Ameliorating crop protection, crop production and productivity by nanotechnology application

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*Implementation for the period 2023-24 to 2025-26*

# MAHATMA PHULE KRISHI VIDYAPEETH

## RAHURI, DISTRICT: AHMEDNAGAR

## (MAHARASHTRA)

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Univ. Reso.No.MTG-3(729)/ 221/of 2023, Date: 27/07/2023

Read: - 1) The Government of Maharashtra vide GR No. म.फु.वि. 1422/ प्र. क्र. 253/7-A, Dated 31/03/2023.
2) Executive Council Resolution No.15/339 Dated 15/06/2023

Agriculture is the backbone of most of the developing countries in which a major part of their income comes from agriculture sector and more than half of the population depends on it for their livelihood. However, agricultural production and productivity is adversely affected by climate change. Further the population is increasing in geometric fashion and it is the great task in front of agriculture sector including agricultural scientist for food and nutritional security. Plant breeders have certain limitations need the alternative technology to assist them to evolve the climate resistant varieties.

Nanotechnology is the emerging science and has many potential benefits such as enhancement of food quality and safety, reduction of agricultural inputs, enrichment of absorbing nanoscale nutrients from the soil, etc. allow the application of nanotechnology to be resonant encumbrance.

The ambition of nanomaterials in agriculture is to reduce the amount of spread chemicals, minimize nutrient losses in fertilization and increased yield through pest and nutrient management. The significant interests of using nanotechnology in agriculture includes specific applications like nanofertilizers and nanopesticides to trail products and nutrients levels to increase the productivity without decontamination of soils, waters, and protection against several insect pest and microbial diseases. Nanotechnology may act as sensors for monitoring soil quality of agricultural field and thus it maintain the health of agricultural plants.

Thus nanotechnology seems to revolutionary science of 21$^{st}$ Century. Therefore, the proposed project is submitted for in depth study of nanotechnology in agriculture with following specific objectives.

The main goal of this project is to screen of available agricultural waste materials for synthesis of various nano particles. To optimize protocol for synthesis of various nano materials from agricultural wastes. To develop of ecofriendly finish formulation and check its efficacy as

pesticides, fertilizers for alternative to chemical pesticides and fertilizers, to develop of coating solution for increase the shelf life of post harvest produce.

After due deliberations and presentation before the Principal Secretary, Ministry of Agriculture and Minister of Agriculture, Government of Maharashtra, the 13 research project proposal have been approved. The research project proposal "Ameliorating crop protection, crop production and productivity by nanotechnology application" is one of the project approved by the Government of Maharashtra.

The Government of Maharashtra has sanctioned an amount of Rs. 3,75,00,000/- (Rupees Three Hundred Seventy Five Lakhs) only for implementation of project entitled "Ameliorating crop protection, crop production and productivity by nanotechnology application" under Mahatma Phule Krishi Vidyapeeth, Rahuri at Department of Biochemistry, MPKV, Rahuri for a period of three years w.e.f. 2023-24 to 2025-26.

***RESOLUTION:***

On approval accorded by the Government of Maharashtra vide letter under reference at Sr. No. 1 and Resolution passed by the Executive Council referred to at Sr. No.2 above, the Hon. Vice-Chancellor is pleased to accord sanction for implementation of project entitled "Ameliorating crop protection, crop production and productivity by nanotechnology application" under Mahatma Phule Krishi Vidyapeeth, Rahuri at Department of Biochemistry, MPKV, Rahuri for a period of three years w.e.f. 2023-24 to 2025-26, at a total cost not exceeding Rs. 3,75,00,000/- (Rupees Three Hundred seventy five lakh) only.

