

Preface to Manual on Biofertilizer Production and Application

by Dr. Sueo Machi, the FNCA Coordinator of Japan

The proper feeding of the rapidly growing populations in developing countries is the most important challenge for mankind. Presently, about 800 million people in the world are suffering from chronic malnutrition due to shortage of suitable foods. In this context, improving agriculture to increase yield of crops without deteriorating the environment should be an ultimate goal. Continuous and excess use of chemical fertilizers and other agrochemicals to increase yield may lead to ground water contamination and depletion of soil nutrients, eventually resulting in reduction of crop yield.

Biofertilizers from microorganisms can replace chemical fertilizers to increase crop production. In principle, biofertilizers are less expensive and are more environmentally-friendly than chemical fertilizers.

In the Forum for Nuclear Cooperation in Asia (FNCA) project on “Biofertilizer”, experts from member countries cooperate through exchange of experiences and information including showing field demonstration on biofertilizers for a variety of crops.

In the production of biofertilizer, radiation processing has been tested and proposed for sterilization of carriers for the biofertilizer microorganisms. Ionizing radiation from existing irradiation facilities in member countries should be able to provide a simple, reliable and less expensive method to sterilize carriers.

The stable isotope of nitrogen, N-15, can be effectively utilized as a tracer to accurately quantify the efficiency of biofertilizer microorganisms such as *Rhizobium* to fix atmospheric nitrogen. This may be extended to other suitable isotopes for other major plant nutrients.

I am confident that this manual is useful for the extension of biofertilizer usage to a large number of farmers for improvement of crop yield and other benefits, while minimizing environmental pollution from agrochemical inputs.