Annex 3. Summary of Session 1 Country Report

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FNCA 2011 Workshop on Biofertilizer Project

Session 1　Country Report

7 countries presented their country reports as the summaries of project activity for 2007-2011. The brief summary of each country report is as follows:

China (Dr. Wang Hongyuan, CAAS)

1) Conducted screening of high effective strains for biofertilizers, and obtained 14 strains of high effective P-solubilizating microbes, 20 strains of soil-born disease antagonistic microorganisms, 14 strains of high effective PAHs-degrading strain, and over 100 straw cellulose-degrading strains.
2) Conducted research on selection of high effective P-solubilizing biofertilizer, and obtained 25 optimum combinations of P-solubilizing biofertilizers suitable for 11 types of soil and 4 kinds of main crops.
3) Conducted research on selection of high effective multifunctional biofertilizers containing more than two functional species, 8 optimum combination of various functional species have obtained.
4) Conducted research on Radiation Sterilization of compost Carrier, the 30 kGy dose of 60Co – gamma ray to peat are best for biofertilizer preservation, which can prolong biofertilizer shelf-life above 6 months.
5) Conducted extension of biofertilizers in North China and Northeast China. The extension areas are 3000 mu (200 hectare) in crops of corn, soybean, wheat, vegetables and melons.

Indonesia (Dr. Iswandi Anas, IPB-BATAN)

Bio-organic fertilizer application replaced 50% inorganic NPK fertilizer without reducing yield. Autoclave is able to kill all microbe in carriers, however autoclaving may change the physical, chemical properties of carriers. Gamma Irradiation by using Co-60 at 35 kGy was effectively reduce the number of indigenous microbes in the carriers by more than 99%. EBM was less effective in sterilized inoculants carriers compared to Gamma Irradiation. Sterilization of carrier with Gamma Irradiation at a dosage of 35 kGy gave a better viability of *Azotobacter, Azospirillum* and phosphate solubilizing fungus than autoclave and EBM.

Commersial application　of biofertilizer in Indonesia has been started. The involment of the goverment in biofertilizer use in Indonesia is necessary. Goverment have to play important role in regulation, exstention of the benefit of using biofertilizer and support producers in providing sterilization carriers facilities. Some important challenges are: (1) How to convince all stake holders; (2) How to control the quality of biofertilizer effectively;

(3) How to support the producers. Obstacles for extension of biofertilizers application in the future can be: (1). Reaction from the an inorganic fertilizer producers, (2) The inadquate knowledge about biofertilizer of the users; (3) Quality control of the biofertilizres

Japan (Dr. Shotaro Ando, JIRCAS)
Four kinds of experiments, 1) plant growth promoting rhizobacteria (PGPR) inoculation to paddy rice, 2) radiation sterilization of biofertilizer carrier, 3) microbial mutation breeding by ion beam, and 4) application of biofertilizer with plant growth promoter of oligochitosan, were conducted by Japanese members of FNCA Biofertilizer Project from 2007 to 2011. Major achievement for 2007 - 2011 was summarized as follows: 1) Paddy rice growth promotion by inoculation of *Bacillus* was demonstrated and possibility to reduce chemical fertilizer was indicated. 2) *Bacillus* population in autoclaved peat carrier was sharply decreased and advantage of γ-sterilized carrier was confirmed in some combination of inoculant and carrier. 3) Method of microbial mutation breeding by ion beam was developed. High temperature tolerance was added to *Bradyrhizobium* and antagonistic effect of *Pseudomonas* was strengthened. 4) Oligochitosan induced resistance for tomato seedling treated with *Pseudomonas.*

Malaysia (Dr. Khairuddin Bin Abdul Rahim, Nuclear Malaysia)
Biofertilizer research has come a long way in Malaysia. The biofertilizer industry is flourishing and gaining acceptability in the plantation industry. Radiation technology can enhance biofertilizer product quality. Biofertilizers have to be versatile so that they can complement chemical fertilizer.

The Philippines (Ms. Juliet A. Anarna, UPLB)
Bio N, the nitrogen fixing inoculants that were initially developed for rice and corn have now been of interest for use in other test crops. There were (3) experiments conducted, The plant materials that were used in the experiments conducted during the period were eggplant, tomato and sorghum. Both process of sterilization meets the microbial count or population of the requirement for the standard quality of Bio N biofertilizer (1 X108). Continous transfer of technology through the support of the government was undertaken. Massive information campaign for the application and benefits of Bio N was conducted since farmers need thorough explanation of the technology.

Thailand (Dr. Sompong Meunchang, DOA)
Biofertilizer was developed for 4 types in Thailand. The extension was very fruitful and success to the farmers fields. Radiation has been used for improving biofertilizer production in Thailand, not only for carrier sterilization but also microbes mutation breeding too.

Vietnam (Pham Van Toan, MARD)

From 2008 to 2011 more than 35 new N-fixing, P-solubilizing, plant growth promoting microbial strains are selected and used for biofertilizer production. Technologies for biofertilizer production are developed and transfer to 6 production companies in different location. Biofertilizer incorporated with organic fertilizer are applied for rice, groundnut, soybean, vegetable, cotton, coffee, pepper and forestry trees in different locations. The filed trial and demonstration showed, that biofertilizer are able to increase crop yield from 10 to 35%, reduce plant root disease and save 20-30% of required chemical N and P fertilizers. To promote biofertilizer production and application, many technical trainings for farmers, field days, field demonstrations and biofertilizer communication in mass media like TV, radio program are take in place during time of 2008-2011.