

SUMEET MANKAR

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EDUCATION

Texas A&M University <i>Doctor of Philosophy</i> Plant Breeding Projected: Dec. 2020	University of Cambridge <i>Master of Philosophy</i> Biological Science Apr. 2017	Tamil Nadu Agri. University <i>Master of Science</i> Biotechnology Oct. 2011	Dr. PDKV <i>Bachelor of Science</i> Agriculture Biotechnology Jul. 2009
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RESEARCH EXPERIENCE

Graduate Research Assistant , Texas A&M University (TAMU), College Station, USA • Conducting High-resolution Genome-wide association study (GWAS) using mixed linear models for 32 dry direct-seeded rice (DDSR) traits • Optimizing protocol to validate anthocyanin genes in purple rice using CRISPR/Cas9 multiplex genome editing	Aug. 2017-Present
Visiting Scholar , International Rice Research Institute (IRRI), Metro Manila, Philippines • Designed and implemented two research projects in rice breeding (4 sites for 2 seasons) • Conducted genomic and phenomics selection for DDSR and abiotic stress resistance • Estimated and computed quantitative genetic parameters using R, SAS and Python • Gained hands on cleaning/formatting next-generation sequencing data for genetic mapping	Jan. 2018-Dec. 2018
Graduate Research Scholar , University of Cambridge, Cambridge, UK • Conducted and analyzed high-throughput Smarthouse phenomics study for trait dissection in NIAB wheat MAGIC population • Acquired hands on experience in the field of quantitative methods of plant breeding	Sep. 2015-April 2017
Visiting Scholar , International Rice Research Institute, Metro Manila, Philippines • Managed phytotron and field research for abiotic stress studies • Evaluated rice Global-MAGIC population for salinity stress tolerance • Completed training in rice production, design and analysis of breeding trials	Feb. 2015-May 2015
Research Scholar , Seoul National University (SNU), Seoul, South Korea • Performed cloning, transformation and functional studies in Arabidopsis, Rice and Setaria • Optimized protocol for large-sized DNA deliver in plants using nanoparticles • Characterized P450's genes for secondary metabolite, herbicide, and pesticide resistance	Sep. 2012-Aug. 2014
Research Trainee - Assistant Wheat Breeder , Pragati Agro Enterprises Pvt Ltd, Amt, India • Supervised wheat genetic improvement program for biotic and abiotic stress tolerance • Conducted large-scale data assessment with genotypic and phenotypic selections in wheat	Nov. 2011-Jun. 2012
Graduate Research Assistant , Tamil Nadu Agricultural University (TNAU), Coimbatore, India • Planned, conducted and evaluated GWAS for drought resistance in rice • Functionally analyzed the linkage disequilibrium and genetic diversity in rice • Development and validation of molecular markers for marker-assisted selection	Aug. 2009-Oct. 2011

TECHNICAL SKILLS

Plant Breeding	: GWAS, Mixed Linear Models, BLUPs, BLUEs, Bi-parental and Multi-parent population development and evaluation, Genotype-By-Sequencing, Genomic Predictions
Molecular Skills	: PCR, DNA/RNA extraction, Cloning and Transformation, CRISPR/Cas9 Genome Editing,
Programs	: NGS DNA and RNA Sequencing, TASSEL, GAPIT, STRUCTURE, ICIMapping, QTL-Cartographer, TreeView, Darwin, FigTree
Programming	: R, Linux (High Performance Research Computing) and Python (Intermediate), SQL

PUBLICATIONS

Selected Publications Published / Accepted / Peer Reviewed

- Deshmukh, V., Mankar, S.P., and Babu, R.C., 2018. Genome-wide consistent molecular markers associated with phenology, plant production and root traits in diverse rice accessions under drought in rainfed target populations of the environment. *Current Science*, 114(2), p.329.
- Wade, L.J., Bartolome, V., Mauleon, R., Vasant, V.D., Prabakar, S.M., and Patil, K.G., 2015. Environmental response and genomic regions correlated with rice root growth and yield under drought in the *OryzaSNP* panel across

multiple study systems. *PLoS One*, 10(4), p.e0124127.

