



15th World Congress on Parasitic Plants

June 30 – July 5 2019,
Amsterdam, The Netherlands



Sponsors 15th World Congress on Parasitic Plants,
30 June – 5 July 2019, Amsterdam, the
Netherlands



UNIVERSITY OF AMSTERDAM



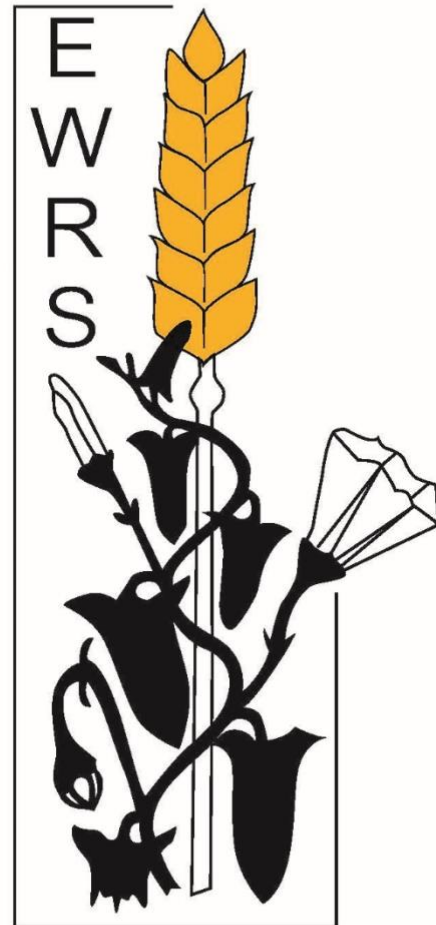
RESEARCH
PROGRAM ON
Grain Legumes and
Dryland Cereals



The Federation
of European Societies
of Plant Biology



plants
an Open Access Journal by MDPI





SCHEDULE OF ORAL PRESENTATIONS

SUNDAY, JUNE 30

- 16.00 - 20.00 Registration open
18.00 - 21.00 Welcome mixer with snacks sponsored by Trends in Plant Science | Cell Press

MONDAY, JULY 1

- 09.00 - 09.20 Welcome by Julie Scholes and Harro Bouwmeester
- 09.20 – 12.40 Host plant resistance**
Session chair: *Steve Runo*
- 09.20 – 09.55 The parasite *Cuscuta australis* with a streamlined genome mediates inter-plant systemic signals
Jianqiang Wu
- 09.55 – 10.30 *Cuscuta* microRNAs target host mRNAs involved in defence and vascular function
Michael Axtell
- 10.30 – 11.00 Coffee break
- 11.00 – 11.25 Interspecific long-distance movement of *Cuscuta* small RNAs control biological processes in host-parasitic plant complex
Koh Aoki
- 11.25 – 11.50 A peptide motif of a parasitic plant cell wall protein is recognized by the receptor protein CuRe1 and induces defence in tomato
Markus Albert
- 11.50 – 12.15 Molecular basis for tomato resistance to the parasitic plant *Cuscuta*
Neelima Sinha
- 12.15 – 12.40 Characterization of resistance to sunflower broomrape (*Orobanche cumana* W.) in sunflower (*Helianthus annuus* L.)
Dana Sisou
- 12.40 – 12.50 International consortium on sunflower broomrape resistance
Stephane Munos & Begoña Pérez-Vich
- 12.50 – 14.15 Lunch
- 14.15 – 18.00 Ecology, phylogeny and evolution**
Session chair: *Claude DePamphilis*
- 14.15 – 14.50 Eco-evolutionary causes and consequences of parasitism in plants
Susan Wicke
- 14.50 – 15.25 Novel genetic code and record-setting AT-richness in the highly reduced plastid genome of the holoparasitic plant *Balanophora*
Claude dePamphilis
- 15.25 - 15.50 A neglected alliance in battles against parasitic plants: AM and rhizobial symbioses alleviate damage to a legume host by root hemiparasitic *Pedicularis* species
Airong Li
- 15.50 – 16.20 Coffee break
- 16.20 – 16.45 When the same is not the same
Peter Toth
- 16.45 – 17.10 Genetic diversity of *Orobanche cumana* (sunflower broomrape) populations at the world level revealed by SSR markers
Luyang Hu
- 17.10 - 17.35 Facultative parasitism: an evolutionary precursor of complete parasitism or an effective strategy in its own right?
Lammert Bastiaans
- 17.35 – 18.00 Fitness of reciprocal F1 hybrids between *Rhinanthus minor* and *R. major*
Renate Wesselingh
- 18.00 - 19.30 Poster viewing with drinks
- 19.30 - 21.00 Dinner
- 21.00 – Bar conference centre open

