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※弊会記入欄

Form B-2
(FY2022)
Must be typed

Date（日付）
25/11/2022（Date/Month/Year：日/月/年）

Activity Report -Science Dialogue Program-
（サイエンス・ダイアログ事業　実施報告書）

- Fellow's name（講師氏名）: XU Zhenxing （ID No. P21091 ）

- Name and title of the lecture assistant（講義補助者の職・氏名）
No

- Participating school（学校名）: Chiba Prefectural Sakura High School

- Date （実施日時） 24/11/2022 （Date/Month/Year:日/月/年）

- Lecture title（講義題目）:
Iron-reducing bacteria enhance paddy soil fertility by nitrogen fixation

- Lecture format（講義形式）:
◆☒Onsite ・ □Online (Please choose one.)（□対面 ・ □オンライン（どちらか選択ください。））
◆Lecture time（講義時間） 60 min（分）, Q&A time（質疑応答時間） 30 min（分）
◆Lecture style（ex.: used projector, conducted experiments）
（講義方法（例:プロジェクター使用による講義、実験・実習の有無など））
used projector

- Lecture summary（講義概要）: Please summarize your lecture within 200-500 words.

Unique characteristic of rice paddy soil is "sustainable nitrogen fertility". Even with no nitrogen fertilization, a relatively high rice yield would be obtained. In contrast, the yield of upland crops drastically drops under no nitrogen fertilization. A Japanese saying describes this phenomenon, 「米は地力でとり、麦は肥料でとる」. Nitrogen fixation is one of the major routes which supplies nitrogen to the soil. Biological nitrogen fixation (BNF) is essential for sustainable soil nitrogen fertility of paddy soil. Many studies focusing on BNF in paddy soil have been performed. But nitrogen fixation by iron-reducing bacteria has been missed. We found N fixation of iron-reducing bacteria in paddy soil by soil DNA/RNA-based and isolation-based studies. Iron-reducing bacteria can utilize rice straw as a carbon source, utilize iron as respiration, and fix nitrogen. As long as the rice is cultivated in paddy fields, N fixation is "permanent". Modern agriculture is supported by N fertilizer. The invention of chemical fertilizer was a revolution, but the over-use of N fertilizer has caused serious environmental and energy problems, i.e. unhealthy soil. Thus, the utilization of biological nitrogen fixation is important to minimize N fertilizer. Boosting nitrogen fixation of iron-

reducing bacteria is promising to establish novel and practical for soil N health.

◆Other noteworthy information（その他特筆すべき事項）:

- Impressions and comments from the lecture assistant（講義補助者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。）: