



*INTERNATIONAL SYMPOSIUM*

**MICROBE-ASSISTED CROP PRODUCTION –  
OPPORTUNITIES, CHALLENGES & NEEDS**

***JULY 11 – 14, 2022***

*SCHLOSS SCHÖNBRUNN - ORANGERIE, APOTHEKERTRAKT  
VIENNA, AUSTRIA*

**ABSTRACTBOOK  
2022**





# MICROBE-ASSISTED CROP PRODUCTION 2022

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OPPORTUNITIES, CHALLENGES & NEEDS

*July, 11 – 14, 2022*

*SCHLOSS SCHÖNBRUNN | ORANGERIE*

*VIENNA, AUSTRIA*

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# Introduction

**Dear miCROPe attendees,**

Our last miCROPe conference was in December 2019, right before the outbreak of the Covid-19 pandemic. Meanwhile we all have experienced many online meetings and conferences with all their advantages and disadvantages. Many of us look forward to again having personal meetings and discussions while having a coffee in the coffee break or having a chat during a social event.

**Finally, miCROPe IS BACK**, this time without Christmas markets, but you will be able to enjoy Vienna in summer.




There is unbroken interest in soil and plant microbiomes and their important contribution in agro-systems. Plant microbiota are diverse and provide important functions for their host's performance, and mediate functions like nutrient delivery, fitness, stress tolerance, and pathogen or pest control. Current understanding of plant-microbe interactions is helping to develop microbial products, new applications to improve crop production, and create alternatives to chemicals. Microbial ecology is an important asset for understanding the fate of applied microorganisms in a natural environment, and for affecting product development. Greater understanding of microbiome functioning will also lead to new routes of exploration.

The increasing awareness of and interest in plant microbiota is linked to the urgent need to find solutions for current challenges in global crop production such as climate change and global demographic development. Difficulties to be overcome include world-wide population increases, extreme weather events and highly variable weather conditions, emerging pathogens and pests, and diminishing land resources. Furthermore, the use of chemical pesticides poses a threat to human health, animal welfare, and biodiversity. Innovations based on the functioning of plant microbiota have the potential to contribute to combating these challenges.

The symposium "Microbe-assisted crop production – opportunities, challenges and needs" (miCROPe 2022) addresses basic and applied aspects of applying beneficial microorganisms in crop production. Scientific sessions will address different functions of microorganisms in crop production, ranging from biocontrol to nutrition and stress resilience. Furthermore, we will address plant mechanisms, functional understanding and most importantly also address how microbiomes can be translated in field applications.

**I am excited to see you all again - to great talks and posters, fruitful discussions and lots of f2f interaction.**

**A heartfelt welcome to micrope 2022!**



**Angela Sessitsch** – AIT Austrian Institute of Technology, Austria  
on behalf of the Organizing Committee


# Scientific Program

## DAY 1 | Mon, July 11 | 13:00 - 20:00

11:30 - 13:00 Arrival, registration opens

13:00 - 13:15 **WELCOME**

13:15 - 13:50 **OPENING LECTURE**  
**Brajesh Singh (Western Sydney University, AU)**  
 Fundamental knowledge of plant-microbial interactions for improved translational outcomes of crop microbiome tools

**SESSION 1**  
**13:50 - 15:15** **BRINGING MICROBIAL APPLICATIONS INTO PRACTICE** SPONSORED BY  
*Session chair: Angela Sessitsch* 

13:50 - 14:15 **Veronica Reis (Embrapa Agrobiologia, BR)**  
 Sugarcane Inoculant – A Case of Success Driven by Open Innovation

14:15 - 14:30 **Nora Temme (KWS SAAT SE & Co. KGaA) & Wieland Reichelt (Evologic Technologies)**  
 Biological seed treatment development from the lab to the field

14:30 - 14:45 **Tom Viaene (Apha.bio, BE)**  
 Apha.Bio's microbial biostimulants entering pre-commercial phase and exhibiting substantial yield increase in cereals and maize

14:45 - 15:00 **Lydia Ugena (Tradecorp International, ES)**  
 A research's answer to the farmer's need: ultra-efficient biostimulation from microbial-based fermentatio

