Attachment IV

Summary of Open Seminar

23 February 2009
Centre for the Application of Isotopes and Radiation Technology, BATAN

Opening Address
Dr Hudi Hastowo
Chairman, BATAN

In the Opening Address, Honorable Dr. Hastowo emphasized the importance of nuclear science and technology (NST) for human welfare, especially in Indonesia, where NST has contributed in the areas of food production, energy, water, health and medicine, industry and manufacturing, and the environment. For this workshop the emphasis is on the use of radiation for the sterilization of biofertilizer carrier, and BATAN provided the irradiation service to potential users such as biofertilizer companies.

Six papers were presented in the Seminar, which is open to the public. Attendees included research scientists, lecturers and staff from farmers association, private fertilizer companies and non-governmental organization.

Nuclear Technology for Development and Environment Protection
Dr Sueo Machi
FNCA Coordinator for Japan

The presentation was focused on nuclear power, and the experience of Japan in the nuclear power programme was reported. Japan's policy for energy considered energy security, compatibility with the environment and cost compatibility. Many countries in Asia have embarked in nuclear power programme (NPP), and nuclear should be considered as an energy source of the future.

Bio (organic) Fertilizer for Sustainable Agriculture
Dr Zaenal Soedjais
Indonesian Fertilizer Council

The presentation reviewed the historical transformation of the farming system from traditional to modern agriculture, using chemical fertilizers as well as chemical pesticides to increase food production. On the other hand, as farmers became addicted to synthetic fertilizer and pesticide, they gradually reduce the organic fertilizer and sometime with no organic fertilizer input at all. As consequences, they face a lot of environmental problems, such as soil erosion, nutrient run-off losses, loss of soil productivity, pollution of surface and ground water by agrochemicals, which jeopardize food safety and quality. These problems of degraded soil condition could be overcome by proper and regular addition of various organic materials boosted and enriched by selected potential microbes. The bio (organic) fertilizer has a very important role and function in securing the sustainability of agricultural production through the following improvements and restored biological, chemical and physical fertility of the agricultural land and the soil condition of sick, fatigue marginal soils, whilst improving bearing capacity of agricultural lands and reducing the losses from chemical fertilizer application.

Status and Implementation of Mycorrhiza Research in Research
Dr Supriyanto
SEAMEO-Biotrop, Factory of Forestry
Bogor Agriculture University

Dr Supriyanto lectured on the use of mycorrhizal inocula (endomycorrhiza and ectomycorrhiza) in forestry, as well as for other ecosystem such as former mining lands, where they are used as agents for bioremediation. There are many researchers and institutions involved in research on mycorrhiza in Indonesia and the information are currently available as database in MySQL, accessible to the public. Advances in mycorrhizal research can be made known, including their different formulation in the form of alginate beads, tablets, capsules, slurries and granules. Indonesia, too, has mycorrhiza herbarium, which is important as reference to scientists as well to other interested parties.

Biofertilizer Application for Sustainable Agriculture in Thailand
Dr Siriluck Jitacksorn
DOA of Thailand

Rhizobium biofertilizer has been firstly known since 1976 for soybean growers. Typically, the growers applied the biofertilizer in an integrative way with other inputs of soybean production with 20% more profits, and decreasing in amount of nitrogen fertilizer over 80%. Unfortunately, the quantity of production and sale has declined by 60% since 1992, for some reason. Currently, arbuscular mycorrhiza (AM), and plant growth-promoting rhizobacteria (PGPR), as well as phosphate solubilizing biofertilizer are predominantly used in place of rhizobium based on the estimation of increased quantity of biofertilizer sold yearly. This implies that the application of biofertilizer is gradually increasing and commonly in Thailand. Recently, the Thailand Department of Agriculture (DOA) has initiated a 5 year project on “organic farming” in order to promote the application of biofertilizer for sustainable agriculture, in part, overcoming agriculture problem as well as increasing production of high-value crops. Shortly, the project has been accepted by educated farmers and organic farming is now approximately 2.5 million hectares (equal to 10% of total cultivation area).

Environmental Friendly Bio-Pesticide Application in Japan
Dr Masataka Aino,
Hyogo Pref. Tech. Centre for Agriculture, Forestry and Fisheries, Japan

Chemical pesticides used in the agriculture production have brought us a great yield and economic benefit in the past several decades. In the meantime, they also brought us the problems, such as environmental pollution and human health hazards. Modern agriculture asks plant protection scientists to pay much attention to the sustainability of nature ecosystems. Thus, a pressing need in agriculture is to find sustainable plant protection measures, which are harmonious with nature ecosystems. Biological control is one of the potential alternatives for preventing plant disease damage without pollution. Currently, 20 bio-fungicides have been registered to Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF) for a commercial use in Japan. The 6 bio-fungicides are allowed to be used for rice and the 14 bio-fungicides are allowed to be used for vegetables and fruit trees. In the present, a large quantity of chemical pesticides (245,997 tons, 2008) were used for agricultural production in Japan. Bio-pesticides consumption is about 0.1% (211.3 tons, 2008) of the chemical pesticide.

Radiation Sterilization in Biofertilizer Production
Ratna, PT Hobson Interbuana, Indonesia

Gamma irradiation has been used for sterilization of biofertilizer carrier in Indonesia since 1987. PT Hobson started using gamma irradiation services provided by BATAN since about 10 years ago. The company’s production of biofertilizer products is quite high and thus, the use of autoclave for carrier sterilization is quite impractical as it also involves space, high cost electricity, more labour and maintenance.