Annex 4. Session Summary

FNCA 2009 Workshop on Biofertilizer Project

Session 3 "Country Report"

Member Countries presented their country reports. The brief summaries of each country report are as follows;

China (Dr. Ren Ping, CAAS)

Experiment 1: Matching study of Penicillium oxalicum P8 with crop & soil

In this experiment, we investigated matching features of inoculum Penicillium oxalicum (P8) with corn, peanut and cnocula in carcalreous soil. Inoculum P8 will promote plant growth and phosphrous absorption for 3 tested plants, and can significatly increase nuitrient absorbtion and biomass from high or low fertility soil compared with control.

Experiment 2: Matching study of soybean & paddy rice with biofertilizer

Inoculum 10084 (Klebsiella pneumoniae subsp.), Metarhizium, 30150 (Trochoderma longbrachiatum Rifai), 30166 (Trichoderma lignorum Harz), RN5 (Azotobacter chroococcum) are effective to promote soybean growth in dark brown chernozemic soil compared with contrl. InoculumPMR14 (Bacillus subtilis) is effective on promoting paddy rice growth.

Experiment 3: Bio-fertilizer carriers and their impact to microorganisms in soil

Inoculanted with P8, six carriers including clay, Vermiculite, Peat, Diatomite, rice straw, Mixture of caly+chicken manure+rice straw are investigated their effection to soil microorganism in 10 weeks. Compared with peat, rice straw and clay showed positive effect on P-solu. bacteria, K-solu. Bacteria and N-fixing bacteria, which are promising to be peat-alternating carriers for P8.

Indonesia (Dr. Iswandi Anas, BATAN/PAIR-IPB)

There is a growing demand for bio-fertilizer and bio-organic fertilizer in Indonesia recently as an effect of increasing the price of inorganic fertilizers, degradation of the environments, increase demand for organic products. These fertilizers are being used for several crops such as food crops, vegetable and cash crops (oil palm, tea and rubber plantation). Irradiation of carriers for bio-fertilizer is needed to have a better quality of the bio-fertilizer/bio-organic fertilizer. However, the irradiation technology has not been used widely by bio-fertilizer producers, researchers and publics due to the less information about the availability, cost and the advantages of this facility.

Japan (Dr. Shotaro Ando, NARO)

During 2007 to 2009, optimal γ-ray doses to sterilize different kinds of carriers were determined, effect of Azospirillum inoculation to paddy rice was evaluated, and bacterial mutation method by carbon ion beam irradiation for biofertilizer production was developed. The shelf life of the inoculants in the γ-sterilized carriers will be investigated and further screening of mutant strains will be conducted.

Korea (Dr. Lee Young-Keun, KAERI)

Three potential phosphate solubilizing strains belong to Pantoea dispersa and P. terrea were isolated and characterized. Role of DOPG pathway in gluconic acid production and P-solubilization by Pantoea strains were established. GDH substrate specificity and carbon source utilization by Pantoea strains were studied. Mutants with enhanced phosphate solubilization potential were developed through radiation induced mutagenesis. Mutants with broad GDH substrate specificity and enhanced specific activity were developed in order to utilize the sugars in root exudates efficiently.

Malaysia (Dr. Khairuddin Bin Abdul Rahim, Nuclear Malaysia)

The status of the multifunctional biofertilizer project is reported, with regard to the use of gamma sterilised carriers, new formulations and isotope-aided biofertilizer field trials involving crops such as vegetables and herbs. The biofertilizers used include single-strain microorganisms with multiple-functions (plant growth promoting, phosphate solubilising and antagonistic to pathogens) and microbial consortia comprising strains with different functions. A suggestion is for the government to provide encouragement and support on the use of biofertilizers with quality standards in Malaysia's agriculture industry, in line with the proposed enhancement of the 'green technologies' across all socio-economic sectors.

The Philippines (Dr. Julieta A. Anarna, UPLB)

In the Philippines, the National Institute for Molecular Biology and Biotechnology (BIOTECH) of the University of the Philippines Los Banos (UPLB) provided its resources in the development of alternative fertilizer technologies that enhance and sustain crop production. As a result, BIOTECH was able to develop microbial-based fertilizers that are safe to use and demonstrated to be giving socio-economic benefits to intended clients. One of these products is Bio N.

Bio N concentrates and Bio N microbial inoculant have been commercialized and utilized by most farmers in the country through the establishment of the sixty eight (68) mixing plants all over the region with the support of the Department of Agriculture Improvement of Bio N carrier which includes sterilization through gamma irradiation, study of the shelf life and survival of Bio N organism using carrier sterilized through gamma irradiation at dose 30kGY were conducted. Pot and field experiment of vegetables using Bio N microbial inoculant and different levels of fertilization was conducted.

Thailand (Dr. Achara Nuntagij, DOA)

Study on the integrated used of Rhizobium, AM Mycorrhiza, PGPR and phosphate-solubilizing biofertilizer on growth and yield of vegetable soybean was conducted in greenhouse trial. The plants receiving the biofertilizer treatments were significantly different from those plants receiving only chemical fertilizers.

Vietnam (Dr. Pham Van Toan, MARD)

I. Isolation and selection of 9 N-fixing, P-solubilizing, Plant growth promoting and root disease pathogen antagonistic bacterial strains.

II. Development of 3 munti-functional biofertilizer applied for forestry trees, cotton, coffee

and pepper

III. Conducting 6 field trials to evaluate the effect of biofertilizer on growth, yield and reduction of root disease of forestry trees, coffee and pepper

IV. Conducting 6 field demontrations to introduce to farmers the effect of biofertilizers