

Abhishek Soni

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Professional Summary

A genomics-driven plant scientist with cross-sector experience in agricultural innovation, conservation genetics, and biodiversity science. Currently in the final stages of a PhD in Plant Genetics, focusing on genome size evolution in the Proteaceae family. Proven expertise in bridging field and molecular research, managing end-to-end projects, and translating scientific knowledge into outcomes for plant breeding, conservation, and biosecurity. Experienced in working with both cultivated and wild plant species, leading collaborations, and communicating science to diverse stakeholders. Passionate about leveraging genomic data to enhance sustainability, preserve biodiversity, and improve crop resilience.

Qualifications

Doctor of Philosophy (PhD) – Plant Genetics

The University of Queensland, Brisbane, Australia | 2022- Ongoing

- Expertise in genome size estimation, bioinformatics, and comparative genomics, with a focus on genome size dynamics in the Proteaceae family.
- Expertise in genome size estimation, genome assembly, short-read and long-read sequencing, high molecular weight DNA/RNA extraction from recalcitrant plant species, bioinformatics, and comparative genomics.
- Developed novel methodologies for genome size estimation in plant cells and de novo genome assembling, integrating high-throughput sequencing, flow cytometry, and computational biology.
- Led multi-disciplinary collaborations and contributed as first and corresponding author in research publications.

Master of Agricultural Sciences (Plant Protection)

The University of Queensland, Gatton, Australia | 2018-2020

Research Focus: Integrated Weed Management in Tropical Pastures

Master of Environmental Sciences

2015 – 2017

- Advanced coursework in environmental impact assessment, waste management, pollution, and biotechnology complementing sustainable agriculture.

Bachelor of Science

2012 – 2015

- Strong foundation in biological sciences

Employment History

Industrial Placement

Research Centre for Ecosystem Resilience, Royal Botanic Garden Sydney | 02/2025-04/2025

- Leveraging genomic insights from SNP-based data and structural genome assembly to enhance SNP detection accuracy.

- Identifying and mitigating false positives in SNP detection for both endangered and common species, contributing to conservation genomics.

Casual Academic Officer

ARC Centre of Excellence for Plant Success in Nature and Agriculture | 08/2024

- Delivered interactive scientific content and engaged with students at the World Science Forum.
- Facilitated discussions on cutting-edge plant science research, enhancing student understanding and critical thinking.

Academic Engagement Officer

School of Biological Sciences, The University of Queensland | 08/2023

- Developed educational resources for plant moisture stress assessment, water requirements, and irrigation scheduling.
- Designed interactive learning modules to bridge scientific research and practical applications for students and researchers.

Senior Technical Officer – Research Design & Field Trial Management Plant Industries

Northern Territory Government | 04/2021 – 04/2022

- Led and managed multiple agricultural R&D projects, overseeing research design, methodology development, field trials, and data-driven decision-making.
- Supervised a team of technical officers, coordinating research workflows, training staff, and ensuring high-quality project execution.
- Provided technical and strategic insights for funding proposals, grant applications, and budgeting, securing financial support for research initiatives.
- Engaged with stakeholders, including industry partners, government agencies, and research institutions, to drive collaborative innovation and ensure research alignment with industry needs.
- Applied statistical analysis and bioinformatics tools to interpret large-scale agricultural data, contributing to data-driven decision-making in crop breeding and management.

Key Projects & Contributions:

- Future Drought Fund (2021-22): Assessed water use efficiency in mango cultivars, contributing to national drought resilience strategies.
- Avocado & Mango Breeding Trials: Designed and executed phenotypic assessments, ensuring data-driven varietal selection to improve yield and diversification.
- Tomato Value Chain & Post-Harvest Quality Monitoring: Led research on supply chain optimization for improved market outcomes.
- Mango Rootstock-Scion Trials & Paclobutrazol Efficacy Studies: Applied agronomic tools to assess growth regulator efficiency, optimizing fruit production practices.
- Sesame & Industrial Hemp Trials: Implemented methodologies for varietal trials.

