

SHRADHASUMAN YOGIRAJ KARHADE

+91-7498085782 | shradhasuman1412@gmail.com | [linkedin.com/in/shradhasuman-karhade-925909361](https://www.linkedin.com/in/shradhasuman-karhade-925909361)

PROFESSIONAL SUMMARY

Molecular biology postgraduate with hands-on experience in **microbial culturing and fermentation**, gained through postgraduate thesis research on fungal biodegradation of plastic waste. Skilled in handling **beneficial microorganisms (Bacillus clausii, Trichoderma spp., Pseudomonas spp.)** for agricultural applications, with a strong foundation in **quality testing, formulation analysis, and research & product development**. Experienced in scientific documentation and cross-functional technical communication, with a personal commitment to environmental sustainability.

CORE STRENGTHS

- **Microbial Culturing & Fermentation:** Hands-on experience isolating, maintaining, and cultivating fungal and microbial species (*Ganoderma lucidum*, *Pleurotus sajor-caju*, *Aspergillus niger*) via submerged flask fermentation across carbon-, nitrogen-, and micronutrient-limited media conditions.
- **Beneficial Microorganism Handling:** Practical exposure to biological control agents and bioinoculants (*Trichogramma spp.*, *Chrysoperla spp.*) with transferable technique base for handling *Bacillus clausii*, *Trichoderma*, and *Pseudomonas* in agricultural formulations.
- **Quality Testing & Formulation Analysis:** Proficient in analytical characterization using UV-spectrophotometry, FTIR (ATR), GC-MS, and enzymatic assays (ninhydrin, guaiacol oxidation) to validate product activity and composition.
- **Research & Product Development:** Designed and executed a full postgraduate research project from hypothesis through data analysis, including degradation kinetics studies and metabolite profiling, culminating in an international conference presentation.
- **Technology Transfer & Documentation:** Experience preparing biomix and bioinoculants for field-scale adoption during agribusiness training, alongside strong scientific manuscript writing and GLP-compliant data management skills.

PROJECTS

Assessment of Biodegradation Potential of Selected Fungal Species for Nylon-6 and PET-Based Plastic Waste Management

- **Organism Culturing & Isolation:** Isolated and maintained pure cultures of macrofungi (*Ganoderma lucidum*, *Pleurotus sajor-caju*) and microfungi (*Aspergillus niger*) on PDA matrices.
- **Degradation Kinetics:** Set up submerged flask cultivation across carbon-limited, nitrogen-limited, and manganese-supplemented media to monitor degradation over 9–70 day incubation intervals.
- **Nylon-6 & PET Bio-cleavage Analysis:** Quantified nylon fragmentation via UV spectrophotometry (214–230 nm) and tracked PET ester-bond breakdown across the 200–300 nm absorbance range; measured hydrolytic activity via ninhydrin assays at 570 nm.
- **Structural & Enzymatic Characterization:** Used FTIR (ATR mode, 4000–650 cm^{-1}) to track Amide I/II and PET ester carbonyl shifts, and monitored extracellular laccase activity via guaiacol oxidation at 470 nm.
- **Metabolite Profiling:** Performed solvent-phase extraction and GC-MS (TRACE 1300/TSQ 8000 Evo) to identify degradation intermediates including diethyl phthalate, benzyl alcohol, and benzaldehyde.
- **Outcomes:** Identified *P. sajor-caju* as exhibiting strong extracellular hydrolytic activity against nylon-6 versus the primarily oxidative surface attack of *G. lucidum*; findings presented at ICEFIABAMS-2026 International Conference.