TUESDAY, JULY 2

- 09.00 – 12.45 Genes and genomes**
Session chair: *Jim Westwood*
- 09.00 – 09.35 *Cuscuta campestris*: A plant genome under the influence of a parasitic lifestyle
Kirsten Krause
- 09.35 – 10.10 Genetic basis for host and parasitic plant communication



Satoko Yoshida

10.10 – 10.35	Exploring the evolutionary origin of haustorium development in root parasitic plants <i>Daniel Steele</i>
10.35 – 11.05	Coffee break
11.05 – 11.30	Where the action is: gene expression at the parasite-host interface <i>Elizabeth Kelly</i>
11.30 – 11.55	Convergent horizontal gene transfer and crosstalk of mobile nucleic acids in parasitic plants <i>Claude dePamphilis</i>
11.55 – 12.20	The identification of candidate pathogenicity-related genes from the genome of <i>Striga hermonthica</i> <i>James Bradley</i>
12.20 – 12.45	Lack of evidence for horizontally transferred genes in mitochondria of <i>Cuscuta</i> species <i>Benjamin Anderson</i>
12.45 - 14.15	Lunch
14.15 – 18.10	Molecules and Biochemistry Session chair: David Nelson
14.15 – 14.50	CHEMICALS that control <i>Striga</i> germination <i>Tadao Asami</i>
14.50 – 15.25	Signalling pathways in <i>Striga hermonthica</i> germination <i>Shelley Lumba</i>
15.25 - 15.50	Complementary hormone-based approaches for <i>Striga</i> Control <i>Salim Al-Babili</i>
15.50 – 16.20	coffee break
16.20 – 16.55	Unravel strigolactone signaling and controlling parasitic plant behaviors in <i>Striga</i> <i>Yuichiro Tsuchiya</i>
16.55 – 17.20	Structural and biochemical characterization of strigolactone parasitic receptors, understanding their functionality and how to inhibit them <i>Amir Arellano Saab</i>
17.20 - 17.45	Identification and characterization of α -galactosidase capable of hydrolyzing planteose in <i>Orobancha minor</i> as a target for control of root parasitic weeds <i>Atsushi Okazawa</i>
17.45 – 18.10	Cannalactone: a new non-canonical strigolactone exuded by <i>Cannabis sativa</i> roots with a pivotal role in host specialization within French broomrape (<i>Phelipanche ramosa</i>) populations <i>Jean-Bernard Pouvreau</i>
18.10 - 19.30	Poster viewing with drinks
19.30 - 21.00	Dinner
21.00 –	Bar conference centre open
09.00 – 12.45	Control and Management Session chair: <i>Maurizio Vurro</i>
WENDNESDAY, JULY 3	
09.00 – 09.35	<i>Striga</i> research on finger millet: protocols, GWAS and RNA sequencing <i>Damaris Odeny</i>
09.35 – 10.10	Parasitic weed management - opportunities and challenges <i>Hanan Eizenberg</i>
10.10 – 10.35	Advances in parasitic weed control in the field <i>Binne Zwanenburg</i>
10.35 – 11.05	Coffee break
11.05 – 11.30	Correctly multi-targeted Host-Induced Gene Silencing (HIGS) should allow full and sustainable control of parasitic weeds <i>Jonathan Gressel</i>
11.30 – 11.55	Realizing the suicidal germination strategy to control <i>Striga hermonthica</i> in rain-fed agriculture of sub-Saharan Africa <i>Boubacar Kountche</i>
11.55 – 12.20	How do fertilisers affect the facultative parasitic weed <i>Rhamphicarpa fistulosa</i> ? <i>Jonne Rodenburg</i>
12.20 – 12.45	Development of chickpea (<i>Cicer arietinum L.</i>) mutant resistant to imidazolinone herbicides for broomrape management <i>Evgenia Dor</i>
12.45 - 13.45	Lunch
14.00 - 23.00	Conference tour + Conference dinner