15:00 - 15:15 **SCIENCE FLASHES:**  
**Sara G. Cazzaniga (Wageningen University&Research, NL)**  
 Promotion of healthy crop growth by cover crops-based steering of the soil microbiome  
**Katja Burow (Erfurt Research Centre for Horticultural Crops (FGK), DE)**  
 How to improve the functionality of peat-free substrates by the targeted use of microbial consortia in sustainable horticulture  
**Annamaria Bevivino (Italian National Agency for New Technologies, Energy and Sustainable Economic Development, IT)**  
 Effects of plant probiotics and biochar application on rhizosphere biodiversity and maize growth in the field

15:15 - 15:40 **Coffee break** Sponsored by: KWS



**DAY 1 | Mon, July 11 | 13:00 - 20:00**

**SESSION 2**  
**15:40 - 17:15** **CLIMATE CHANGE, PLANT MICROBIOMES AND PLANT ABIOTIC STRESS TOLERANCE**  
*Session chairs: Gwyn A. Beattie, Islam Abdel Daim & Maggie R. Wagner*

- 15:40 - 16:05 **Gwyn A. Beattie (Iowa State University, US)**  
The soybean root microbiome: High resolution mapping and responses to abiotic conditions that induce oxidative stress
- 16:05 - 16:30 **Maggie R. Wagner (University of Kansas, US)**  
Adaptation to water stress in plant-associated and free-living microbiomes
- 16:30 - 16:45 **Max Kolton (Ben-Gurion University of the Negev, IL)**  
Peatmoss microbiome: roles of the oligotrophic methanotrophs in the nitrogen cycle
- 16:45 - 17:00 **Sonja Wende (Leibniz Centre for Agricultural Landscape Research, DE)**  
Functional Traits of Wheat's Bacterial Rhizosphere Microbiota under Flooding and Drought by Metagenomics
- 17:00 - 17:15 **Michele Perazzolli (University of Trento, IT)**  
Ecological and functional analysis of the microbiota associated with a vascular Antarctic plant

**17:15 - 17:30** Health break

**SESSION 2**  
**17:30 - 18:40** **CLIMATE CHANGE, PLANT MICROBIOMES AND PLANT ABIOTIC STRESS TOLERANCE**  
*Session chairs: Gwyn A. Beattie, Islam Abdel Daim & Maggie R. Wagner*

- 17:30 - 17:50 **Islam Abdel Daim (AIT Austrian Institute of Technology, AT)**  
Multi-omics approach revealed molecular and metabolic reprogramming connected with microbial mediated abiotic stress tolerance in plant
- 17:50 - 18:05 **Borjana Arsova (Forschungszentrum Jülich, DE)**  
Abiotic condition plays an important role and shapes the amplitude or the direction of the plant - microbe interaction, on plant-phenotype and molecular level, in studies of elevated temperature or nitrogen limitation
- 18:05 - 18:20 **Dror Minz (Volcani Center, IL)**  
Environmentally important bacteria: from ecology to isolation
- 18:20 - 18:40 SCIENCE FLASHES:  
**Adriana Giongo (Julius Kuhn Institute, DE)**  
Soil depths and microhabitats influence the structure and composition of microbial communities in wheat rotations  
**Kathryn Bazany (Colorado State University, US)**  
Water deficit and host selection explain interkingdom microbial connections across plant compartments  
**Davide Francioli (Leibniz Centre for Agricultural Landscape Research (ZALF)**  
Wheat mycobiota responses to flooding revealed substantial shifts towards harmful fungi  
**Amélie Semblat (INRAe - UMR Agroécologie, FR)**  
Drought stress impacts the microbiota mediating iron dynamic in the pea rhizosphere

