

# Improving plant NUE: From phenotype to genotype

## N. Raghuram

INI Chair and Professor of Biotechnology, Guru Gobind Singh Indraprastha University, New Delhi, India

E-mail: raghuram@ipu.ac.in

### Abstract

Lack of well defined phenotype and genotype have hampered crop improvement for N use efficiency so far (Raghuram and Sharma, 2019). We ranked 21 rice varieties (Indica) based on N-responsive germination and identified early germinating, short duration varieties that were least N-responsive and late germinating, long duration varieties that were most N-responsive with higher yields and NUE (Sharma et al., 2018). Using 6 contrasting varieties from this ranking, we conducted complete life cycle analysis for 25 phenological parameters in the greenhouse. Only 20 parameters were significantly N-responsive and only 6 contributed to the NUE phenotype. It constitutes germination and flowering time, shoot/root length and vegetative biomass, apart from yield. N-responsive genes associated with these traits have been identified using microarray data and are being shortlisted for validation in activation-tagged transgenic lines. This approach can be used for any crop.

Keywords: NUE, phenotype, genotype, rice, transcriptome

### References

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