

日本—中国 国際共同研究「第2回生物遺伝資源分野」 ～植物—微生物共生系、微生物叢の機能と制御に着目した基盤技術の創出～ 平成29年度 年次報告書	
研究課題名（和文）	窒素利用効率の向上と温室効果ガス N ₂ O の排出量低減を目指した 1,9-デカンジオール等の土壌窒素代謝を制御するイネの根浸出物の放出制御を通じた水田土壌微生物叢の制御
研究課題名（英文）	Regulation of rice rhizosphere soil microbial flora through enhancing release of 1,9-decanediol and other specific root exudate compounds for higher nitrogen use efficiency and lower N ₂ O emission
日本側研究代表者 氏名	藤原 徹
日本側研究代表者 所属・役職	東京大学 農学生命科学研究科・教授
研究期間	平成29年12月 1日～平成33年 3月31日

1. 日本側の研究実施体制

氏名	所属機関・部局・役職	役割
Toru Fujiwara	Professor, Graduate School of Agricultural Life Sciences, The University of Tokyo	Identification of genetic locus and structure analysis of 1,9-decanediol release and nitrogen efficiency in rice
Keishi Senoo	Professor, Graduate School of Agricultural Life Sciences, The University of Tokyo	Metagenomic analysis of rhizosphere soils affected by 1,9-decanediol and other rice BNIs

2. 日本側研究チームの研究目標及び計画概要

For the work Package 1, for the identification of Genetic locus regulating 1,9-decanediol release, it is necessary to establish the exudate collection system in Tokyo. Establishment of the root exudate collection system for the analysis of 1,9-decanediol release with the help from Prof. Shi is the plan of the first year for the Work package 1

For the work Package 4: It is essential to establish soil microbe analysis system both in Japan and in China. The system is already established in the Prof. Senoo's group. Establishment of the soil microbiome analysis system in China with the help of Prof. Senoo is the plan of the first year for the work Package 4

3. 日本側研究チームの実施概要

To establish exudate collection system in Tokyo for the determination of 1,9-decanediol release, we initially constructed exudate collection systems based on our experience in rice hydroponics in 2017. Based on such preliminary experiments, we had in depth discussion with scientists from Nanjing on the occasion of international workshop in Jan 2018. With the comments from the peoples in Nanjing we established root exudate collection systems in Tokyo and initiated collection in Feb 2018. We downsized the root exudate collection systems compared with the one used in Nanjing because possibly due to the difference in light condition the growth of rice in Tokyo is much better and we can expect the collection of exudate at a similar levels. In the first experiments, we cultivated two major rice cultivars with several replicates to confirm a part of results previously published by Nanjing group and also to understand the variations. The first samples were collected by the end of March 2018. In the coming April 2018, the samples will be concentrated and sent to Nanjing for the 1,9-decanediol analysis.

The cultivation of 200 cultivars are also started in March 2018.

For the establishment of the metagenomic analysis system which was already established in Prof. Senoo's lab in Nanjing, we had international workshop and in depth discussion in Nanjing in Jan 2018.