**18:40 - 20:00** Welcome Reception, Networking & Poster Session I  
**22:00 -** Zoo Night Tour - Monday (optional)

**DAY 2 | Tue, JULY 12 | 09:00 – 18:00**

<b>SESSION 3</b> <b>09:00 - 10:55</b>	<b>MICROBIOMES AND SOIL FERTILITY</b> <i>Session chairs: Euan James &amp; Marcel van der Heijden</i>
09:00 - 09:25	<b>Euan James (The James Hutton Institute, GB)</b> Development and use of rhizobial inoculants to improve Biological Nitrogen Fixation by pulse crops in the UK
09:25 - 09:50	<b>Marcel van der Heijden (Agroscope, CH)</b> Soil Microbiome Engineering and Sustainable Plant Production
09:50 - 10:05	<b>Simon Lewin (Leibniz Centre for Agricultural Landscape Research (ZALF), DE)</b> Cereal crop growth and yield is modulated by the N-cycling microbiota of the rhizosphere
10:05 - 10:20	<b>Lisa Cangioli (University of Florence, IT)</b> Differential response of wheat rhizosphere microbiodiversity to plant variety and fertilization
10:20 - 10:35	<b>Israel Ikoyi (University College Dublin, IE)</b> Impact of biofertilizer strains application on quality and quantity of fodder grass swards
10:35 - 10:55	SCIENCE FLASHES: <b>Kalisa Bogati (Nicolaus Copernicus University, PL)</b> The study on impact of drought stress on microbial communities and their enzyme activities in agricultural soil <b>Morgane de Toeuf (Université Libre de Bruxelles (ULB), BE)</b> Reducing outcome uncertainty in cereal-legume intercrop by leveraging insights on farming history and practices as drivers of soil microbial functions and soil fertility <b>Alí Asaff (Innovak Global, MX)</b> Asparagus microbiome modulation by biostimulants and its impact on crop quality and productivity <b>Anna Sophie Wendel (University Bonn, DE)</b> Root-soil contact areas are critical for rhizosphere characteristics
10:55 - 11:20	Coffee break
<b>SESSION 4</b> <b>11:20 - 12:40</b>	<b>FUNCTIONAL UNDERSTANDING OF PLANT MICROBIOMES</b> <i>Session chairs: Matthieu Barret &amp; Víctor J. Carrión Bravo</i>
11:20 - 11:45	<b>Víctor J. Carrión Bravo (Leiden University, NL)</b> Unlocking the secrets of plant microbiomes
11:45 - 12:10	<b>Matthieu Barret (INRAE, FR)</b> Processes driving microbial succession during seed development
12:10 - 12:25	<b>Laure Weisskopf (Université de Fribourg, CH)</b> Microbe-microbe communication in the plant microbiota and its impact on plant health
12:25 - 12:40	<b>Ginaini Grazielli Doin de Moura (INRAE, FR)</b> Genetic bases and selective forces driving the emergence of new legume symbionts
<b>12:40 - 15:00</b> <b>13:30 - 14:30</b>	<b>Lunch break &amp; Poster Session I</b> <b>Workshop: Emily White (Nature Microbiology)</b> Meet the Editor: behind the scenes at Nature Microbiology

**DAY 2 | Tue, JULY 12 | 09:00 – 18:00**

<b>SESSION 4</b>	<b>FUNCTIONAL UNDERSTANDING OF PLANT MICROBIOMES</b>
<b>15:00 - 16:40</b>	<b>Session chairs: Matthieu Barret &amp; Víctor J. Carrión Bravo</b>
15:00 - 15:15	<b>Sina Schultes (University of Bonn, DE)</b> Combining an <sup>11</sup> C and <sup>13</sup> C labelling approach to track recently fixed C into the root system and rhizosphere microbiota of maize
15:15 - 15:30	<b>Makrina Diakaki (Wageningen University and Research Wageningen Plant Research, NL)</b> Beetroot and spinach seed microbiomes can suppress <i>Pythium ultimum</i> infection; results from a large scale screening
15:30 - 15:45	<b>Jelle Spooren (Utrecht University, NL)</b> Downy mildew associated microbiomes that are inherited via the soil enhance plant resistance against disease
15:45 - 16:00	<b>Sebastian Pfeilmeier (ETH Zurich, CH)</b> The interplay between the leaf microbiota, plant immunity and opportunistic pathogens
16:00 - 16:15	<b>Lisa Thönen (University of Bern, CH)</b> Maize root bacteria metabolize host secondary metabolites
16:15 - 16:40	SCIENCE FLASHES: <b>Lidia Błaszczuk (Institute of Plant Genetics Polish Academy of Sciences, PL)</b> Mycobiome of the common wheat ( <i>T. aestivum</i> L.) endosphere <b>Dario X. Ramirez-Villacis (Netherlands Institute of Ecology NIOO-KNAW, NL)</b> A walk on the wild side: exploring the functional potential of Andean soil microbiomes to enhance tolerance of potato to late blight disease <b>Stalin Sarango-Flores (Leiden University/NIOO-KNAW, NL)</b> BackToRoots: the protective role of the microbiome of native soils from the centre of origin of tomato <b>Frederik Bak (University of Copenhagen, DK)</b> The role of <i>Erwinia gerundensis</i> during wheat seed germination <b>Caroline De Tender (Ghent University, BE)</b> Tailor your root: chitin-based rhizobiome selection towards plant beneficials
<b>16:40 - 17:00</b>	<b>Coffee break</b>



