BioGroe™ Technology:
Paving the way for efficient fertilizer use and increased farmer’s income

Fertilizers play an important role in crop production and management. It reduces the rate of soil degradation by improving soil fertility and replacing the nutrients taken up by the crops, thus, becoming one of the primary inputs in a farming system. In the country, chemical fertilizers are commonly used by our farmers. It is also one of the major cost items in the farm with an average of ₱5,614 /ha, the highest cost compared to the other inputs (e.g., seeds, pesticides) of crop production. Thus, the high prices of the chemical fertilizers create huge problems for the local farmers since it reduces their overall income. Also, environmental effects of excessive use of this type of fertilizers pose a threat to our ecosystem.

In view of these issues, the National Institute of Molecular Biology and Biotechnology (BIOTECH) spearheaded the production of microbial inoculants that will help reduce the application of inorganic fertilizers leading the way to environment-friendly production technology. Among the inoculants produced by BIOTECH is BioGroe™. The BioGroe™ inoculant was developed from a series of projects funded by DOST, the then Philippine Council for Advanced Science and Technology Research and Development (PCASTRD), and PCAARRD and conducted by BIOTECH researchers led by Dr. Erlinda S. Paterno. BioGroe™ inoculant is a solid-based microbial plant growth promoter, which contains plant growth promoting bacteria (PGPB) that induce root growth through plant hormone production. BioGroe™ is easy to use and is environment friendly.

In recognition of the benefits derived from BioGroe™ utilization, the DOST - Technology Innovation for Commercialization Program (TECHNICOM)-funded project, “Enhancing the Commercialization of BioGroe™ Technology” was started on August 1, 2012 and led by the late Ms. Fe G. Torres of BIOTECH. With the aim of promoting and commercializing the BioGroe™ technology, training seminars were conducted in Batangas, Cavite, Laguna, and Tarlac. The group has even reached the southern towns of Palawan, namely: Brooke’s Point, Quezon, and Narra, in the effort to promote the BioGroe™ technology.

Eleven seminars were conducted in these provinces with close to 500 participants. Composed of farmers and agricultural technicians, these seminars showcased the beneficial effects of BioGroe™ on various crops in terms of improved growth and increase in yield. Information, education, and communication materials on the use of BioGroe™ were produced and disseminated not only to increase people’s awareness of this technology, but to show inoculation method and rates for various crops.

The seminars also provided a venue to identify farmer-cooperators for the establishment of demonstration trials for different crops. In coordination with the offices of the municipal agriculturist, demonstration trials were successfully conducted for
pechay, mustard, and corn in Batangas. Pechay and mustard demonstration trials were also established in Cavite. Pechay yield increased from 8% to 88% with the use of BioGro™, with the highest increase obtained from BioGro™ inoculation combined with full fertilizer rate. However, cost analysis showed that BioGro™ combined with half of the usual fertilizer rate resulted in a higher net income. This was observed in one of the demonstration trials in Rosario, Batangas at the farm of Mr. Rodrigo Balbaira, wherein a 49% increase in the yield per hectare was recorded for BioGro™ plus half of the fertilizer rate. Cost analysis of the yield obtained from the use of BioGro™ and half the recommended fertilizer rate showed that Mr. Balbaira had a net income increase of ₱182,478/ha. A second cropping on the same farm also showed that the plots with BioGro™ combined with half of the recommended rate of fertilizer had the highest net increase in revenue amounting to ₱184,945/ha.

The mustard demonstration trials also showed positive response to BioGro™ inoculation with yield increases ranging from 10% to 50% for BioGro™ plus half of the recommended fertilizer rate and from 11% to 98% for BioGro™ plus the full recommended fertilizer rate.

The two corn trials in Sto. Tomas, Batangas showed 33–73% yield increase in green corn harvest with BioGro™ plus half of the recommended fertilizer rate while 10–46% increase was obtained with BioGro™ plus the recommended full fertilizer rate. For the farm owner Mr. Candido Ocampo, the
73% increase in yield and 50% reduction in the cost of fertilizer with BioGroe™ inoculation provided him with an additional income of ₱82,077/ha.

Collaborations with the private sector on the development of production and distribution strategies was also sought during the seminars and demonstration trials. At present, a licensing agreement between the University of the Philippines Los Baños and Mr. Eduardo Trajano of Alltrade Marketing and Manufacturing, Inc. is being negotiated.

A packet of BioGroe™ inoculant costs only ₱60. The product is very simple to use. Large seeds (amplaya, corn, etc.) are placed in a container and moistened. The recommended rate of BioGroe™ is added to the moistened seeds and mixed until the seeds are fully coated. The inoculated seeds are sown preferably within the day.

For small seeds (eggplant, mustard, etc.), 1 packet (100 g) of BioGroe™ is suspended in 2 L of water. The inoculant is applied at sowing by drenching the seedbed with BioGroe™ suspension at 4 L/m², and at transplanting by root dipping. For ornamentals and other cut plants, the cuttings are dipped, for about 30 seconds before planting, in a 1:10 ratio of BioGroe™ to water suspension or 100 g BioGroe™ per 1 L of water. The cuttings can also be dipped in a slurry suspension of BioGroe™ (100 g BioGroe™ suspended in 100 mL water). (Evelyn F. Delfin, Ronilo P. Violanta, Erlinda S. Paterno, and Jose Arnel Reyes)