

### **3.5.1. Number of functional MoUs/linkages with institutions/industries in India and abroad for internship, on-the-job training, project, student/faculty exchange and collaborative research during the last five years**

#### **Activities under MoU with ICAR Directorate of Floricultural Research**

**Activity scope:** To conduct advance research, education, training & extension activities related to plant tissue culture, molecular biology & genetic engineering, plant microbiology, soil science, food science & technology in sugar cane & allied crops, etc. for the thesis requirement of the research students for masters and doctoral studies

#### **Activity details:**

- ✓ The activity under both MoU with ICAR Directorate of Floricultural Research is belongs to the year 2021-2022 after signing of MoU on 28<sup>th</sup> January 2022.
- ✓ After signing MoU with ICAR Directorate of Floricultural Research, project was effectively started.
- ✓ Research under the following objectives with COEP was undertaken
  1. Admission for Ph.D in Biotechnology
  2. To evaluate application of Vasant Urja for enhancement of flower quality and yield of popular marigold varieties
- ✓ Other communicated with ICAR Directorate of Floricultural Research related to project operation is attached with this report.

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BY HAND DELIVERY

**VASANTDADA SUGAR INSTITUTE**  
Manjari (Bk.) Tal. : Haveli, Dist. : Pune - 412 307, Maharashtra, India.

VSI/Reg./ 1338 /2023-24

Dt. 02/05/2023

### Confirmation of Admission/Registration

To,  
Nalini Arun Shinde  
Tissue Culture Section,  
Agricultural Science and Technology,  
Vasantdada Sugar Institute, Manjari (Bk), Pune

Sub:- Confirmation of admission for Ph.D. in Biotechnology.  
Ref:- University Letter PGS/PGS/1298/Dt.30/07/2022

Dear Nalini Arun Shinde,

I am happy to inform you that the Research and Recognition Committee in Biotechnology, Faculty of Sciences and Technology has approved your research topic as is as follows:-

**Title of the PhD Thesis:- "Irradiated Chitosan-Silicon Conjugate for Mitigating Water Deficit Stress Tolerance in Sugarcane and Marigold".**

Your admission is now confirmed as per Ph.D. Rules 7 (ix). The Details of your admission are:-


1. Subject: Biotechnology
2. Faculty: Science
3. Guide: Dr. S. G. Dalvi
4. Co-guide: Dr. P. G. Kawar
5. Date of Registration: 28<sup>th</sup> April 2022
6. Period of Registration from: 28<sup>th</sup> April 2022 to 27<sup>th</sup> April 2027.

Please note that your admission will be governed by the Savitribai Phule Pune University rules for the Degree of Doctor of Philosophy (Ph.D.) with effect from 29<sup>th</sup> Nov.2016.

Please also note you will have no pay the fees prescribed as per the following schedule.

The first installment will have to be paid within a month from the date on which your admission is confirmed. The successive installments will have to be paid within a month from the date of completion of each year. In case of failure to pay the prescribed fees as per the schedule mentioned. A late fee of Rs. 100 for Indian students and Rs. 500 for foreign students per month from the due date of payment shall be charged.

Thanking You.

  
Principal  
Vasantdada Sugar Institute  
Manjari (Bk.), Tal. Manjari,  
Dist. Pune - 412 307



  
(D. B. Ghule)  
Registrar

- Copy to:
1. The Dy. Registrar, (Ph.D. Unit), University of Pune, Pune- 411007
  2. The Guide: Dr. S. G. Dalvi, Vasantdada Sugar Institute Vasantdada Sugar Institute Addr: Manjari Bu Ta: Haveli (excluding Corporation Area) Dist: Pune.
  3. The Co-guide: Dr. P.G. Kawar, ICAR, DFR, Pune

Reply to be sent on the name of Institute and not on individual's name.

