

**Summary of Presentations of Each Country  
at the 2005 FNCA Biofertilizer Project  
Technical Meeting on Sterilization of Carrier by Irradiation  
June 20 - 22, 2005  
Tokyo, Japan**

**【Indonesia】**

by Ms. Soertini Gandanegara  
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1. Current status of commercial application of biofertilizer

Bradyrhizobium inoculants produced by  
private company            100 kg /yr  
government                100 kg /yr

Rhizobium for legume cover crops >100 kg /yr

2. The difficulties to expand the use of biofertilizer for farmers

Low education of farmer

Reduction of soybean cultivation due to the cheaper imported soybean

Demand of biofertilizer depend on the development project

The other question is adoptability of farmers to technology

3. Prospect and planning of extension of promoting by:

-Field demonstration on selected area

-Publications

-Leaflets

-Participate in exhibition carried out by other institutes (DoA & Min. of Ris & Tech)

4. Current status and future plan for using radiation processing for sterilization of carries

-Determination of the optimal dose of radiation

-Number of bacteria during storage time

-Field trial to compare the effectiveness between unsterilized (control) with 2 methods of sterilization

## 【Philippines】

by Mr. Richard Balog

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Philippine Nuclear Research Institute (PNRI)

In the Philippines, Bio-N was chosen as the pilot biofertilizer under study within the framework of FNCA. It consists of solid inoculant in powder form composed of soil and charcoal that contains bacterium *Azospirillum* spp isolated from the local grass *talahib*. It comes in 200g per pack. It is mostly used to rice and corn. The National Institute of Molecular Biology and Biotechnology (BIOTECH) in UPLB has been producing Bio-N at commercial scale. It costs PhP60 per pack (~ US1\$). About 5 packs was recommended per hectare. Department of Agriculture has granted funds to BIOTECH for the establishment

of facility for Bio-N production. Significant amount has been produced yearly in accordance to the demands of farmers.

Prospects and plan for the extension of Bio-N will be carried out through conducting field demonstration (using irradiated carrier) at research level, farmers field day inviting farmers and government officials to show the effect of Bio-N to crop. Use of media (reading materials and television programs) will also be tapped. Training to farmers and agricultural technicians and establishment of mixing plants will be also considered.

Irradiation sterilization of the carrier will be proposed to BIOTECH. Determination of optimum dose for the sterilization of Bio-N carrier through irradiation using the Co-60 irradiation facility of PNRI was ongoing. Comparison between heat autoclave and irradiation sterilization will also be carried out in aid for the promotion of irradiation sterilization. Potential market was projected to be good since the government has supported for the production of Bio-N by establishing mixing plants in all areas in the country tapping local government units, private individual and farmer organizations/cooperatives.

## 【Thailand】

by Dr. Achara Nuntagij, Thailand

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Department of Agriculture (DOA)

### 1. The status of commercial application of biofertilizer in Thailand

#### 1.1 Rhizobium Biofertilizer

-- Cash crop: Soybean, Mungbean, Peanut

Soybean 30,000 packets = 6 ton

Mungbean 26,000 packets = 5.2 ton

Peanut 4,800 packets = 0.48 ton

-- Other crops: Tree legume, Forage legume, Vegetable legume

1,000 packets = 0.1 ton

#### 1.2 Mycorrhiza Biofertilizer

DOA Fruit Crops: Durian, Langon, Papaya, Tamarine, Mangosteen

--- 500 kg=0.5ton

Another company: ? (don't know) --- \* capacity of production = 100ton/y

#### 1.3 PGPR1. 600 packets- 0.12 ton

### 2. The difficulties to expand the use of biofertilizer by farmers

2.1 Not so widely available and very hard for farmers to commute

2.2 Problems with distribution

2.3 Cannot be stored for long period of time

2.4 Lack of demonstration

2.5 Low in public relation and technology transfer

### 3. Prospect and planning of extension of biofertilizer

#### 3.1 Promoting of biofertilizer using

- Publication (Manuals, pamphlets, brochures)

- Television and radio broadcasting

#### 3.2 Demonstrate by

- Posters

- Publications

- Sample

- Field trial demonstrate

#### 3.3 Exhibition

- Academic level

- National Agriculture Day

- Farmer Gathering Day

- Regional Meeting

- Fix permanently at Center for Research and Development and Agricultural Research Station

#### 3.4 Workshop for

- Researcher
- Farm owners

#### 4. Current status and future plan for using radiation processing for sterilization of carrier in Thailand.

- Determine the optimum dose of irradiation for the carrier
- Number and type of the bacteria contaminated
- How long do the carrier have a long shelf-life (with and without Rhizobium mixing)
- Field Trial to compare the effectiveness

## 【 Vietnam 】

by Dr. Pham Van Toan

Head, Department of Microbiology

Vietnam Agricultural Science Institute (VASI)

### 1. Current Status of Commercial Application of Biofertilizer

- Plant: rice, vegetables, legumes, and industrial crops like cotton, pepper, coffee and rubber
- Bacteria:
  - N-Fixing microorganisms (Rhizobium, Azotobacter, Azospirillum, Pseudomonas)
  - P-Solubilizing microorganisms: Bacillus, Pseudomonas
  - Root pathogen antagonistic bacteria (Bacillus, Pseudomonas)
- Amounts of biofertilizer at present: about 100,000 tons/year

### 2. Difficulties to expand the use of biofertilizer by farmers

- Difficult handling of biofertilizer
- Low quality of biofertilizer
- Low visual effect of biofertilizer
- Low knowledge of farmer on sustainable agriculture and environmental effect of biofertilizer

### 3. Prospect and planning of extension of biofertilizer

- Farmer training on biofertilizer (application, benefit and handling of biofertilizer)
- Propaganda of biofertilizer and social, economical and environmental effects
- Field trial and demonstration of effects of biofertilizer
- Policy maker to enhancing the production and application of biofertilizer

### 4. Current status and future plan for using radiation processing for sterilization of carrier

- Current status: Limited
- Future plan: When we have the new Co 60 resource in Hanoi:
  - Irradiation of peat as carrier for concentrated inoculant used in organic biofertilizer production 5-10 tons/year
  - Study the multi - effect of new biofertilizer made by combination irradiated carbohydrates and microbial biomass