Quality Inspector

Coles Distribution Centre, Brisbane | 01/2019 – 05/2019

- Conducted post-harvest quality control for fresh produce, ensuring compliance with FSANZ, COO, NMI, and DPI biosecurity regulations at national and international standards.
- Assessed food safety, storage conditions, and quality attributes to maintain freshness, marketability, and supply chain integrity.

- Worked with internal teams and external suppliers to implement corrective actions for non-compliant products, minimizing post-harvest losses.
- Enhanced quality assessment protocols by integrating scientific methodologies, contributing to improved food security and compliance efficiency.
- Provided insights on fresh produce handling, shelf-life optimization, and temperature management, ensuring compliance with industry standards for post-harvest technology.

Part-Time Lecturer

Undergraduate Biological Sciences | 08/2017 – 03/2018

- Designed and delivered undergraduate-level coursework in biological sciences.
- Developed interactive learning materials, including presentations, tutorials, and practical laboratory sessions.
- Managed the laboratory budget and resources, ensuring smooth operation of lab-based coursework.

Research outputs/ Publications

Peer-Reviewed Publications

- **Soni A.**, Henry R.J. (2024). *Re-calibration of flow cytometry standards for plant genome size estimation*. bioRxiv. [doi:10.1101/2024.11.11.623134](https://doi.org/10.1101/2024.11.11.623134) (Submitted)
- **Soni A.**, Constantin L., Furtado A., Henry R.J. (2024). *A flow cytometry protocol for accurate and precise measurement of plant genome size using frozen material*. bioRxiv. [doi:10.1101/2024.02.14.580322](https://doi.org/10.1101/2024.02.14.580322) (Submitted).
- Shi B., Osunkoya O.O., **Soni A.**, et al. (2023). *Growth of the invasive Navua sedge under competitive interaction and simulated grazing*. *Ecological Research*, 38(2), 331–346. [doi:10.1111/1440-1703.12369](https://doi.org/10.1111/1440-1703.12369) (Accepted).
- The de novo reference genome assembly of *Eidothea hardeniana* – *Under Review*.
- Genome size evolution of the Proteaceae family – *Under Review*.
- Genome size estimation for *Nicotiana* species complex – *In collaboration with QUT, 2023–2024*.
- Genome size estimation of *Duboisia* species complex – *The University of Queensland, 2024*

Technical Reports & Applied Research (NT Government Projects)

- *Evaluation of Water Use Efficiency in Mango Cultivars* – Future Drought Fund Project (2021–22): Experimental design, soil moisture data, leaf water potential measurement, Diurnal measurements for stomatal conductance with LiCOR.
- *Avocado Varietal Evaluation Trial*: Designed methodology and authored internal trial report covering performance metrics and varietal adaptability under NT conditions.
- *Tomato Value Chain & Post-Harvest Quality Monitoring Project*: Developed experimental and reporting frameworks for analysing tomato supply chain bottlenecks and quality degradation points.
- Pitaya market assessment report : Hort Innovation Funded project to assess the Australian dragon fruit market.
- *Jackfruit varietal trial*: Compared the morphological traits for three Jackfruit cultivars and drafted a report for varietal assessment.
- *Mango Rootstock-Scion Combination Trial*: Documented trial performance of different rootstock- scion combinations with data on compatibility, productivity, and physiological response under NT climate, chemical management and application of the trial, pesticide and fungicide plan management.

- *Paclobutrazol Efficacy in Mango (NMBP Varieties)*: Authored data summary and application efficacy report.
- *Sesame & Industrial Hemp Varietal Trials*: Data collection and trial management, crop monitoring, technical briefs for stakeholder review and internal planning.