**DAY 2 | Tue, JULY 12 | 09:00 – 18:00**

<b>SESSION 5</b>	<b>PLANT MECHANISMS TO INTERACT WITH BENEFICIAL MICROORGANISMS</b>
<b>17:00 - 18:00</b>	<b>Session chairs: Adriana Hemerly &amp; Elisa Korenblum</b>
17:00 - 17:25	<b>Adriana Hemerly (Federal University of Rio de Janeiro, BR)</b> Communication between plants and endophytic diazotrophic bacteria: what the plant genes can tell us?
17:25 - 17:40	<b>Sofie Goormachtig (VIB/UGent, BE)</b> A combined approach to identify novel receptor complexes involved in beneficial plant-microbe interactions
17:40 - 18:00	SCIENCE FLASHES: <b>Meha Sharma (McGill University, CA)</b> Effect of colonization of <i>Bacillus velezensis</i> strain B26 on different <i>Brachypodium distachyon</i> genotypes <b>Muhammad Syamsu Rizaludin (NIOO-KNAW/Leiden University, NL)</b> Volatile-mediated communication in the rhizosphere of plants under siege <b>Namrata Baruah (University of Oulu, FI)</b> Intracellular colonizers of Scots pine-Which PHB mutant of <i>Methylobacterium extorquens</i> DSM13060 performed better? <b>Alberto Pascale (Utrecht University, NL)</b> The microbiome of induced systemic resistance along the root-shoot axis
<b>22:00 -</b>	<b>Zoo Night Tour - Tuesday (optional)</b>

**DAY 3 | Wed, JULY 13 | 09:00 – 17:00**

<b>SESSION 5</b>	<b>PLANT MECHANISMS TO INTERACT WITH BENEFICIAL MICROORGANISMS</b>
<b>09:00 - 10:10</b>	<b><i>Session chairs: Adriana Hemerly &amp; Elisa Korenblum</i></b>
09:00 - 09:25	<b>Elisa Korenblum (ARO - Volcani Center, IL)</b> Phytobiome influencers: the rhizosphere microbiome mediates root metabolite exudation
09:25 - 09:40	<b>Harriet Middleton (Institut National de la Recherche Scientifique, CA)</b> Implication of microRNAs in rhizospheric plant-microbe interactions and their potential use as innovative tools for plant microbiota manipulation
09:40 - 09:55	<b>Adam Schikora (Julius Kühn Institute (JKI), DE)</b> Scale up: AHL-Priming under field conditions
09:55 - 10:10	<b>Bérenghère Decouard (INRAe Versailles, FR)</b> Impact of nitrogen fertilization on arbuscular mycorrhizae mediated nitrogen nutrition of maize
<b>10:10 - 10:35</b>	<b>Coffee break</b>
<b>SESSION 6</b>	<b>PLANT MICROBIOMES IN THE FOOD SYSTEM</b>
<b>10:35 - 12:00</b>	<b><i>Session chairs: Gabriele Berg &amp; Angela Sessitsch</i></b>
10:35 - 11:00	<b>Gabriele Berg (TU Graz, AT)</b> The plant microbiome from farm to fork
11:00 - 11:30	<b>Angela Sessitsch (AIT Austrian Institute of Technology, AT)</b> MicrobiomeSupport: Towards coordinated microbiome R&I activities in the food system
11:30 - 11:45	<b>Marie Legein (UAntwerp, BE)</b> The impact of introduced bumblebees and predatory mites on the phyllosphere microbiome of greenhouse crops
11:45 - 12:00	<b>Eva M. Molin (AIT Austrian Institute of Technology, AT)</b> A multi-omics approach to disentangle factors underlying a crop's storability
<b>SESSION 7</b>	<b>MICROBIAL BIOCONTROL OF PESTS, PATHOGENS AND WEEDS</b>
<b>12:00 - 12:55</b>	<b><i>Session chairs: Alexandre Jousset, Ena Šečić &amp; Friederike Trognitz</i></b>
12:00 - 12:25	<b>Zhong Wei &amp; Alexandre Jousset (Nanjing Agricultural University, CN)</b> Synbiotics for reliable microbiome enhancement
12:25 - 12:40	<b>Sascha Patz (University of Tübingen, DE)</b> Genome-wide R-type Tailocin Prediction contributes to low-risk phytosanitary practices
12:40 - 12:55	<b>Steffi Pot (KU Leuven, BE)</b> Disease suppression in sustainable horticultural substrates with management residues depends on fertilization and is linked to the rhizosphere microbiome
12:55 - 14:45	<b>Lunch break &amp; Poster session II</b>
14:45 - 15:00	<b>Group Photo</b>

