

International Symposium on Crop Roots and Rhizosphere Interactions

9–13 October 2017, Yangling, China



THE UNIVERSITY OF
WESTERN
AUSTRALIA

Monday, October 9, 2017

Yangling Xincheng Horizon (Tianyuan) Hotel 杨凌鑫诚田园山庄大酒店

08:00–21:30 Registration

18:30–20:30 Dinner - Buffet (Hotel Banquet Hall 酒店宴会厅)

Tuesday, October 10, 2017

NWAFU Intl. Exchange Center 西农国际交流中心

08:15 Bus to NWAFU Intl. Exchange Center 西农国际交流中心

09:00–09:30 Opening Remarks

Chair: Hao Feng, Northwest A&F University, China

09:30–10:00 Group Photo & Tea Break

Keynote Speech

Chair: Henry Nguyen, University of Missouri, USA

Fengmin Li, Lanzhou University, China

10:00–10:30 [**Keynote 01**] Can we breed for an efficient root system architecture for water and nutrient uptake in crops plants

Kadambot Siddique, The University of Western Australia, Australia

10:30–11:00 [**Keynote 02**] Phosphorus-acquisition and phosphorus-use efficiency in Australian native plants

Hans Lambers, The University of Western Australia, Australia

11:00–11:30 [**Keynote 03**] Engineering crop nutrient efficiency through root modifications for sustainable agriculture

Hong Liao, Fujian Agriculture and Forestry University, China

11:30–11:45 **Session Discussion**

11:45 Bus Back to Hotel

12:00–14:00 Lunch (Hotel Western Dining Room & Coffee Room 酒店西餐厅与咖啡厅)

14:00

Bus to NWAUFU Intl. Exchange Center 西农国际交流中心

Plenary 1: Crop root traits and functions (Session I)

Chair: Hans Lambers, The University of Western Australia, Australia

Hong Liao, Fujian Agriculture and Forestry University, China

14:30–15:00 [**Keynote 04**] Genetic and physiological analyses of the root traits for internal aeration of crops under flooded soil conditions

Mikio Nakazono, Nagoya University, Japan

15:00–15:30 [**Keynote 05**] Small root system wins high yield

Fengmin Li, Lanzhou University, China

15:30–15:45 [**Oral 01**] A phosphate deficiency-induced protein kinase (PRK1) is involved in the remodeling of root architecture in Arabidopsis upon phosphate starvation

Ping Lan, Nanjing Institute of Soil Science, Chinese Academy of Sciences, China

15:45–16:00 [**Oral 02**] The epigenetic regulation mechanism of crown root in rice

Yu Zhao, Huazhong Agricultural University, China

16:00–16:15 **Session Discussion**

16:15–16:35

Tea Break

Plenary 2: Crop root traits and functions (Session II)

Chair: Kadambot Siddique, The University of Western Australia, Australia

Jianbo Shen, China Agricultural University, China

16:35–17:05 [**Keynote 06**] Natural variation and genetic regulation of root system architecture and plasticity in soybean

Henry Nguyen, University of Missouri, USA

17:05–17:35 [**Keynote 07**] Genetic improvement of root system architecture for nutrient use efficiency in maize

Lixing Yuan, China Agricultural University, China

17:35–17:50 [**Oral 03**] A pair of SNARE proteins generated by alternative termination of transcription in roots and root nodules

Huairong Pan, Hunan University, China

17:50–18:05 **Session Discussion**

18:05

Bus Back to Hotel

18:30–21:00

Conference Dinner (Hotel Banquet Hall 酒店宴会厅)

Wednesday, October 11, 2017

Hotel Conference Room 酒店双馨厅

Plenary 3: Root Response to Stress (Session I)

Chair: **Vara Prasad**, Kansas State University, USA
Youcai Xiong, Lanzhou University, China

- 08:30–09:00 [**Keynote 08**] Root systems and drought resistance
Neil Turner & Jairo Palta, The University of Western Australia, Australia
- 09:00–09:30 [**Keynote 09**] Maximizing root/rhizosphere efficiency to improve nutrient use efficiency and crop productivity in intensive cropping systems
Jianbo Shen, China Agricultural University, China
- 09:30–10:00 [**Keynote 10**] Interaction of aluminium toxicity and drought stress on root growth and field crops yield on acid soils: Case study in Serbia
Ivica Djalovic, Institute of Field and Vegetable Crops, Serbia
- 10:00–10:15 [**Oral 04**] Genotypic variability in wheat root system traits for improving nitrogen uptake
Jairo Palta, The University of Western Australia, Australia
- 10:15–10:30 **Session Discussion**

10:30–10:50 **Tea Break**

Plenary 4: Rhizosphere Interactions (Session I)