The terms and conditions prescribed by funding agency be followed scrupulously. The head wise allocation of funds is shown in **Annexure-A.**

Dr. Anil Arjunrao Kale, Professor and Head, Department of Biochemistry, MPKV, Rahuri shall act as Principal Investigator of this project and Dr. Bharat Murlidhar Bhalerao, Assistant Professor, Department of Biochemistry, MPKV, Rahuri shall act as Co-Principal Investigator of this project. The administrative, technical and financial control of the project shall rest with Professor and Head, Department of Biochemistry, MPKV, Rahuri and Assistant Registrar, Post Graduate Institute, MPKV, Rahuri shall be Drawing & Disbursing Officer. The overall control of the project shall rest with the Director of Research, MPKV, Rahuri.

Hon. Vice-Chancellor is further pleased to accord permission for filling up temporary posts of (one) Young Professional-I on consolidated pay as prescribed under the guidelines of the project and by following due procedure. This university will have no liability whatsoever towards the temporary posts engaged in this project.

This resolution is issued in concurrence of the Comptroller vide his reference No. 626, VC, dated- 07/07/2023.

***Sd/-***
***Registrar***
***MPKV, Rahuri***

F.w.cs. for information and necessary action to:-

1) The Secretary to Government, Ministry of Agriculture, Mantralaya, Mumbai-32.
2) The Member-Secretary, MCAER, 132/B, Bhamburda, Bhosalennagar, Pune-7.
3) The Director of Research/Instruction/Extn. Education, MPKV Rahuri.
4) The Dean, Faculty of Agriculture, MPKV Rahuri.
5) The Associate Dean (All).
6) The Nodal Officer, MPKV, Rahuri.
7) The Associate Director of Research, NARP (All).
8) The Heads of Departments (All).
9) The Comptroller/ the Planning Officer, MPKV Rahuri.
10) The Deputy Registrar (Admn.), MPKV Rahuri.
11) The Asstt. Comptroller (/II/III/IVY PAO, MPKV Rahuri.
12) The PA to Hon. Vice-Chancellor, MPKV Rahuri.

***Deputy Registrar (Admn.)***
***MPKV Rahuri***

## *Annexure-A*

Head wise Allocation of funds for "Ameliorating crop protection, crop production and productivity by nanotechnology application"

**Financial layout of proposed budget**

| Sr. No. | Particulars | Approximate cost (Rs. Lakh) | | | |
|---|---|---|---|---|---|
| | | First Year | Second Year | Third Year | Total |
| 1 | **Non recurring equipment's*** | 350 | - | - | Rs. 350 |
| | Total (A) | | | | Rs. 350 |
| 2 | **Recurring** | | | | |
| | Contractual young professional-I (1), Rs. 25,000/- per month | 3.00 | 3.00 | 3.00 | 9.00 |
| | Chemicals, consumables, glassware's, office stationery, sundry materials, AMC, POL, TA/DA, field and farm, over-head charges etc. | 4.00 | 4.00 | 4.00 | 12.00 |
| 3 | Out sourcing | 1.3 | 1.3 | 1.3 | Rs. 3.9 |
| | Total (B) | | | | Rs.24.09 |
| | **Total (A) +(B)** | | | | **374.9** |

*** Details of list of Equipment facility**

| Sr. No. | Particulars | Amount (Rs. In lakh) |
|---|---|---|
| 1. | UV-Visible spectrophotometer | 10,00,000 |
| 2. | Flurospectrometer | 16,00,000 |
| 3. | Dynamic Light Scattering (DLS) | 39,00,000 |
| 4. | Fourier Transform Infrared (FTIR) | 28,32,000 |
| 5. | Energy-Dispersive X-Ray Analysis & Scanning Electron Microscope (EDAX and SEM) | 1,75,00,000 |
| 6. | X-Ray Diffraction (XRD) | 50,00,000 |
| 7. | Centrifuge | 7,08,000 |
| 8. | Ultrapure water purification unit | 8,00,000 |
| 9. | Rotary Vacuum Evaporator | 10,00,000 |
| 10. | Small equipments: balance, deep freezer, refrigerator, oven, incubator, autoclave, laminar air flow, water bath, computers, AC etc. | 6,60,000 |
| | **Total** | **3,50,00, 000** |

*Deputy Registrar (Admn.)*
*MPKV Rahuri*