**DAY 3 | Wed, JULY 13 | 09:00 – 17:00**

<b>SESSION 7</b>	<b>MICROBIAL BIOCONTROL OF PESTS, PATHOGENS AND WEEDS</b>
<b>15:00 - 17:20</b>	<b>Session chairs: Alexandre Jousset, Ena Šečić &amp; Friederike Trognitz</b>
15:00 - 15:25	<b>Ena Šečić (Justus Liebig University Gießen, DE)</b> Analysis of the RNA landscape of a beneficial fungus interaction with the host plant and its importance for biocontrol activity
15:25 - 15:45	<b>Friederike Trognitz (AIT Austrian Institute of Technology, AT)</b> Development of biocontrol applications against fungal and oomycete diseases
15:45 - 16:00	<b>Arjen Biere (Netherlands Institute of Ecology (NIOO-KNAW), NL)</b> HOW AMF affect plant herbivore resistance: insights from a transcriptome study in <i>Plantago lanceolata</i>
16:00 - 16:15	<b>Shumaila Rasool (Netherlands Institute of Ecology (NIOO-KNAW), NL)</b> Plant-fungus-herbivore interactions, a step towards sustainable pest control
16:15 - 16:30	<b>Wendalina Tigani (Leiden University, NL)</b> Listening to the plant-microbe cross-talk to unwind the molecular mechanisms underlying plant protection
16:30 - 16:45	<b>Keming Yang (Nanjing Agriculture University, CN)</b> Rhizosphere phage communities drive bacterial wilt disease outcomes
16:45 - 17:00	<b>Ola Abdelrahman (University of Fribourg, CH)</b> The potential of Actinomycetes to control potato late blight
17:00 - 17:20	SCIENCE FLASHES: <b>Haymanti Saha (NIOO-KNAW, NL)</b> Interactive effects of plant root beneficial microbes and abiotic stress on plant defense <b>Zayda Morales Moreira (University of British Columbia, CA)</b> Unraveling host-microbiome interactions for root-rot disease suppression in peas <b>Pedro Beschoren da Costa (Wageningen University &amp; Research, NL)</b> Brassicaceae microbiome response to insect herbivory: summarizing random forest, network analysis, and differential abundance <b>Adrian Wolfgang (Graz University of Technology, AT)</b> Mutual tripartite interactions of microbial communities in a soil-plant-aphid microcosm system
<b>18:15</b>	<b>Busses leave for conference dinner</b>
<b>19:00 - 23:00</b>	<b>Conference Dinner (optional)</b>

