J.L. MacDONALD AND M.T. FRANKLIN.** *Biovigilance: a more inclusive approach to disease management.*
- 13:00** **X. NIE, M. SINGH, J. LAVOIE, V. BISHT, M. SHUKLA, A. CREELMAN AND T. MACKENZIE.** *Assessment of cultivar sensitivity to potato mop-top virus induced tuber necrosis.*

<b>13:15 – 14:30</b>	<b>SESSION 11 – PATHOGEN BIOLOGY</b>
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**Moderators: TBD**

- 13:15** MSc - SC **C.X. YANG, R. FREDUA-AGYEMAN, S. . HWANG, S.E. STRELKOV AND L.Y. GORIM.** *Comparison of root morphological traits among Brassica accessions*

**13:30**  
MSc - SC

**M.K. LARIVIERE** AND B.J. SAVILLE. *Exploring the stress response of Ustilago maydis: an antisense approach*

**13:45**  
PhD - SC

**M.A. JAVED** AND E. PÉREZ-LÓPEZ. *Unveiling clubroot candidate effector families through ColabFold-based structural genomics.*

**14:00**  
PhD - SC

**A.M. SETO** AND B.J. SAVILLE. *Exploring the functions of an RNA helicase upregulated in the Ustilago maydis teliospore.*

**14:15**  
PhD - SC

**M.S. McLAUGHLIN**, S.N. YURGEL, P.A. ABBASI AND S. ALI. *Impacts of Abiotic Factors on the Fungal Communities of 'Honeycrisp' Apples in the Atlantic Maritime Ecozone*

## FRIDAY JULY 8, 2022

### 8:00 – 9:00 SESSION 12 – PATHOGEN BIOLOGY

**Moderators: TBD**

- 8:00** R. GOURLIE, M. MCDONALD, M. HAFEZ, R. ORTEGA-POLO, K.E. LOW, D.W. ABBOTT, S.E. STRELKOV, F. DAAYF, **R. ABOUKHADDOUR**. *Insights into the tan spot genome and its effector genes diversity.*
- 8:15** **M. HAFEZ**, M. TELFER, M.A. CARMONA, C. MOFFAT AND R. ABOUKHADDOUR. *Sequence analysis and structural features of the ToxB gene in Pyrenophora tritici-repentis and other ascomycete species.*
- 8:30** **S. HOLDEN**, R. BAMRAH, J. HUBENSKY, G. BAKKEREN, B.D. MCCALLUM, H.R. KUTCHER, G.S. BRAR. *Pathogenomics of Wheat Stripe Rust reveals a population shift in western Canada.*

### 8:45 – 9:15 BREAK

### 9:15 – 10:45 SESSION 13 – DISEASE/PATHOGEN EPIDEMIOLOGY

**Moderators: TBD**

- 9:15** **T.A. FORGE**, P MUNRO, T. WATSON, M. SHARIFI, G. NEILSEN AND D. NEILSEN. *Influences of soil organic matter and irrigation management on ring nematode population growth and its relationship with growth of sweet cherry trees.*
- 9:30** **B.D. GOSSSEN** AND M.R. MCDONALD. *Decline of Plasmodiophora brassicae over time in response to liming or a grass cover crop in a field trial.*
- 9:45** **Z.K. PUNJA**, L. NI, S. LUNG AND L. BUIRS. *The diverse and complex mycoflora present in cannabis (Cannabis sativa L., marijuana) inflorescences.*
- 10:00** **T.K. TURKINGTON**, H. KLEIN-GEGBINCK, H. KUBOTA, B. TIDEMANN, G. SEMACH, C. GEDDES, S. CHATTERTON, M. HARDING, P. LOKURUGE, A. MULENGA, E. KARPPINEN, P. MOOLEKI, D. TOMASIEWICZ, G. PENG, W. MAY, R. MOHR, G. TELMOSSE, D. PAGEAU, J. FENG, E. MCBAIN, AND S.E. STRELKOV. *Fungicide timing and assessment of risk factors for Sclerotinia stem rot of canola.*
- 10:15** **H. VAN DER HEYDEN**, G.J. BILODEAU, M.O. DUCEPPE, J. B. CHARRON AND O. CARISSE. *Towards improved surveillance of aerial plant pathogens using nanopore sequencing technology*

**10:30**

M. NAZRUL ISLAM, M. BANIK, S. SURYA, J. TUCKER AND X. WANG.  
*Implications of crop rotation and fungicide on the Fusarium and mycotoxin spectra in Manitoba barley 2017-2019.*

**10:45 – 11:30**

**BREAK**

**11:30 – 12:15**

**STUDENT COMPETITION & PHOTO CONTEST AWARDS**

**12:15 – 12:30**

**ADJOURN**

**12:45 – 14:00**

**STUDENT SOCIAL**