

COURSE : Soil Biology related with rhizobia

Summer Program

COURSE TUTOR

Associate Professor Yuichi Saeki, Faculty of Agriculture, Miyazaki University

COURSE OVERVIEW

Soybean (*Glycine max* L. Merr.) establishes the symbiotic relationship by infection with soybean-nodulating bacteria and the subsequent root nodule formation. The soybean acquires atmospheric nitrogen as ammonia through the root nodules. Since not only various wild soybeans are distributed but also various soybean cultivars are cultivated from the northern to the southern regions in Japan, it is expected that soybean-nodulating bacteria will vary from place to place. Inoculation to soybean with bradyrhizobia that show high ability for nitrogen fixation is effective for an increase in soybean production in soils which have never been under soybean cultivation. However, the inoculation efficiency of useful rhizobia is so critical in soils with soybean fields because of the increased densities of indigenous rhizobia. It is therefore very important to understand the diversity of indigenous soybean-nodulating rhizobia in the soil for cultivation of soybean in order to improve the inoculation efficiency. The *Rj* genes are known as nodulation regulatory genes in soybean, and the genotypes of non-*Rj*, *rj*₁, *Rj*₂, *Rj*₃, and *Rj*₄ have been confirmed to exist naturally. Soybean cultivars that harbor an *Rj*-gene might control not only compatibility with specific strains, but also preference for indigenous soybean-nodulating rhizobia, even if soybean cultivation was performed on a same soil. In this course, recent results will be introduced and discussed about diversity and ecology of soybean-nodulating rhizobia.

TEXTBOOKS AND READINGS

There will be no set textbook for this course. Some research papers will be used for this course.

COMMUNICATIONS

The course tutor's details are as follows:

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