Technical skills

Molecular & Genomic Techniques

- High molecular weight DNA & RNA extraction (especially from recalcitrant plant species)
- Flow cytometry for genome size estimation and ploidy analysis
- Fluorescent microscopy for cell/nuclei counts
- PCR, gel electrophoresis, Qubit, Nanodrop, Bioanalyzer, QC of short and long reads

Sequencing & Assembly

- Experience with ONT, PacBio, and Illumina platforms
- De novo genome assembly, scaffolding, polishing (e.g., Hifiasm, Flye, SPAdes, SALSA, YaHS)
- Genome annotation (BRAKER3, GeSeq), organelle genome extraction

Bioinformatics & Data Analysis

- Command-line tools for genomics, High Performance Computing, transcriptomics, and comparative genomics
- Phylogenetic analysis (RAxML, MrBayes), variant calling, and gene family evolution
- Familiar with pipelines involving conda environments, and HPC usage

Statistical Analysis & Visualization

- Proficient in R (ggplot2, stats, tidyverse, ggstatsplot), basic Python scripting
- Experience with biostatistical tools for agricultural/environmental data

Remote Sensing & GIS

- QGIS: image classification, binary conversion, raster data handling
- Remote sensing data analysis for crop monitoring (Sentinel-2, thermal imaging)
- Certified Remote Pilot License for drone-based data collection

Professional & Regulatory Competencies

- Strong scientific writing, reporting, and technical documentation.
- Experience with agricultural and post-harvest compliance frameworks including FSANZ, COO, NMI, and DPI biosecurity standards.
- Familiarity with Australian regulatory frameworks related to the conservation of threatened plant species and environmental research ethics.
- Skilled in cross-disciplinary project coordination, stakeholder engagement, and collaboration with government and academic institutions

Awards & Fellowships

- **ARC Centre of Excellence PhD Scholarship** – *The University of Queensland* 2022 – 2025 / AUD \$35,000 per year for 3.5 years
- **UQ Full Tuition Scholarship** – *The University of Queensland* 2022 – 2025 / Competitive tuition fee waiver granted to high-performing international PhD students.

- **UQ High Achievers Scholarship**
2019 / Merit-based scholarship awarded for outstanding academic performance in postgraduate studies.
- **DST-INSPIRE Fellowship** (Govt. of India)
2012 – 2017 / INR 400,000 / Awarded to top 1% of science students nationally by the Department of Science and Technology, India.
- **ARS-NET Lectureship** (Environmental Science) – ICAR, India
2018 / Qualified national-level exam conducted by the Indian Council of Agricultural Research for lectureship eligibility in Environmental Science.

Certifications, Licenses & Professional Training

- **Remote Pilot License & Remote Operator Certificate**
Certified for drone-based data collection and imagery analysis.
- **Digital Agriculture Certificate – UQ Skills**
Completed training in digital technologies and data-driven decision-making in agriculture.
- **ChemCert / First Aid / Open Driver's License**

Professional Development & Training

- **Media & Science Communication Training – 2024**
Completed practical training on engaging with the media, communicating complex research, and public science outreach.
- **MOOCs & Online Certifications:** Remote Sensing | GIS | R Programming | Biostatistics | Data Analysis & Visualization

Conferences/Symposium Presentations

Tropical Plants International Conference (2024)

- Oral Presentation: *Measuring Plant Genomes*
- Poster Presentation: *Genome Size Diversity in the Proteaceae Family*

ARC Centre of Excellence Annual Symposium (2023)

- Oral Presentation: *Flow Cytometry Using Frozen Plant Material*
- Poster Presentation: *Genome Size Estimation Using Flow Cytometry*

TropAg International Conference, Brisbane (2022)

- Poster Presentation: *Genome Size Diversity in the Proteaceae Family*

UQ Postgraduate Conference (2019)

- Oral Presentation: *Growth of the Invasive *Navua* Sedge Under Competitive and Grazing Pressure*

International Conference of Entomology (2017)

- Poster Presentation on pest management strategies in agricultural systems

National Conference: 'Man & Environment' (2017)

- Oral Presentation: *"How Far We Are, How Near I Am?" – Reflections on Emission Reduction & COP Commitments*

National Conference of Entomology (2015)

- Presented undergraduate research on pest-plant interactions

References

Available upon request.