- Suji, K.K., Prince, K.S.J., **Mankar, P.S.**, and Babu, R.C., 2012. Evaluation of rice NIL's with root QTLs for plant production and root traits in rainfed target populations of environment. *Field Crops Research*, 137, pp.89-96.
- Suji, K. K., **Sumeet Mankar**, and R. Chandra Babu. Mapping QTLs for plant phenology and production traits using indica rice lines adapted to rainfed environment. *Molecular biotechnology* 52, no. 2 (2012): 151-160.
- Pradeepa, N., **Prabhakar, M.S.** and Babu, R.C., 2012. In Silico analysis of a consensus QTL for drought resistance in rice. *Online J Bioinformatics*, 13, pp.1-13

Publications Submitted / In Review / In preparation

- **Mankar, S.**, Sandhu, N., Cruz, T., Rastogi, K., Kumar, A., Septiningsih, E.M. Dissecting the genetic determinants of nutrient uptake, early seedling vigor, lodging, and grain yield under DDSR cultivation. (Projected: The Plant Cell 2021)
- **Mankar, S.***, Rastogi, K.*, and Maity, A. GWAS for trait analysis in crops. *Springer Protocol 2021*
- **Mankar, S.**, Mackay, I., Hibberd, J., Bentley, A. Phenome to genome: mapping automated high throughput phenotypes in wheat MAGIC population. (Projected: Theoretical and Applied Genetics 2020)

AWARDS AND ACHIEVEMENTS

- *Monsanto Beachell-Borlaug International Program*, TAMU Aug. 2017-Present
- *Department of Soil and Crop Sciences - Student Travel Grant*, TAMU Jun. 2020, 2019
- *5th International Rice Congress - Travel grants*, IRRI and CGIAR Research Program Oct. 2018
- *Integrative Bioinformatics Symposium - Travel grant*, Monogram Network, UK Apr. 2016
- *Monsanto Beachell-Borlaug International Program*, University of Cambridge, UK Sep. 2015-Apr. 2017
- *Brain Korea 21 Plus Research Fellowship*, SNU, South Korea Sep. 2013-Aug. 2014
- *Graduate Scholarship for Excellent Foreign Students*, SNU, South Korea Sep. 2012-Aug. 2014
- *Best Outgoing Student – Batch 2005-2009*, Shivaji Education Society, India Apr. 2009

PRESENTATIONS

Conference Oral Presentations

- *High-Resolution Genome-Wide Association Study of Yield-Related Traits for Direct-Seeded Rice (DSR)* ASA-CSSA-SSSA International Annual Meeting, San Antonio, USA (November 2019)

Selected Poster Presentation

- *GWAS for Grain Yield Traits in DSR Conditions*. Plant Breeding Symposium, Texas A&M, USA (February 2020)
- *Genome-wide Association Mapping for nutrient uptake for DSR condition*, 5th IRC, Singapore (October 2018)
- *High-throughput Smarthouse Phenomics data for trait dissection in NIAB MAGIC wheat*. Monogram, UK (April 2016)

TEACHING AND MENTORING EXPERIENCE

- **Rice Genetics and Crop Genome Editing Lab, TAMU**: Mentored new graduate students Aug. 2017-Dec.2019
- **Rice Molecular Breeding Lab, TNAU**: Mentored 2 undergraduates for a six-month project Dec. 2010-May 2011
- **Teaching Assistant**, Plant Molecular Breeding, CPMB&B, TNAU Dec. 2010-May 2011

PROFESSIONAL AFFILIATIONS

- ASA-CSSA-SSSA (Tri-Society), Member 2018-Present
- Association of Agricultural Scientists of Indian Origin (AASIO), Member 2019-Present

LEADERSHIP / SERVICE

- **Batch Representative**, TNAU, Coimbatore, India Jul. 2010-Oct. 2011
- **Group Leader**, National Service Scheme, Dr. PDKV, Amaravati, India Aug. 2007-Jul. 2008
- **Corporal**, National Cadet Corps, Shri Narsing Vidhyalaya, Akot, India Apr. 2001-Mar. 2002

WORK AUTHORIZATION

- F1 visa, Eligible to work in the US for 36 months with Optional Practical Training (OPT)

COURSE WORK

Plant Breeding II | Molecular Quantitative Genetics in Plant Breeding | Population Genetics | Experimental Design in Agriculture | Complex Genomes | Statistics in Research | Bioinformatics Command Line | Introduction to Bioinformatics

REFERENCES

Dissertation Advisor

Dr. Endang M. Septiningsih
Associate Professor
Dept. of Soil and Crop Science, TAMU
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IRRI Advisor

Dr. Arvind Kumar
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Committee Member

Dr. William Rooney
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