Zhong Wei

Professor of Rhizosphere microbial ecology

Address: D201 Administrative NorthBuilding
Phone Number: 86+025-84396864
Email: weizhong@njau.edu.cn

Education:

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- Bachelor, Sep 2003-Jun 2007 in Agricultural resources and environment, Nanjing Agricultural University, China
- PhD, Sep 2007—Jun 2012 in Science of Plant nutrition, Nanjing Agricultural University, China

Research interests and expertise:

I am interested in rhizosphere microbiome interactions and their roles in plant health, aiming to address questions: 1) Who are they? Here I mainly use the next generation sequencing to decipher healthy and diseased-associated microbiome from field sampling data. 2) How are they assembled? Here I focus to understand root exudate, plant cultivars, soil types, fertilization regimes and global warming affect microbiome composition and functioning. 3) How do they interact and what is the impact? Here I apply biodiversity-ecosystem functioning framework and use simple synthetic microbial consortia (bacteria, phage, protist) to understand microbial assembly, and interaction rules and further responses to plant pathogen invasion in rhizosphere. 4) How to manage soil microbiome? Here I apply the frameworks developed above to design novel probiotic consortia, prebiotics, phage and protists based bio-products to improve plant health in a sustainable way. Meanwhile, I investigate the impact of these applications on soil microbiome composition and multifunctionality.

Current projects:

- 2017-2020, National Natural Science Foundation of China, 41671248, 800K;
- 2017-2020, Natural Science Foundation of Jiangsu Province, BK20170085, 500K;
- 2015-2019, National Key Basic Research Program of China, 2015CB150503, 800K;
- 2015-2017, Young Elite Scientist Sponsorship Program by CAST, 2015QNRC00, 450K;
- 2014-2016, National Natural Science Foundation of China, 41301262, 250K;
- 2013-2016, Natural Science Foundation of Jiangsu Province, BK20130677, 200K;

Selected publications:

1. Mei Li[1], Zhong Wei[1*], Jianing Wang, Alexandre Jousset, Ville-Petri Friman, Yangchun Xu, Qirong Shen* and Thomas Pommier. Facilitation promotes invasions in plant-associated microbial communities. Ecology letters, 2018 (minor revision)
2. Zhong Wei, Jie Hu, Yi'an Gu, Shixue Yin, Yangchun Xu*, Alexandre Jousset, Qirong Shen, and Ville-Petri Friman, 2017, Ralstonia solanacearum pathogen disrupts bacterial rhizosphere microbiome during an invasion. Soil Biology & Biochemistry, 2018, 118: 8-17.
3. Zhong Wei, Alexandre Jousset, 2017. Plant breeding goes microbial. Trends in Plant Science, 2017, 22(7):555-558.
4. Zhong Wei, Jianfeng Huang, Tianjie Yang, Alexandre Jousset, Yangchun Xu, Qirong Shen, Ville-Petri Friman. Seasonal variation in the biocontrol efficiency of bacterial wilt is driven by temperature-mediated changes in bacterial competitive interactions. Journal of Applied Ecology, 2017, 54 , 1440–1448.
5. Zhong Wei[1]· Tianjie Yang[1]· Ville Petri Friman· Yangchun Xu· Qirong Shen*· Alexandre Jousset*. Trophic network architecture of root-associated bacterial communities determines pathogen invasion and plant health. Nature communications. 2015 6:8413

Prizes, awards, honors:

2017-2020, Talent Project, The Natural Science Foundation of Jiangsu Province, BK20170085;
2015-2017, Talent Project, Young Elite Scientist Sponsorship Program by CAST, 2015QNRC001;
2016-2018, Qing Lan Talent Project;

2017, DBN (大北农) Young Scholar Award;

2017, Science and technology progress award of Gansu province
2016, Travel award, 5th International bacterial wilt conference
2015, Travel award, 1th Global Soil biodiversity conference