**DAY 4 | Thu, JULY 14 | 09:00 – 15:10**

<b>SESSION 8</b>	<b>MICROBIOME UNDERSTANDING TO IMPROVE FIELD SUCCESS OF MICROBIAL APPLICATIONS</b>
<b>09:00 - 10:50</b>	<b>Session chairs: Davide Bulgarelli &amp; Pankaj Trivedi</b>
09:00 - 09:25	<b>Pankaj Trivedi (Colorado State University, US)</b> Harnessing Plant-Microbiome Interactions for Disease Resistance
09:25 - 09:50	<b>Davide Bulgarelli (University of Dundee, GB)</b> Taking roots: facilitating breeding selection for host-microbiota interactions in the rhizosphere
09:50 - 10:05	<b>Natacha Bodenhausen (Research Institute of Organic Agriculture FiBL, CH)</b> Predicting fungal communities from soil properties
10:05 - 10:20	<b>Liese Vlasselaer (KU Leuven, BE)</b> Infection with <i>Phytophthora cryptogea</i> alters the root microbial community of hydroponically-grown lettuce
10:20 - 10:35	<b>Barbara Pivato (INRAE, FR)</b> Holobiont interactions occurring in pea-wheat intercropping impact both plant phenotype and the associated microbiota
10:35 - 10:50	SCIENCE FLASHES: <b>Katherine Cuadros (Graz University of Technology, AT)</b> RESPONSE of <i>Cannabis sativa</i> to inoculation with potential plant growth-promoting bacteria in combination with functional superabsorbent cellulose biopolymers <b>Mohamed Abdelfadil (Leibniz Institute of Vegetable and Ornamental Crops (IGZ) e.V., DE)</b> Clay chips used to capture barley root microbiota <b>Shilpi Sharma (Indian Institute of Technology Delhi, IN)</b> Understanding “general disease suppression” of phytopathogens in organic fields for transformation of conducive soil
<b>10:50 - 11:10</b>	<b>Coffee break</b>
<b>SESSION 9</b>	<b>DISRUPTIVE APPROACHES FOR PHYTOBIOME IMPROVEMENT</b>
<b>11:10 - 12:15</b>	<b>Session chairs: Vadim Kessler &amp; Marko Vinceković</b>
11:10 - 11:35	<b>Vadim Kessler (Swedish University of Agricultural Sciences, SE)</b> Mineral nanoparticles as perspective tools in regulating plant-microbe interactions and alleviating plant stress
11:35 - 12:00	<b>Marko Vinceković (University of Zagreb Faculty of Agriculture, HR)</b> Bioencapsulation as a sustainable delivery of active agents for plant nutrition/protection
12:00 - 12:15	<b>Carola Peters (Incotec Europe BV, NL)</b> Practical aspects of microbial seed application
<b>12:15 - 13:55</b>	<b>Lunch break &amp; Poster session II</b>
<b>SESSION 10</b>	<b>PHYTOBIOMES ALLIANCE SESSION</b>
<b>13:55 - 14:15</b>	<b>Session chair: Angela Sessitsch</b>
13:55 - 14:15	<b>Kellye Eversole (International Alliance for Phytobiomes Research, US)</b> Embracing Complexity: Phytobiomes and a New Vision for Agriculture
<b>14:15 - 14:50</b>	<b>CLOSING LECTURE</b> <b>Corné Pieterse (Utrecht University, NL)</b> Bi-directional communication along the microbiome-root-shoot axis
<b>14:50 - 15:10</b>	<b>AWARDS &amp; CLOSURE</b>

## Posters Table – Poster Session I

Poster Session I: Monday July 11, 18:40 - 20:00 (Even numbers present) & Tuesday July 12, 12:40 – 15:00 (Odd numbers present)

