

(For JSPS Fellow)

Form B-5

Date (日付)

8/12/2014 (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) : PARADA JACO ROXANA YANIRA
(ID No. P 13082)

- Participating school (学校名): HIROSHIMA UNIVERSITY HIGH SCHOOL

- Date (実施日時) 1/12/2014 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) THE USE OF LIGHT IN PLANT PROTECTION
(in Japanese)

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

I divided my lecture in two sections: In the beginning of the lecture I gave a short introduction about my country (El Salvador), geography, population, culture, crafts, and natural resources for understanding foreign country, and why I was interesting in science and why is important to learn English.

The second presentation of the lecture I gave my research topic about the use of light in plant protection and I provided to the students the following summary:

It is well known that for plant diseases to occur, 3 components must be present and interact: plant, pathogen and environment. If any of the 3 components is absent, the disease will not manifest, and changes in any one component will affect the degree of disease development. Light from the sun is the source of energy for plant life, and it's considered one of the most important environmental factors affecting plants. It regulates many aspects of plant growth and controls developmental and physiological processes, making it a potentially useful tool in disease control. Rice is an important staple food in many parts of the world. Protecting crops against plant diseases to maintain balance between food production and growing food demand is the principal objective of plant pathology. The control of plant diseases included several strategies, some of them, may have negative impact in environment and human health. Our research is focused in the use of additional light, in particular, red light irradiation to control diseases in rice caused by fungi. Red light has been reported to protect several crops including broad bean, cucumber, eggplant, tomato, pepper, pumpkin and watermelon against fungi, bacteria and nematode diseases. In our research, we found that red light also protects rice against brown spot disease caused by the fungus *Bipolaris oryzae*, and rice blast caused by the fungus *Magnaporthe oryzae*, the two diseases responsible of heavy yield losses worldwide in rice. It is known that the mechanism by which red light irradiation protects plants against fungi attack is through disease induced resistance. Plants exposed to red light irradiation in presence or absence of the pathogen become more resistance activating their own defense mechanism

and get ready for a different battle. So, understanding how red light protects rice against fungi pathogens basically at the molecular level is our objective and will improve us the basic elements to design crop plants that are less dependent on the use of synthetic pesticides to reduce the environmental costs of modern agriculture.

Finally, I shown to the students the pathogen fungus of rice under microscope and I explained *in vivo* how we are conducting experiments using red and green light with rice and cucumber plants.

- Language used (使用言語): ENGLISH

- Lecture format (講演形式): Presentation

◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 30 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Projector, and demonstration *in vivo* how red and green light induced-resistance in rice and cucumber plants against fungal diseases.

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

Dr. Arase Sakae

◆Name and title of accompanied person (同行者 職・氏名)

Dr. Arase Sakae, Dean of Faculty of Life and Environmental Science, Shimane University.

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

I was surprised the good english of the students, they listened carefully and I did not see nobody sleeping as usually happen in some presentations. At the end of the presentation they were able to ask me many questions without shame.

- Impressions and opinions from accompanied person (同行者の方から、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。):