Chair: **Johannes Postma**, Forschungszentrum Jülich, Germany
Lixing Yuan, China Agricultural University, China

- 10:50–11:20 [**Keynote 11**] Symbiotic microbes - good partners of plant roots
Runjin Liu & Yinglong Chen, Qingdao Agricultural University, China
- 11:20–11:50 [**Keynote 12**] Diversity and ecological heterogeneity of dark septate endophytes (DSE) in desert plants
Xueli He & Xia Li, Hebei University, China
- 11:50–12:05 [**Oral 05**] Sorghum crop residues may influence weed infestation, rhizosphere enzymatic activities and microbial communities in spring planted mung bean
Zubair Aslam, University of Agriculture Faisalabad, Pakistan
- 12:05–12:20 [**Oral 06**] Maize root new function- root exudate stimulate parasitic weeds *Orobanche* spp. seeds suicide germination
Yongqing Ma, Northwest A&F University; Institute of Soil and Water Conservation, Chinese Academy of Sciences, China
- 12:20–12:35 **Session Discussion**

12:35–13:50 **Lunch (Hotel Western Dining Room & Coffee Room 酒店西餐厅与咖啡厅)**

13:50–14:30 **Poster Session (Hotel Conference Room 酒店双馨厅)**

Plenary 5: Root Response to Stress (Session II)

Chair: **Mikio Nakazono**, Nagoya University, Japan
Guohua Mi, China Agricultural University, China

14:30–15:00 [**Keynote 13**] Root traits for enhancing drought tolerance in wheat: Genetic diversity and mechanisms

Vara Prasad, Kansas State University, USA

15:00–15:30 [**Keynote 14**] Phenotyping root traits for improved adaptation to abiotic stress
Yinglong Chen, Northwest A&F University, China; The University of Western Australia, Australia

15:30–15:45 [**Oral 07**] Phenotyping the hidden half – roots as breeding targets
Tobias Wojciechowski, Forschungszentrum Jülich, Germany

15:45–16:00 [**Oral 08**] Why does oriental arborvitae grow better when mixed with black locust?
Min Sheng, Northwest A&F University, China

16:00–16:15 **Session Discussion**

16:15–16:35 **Tea Break**

Plenary 6: Root Research Methods and Simulation Modelling

Chair: **Jairo Palta**, The University of Western Australia, Australia
Long Li, China Agricultural University, China

16:35–17:05 [**Keynote 15**] The limits to resource acquisition: Simulating the role of root phenes in plant nutrition

Johannes Postma, Forschungszentrum Jülich, Germany

17:05–17:35 [**Keynote 16**] Spatial morphology of root system and its contribution to reproductive allocation in dryland wheat

Youcai Xiong, Lanzhou University, China

17:35–17:50 [**Oral 09**] Silicon-induced increase in root hydraulic conductance under stress conditions

Xiping Deng & **Shiwen Wang**, Northwest A&F University, China

17:50–18:05 [**Oral 10**] Initial rhizoliths in dune soil of Badain Jaren Desert, NW China

Qingfeng Sun, Northwest Normal University, China

18:05–18:20 **Session Discussion**

18:30–21:00 **Dinner - Buffet (Hotel Banquet Hall 酒店宴会厅)**

Thursday, October 12, 2017

Hotel Conference Room 酒店双馨厅

Plenary 7: Rhizosphere Interactions (Session II)

Chair: **Michel Edmond Ghanem**, ICARDA, Morocco
Xueli He, Hebei University, China

08:30–09:00 [**Keynote 17**] Root recognition in neighboring plants: Evidence for a specific role of root exudates

Long Li, China Agricultural University, China.

09:00–09:30 [**Keynote 18**] Root plasticity in response to nitrogen supply in maize

Guohua Mi, China Agricultural University, China

09:30–09:45 [**Oral 11**] Plant growth-promoting and cadmium remediation potential of *Serratia marcescens* CP-13 characterized from wastewater-irrigated soil

Muhammad Shahid, Government College University, Pakistan

09:45–10:00 [**Oral 12**] Arbuscular mycorrhizal fungus increased potassium content and expression of genes encoding potassium channels in *Lycium barbarum*

Haoqiang Zhang, Northwest A&F University, China

10:00–10:15 **Session Discussion**

10:15–10:35

Tea Break

Plenary 8: Applications in crop breeding programs

Chair: **Neil Turner**, The University of Western Australia, Australia
Xiping Deng, Northwest A&F University, China

10:35–11:05 [**Keynote 19**] Physiological analyses of water-saving traits during wheat domestication: Links between shoot and root hydraulics

Michel Edmond Ghanem, International Centre for Agricultural Research in the Dry Areas (ICARDA), Morocco

11:05–11:35 [**Keynote 20**] Genetic variants associated with the root system architecture of oilseed rape (*Brassica napus* L.) under contrasting phosphate supply