Poster #	S1: Bringing microbial applications into practice	PS1-S2-SF09	Adriana Giongo	Poster #	S4: Functional understanding of plant microbiomes
PS1-S1-PP01	Klervi Crenn	PS1-S2-SF10	Kathryn Bazany	PS1-S4-PP01	Liya Zhu
PS1-S1-PP02	Almudena Aranda Martínez	PS1-S2-SF11	Davide Francioli	PS1-S4-PP02	Linda Gouka
PS1-S1-PP03	Aundy Kumar	PS1-S2-SF12	Amélie Semblat	PS1-S4-PP03	Dorota M. Krzyzanowska
PS1-S1-PP04	Sabine Gruber	<b>Poster #</b>	<b>S3: Microbiomes and soil fertility</b>	PS1-S4-PP04	Brandon Ford
PS1-S1-PP05	Elena Grosu	PS1-S3-PP01	Maria Cañellas-Cifre	PS1-S4-PP05	Janina E. Zierul
PS1-S1-PP06	Yujia Luo	PS1-S3-PP02	Federica Boiocchi	PS1-S4-PP06	Adrian Pintado
PS1-S1-PP07	Philipp Franken	PS1-S3-PP03	Silvia D. Schrey	PS1-S4-PP07	Julia Sacharow
PS1-S1-PP08	Maria Morel	PS1-S3-PP04	Ohana Yonara de Assis Costa	PS1-S4-PP08	Johannes Herpell
PS1-S1-PP09	Marta Acin-Albiac	PS1-S3-PP05	Tanvi Taparia	PS1-S4-PP09	Marcela Sofia Aragon Gomez
PS1-S1-PP10	Sofia Pereira	PS1-S3-PP06	Sophie Slezack-Deschaumes	PS1-S4-PP10	Xinya Pan
PS1-S1-PP11	Eduardo Abreo	PS1-S3-PP07	Eduardo Abreo	PS1-S4-PP11	Camilla Fagorzi
PS1-S1-PP12	Jonathan Sølve	PS1-S3-SF06	Kalisa Bogati	PS1-S4-PP12	Sonal Srivastava
PS1-S1-PP13	Helena Moreira	PS1-S3-SF07	Morgane de Toeuf	PS1-S4-PP13	Adrien Anckaert
PS1-S1-SF05	Sara G. Cazzaniga	PS1-S3-SF08	Alí Asaff	PS1-S4-PP14	Guillermo Guerrero
PS1-S1-SF06	Katja Burrow	PS1-S3-SF09	Anna Sophie Wendel	PS1-S4-PP15	Sascha Patz
PS1-S1-SF07	Annamaria Bevivino			PS1-S4-PP16	Cecile Gruet
<b>Poster #</b>	<b>S2: Climate change, plant microbiomes and plant abiotic stress tolerance</b>			PS1-S4-PP17	Wasin Poncheewin
PS1-S2-PP01	Mátyás Cserhádi			PS1-S4-PP18	Adrian Wallner
PS1-S2-PP02	Chiara Pucciariello			PS1-S4-PP19	Arista Fourie
PS1-S2-PP03	Giorgio Licciardello			PS1-S4-SF10	Lidia Błaszczuk
PS1-S2-PP04	Amal Alghamdi			PS1-S4-SF11	Dario X. Ramirez-Villalobos
PS1-S2-PP05	Nina Bziuk			PS1-S4-SF12	Stalin Sarango-Flores
PS1-S2-PP06	Ahmed Abdelfattah			PS1-S4-SF13	Frederik Bak
PS1-S2-PP07	Rachele Istitato			PS1-S4-SF14	Caroline De Tender
PS1-S2-PP08	Karl Rumbold			<b>Poster #</b>	<b>Varia</b>
PS1-S2-PP09	Mahtab Nazari			PS1-V-PP01	Matthias Schweitzer
PS1-S2-PP10	Malek Marian			PS1-V-PP02	Tanja Kostic
PS1-S2-PP11	Subha Chandran				

## Posters Table – Poster Session II

### Poster Session II: Wednesday July 13, 13:00 - 15:00 (Even numbers present) & Thursday July 14, 12:15 - 13:55 (Odd numbers present)