### Collaborative Experiment with DFR proposed during 2023-24

**Name of experiment:** Effects of Vasant Urja on agronomic, yield and flower quality traits of marigold crop

**Objective:** To evaluate application of Vasant Urja for enhancement of flower quality and yield of popular marigold varieties

**Experimental details:**

Year of start	: 2023-24
Year of completion	: 2023-24
Time frame	: Two seasons
Date of planting	: 30/09/2023
Tentative date of Harvest	: 30/01/2023
Soil type Location	: Black Cotton Sol
Design	: RBD
Replications	: Three
Varieties	: Pusa Narangi Gainda, Punjab Gainda No.1 , KAUM-2, BM-4

**Treatment details (8 Treatment combinations):**

- T1: Control (no treatment)
- T2: Foliar spray on seedling 15 days after seed sowing
- T3: T2+ Seedling root dipping (br 30 min.) before transplanting
- T4: T3 Foliar spray at 15 days after transplanting
- T5: T4 Foliar spray at the time of flower initiation
- T6: T5+ Foliar spray at 20 days after T5
- T7: T6+Foliar spray at 20 days after T6
- T8: T7-Foliar spray at 20 days after T7

**Observations to be recorded:**

1. Germination percentage
2. Transplanting survival percentage at 8 and 15 DAT
3. All the observations will be recorded after the 48h of foliar spray.

**Morphological observations to be recorded:**

- a) Plant Height
- b) Days to flower bud initiation.
- c) Days to 50% flowering.
- d) No. Of flowers
- e) Flower Diameter.
- f) Flowering duration.
- g) Weight of flower
- h) Vase life
- i) SPAD analysis

**Location:** Vasantdada Sugar Institute, Manjari



Principal

Vasantdada Sugar Institute

Manjari (Bk.), Tal. Haveli,

Dist. Pune - 412 307







## Memorandum of understanding (MoU) between VSI and DFR

ICAR's Directorate of Floriculture Research (DFR)

Manjari Pune and Vasantdada Sugar Institute, Pune signed a MoU on February 28, 2022 for collaborative research work. Dr. KV Prasad Director, DFR, Dr. Naveen Kumar, Principle Scientist (Floriculture) Dr. PG Kawar, Principle Scientist (Genetics & Plant Breeding) from DFR side and Mr. Shivajirao Deshmukh, Director General, Mr. Sambhaji Kadupatil, Officer on Special Duty, Dr. SG. Dalvi Scientist (Tissue Culture) from VSI were present.

Operational details of research effort and collaboration will be made in common research programmes in Research, training and extension work in Plant Tissue culture, Molecular Biology and Genetic Engineering, Plant Microbiology, Food Science & Technology, Soil Science and Environmental Sciences etc. Research instrumentation facility and library facilities available



with organizations will be made available to the faculty and research scholars. There shall be an exchange of students for academic, research and training purposes. The Advisory Committee will be set & meet

at least once in a year alternatively in the institutions to review the activities. Collaborative projects will be submitted for financial grants. The technologies available both institutes will be evaluated and recommended for improving sustainability of sugarcane and floriculture crops. Under the MOU the

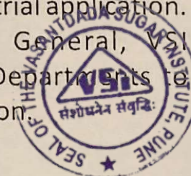
biosimulators from the VSI will be evaluated and recommended for enhancing the quality (essential oils, color, post-harvest quality, vase life etc) and quantity as yield in floriculture crops and different floriculture crops will be evaluated for their integration in sugarcane agriculture as intercrops, development of biopesticides/ bioinsecticides etc.

## Prospective use of Artificial Intelligence in Sugar & Allied Industries

Dr. Sanjeev Tambe, Adjunct Prof. ICT Mumbai and Ex Head, Chemical Engineering & Process Division, NCL, Pune had visited VSI on March 15, 2022 and given a talk on 'Prospective use of artificial intelligence in sugar & allied Industries'. Mr. Shivajirao Deshmukh, Director General, VSI and Mr. Sambhaji Kadupatil, OSD, VSI were present. Mr. Sambhaji Kadupatil gave a brief introduction of Dr. Tambe and started the meeting cum discussion.

Dr. Tambe started his presentation with special focus to sugar & allied industries with application of artificial intelligence (AI). He emphasized the possibility of simulation of human intelligence in

machines (software or hardware). He said that the input variables will be mapped with output (yield, conversion, selectivity, profit, production and efficiency) in AI. He described different types of process models (phenological models, Empirical models and Black-box models) can be used to map data. He informed about the principal components of AI such as artificial neural network (ANN), deep learning, fuzzy logic, evolutionary algorithms etc. He explained few case studies of AI (polyethylene plants and gross power plant) used in Industrial application. After the discussion, Director, General, recommended AI and advised all Departments identify projects for AI implementation.



*Signature*  
Principal  
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