THURSDAY JULY 4

09.00 – 12.45 **Parasitic plant biology**

Session chair: *Airong Li*

- 09.00 – 09.35 Understanding the arms race: host resistance and parasite virulence in the *Striga*-cereal interaction
Julie Scholes
- 09.35 – 10.10 Native parasitic plants: a solution of plant invasions worldwide?
Jakub Tesitel
- 10.10 – 10.35 Transcriptomics to farmer field: a system biology approach for commercializing root parasitic *Santalum album* (Sandalwood)
Pradeepa Bandaranayake
- 10.35 – 11.05 Coffee break
- 11.05 – 11.30 Reproductive biology and pollination of *Cynomorium songaricum* (Cynomoriaceae)
Gullin Chen
- 11.30 – 11.55 *Triphysaria* controls vegetative self-recognition by restricting release of HIFs in roots
Yaxin Wang
- 11.55 – 12.20 Analysis of genetic variation in pre and post attachment resistance mechanisms in maize inbred lines to the parasitic weed *Striga hermonthica* ; implications for control
Mamadou Cissoko
- 12.20 – 12.45 Impact of the soil microbiome on *Striga*-sorghum interaction
Desalegn Etalo
- 12.45 - 14.15 Lunch

14.15 – 18.00 **Parasitic plant-host interaction**

Session chair: *John Yoder*

- 14.15 – 14.50 War and peace – the molecular dynamics of compatible and incompatible *Striga*-host plant associations
Mike Timko
- 14.50 – 15.25 What model plants can tell us about parasitic plants
Thomas Spallek
- 15.25 - 15.50 Message received: Evidence for translation of mobile mRNAs in *Cuscuta*-host interactions
James Westwood
- 15.50 – 16.20 Coffee break
- 16.20 – 16.45 The roles and functions of lignin in parasitic plant-host interaction
Songkui Cui
- 16.45 – 17.10 A receptor and pathways discovered in the lignin-based resistance to *Cuscuta campestris* in Heinz hybrid tomato cultivars
Min-Yao Jhu
- 17.10 - 17.35 Cytokinins act as signaling molecules within the rhizosphere to trigger haustorium formation in the holoparasitic plant *Phelipanche ramosa*
Estelle Billard
- 17.35 – 18.00 Striking vegetative developmental convergence in endoparasitic angiosperms
Luiza Teixeira-Costa
- 18.00 - 19.30 Poster viewing with drinks
- 19.30 - 21.00 Dinner
- 21.00 – Bar conference centre open

Departure participants



[P24]Validation of broomrape resistance QTLs in sunflower line HA-267

Ivana Imerovski¹, Boško Dedić², Sandra Cvejić², Dragana Miladinović², Siniša Jocić², Loren H. Rieseberg¹

¹Department of Botany University of British Columbia 3529-6270 University Blvd, Vancouver, B.C. V6T 1Z42
²Institute of Field and Vegetable Crops Maksima Gorkog 30, 21000 Novi Sad, Serbia

Broomrape (*Orobanche cumana*) is a parasitic weed that causes substantial yield losses in sunflower. While chemical options for suppressing sunflower broomrape are available, breeding for resistance has both economic and environmental advantages. In a previous study, we reported on the mapping of polygenic broomrape resistance in the HA-267xOD-DI-82 mapping population. We identified 2 major quantitative trait loci (QTL), or7.1 and or12.1, as well as numerous small effect QTLs that were dispersed across the genome. While these results provided valuable insights into the complexity of resistance to broomrape, QTL validation is an important and often overlooked step for breeding. The aim of this study is to assess the effects of these QTLs in an unrelated genetic background and to identify QTLs that are stable and thus have the highest breeding value. To achieve this goal, resistant line HA-267 was crossed with a susceptible parental line HA-26-PR, and a mapping population consisting of 189 individuals was developed. Following phenotyping, we used selective bulked segregant analyses coupled with genotyping-by-sequencing (GBS) to re-map QTLs conferring resistance to broomrape population LP12BSR. A total of 7 QTLs were identified. The results confirmed that the effects of QTLs or7.1 and or12.1 was large and consistent. Importantly, an additional QTL located on sunflower chromosome 3 (or3.1), which was previously proven to control resistance to broomrape race E, appeared to have a larger effect in the new HA-267xHA-26-PR cross compared to the previous one (HA-267xOD-DI-82). These validated and stable QTLs will be prioritized in breeding, and associated molecular markers will facilitate marker-assisted selection.