Annex 3. Summary of Session 1 Country Report

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FNCA 2012 Workshop on Biofertilizer Project

Session 1　Country Report

8 countries presented their country reports. The brief summary of each country report is as follows:

China (Dr. Fan Bingquan, CAAS)

1. Isolation of high effective strains was conducted. Six P-solubilizing Bacteria, eleven associated N-fixation bacteria, Seven antagonistic Bacteria, and 5 herbicides-degrading strains were isolated from China.
2. We conducted experiments P-solubilizing Biofertilizers in greenhouse and in field. The results showed that 6 biofertilizers are high effective.
3. We conducted Oligochitosan experiment in greenhouse. The date will be analyzed.
4. We conducted research on effects of γ–irradiation and autoclave on survival rate of beneficial microbe in 4 kinds of carriers.

Indonesia (Dr. Iswandi Anas, BATAN-IPB)

Gamma Irradiator facilities is available at BATAN (National Nuclear Energy Agency) has been utilized by wide range of research institutions and universities for research as well as for commercial use　such as for herbals , spices, medical equipments and also to some extent Gamma Irradiator was also used for sterilization of carrier of biofertilizer. However, the biofertilizer producers may not get enough information about the facilities as well as the benefits of gamma irradiation in producing good quality of biofertilizer. Multifunctional biofertilizer has been shown to have positive effect on several crops not only in the experimental stage but some multifunctional biofertilizers are available commercially. Irradiated oligochitosan has stimulation effect on rice growth in pot experiment but not in the field experiment. This may due to the fact that the amount of oligochitosan applied in the field experiment was too small. Therefore in the future experiment, the concentration, the frequency of application as well as the amount of oligochitosan applied per hectare should be evaluated.

Japan (Dr. Shotaro Ando, JIRCAS)

In order to know the effect of state of inoculums, vegetative and spore bacteria of Bacillus biofertilizer were inoculated to seedlings of paddy rice. One month after inoculation, spore state of inoculums increased dry matter weight of root, but vegetative state of inoculums did not. Seven days after inoculation, bacteria could not be detected at the rice root when vegetative bacteria were inoculated. In case of spore bacteria inoculation, high numbers of bacteria were maintained at the root at 25 days after inoculation. In order to evaluate the

synergy effect between biofertilizer and irradiated oligochitosan on plant growth promotion and on plant pathogen suppression, manual for experiments was prepared for FNCA member countries.

Malaysia (Ms. Phua Choo Kwai Hoe, Nuclear Malaysia)

Biofertilizer is one of the important inputs for agriculture industry on global warming and climate challenges. Multifunctional biofertilizers including phosphate and potassium solubilising abilities; nitrogen fixing; plant growth promoting activities and antagonistic against plant diseases are currently developed at Nuclear Malaysia. Gamma irradiation had been used to produce good biofertilizer carrier. Combination irradiated oligochitosan with biofertilizer will be future research for biofertilizer project.

Mongolia (Dr. Delgermaa Bongosuren, PSARI)

In 2012 we conducted 2 experiments including: 1) Commercial application of bio fertilizer 2) Synergy effect of biofertilizer and oligochitosan to wheat in field plot test.

1) Biofertilizer produced by using beneficial microorganisms have a positive economic impact in terms of nitrogen fertilizer saving and increasing the crop yield. Annually 5-8 tons of biofertilizer is produced and distributed to farmers.
2) The experiment on the **"Synergy between biofertilizer and irradiated oligochitosan for wheat yield"** was conducted using experimental design and methodology provided by FNCA. The result of the experiment under field condition showed that the lowest grain recorded was on plots applied with oligochitosan.

The Philippines (Ms. Juliet A. Anarna, UPLB)

Two experiments conducted to test the efficacy of ***Bio N*** using eggplant and tomato as the test crops. All the treated plants demonstrated an increase in yield over the control or untreated plants Gamma irradiation sterilization dose of Bio N carrier is more effective in the sterilization of ***Bio N*** carrier using 20kGy. Promotion and extension of Bio N technology through establishment of techno demo farms, development and distribution of non-electronic media such as brochures, posters, and tarpaulin. Technical assistance and training were extended continuously to the accredited ***Bio N*** Mixing Plants to maintain the quality of the product. Based on the study for corn combination of ***Bio N*** inoculants and oligochitosan can contribute to the program of organic agriculture in the Philippines.

Thailand (Dr. Phatchayaphon Meunchang, DOA)

The biofertilizer production and utilization in Thailand are progressing. Four types of novel biofertilizer were produced and commercialized. The production technology was already transferred to some companies for commercial scale production. The registration of biofertilizer was started in Thailand.

For 2012-2013, development of the novel biofertilizer through radiation technology for

carrier sterilization and mutation breeding of effective microorganisms for biofertilizer production will be done. At present, the search for best carrier is the first priority of our research target due to the absence of supplier of soil peat in Thailand.

Vietnam (Dr. Pham Van Toan, MARD)

Sandy soil was used to evaluate the effect of biofertilizers on soil fertility under green house and field experiments are conducted to evaluate the effect of biofertilizer on soil fertility, growth and yield of peanut and cashew. Microbial strains used were N-fixing, P-solubilizing, Cilicate solubilizing microorganism and polysaccharide containing *Bradyrhizobium japonicum, Bacillus megaterium, Paenibacillus castaneae* and *Lipomyces starkeyi* with the density of more than 10^8 CFU/gram. The results showed that biofertilizer and cover crops improved the soil moisture, increase the density of beneficial microorganisms in the soil, and yield of peanut and cashew from 17.02% to 24.36% thus increasing profit for farmers. Two experiments were conducted in irradiated oligochitosan from Japan, effect of oligochitosan on growth of tested microbes by plate count at the concentration of 1 to 5 ppm and synergy effect of oligochitosan and biofertilizer on growth of cabbage in the green house. The results showed no effect of oligochitosan on growth of tested microbes in all concentration from 1 to 5 ppm and that oligochitosan and biofertilizer have the synergy effect by reduction of 50% chemical fertilizer and increasing yield by27.81%.