

Personal Information

Name: Ekta Narwal

Designation: Scientist (Agricultural Microbiology)

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Academics:

Ekta Narwal born in Jalandhar, Punjab, is graduated in Microbiology in 2010 and M.Sc. Microbiology in 2012 from Ch. Charan Singh University, Meerut. She has earned her Ph. D. in Microbiology in 2019 from ICAR-Indian Agricultural Research Institute. After completing Ph.D., she has been serving as an Assistant Professor in Department of Agriculture, Shobhit Deemed to-be University (NAAC A+ grade), Meerut. In the year, 2023, she joined Agricultural Research Services (ARS) in the discipline of Agricultural Microbiology. Presently, she is Scientist at ICAR-Indian Institute of Agricultural Biotechnology, Ranchi, Jharkhand.

Awards:

- 🏆 B.Sc. Microbiology from B.C.M.T. College, Meerut, **University Gold Medalist** (2010).
- 🏆 M.Sc. Microbiology from C.C.S University, Meerut, **University Gold Medalist** (2012).
- 🏆 Qualified CSIR-UGC NET exam, June 2013 (AIR-68) and December 2014 (AIR-37).
- 🏆 Qualified GATE 2013, AIR- 278.
- 🏆 Qualified ARS NET 2015 (Marks Scored- 81.0%).
- 🏆 DST- INSPIRE fellowship for doctoral program.
- 🏆 Young Microbiologist award-2020 in 4th International conference of GNRSA-2020, ATD society Ghaziabad, UP.
- 🏆 Award of honour and recognition for outstanding performance in the India Book of Records and Asia book of records.
- 🏆 Best oral presentation award in 4th International conference of GNRSA-2020, ATD society Ghaziabad, UP.

- 🏆 Best oral presentation award in Inspirer's Day celebration at Shobhit Institute of Engineering and Technology (Deemed to-be University), Meerut, from 06-07 Feb, 2022.

Major Research Area: Microbiology

Areas: Molecular biology, Immunological Techniques, Biochemistry

Research:

Microbiology: Pure culture techniques, microscopy, staining techniques, physiological tests, biochemical tests, antibiotic assay, MIC determination, enzymatic assays, ARA activity, PGPR activities (IAA production, P-solubilization, HCN production, antibiotic and antifungal activities), Production of Biocontrol agents (*Trichoderma*, *B. thuringiensis*), Mushroom Cultivation, Biodegradation, Bioethanol production, Plant- microbe interactions.

Molecular Biology: DNA isolation and quantification, PCR (16S rDNA, *nifH*, *rpo B*), RFLP, Plasmid isolation, curing, cloning, Southern Hybridization, RNA isolation, Northern Hybridization, RT-PCR.

Immunological Techniques: Radial Immunodiffusion, Agglutination, Ouchterlony Double Diffusion, ELISA, Countercurrent Immunelectrophoresis (CCIEP).

Biochemistry: SDS-PAGE analysis, Native-PAGE analysis, Spectroscopic quantification, HPLC, TLC, Protein isolation and quantification, Gas Chromatography.

Publications:

Research articles:

1. Narwal, E., Kannepalli, A., Choudhary, J., Singh, Y. V., & Shah, M. P. (2022). Bioprospecting plant growth-promoting rhizobacteria from rice genotypes and their influence on growth under aerobic conditions. *Journal of Basic Microbiology*, 62(2), 135-149.
2. Meena, A. L., Pandey, R. N., Kumar, D., Sharma, V. K., Meena, M. D., Karwal, M., Dutta, D., Meena, L.K., **Narwal, E.**, Mishra, R.P. and Panwar, A.S., & Ghosh, A. (2022). Impacts of long-term rice-based organic farming on fractions and forms of soil organic carbon and nitrogen in the Indo-Gangetic Plain. *Soil Research*, 61(2), 159-175.

3. **Narwal E**, K Annapurna, J Chaudhary, R Dhakad, Y V Singh (2021). Bioprospecting rice and arbuscular mycorrhizal fungi interaction for nutrient uptake and plant growth under aerobic cultivation. *Indian Journal of Agricultural Sciences*. **91** (8): 1236–41.
4. **Narwal, E.** Annapurna K., J. Choudhary, and S. Sangwan. "Effect of Arbuscular mycorrhizal Fungal Colonization on Nutrient Uptake in Rice Aerobic Conditions." *Int. J. Curr. Microbiol. App. Sci* 7, no. 04 (2018): 1072-1093.

