

(For JSPS fellow)

Form 3

Date (日付): 06 日/12 月/2010 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 (参加外国人研究者氏名): RADHOUANE B. CHAFFAI (ID No. P09109)

Participating school (参加機関 (受入学校名)): Gifu Prefectural Gizan High School

Date (実施日時): 06 日/12 月/2010 年 Time: from 10:45 to 12:30

Lecture title (講演題目): (in English) Advancements of Plant Research Using Microarray Technology

(in Japanese) マイクロアレイ技術を用いた植物研究

Lecture summary (講演概要):

This conference was presented as part of "JSPS Science Dialogue Program" and was divided into 4 sections. After a self introductory section, I provided some information about the geography, history and culture of my country Tunisia. The third section has dealt with the environmental constraints and their impact on the Tunisian Agriculture. The last section has focused on advancement of plant research using Microarray experiment.

The environmental constraints in Tunisia include: water erosion, salt stress, drought and desertification. In semi-arid area of Tunisia, water erosion was due to erosive rainfall. This process has led to negative economic and environmental consequences in a context of limited water resources. Therefore, water erosion is considered as a severe environmental stress, ultimately leading to degradation and impoverishment of the soil cover. The second factor corresponds to the salt stress, which represent an important environmental constraint with high impact on Tunisian agriculture. Indeed, a series of salt lakes in Central Tunisia, extending from the Gulf of Gabes into Algeria, has resulted in salt accumulation into the surrounding soils. Salt stress is one of the major abiotic stresses in Tunisia. Some salt-tolerant plants were currently growing in saline soils in Tunisia. The desertification has been recognized as a serious problem since many years. Recently, important action plans have been implemented to stabilize moving sands and to restore degraded areas.

Advancements made in Plant Research in recent years, have led to the discovery of many molecular mechanisms in plants that enable them to withstand these environmental constraints. Particularly, advancements of Microarray Technology in Arabidopsis plants have resulted in the identification of critical genes for tolerance to many soil factors such as acidity (low pH), heavy metals, salinity etc.

In conclusion, identification of such tolerance genes would be interesting for breeding programs to

improve crop performance in polluted soils.

Language used (使用言語): English

Lecture format (講演形式):

○Lecture time (講演時間) 30 min (分), Q&A time (質疑応答時間) 0 min (分)

○Lecture style (examples: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、プレ実験など))

PowerPoint presentation

○Interpreter (example: assistance by host or colleague, provided Japanese explanation by yourself)

(通訳 (例: 受入研究者によるサポート、外国人研究者本人による日本語説明))

Assistance provided by my host researcher

First and foremost, I would like to thank my host researcher Prof. Hiroyuki Koyama for all the assistance and attention he devoted to me. Indeed, his support, guidance and constructive criticism were crucial for the completion of this project.

Opening session was entitled "Plant Research for World Agriculture" by Prof. Hiroyuki Koyama. He demonstrated the role of scientific research for a clean environment. In addition to the environmental constraints, the large increase in the world population and the substantial changes in the alimentary habits are part of key challenges facing the world agriculture. Plant Biotechnology offers new tools for plant breeding research and has resulted in significant increase in plant productivity (e.g. the rice productivity has increased from 200 Kg/ha to 500 Kg/ha) and in high quality food (e.g. the Golden Rice).

The next session was a lecture held by Dr. Tanveer Tazib, entitled "Bangladesh Towards a Sustainable Environment and Agriculture".

Name and title of assistant (協力者 職・氏名) (example: host or colleague)

Prof. Hiroyuki Koyama

(Host Researcher)

○Other note worthy information (その他特筆すべき事項):

Impressions and opinions of assistant (協力者から本事業に対する意見・感想等がございましたら、お願いいたします。):