JILU CHE

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EDUCATION

- Master of Science (M.Sc.) in Forestry *September 2014 - June 2017*
Zhejiang Agriculture and Forestry University
- Supervisor: Prof. Shuquan Yu
- Thesis: *Heavy Metal Enrichment Efficiency of Urban Green Tree of Cinnamomum Camphora in Differnt Pollution Degrees*

- Bachelor of Science (B.Sc.(Agr.)) in Landscape *September 2009 - June 2014*
North West Agriculture and Forestry University
Yangling Vocational and Technical College

RESEARCH INTEREST

Phytoremediation, Plant Growth-Promoting Bacteria, Plant Physiology, Pollution Ecology

RESEARCH EXPERIENCE

Institute of Soil Science, Chinese Academy of Sciences September 2020 - Present
Research Associate *Adviser: Prof. Xin Song*

· Working towards sustainable remediation of soil with microbial coupling thermal treatment. Current focus is to find microbial community that helps degrade PAHs, which may be added to the thermal treatment of contaminated soil to achieve sustainable remediation.

Nanjing Agriculture University September 2017 - June 2020
Research Associate *Adviser: Prof. Qingsheng Cai*

· Explored candidate genes' response to cadmium stress and the function of the target gene. Took part in screening Cd-tolerant PGPR and applied to alleviate the growth and development of plants under cadmium stress.

Zhejiang Humanities Landscape Co., Ltd April 2017 - August 2017
Research Intern *Adviser: Yuchu Chen*

· Recorded the growth and development indexes of lotus throughout different periods, and performed the DUS test to identify the new Lotus varieties.

PROJECTS

- Cd-tolerant PGPR screening and its effect on Switchgrass
Cd in soils inhibits plant growth, therefore it is important to screen Cd-tolerant PGPR to overcome the inhibition. We first collected contaminated plant and its rhizosphere soil samples, then isolated multiple strains that have growth-promoting characteristics (IAA production, ACC deaminase activity and phosphate solubilization activity) and are Cd-tolerant. After that, we inoculated them into Switchgrass seedlings and verified their promoting effects.

- Candidate genes functional studies toward switchgrass Cd-tolerance based on transcriptome analysis
Switchgrass can be used for revegetation of Cd-contaminated soil. Previous study highlighted the indispensable role of HSF/HSP network in switchgrass Cd tolerance. This study selects the target gene as HSP70 genes. Target genes were validated by qRT-PCR to confirm the results of the RNA-Seq. We construct the target gene expression vectors, then transfer into different yeast strains, and overexpress

the target gene in Arabidopsis and Switchgrass to identify the gene function and explore the regulatory mechanism under cadmium stress.

- Heavy metal enrichment efficiency of urban green trees in different pollution degrees
This program aims at studying phytoremediation of heavy metals in soil. We worked on the urban green trees (*Cinnamomum camphora*) under different levels of heavy metal pollution. Plant organs samples (leaf, branch and trunk) and plant rhizosphere soil samples were collected, and heavy metal element concentration were analyzed by ICP-OES. The results show that trunks enrich significantly more Pb and Ni than the other organs, and have the potential to be an alternative option for heavy metal contaminated soil remediation.

- Heavy metals accumulation and risk assessment in river surface sediments
This project is to investigate heavy metals pollution in surface sediment of the Lower Ou River and coastal urban river. To this end, we evaluated the concentrations of multiple heavy metals (Cr, Co, Ni, Cu, Zn, As and Pb) in collected samples. We then analyzed the characteristics, explored source of heavy metals, and assessed potential ecological risks.

PUBLICATIONS

- Effects of Soil Heavy Metal Content on Heavy Metal Accumulation Characteristics in the Upper Part of Magnolia Grandiflora L,
Hui Liu, Shuquan Yu, *Jilu Che*, Wenxin Qiu and Yating Wen,
Journal of Northeast Forestry University, 2018, 46(01):31-39.

- Characteristics of Heavy Metal Enrichment Efficiency in Different Organs of Urban Green Tree Cinnamomum Camphora,
Jilu Che, Shuquan Yu, Hui Liu, Wenxin Qiu and Yating Wen,
Chinese Journal of Applied Ecology, 2017, 28(09):2907-2916.

- Pollution Characteristics, Sources and Potential Ecological Risk of Heavy Metals in Surface Sediment from the Lower Ou River,
Jilu Che, Shuquan Yu, Xin Zhang, Peng Qi, Licheng Liang and Jiajun Yu,
Ecological Science, June 2017, 36(04):176-184.

- Discussion on the Application of Lotus Test Guide in the Test of New Lotus Varieties,
Xun Zhao, Yichu Chen and *Jilu Che*,
14th China Standardization Forum, China Association for Standardization, 2017

- The Effects of Land Use on Soil/Sediment Heavy Metal Pollution and Ecological Risk Assessment at Dongtou Islands, Zhejiang, China.,
Xin Zhang, Shuquan Yu, Qinglin Li, Chao Zhang, Linghuan Li and *Jilu Che*,
Ecological Science, 2016, 35(05):126-135.

- Pollution Characteristics and Potential Ecological Risk of Heavy Metals in Urban Surface Water Sediments from Yongkang,
Peng Qi, Shuquan Yu, Chao Zhang, Licheng Liang and *Jilu Che*,
Environmental Science, 2015, 36(12):4486-4493.