

# SWATI

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## Career Objectives

Seeking a challenging role in a progressive organisation where my scientific expertise, leadership skills, and positive approach can contribute to impactful outcomes. Experienced in interdisciplinary research, peer-reviewed publications, essential oil extraction, phytochemical profiling, experimental design, data analysis, and community engagement with a strong commitment to soil health, ecosystem conservation, and climate resilience. Proven track record in conducting innovative research projects, with significant contributions to national initiatives like the **CSIR Aroma Mission and *Ferula assa-foetida* cultivation**. Presented research accomplishments at an international conference. Holds an **IELTS score of 7.5**, demonstrating proficiency in English for global academic engagement.

## Experience

### CSIR- IHBT (Institute of Himalayan Bioresource Technology)

Palampur, India

#### Project Associate PAT-1 (CSIR- Aroma Mission Phase- III)

July 2023 – Till Date

- Agronomic trials of medicinal and aromatic plants, phenological data collection and scientific writing.
- Essential oil extraction and phytochemical screening
- GC/GC–MS analysis for essential oil profiling
- IRGA analysis
- Field trials, experimental design, and data analysis
- Soil sampling and soil analysis
- Rural empowerment initiatives, training, and awareness programmes
- Nutrient (N, P, K, Fe, Cu, Zn & Mn) estimation using standard laboratory protocols

### CSIR- IHBT (Institute of Himalayan Bioresource Technology)

Palampur, India

#### Project Associate PAT-1 (Introduction, Characterisation and cultivation of *Ferula assa-foetida*)

Dec. 2022 – March 2023

- DNA & RNA isolation, PCR amplification, primer design, gel electrophoresis
- Essential oil extraction, phytochemical screening
- HPLC, GC-MS (for essential oil profiling)
- Maintenance of seed and field GenBank
- Field trials, experimental designs & data analysis
- Rural empowerment and entrepreneurship development
- Provided on-field technical guidance and handholding support to beneficiary farmers.
- Maintained field documentation, progress reports, and monitoring records as per project requirements.
- Provided hands-on training to farmers on cultivation, soil sampling, and integrated insect–pest management.

## Education

### Panjab University

Chandigarh, India

#### Master of Science (Botany)

2018- 2020

Thesis title: Allelopathic effect of *Glycyrrhiza glabra* (Mulethi) on germination, growth and physiological aspects of *Triticum aestivum*, *Vigna radiata* and *Cicer arietinum*.

Percentage- 84.05%

### Himachal Pradesh University

Shimla, India

#### Bachelor in Science (Botany)

2015- 2018

CGPA- 8.21/ 10

## Awards and Achievements

**Merit certificate:** Matriculation & High secondary examination, HP Board, [2013 (90.2%), 2015, 87.8%]

**INSPIRE scholarship:** Department of Science & Technology, Govt. of India (2015- 2020)

**BEE certificate:** National Cadet Corps (NCC) (2017)

**Consolation Prize:** World Aroma Ingredients Congress & Expo 2024 of EOAI, Chennai, India; 08-10 Feb, 2024

**First Prize winner:** “Vaad Vivad Pratiyogita” at CSIR-IHBT, Palampur.

## Publications

1. **Dhiman, S.,** Negi, Nidhi., Ghosh, A., Kumari, A., and Kumar, R. (2026). Seaweed-Derived Organic Fertilizer Enhances Biomass, Essential Oil Yield, and Bioactive Compounds in *Pelargonium graveolens* L’Her.: A