Lei Shi, Huazhong Agricultural University, China

11:35–11:50 [**Oral 13**] The relationship of maize root system architecture with higher soil water use efficiency

Yingzhi Gao, Northeast Normal University, China

11:50–12:05 [**Oral 14**] Root to shoot allocation of limited resources: Investment strategies and their possible payoffs

James King, The University of Tokyo, Japan

12:05–12:20 **Session Discussion**

12:20–13:30

Lunch (Hotel Western Dining Room & Coffee Room 酒店西餐厅与咖啡厅)

Plenary 9: Youth Forum (Session I)

Chair: **Guohua Mi**, China Agricultural University, China
Tinglu Fan, Gansu Academy of Agricultural Sciences, China

13:30–13:40 **[YF 01]** Root zone observation of a continuous vegetation transect in wetlands
Chengliang Liu, University of Twente, The Netherlands

13:40–13:50 **[YF 02]** The monitoring system of plant roots and research on the function of wheat deep roots
Siwei Mou, Northwest A&F University, China

13:50–14:00 **[YF 03]** Early season drought stress affected root growth and grain yield of 10 Australian wheat cultivars released during the last 60 years
Yupeng Feng, China Agricultural University, China

14:00–14:10 **[YF 04]** Alteration in root architecture and rhizosphere chemistry in response to P deficiency in five crop species with contrasting root systems
Aijiao Wu, Northwest A&F University, China

14:10–14:20 **[YF 05]** Paclobutrazol improves maize (*Zea mays* L) grain yield by stimulating root growth characteristics and its distribution under semi-arid region
Muhammad Kamran, Northwest A&F University, China

14:20–14:30 **[YF 06]** Root development and water consumption in wheat/maize intercropping system
Longshuai Ma, Northwest A&F University, China

14:30–14:40 **[YF 07]** Alliance between arbuscular mycorrhizal fungi (AMF) and root exudation facilitate short-term nitrogen transfer in maize/alfalfa intercropping system
Hualiang Zhang, Northeast Normal University, China

14:40–14:50 **[YF 08]** Study on the allocation strategy of plant to cope with clipping salinity by using N isotope labeling technique
Huimin Ma, Northeast Normal University, China

14:50–15:05 **Session Discussion**

15:05–15:25

Tea Break

Plenary 10: Youth Forum (Session II)

Chair: **Ping Lan**, Nanjing Institute of Soil Science, Chinese Academy of Sciences, China
Suiqi Zhang, Northwest A&F University, China

15:25–15:35 **[YF 09]** The effect of AM fungi on soil aggregate stability of Calcaric Regosol
Lingling Ji, Huazhong Agricultural University, China

15:35–15:45 **[YF 10]** Responses of fine root growth, morphology traits and vertical distribution in

a young poplar plantation to nitrogen addition through drip fertigation

Xiaoli Yan, Fujian Agriculture and Forestry University, China

15:45–15:55 **[YF 11]** N transfer is dependent on N fixation by legume in maize (*Zea mays* L.)/alfalfa (*Medicago sativa* L.) intercropping system

Xinyu Wang, Northeast Normal University, China

15:55–16:05 **[YF 12]** The selflessness and cost-benefit of *Leymus chinensis* clonal integration strategy to clipping under saline-alkali conditions

Hao Sun, Northeast Normal University, China

16:05–16:15 **[YF 13]** Deep soil water extraction, root system development and carbon input in rain-fed apple orchards with different stand ages in Loess Plateau, China

Huijie Li, Northwest A&F University, China

16:15–16:25 **[YF 14]** Characterising root trait variability in maize germplasm

Sheng Qiao, Northwest A&F University, China

16:25–16:35 **[YF 15]** Large crown root number improves phosphorus acquisition under phosphorus deficiency in maize (*Zea mays* L.)

Baoru Sun, Institute of Botany, Chinese Academy of Sciences, China

16:35–16:50 **Session Discussion**

16:50–17:30

Closing Ceremony

Chair: **Yinglong Chen**, Northwest A&F University, China; The University of Western Australia, Australia

18:00–20:00

Dinner - Buffet (Hotel Banquet Hall 酒店宴会厅)

Friday, October 13, 2017

08:30–10:00 Rainfall Simulation Hall at Institute of Soil and Water Conservation

10:00–11:30 Research facilities at Institute of Water-saving Agriculture in Arid Area of China

11:30

Bus Back to Hotel

12:00–13:30 **Lunch (Hotel Western Dining Room & Coffee Room 酒店西餐厅与咖啡厅)**

14:00–17:00 University Museum Garden

18:00–20:00

Dinner - Buffet (Hotel Banquet Hall 酒店宴会厅)