



## **ANNUAL REPORT (2005-2006)**

**Vivekananda Institute of Biotechnology**

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Vivekananda Institute of Biotechnology was established in 1991 with a project of Department of Biotechnology, Government of India, and later it was recognized as an Institute under Core Support Programme of Department of Science and Technology (DST), Government of India, and Technology Resource Centre of Council for Advancement of People's Action and Rural Technology (CAPART), Government of India. Subsequently it got recognized as a Post Graduate Research Laboratory of Burdwan University and a Scientific and Industrial Research Organization of DSIR, Ministry of Science & Technology, Govt. of India. This Institute was established with a mission of application of Science & Technology for rural Development and Biofertilizer technology was area of work. Now a broad spectrum of rural technologies has been taken for rural development as well as employment generation, the major activities and achievements in this year can be summarized as follows:

### **Programme on Biofertilizer Technology:**

Although the term Biofertilizer technology typically means isolation, purification, characterization, evaluation, selection, production and application of soil fertility inducing microorganisms, but here at this institute this technology integrated with soil testing and fertilizer recommendation.

#### **i) Soil testing and fertilizer recommendation:**

A societal model has been developed to provide soil testing services to the farmers at grass root level. This year, the capacity of the soil testing laboratory has been upgraded (with the financial support of India Council of Agricultural Research, Govt. of India) and an Atomic Absorption Spectrophotometer (AAS) has been procured and installed (with the support of Department of Agriculture, Govt. of West Bengal). A programme to provide soil testing facility at the door step of the farmers is being executed with the financial support of Sunderban development Board, Govt. of West Bengal. Total 1088 soil samples were analyzed in this year.

#### **ii) Isolation, purification and maintenance of microbial strains:**

This is a routine work to increase the number of germplasms of different microbial strains to be used as biofertilizer. This program not only enriches the germplasm stock but also will help to develop a map for soil microbial diversity in Sunderban region. This year, 40 BGA, 3 *Rhizobium*, 17 *Azotobacter* and 7 PSM strains have been isolated and are maintained in this center. Presently, the total number of different strains maintained is: *Azolla*- 6 spp., Blue Green Algae-440, *Rhizobium*-15, *Azotobacter*- 38, Phosphate Solubilizing Microorganisms- 44 and Vesicular Arbuscular Mycorrhizae – 2.

**iii) Production and distribution of biofertilizers:**

The status of production of different biofertilizers. This year is: *Azolla*-4.67 MT, *Rhizobium*-0.43 MT, *Azotobacter*-0.39 MT and PSM-0.28 MT. This microbial biofertilizer produced are carrier based.

**iv) Propagation of the model of Integrated biogas and vermicompost production unit:**

Last year, a model for the production of bio-gas from night soil and cow dung integrated with the production of vermicompost established. This organic waste, comprising of water hyacinth, kitchen waste, mushroom bed and other agro-wastes are used for primary decomposition. Using this model a substantial amount of vermicompost is produced and supplied to the farmers of vermicompost is produced and supplied to the farmers of Sunderban region as well as of the other districts also. Total 33.57 Mt vermicompost was produced this year. This year total 47 such units have been established in Sunderban area.

**Programme on Biocontrol of Pest and Diseases:**

**After successful implementation of the program on development and production of neem based eco-friendly pesticides supported by UNDP-UNIDO and Ministry of Chemicals and Petrochemicals, Government of India, Production of neem seed kernel extract and its application has been popularized among the farmers through trials, demonstrations and awareness building camps. The second phase of the program on the neem based pesticides is has been started. This year, 58.178 MT ripe neem seed and 5.092 MT dry neem seed were collected through our network. During the processing of the seeds, 629 male and 832 female man days wre utilized for job. Through the network, 4.789 MT neem seed kernel powder was distributed to the farmers.**

**Production of bio-pesticides has been introduced in this year. A program is taken to maintain and produce different biopesticides including predators, egg parasites, pathogenic funguys and pathogenic bacteria. Germplasms of *Trichograna* – an egg parasite, *Crysopepala*–a presator, *Trichoderma* sp –a pathogenic fungus and *Baciullus thurigenis*–a pathogenic bacteria are maintained. Production of biopesticides based on these natural resources is initiated.**

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### **Programme on Plant tissue Culture**

The program on the production and supply of tissue cultured banana plantlets continues. During this year, 13244 plantlets were produced, however, 3000 plantlets were supplied to farmers as well as interested grower.

Germplasm of 14 varieties of banana are maintained in our laboratory. These are *Baischada kachakela*, *Martaman*, *Giant Governor*, *Robusta*, *Red banana*, *Pachanandan*, *Rasthali*, *Monthan*, *Nendran*, *Kanai Bansi*, *Chatim*, *Kanthali*, *Amrit sagar*, *Dwarf cavendish*. In this year, 2500 hardened plantlets have been supplied to the farmers. About 500 bottled plantlets have been distributed to the nodal persons for hardening, to explore the possibility of starting it as an additional source of income.

A program on Papaya tissue in culture has resulted in the successfully establishment of papaya tissue under culture conditions. The effect of hormonal combination and concentration growth of papaya tissue in culture has been studies during this period.

### **Programme on Mushroom Technology**

At present 4 genera (*Pleurotus*, *Volvariella*, *Calocybe* and *Agaricus*), 12 species & 22 strains mushroom are maintained in the laboratory. A project entitled, "Popularization of mushroom as a protein rich vegetable among the villagers of Kaikhali, Kultali block, Sundarban", finance by Directorate of Food processing Industries & Horticulture, Government of West Bengal has been completed. Total 25 training programmes were organized in the last year and total 420 person attended. Amongst them, 269 trainees started mushroom production and 71 person could generate reasonable income. Total 52000 packets of mushroom spawn (200 g each ) were supplied to trhe successfully mushroom growers. A training programme on production pf value added products from mushroom was also successfully organized under the STST programme of DST, Govt of India.

### **Programme on sustainable use of mangrove plants:**

The Young Scientist programme on domestication of *Nypa fruticans* (Golpata)-an important endangered mangrove plant, funded by DST, Government of India, is in its final year. A project to document the medicinally important mangrove plants founded by Department of Biotechnology has been initiated in collaboration with IICB, Kolkata, This year a plant is drawn out to build a mangrove interpretation center at Women Technology Park, Sagar Island.

### **Programme on Vocational Training and Entrepreneurship Development:**

- i) Under a program on Promotion of Bio-manure by KVIC, 4 awareness building camps (with 220 persons) and 4 skill development program ( with 74 persons) were organized in S. 24 Pgs, Hooghly, Purba Medinipur and Pachim Medenipur districts.
- ii) Recently, VIB has developed a computer training centre with 15 computers and a capacity of 30 trainees per batch.
- iii) Under the STED project 200 micro entrepreneur are target to be promoted in the area of mushroom cultivation.
- iv) The project on Skill development Training program through Science & Technology (STST) has been completed involving 200 person.

### **Other activities ( R & D):**

- i) **Ph. D. Program:**  
A research program leading to ph. D. degree is completed on the microbial biodiversity of the soil in Sagar island of Sunderban, with special reference to algae.
- ii) **Summer training courses:**  
Six students (M. Sc. Biotechnology) have undergone summer training courses on different aspects of biofertilizer technology during this period.
- iii) Participated in the International conference on “Impact of Woman’s Research in Science and Technology in the Millennium” at at Bangalore during 21<sup>st</sup> – 25<sup>th</sup> November 2005.