<b>Poster #</b>	<b>S5: Plant mechanisms to interact with beneficial microorganisms</b>	PS2-S6-PP02	Naheed Tabassum	PS2-S7-PP22	Mahdere Z. Shimels
PS2-S5-PP01	Rafael J L Morcillo	PS2-S6-PP03	Xinquan Hu	PS2-S7-PP23	Mohammad Mahmoud
PS2-S5-PP02	Heba Ibrahim	PS2-S6-PP04	Louisa Robinson Boyer	PS2-S7-SF11	Haymanti Saha
PS2-S5-PP03	Jan Helge Behr	PS2-S6-PP05	Sara Pipponzi	PS2-S7-SF12	Zayda Morales Moreira
PS2-S5-PP04	Hengjun Zhao	PS2-S6-PP06	Brechtje de Haas	PS2-S7-SF13	Pedro Beschoren da Costa
PS2-S5-PP05	Farah Boubisi	PS2-S6-PP07	Expedito Olimi	PS2-S7-SF14	Adrian Wolfgang
PS2-S5-PP06	Valentin Gfeller	PS2-S6-PP08	Matthias Schweitzer	<b>Poster #</b>	<b>S8: Microbiome understanding to improve field success of microbial applications</b>
PS2-S5-PP07	Stefan Sanow	PS2-S6-PP09	Abhishek Shrestha	PS2-S8-PP01	Lena Vlaininck
PS2-S5-PP08	Yongming Duan	<b>Poster #</b>	<b>S7: Microbial biocontrol of pests, pathogens and weeds</b>	PS2-S8-PP02	Carolina Lobato
PS2-S5-PP09	Sándor Gonda	PS2-S7-PP01	Stefany Castaldi Stefany	PS2-S8-PP03	Javier Pozueta-Romero
PS2-S5-PP10	Ana Shein Lee Diaz	PS2-S7-PP02	Jingxuan Li	PS2-S8-PP04	Birgit Wassermann
PS2-S5-PP11	Tania Galindo Castañeda	PS2-S7-PP03	Tanvi Taparria	PS2-S8-PP05	Lorenzo Vergani
PS2-S5-PP12	Richard Lally	PS2-S7-PP04	Morgane Ourry	PS2-S8-PP06	Jiayi Jing
PS2-S5-PP13	Abhishek Shrestha	PS2-S7-PP05	Christiane Seiler	PS2-S8-PP07	Adrian Wallner
PS2-S5-PP14	Alexandra Siffert	PS2-S7-PP06	Marketa Marečková	PS2-S8-PP08	Joliese Teunissen
PS2-S5-PP15	Kirti Shekhawat	PS2-S7-PP07	Borjana Arsova	PS2-S8-PP09	Steffi Pot
PS2-S5-PP16	Anukool Vaishnav	PS2-S7-PP08	Farideh Ghadamgahi	PS2-S8-PP10	Cristina Rotoni
PS2-S5-PP17	Jelena Pršić	PS2-S7-PP09	Hector Oberti	PS2-S8-PP11	Dahmane Hadou El Hadj
PS2-S5-PP18	Eleonora Rolli	PS2-S7-PP10	Azkie Nurfikari	PS2-S8-PP12	David Johnston-Monje
PS2-S5-PP19	Ludvine Guigard	PS2-S7-PP11	Marta Streminska	PS2-S8-PP13	Santiago Quiroga
PS2-S5-PP20	Omar Hafidi	PS2-S7-PP12	Gloria Torres Cortes	PS2-S8-PP14	Jasper Schierstaedt
PS2-S5-PP21	Michiel Vandecasteele	PS2-S7-PP13	Rachel Serrano Bacallao	PS2-S8-PP15	Niils Orth
PS2-S5-PP22	Paula Melo	PS2-S7-PP14	Raul Masteling	PS2-S8-PP16	Carolina Escobar Rodriguez
PS2-S5-SF03	Meha Sharma	PS2-S7-PP15	Stéphane Compant	PS2-S8-PP17	Luis Gabriel Cueva Yesquén
PS2-S5-SF04	Muhammad Syamsu Rizaludin	PS2-S7-PP16	Maddalena del Gallo	PS2-S8-SF06	Katherine Cuadros
PS2-S5-SF05	Namrata Baruah	PS2-S7-PP17	Victor Gonzalez Menendez	PS2-S8-SF07	Mohamed Abdelfadil
PS2-S5-SF06	Alberto Pascale	PS2-S7-PP18	Priyamedha Sengupta	PS2-S8-SF08	Shilpi Sharma
<b>Poster #</b>	<b>S6: Plant microbiomes in the food system</b>	PS2-S7-PP19	Geoffrey Darbon	<b>Poster #</b>	<b>S9: Disruptive approaches for phytobiome improvement</b>
PS2-S6-PP01	Davide Gerna	PS2-S7-PP20	Matias Pasquali	PS2-S9-PP01	Marijana Dragosavac
		PS2-S7-PP21	Bekele Gelena Kelbessa		

**PS2-S7-PP20 Linking the genome to the phenotype: *Streptomyces anulatus* DEF39 treatment on seeds protects wheat from mild water stress and DON accumulation caused by *F. graminearum*.**



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Fusarium Head Blight (FHB) is a major disease of wheat causing direct production losses and accumulation of trichothecenes that are toxic to humans and animals. The most important mycotoxin is deoxynivalenol (DON).

Strain DEF39, a *Streptomyces anulatus* wheat endophyte, shows the ability to protect wheat spikes from *F. graminearum* infection by >60% and to reduce DON accumulation in spikes by >50% during field trials when applied as a seed coating. According our results, DEF39 seed treatment leads to whole plant colonization. Interestingly, when mild water stress is applied to wheat, DEF39 colonized plants showed different physiological responses compared to the untreated control, maintaining a higher leaf gas exchange rate.

To decipher the possible mechanisms of action of the strain, the genome of DEF39 was assembled using a hybrid strategy combining Nanopore long and Illumina short reads. Two contigs were produced, one linear chromosome (8.8 Mb) with inverted repeats at the edges and one linear plasmid (0.2 Mb). Functional analysis identified a putative role for the plasmid and provided evidence for an indirect effect type of interaction of the strain on the protection of the plant. Comparative genomic analysis within the species *S. anulatus* diversity leads to the identification of DEF39 specific genes likely involved in the endophytic behaviour, in the ability to colonize wheat plants, and in modulating the plant stress response.