Book Chapters:

1. Singh, Geeta, Seema Sangwan, **Ekta Narwal**, and K. Annapurna. "Microbial Proteins and Soil Carbon Sequestration." In *Adaptive Soil Management: From Theory to Practices*, pp. 131-139. Springer, Singapore, 2017.
2. Dotaniya, M. L., K. Aparna, Jairam Choudhary, C. K. Dotaniya, Praveen Solanki, **Ekta Narwal**, Kuldeep Kumar et al. "Effect of Soil Pollution on Soil Microbial Diversity." *Frontiers in Soil and Environmental Microbiology* (2020): 255-272.
3. **Narwal, Ekta**, Jairam Choudhary, Surender Singh, Lata Nain, Sandeep Kumar, M. L. Dotaniya, A. S. Panwar et al. "Microbial Biofuels: Renewable Source of Energy." *Frontiers in Soil and Environmental Microbiology* (2020): 181-192.
4. **Narwal E** and Y V Singh. Role of Microorganisms in sustainability of aerobic rice production system (2020). *Advances in applied microbiology for sustainable development*. ESN publications. pp 19-36.
5. Ekta Narwal, Jairam Choudhary, N. K. Jat, Amrit Lal Meena, P. C. Ghasal, Debashis Dutta, R. P. Mishra, M. Saritha, L. K. Meena, Chandra Bhanu, Raghuveer Singh, G. Chethan Kumar, A. S. Panwar, and Mahipal Choudhary (2023). Plant Growth-Promoting Microbes: Key Players in Organic Agriculture. In: R. Mawar et al. (eds.), *Plant Growth Promoting Microorganisms of Arid Region*, 139-160, Springer, Singapore.. https://doi.org/10.1007/978-981-19-4124-5_7

Technical reports:

- ✚ Meena, A. L., Karwal, M., Raghavendra, K. J., & **Narwal, E.** Aerobic composting versus Anaerobic composting (2021): Comparison and differences. Food and Scientific reports Volume 2(1): 23-26.
- ✚ Kumar, S., Kumar, L., Choudhary, J., Ghasal, PC., **Narwal, E.** and Meena, A.L. (2022). Role of Artificial Intelligence towards Future Farming and Transforming the Agriculture. Food and Scientific Reports, 3(8):19-24.

Book edited:

R. K. Naresh, Sudhir Kumar and **Ekta Narwal** (2021). Artificial Intelligence in Indian Agriculture. Jaya Publishing House.

Abstracts in Conferences:

- ✚ **Ekta Narwal**, Seema Sangwan, Jairam Choudhary, Kannepalli Annapurna. 2017. Impact of Arbuscular Mycorrhizal (AM) fungal colonization on the growth aerobic rice. Third International Conference on Bioresource and Stress Management, Jaipur, India. Page No. 304.
- ✚ Seema Sangwan, **Ekta Narwal**, Kannepalli Annapurna. 2017. Improved drought stress tolerance in wheat by arbuscular mycorrhizal fungi. Third International Conference on Bioresource and Stress Management, Jaipur, India. Page No. 266.
- ✚ **Ekta Narwal**, Seema Sangwan, Kannepalli Annapurna. 2017. Response of rice genotypes grown under aerobic conditions to native arbuscular mycorrhizal (AM) fungal colonization. 58th Annual Conference of Association of Microbiologists of India (AMI) and International Symposium on ‘Microbes for Sustainable Development’: Scope & Applications (MSDSA- 2017). Page No. 235.
- ✚ **Ekta Narwal**, K Annapurna and Jairam Choudhary (2020). Diazotrophic bacteria and mycorrhizal colonization enhance rice growth and physiological traits of rice under aerobic conditions. 4th International conference on Global Approaches in Natural Resource Management (GNRSA) Pp-428
- ✚ **Narwal, E.** Annapurna K., J. Choudhary and Y V Singh (2021). “Bioprospecting aerobic rice microbial interactions for higher productivity”. 61st Annual International Conference of Association of Microbiologists of India on “Microbial World: Recent Developments in health, Agriculture and Environmental Sciences”. Page No. 165.1.

Sequences submitted:

191 bacterial sequences submitted to NCBI (Accession number: MT355569- MT355578 and MZ424508- MZ424688)