

S. G. B. S.P. Sanstha's

Shri Guru Buddhiswami Mahavidyalaya

Purna (Jn.) – 431511, Dist. Parbhani (M.S.) India (Estd. 1983)

(Permanently Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)

Re-accredited by NAAC at 'B' Grade with "2.42" CGPA

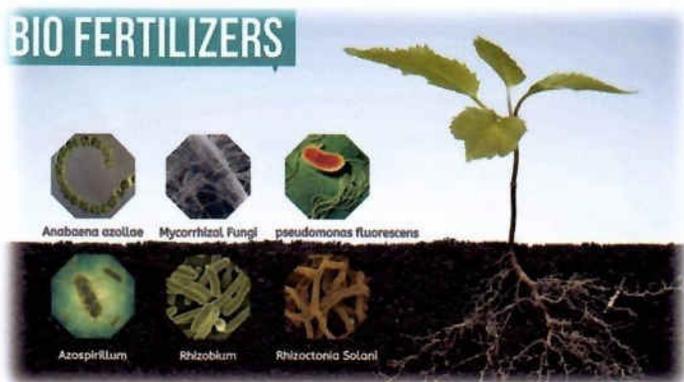
Recognised under 2 (f) and 12 (B) of UGC Act 1956

ISO 9001:2015 Certified Institute; Obtained "A" Grade in Academic Audit by S.R.T.M. U. N.

Awarded The Best College (Rural) 2019 – 2020 by S.R.T.M. University, Nanded



BIO FERTILIZERS



Value-added / Skill Enhancement Course

Certificate Course in Biofertilizers

Course Co-ordinator:

Dr. Kamthane Daiwshala Chandrakant

Department of Microbiology

DEPARTMENT OF MICROBIOLOGY
Value-added / Skill Enhancement Course
CERTIFICATE COURSE IN BIOFERTILIZERS
(With effect from the academic year 2020-2021)

SYLLABUS

Eligibility for the Course:

Candidates for admission to Certificate course in biofertilizers should possess a Higher Secondary School Education Certificate.

Duration of the Course: 40 hrs.

Course objectives

- To promote the application of biofertilizers.
- To make students understand the usefulness of biofertilizers
- To give hands-on training for the preparation of biofertilizers.

Course Outcomes

By successful completing the course students will be able to:

- Isolate the biofertilizers from different sources.
- Prepare the formulation of biofertilizers.
- Become entrepreneur




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“Certificate course in Biofertilizers”

Syllabus

Unit I- Biofertilizers-definition, characteristics of biofertilizers, factors affecting, and constraints in biofertilizer, application of biofertilizers 10 Periods

UnitII- Types of biofertilizers (on the bases of nature and function), precautions before biofertilizer application, application of biofertilizers-seed treatment, main field application and set treatment. 10 Periods

Unit III- Advantages of biofertilizers, potential role of biofertilizers in agriculture, improved nutrient uptake (macro and micronutrients),better water relation and drought tolerance, soil structure (a physical quality),enhanced phytohormone activity and crop protection (interaction with soil pathogens). 10Periods

UnitIV- Practicals- 10 Periods

1. Isolation of root nodule bacterium *Rhizobium* from root nodules and preparation of rhizofertilizer
2. Isolation of N₂ fixing bacteria - *Azotobacter* from soil sample and preparation of azofertilizer
3. Isolation of phosphate solubilizing bacteria -phosphobacteria from soil sample and preparation of PSB biofertilizers.

Evaluation

“Certificate course in Biofertilizers”

A theory paper of 01 hours duration for maximum of 30 marks with passing minimum of 40 % marks.

Question paper pattern

Maximum marks: 50

Credits: 02

Time: 01 hr.

Part A: 30 MCQ (30 Marks)

Part B: Internal Assignment (20 Marks- passing minimum of 40 % marks).

- Record book-10 Marks
- Assignment writing and submission-10 Marks



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Text Book:

1. Biotechnology of Biofertilizers by Sadasivam Kannaiyan
2. Handbook of Microbial Biofertilizers by Mahendra Rai
3. Bioinoculants for sustainable agriculture and forestry by S.M. Reddy
4. Symbiotic Soil Microorganisms: Biology and Applications by Neeraj Shrivastava (Editor), Shubhangi Mahajan (Editor), Ajit Varma (Editor).
5. Development of Bioinsecticide by Faiza Saleem (Author), Abdul Rauf Shakoori (Author).
6. Biofertilizers Volume 1: Advances in Bio-inoculants by Amitava Rakshit, Vijay Meena, Manoj Parihar, H.B. Singh, A.K. Singh.
7. Biofertilizers: Volume 1: Advances in Bio-inoculants (Woodhead Publishing Series in Food Science, Technology and Nutrition) by Amitava Rakshit (Editor), Vijay Singh Meena (Editor), Manoj Parihar (Editor),

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**SHRI GURU BUDDHISWAMI SHIKSHAN PRASARAK SANSTHA'S
SHRI GURU BUDDHISWAMI MAHAVIDYALAYA, PURNA (Jn.)**

Pin-431 511, Dist. Parbhani (M.S.) India.

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Ref: SGBMP/ICAC/2020-21/16

Date 23.11.2020

To,

- i) **Dr. A. A. Atnoorkar** (External Expert)
Assistant Professor, Dept. of Microbiology,
Vai. Dhundamharaj College, Degloor.
- ii) **Dr. Ms. P. S. Borkar,** (External Expert)
Associate Professor, Dept. of Botany, Microbiology & Biotechnology,
NES Science College, Nanded.
- iii) **Dr. Smt. D. C. Kamthane,** (Internal Expert)
Professor & Head, Dept. of Microbiology,
S.G.B. Mahavidyalaya, Purna (Jn.)

Dear Sir/s,

It gives us immense pleasure to inform you that the College Management has decided to introduce a **Certificate Course in Biofertilizers** for UG students across the streams. You are hereby informed to draft the syllabus within a week and submit the same to the IQAC.




Dr. K. Rajkumar
Principal

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