- Sustainable Approach to Agricultural Productivity. <https://doi.org/10.1080/0972060X.2025.2604608>.
- Jariyal, S., **Dhiman, S.**, Walia, S., Kumari A. and Kumar, R. (2026). Power of Precision Nutrition: Optimizing Micronutrients (Zn & B) for Superior Yield and Essential Oil Composition in Aromatic Marigold. <https://doi.org/10.1080/10412905.2026.2621856>.
  - Kumar, A., Garla, A., **Dhiman, S.**, and Kumar, R (2026). Chemical Diversity and Bio-efficacy of Himalayan Aromatic Grasses: A Comparative Study of Lemongrass, Palmarosa and Citronella. <https://doi.org/10.1007/s44473-026-00087-8>.
  - Sharma, A.K., Jamwal, S., **Dhiman, S.**, Kumari, A., Padwad, Y., Ghosh, A. and Kumar, R. (2026). Improving Agronomic Performance, Essential Oil Composition, and Cytotoxic Properties of *Cymbopogon martinii* through Seaweed (*Gracilaria edulis*) Biostimulant in the Sub-Humid Conditions of Western Himalayas. <https://doi.org/10.1186/s12870-026-08243-0>.
  - Dhiman, S.**, Garla, A., Jariyal, S., Kumari A. Jamwal, A., Kumar, A. and Kumar, R. (2026). Post-harvest handling effect on chemical composition and antibacterial properties of rose-scented geranium essential oil cultivated in the Western Himalayas. (**Accepted in IJNPR**).
  - Negi, N., Thakur, **S.**, **Dhiman, S.**, Walia, S., Ghosh, A. and Kumar, R (2026). Harnessing the Power of Red Algae: Optimized Application of Seaweed Biostimulants Boosting *Tagetes minuta* L. Growth and Essential oil in acidic soils. (**In revision**)
  - Kumari, A., Walia, S., Jariyal, S., **Dhiman, S.**, Sharma., A.K. and Kumar, R. (2026). Assessing the efficacy of selective herbicide on biomass yield and essential oil content in transplanted aromatic marigold (*Tagetes minuta* L.) (**Under Peer Review**)
  - Jamwal, S., Sharma, A.K., **Dhiman, S.**, Kumari, A., Kumari, A., Padwad, Y., Ghosh, A. and Kumar, R. (2026). Enhancement of Agronomic Performance, Composition, and Cytotoxic Potential of Sweet Basil (*Ocimum basilicum* L.) Using Red Algae Bio-Stimulant Under Acidic Soil Conditions in the Western Himalayas. (**Under Peer Review**).

#### **Additional Information**

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**Technical Skills:** Proficient in OP STAT, SPSS and MS Office Suite; Extension and outreach skills; Crop and irrigation management; Laboratory and field instrumentation.

**Hands-on experience** in operating **Infrared Gas Analyzer (IRGA)** for measurement of photosynthetic rate, transpiration rate, stomatal conductance, and water use efficiency under field conditions, CCM, pH meter etc.

**Molecular Techniques:** Nucleic acid isolation and purification from plants, nucleic acid fractionation by agarose gel electrophoresis, and PCR.

**Statistical:** Data analysis and construction of heat maps, scatter plots, histograms, and bar charts using Past software. Basics: t-test, Path, correlation, ANOVA, OPSTAT, MS-Excel.

**Biochemical analysis** of Total Phenols, Total Flavonoids, Total reducing sugars & antioxidant assays (DPPH, ABTS), GC/GC-MS (for essential oil profiling), SEM, Basics of Hydroponics

**Personal traits:** Honest; Accountable; Diligent and organised; Ethical and loyal; Punctual; Flexible; Creative; Problem solver.

**Language:** Fluent in English and Hindi.

#### **REFERENCES:**

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- Dr Sanatsujat Singh (Chief Scientist), PhD** Dept of Agrotechnology, CSIR-IHBT, Palampur, India; E-mail: [sanatsujat@ihbt.res.in](mailto:sanatsujat@ihbt.res.in); Phone: +91 94187 09582
- Dr Rakesh Kumar (Chief Scientist), PhD;** Dept of Agrotechnology, CSIR-IHBT, Palampur, India; E-mail: [rakesh.kumar03@csir.res.in](mailto:rakesh.kumar03@csir.res.in); Phone: +91 7876103425

#### **Conferences/Workshops**

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- Participated in a 5-day workshop on DST-sponsored Scheme for Early Attraction of Talents for Science (SEATS) under INSPIRE programme, Shoolini University, Solan, H.P. (June 13- 17, 2013).
- Participated in 11-day national Integration Camp, National Cadet Corps, NCC group Headquarters, Amritsar (20 June-1 July 2016)
- Poster presentation at International Conference on “Optimizing post-harvest processing techniques and evaluating the antibacterial properties of rose-scented geranium essential oil in the Western Himalayas, Essential Oil Association of India (08-10 Feb 2024)
- Attended a 14-day online certification course on “Recombinant DNA Technology”, Biotechnika Info Labs Pvt. Ltd. (13-26 Nov 2024)

- Participated in 3-day International online workshop on Mastering data analysis with SPSS: A Beginner to advanced analytics, RCHUB Educational academy, Chennai, India (06- 08 Feb 2025)
- Participated in a one-month online certificate course on “Flow Cytometry”, Flowcytometry Solution Ltd. Jaipur, India (25 April- May 2025)
- Member, Organizing Committee, National Symposium on “Sustainable Development and Conservation of Himalayan Bioresources Through a Multidisciplinary Approach”, CSIR–IHBT, Palampur, Himachal Pradesh (September 2–3, 2025).
- Participated in Online 2-Day Hands-on Workshop on Applied Statistics Using R, Dev Research (08-09 Sept 2025)
- Participated in 3 days of hands-on training on the Biomanufacturing Workshop 3.0 “DESIGN, Develop and Deliver”, BRIC-NABI, Mohali (29-31 Jan 2026).