Field & Agribusiness Training in Sustainable Agricultural Practice

- **Rural Awareness Work Experience (RAWE):** Promoted organic farming and seed-treatment adoption among rural farmers to improve crop yield and disease resistance.
- **Experiential Learning Module (ELM):** Prepared biomix and bioinoculants for sustainable farming and mass-produced biological control agents (*Trichogramma spp.*, *Chrysoperla spp.*).
- **Agro-Industrial Attachment (AIA):** Conducted an industrial visit to a poultry farm, documenting broiler breed management and farm operations.
- **On-the-Job Training (RUBICS):** Gained technical exposure to optimized mushroom cultivation technologies and bio-fertilizer production streams.

EDUCATION

Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU), Nagpur — M.Sc. in Molecular Biology and Genetic Engineering | 72% (Current Aggregate)

Indira Gandhi National Open University (IGNOU), School of Agriculture — Post Graduate Diploma in Agribusiness (PGDAB) | ~70% (Current Aggregate)

College of Agriculture, Nagpur — B.Sc. in Agriculture (Hons.) | 84.60%

Surbhi Krishi Tantra Niketan, Saoli (Dr. PDKV, Akola) — Diploma in Agricultural Technology | 83.14%

SKILLS

Microbiology & Fermentation: Microbial Culturing, Fermentation Technique (Submerged & Solid-State), Beneficial Microorganism Handling (*Bacillus*, *Trichoderma*, *Pseudomonas*), Bioinoculant Production, Fungal & Plant Tissue Culturing

Quality & Formulation Analysis: UV-Spectrophotometry, FTIR (ATR), GC-MS, Ninhydrin & Guaiacol Enzymatic Assays, Analytical Chromatography

Laboratory Techniques: CRISPR-Cas9 Gene Editing, Southern/Western/Northern Blotting, qPCR & RT-PCR, Gel Electrophoresis (SDS-PAGE), Nucleic Acid Extraction, Plasmid Isolation

Bioinformatics Tools: NCBI BLAST, MEGA, Primer Design Tools, NotebookLM

Productivity & Design: MS Office Suite (Word, Excel, PowerPoint), Canva

Soft Skills: Research Planning, Scientific Manuscript Writing, Data Management & GLP Compliance, Laboratory Leadership, Technical Communication, Documentation & Technology Transfer

LEADERSHIP & INSTITUTIONAL CONTRIBUTIONS

- **Chemical Head, Chemical Committee, Dept. of MBGE, RTMNU (2025–2026)** — Supervised chemical logistics and inventory control for hazardous substances.
- **Joint Secretary, MBGE Society, RTMNU (2024–2025)** — Organized academic seminars and technical event coordination.
- **Magazine Committee Member, Dept. of MBGE, RTMNU (2024–2025)** — Contributed to layout curation and article proofreading.
- **Environmental & Data Volunteer, Gav Kalyankari Sanstha, Khutgaon, Gadchiroli** — Documented Gramsabha proceedings and minor forest produce (Tendu, Bamboo) allocation records.

CERTIFICATIONS & WORKSHOPS

- Hands-On Training – CRISPR-Cas9 Genome Editing & Southern Blotting, Dept. of MBGE, RTMNU | Apr 2025
- Workshop – Next-Generation Diagnostics for Neuroinfection, CIIMS-ARC (ICMR Collaborating Centre), Nagpur | Aug 2025
- Hands-On Training – Analytical Chromatography & PCR Techniques, Dept. of MBGE, RTMNU | Sep 2024
- On-the-Job Training – Plant Taxonomy, Digital Documentation & Phytochemical Analysis, Dept. of MBGE, RTMNU | Apr 2025
- Government Certificate in Computer Typing (GCC-TBC), English 40 wpm – B Grade; English 30 wpm – A Grade (Distinction), Todewar Computer Typing Institute, Gadchiroli | Jan 2020

CONFERENCES & PRESENTATIONS

- Presented minor project work, "Elucidation of Biodegradation Potential of Some Fungal Species for Nylon-6 Based Textile Waste Management," at the ICEFIABAMS-2026 International Conference.
- Attended Techniques in Life Sciences Workshop on modern bio-instrumentation and application systems | Mar 2025.