

SCIENTIST PROFILE



1. Name & Designation : Dr. Nimai Prasad Mandal
Principal Scientist
2. Date of Birth : 24th July, 1970
3. Date of joining ICAR : 1st January, 1997
4. Date of joining the present post : 1st January, 2012
5. Qualification (highest degree) : Ph.D (Genetics)
6. Post Doctoral Research Experience/Training:
 - Visiting Research Fellow at PBGB, IRRI during 25th January to 28th February 2009 under the ICAR-IRRI collaborative project “Developing and disseminating resilient and productive rice varieties for drought-prone areas of India”.
7. Area of Specialization/research interest:
 - Breeding rice for direct seeded rainfed uplands and drought tolerance
8. Significant Contribution including products and patents (Five bullets):
 - Developed 5 varieties (Anjali, Virendra, Abhishek, CR Dhan 40 and Sahbhagi Dhan).
 - Collected and characterized 230 upland rice germplasm from Sikkim, WB hills and Chhattisgarh.
 - Indirect selection under moderate-input conditions was less efficient than direct selection for grain yield in low-input conditions, indicating upland breeding programs to adopt selection for grain yield under both moderate- and low-input conditions.
 - Managed stress screening methodology for drought tolerance established for both upland and drought-prone shallow lowland and genotypes with drought tolerance and responsive to high input management and new sources for drought tolerance in VLDT 1, VLDT 2 and Sukhawan identified.
 - The effect of the major QTL for grain yield under stress (*qDTY12.1*) identified in Vandana x Way Rarem population has been validated at the target environment in eastern India.
 - Traditional *aus* genotypes were found superior in weed suppressive ability. EVV rating at 2 to 3 WAS, plant height and biomass at 25 DAS appeared to be useful selection criteria.
9. Awards/Honours:
 - Received Institute Best Worker (Scientist) award for the year 2007-08 from Director, CRRRI for the outstanding contribution in the research and development of upland rice varieties.
10. Publications (10 best):
 - i. Swamy BPM, Ahmed HU, Henry A, Mauleon R, Dixit S, Vikram P, Ram T, Verulkar SB, Perraju P, **Mandal NP**, Variar M, Robin S, Chandrababu R, Singh ON, Dwivedi JL, Das SP, Mishra KK, Yadaw RB, Aditya TL, Karmakar B, Satoh K, Moumeni A, Kikuchi S, Leung H and Kumar A (2013). Genetic, physiological, and gene expression analyses reveal that multiple QTL enhance yield of rice mega-variety IR64 under drought. **PLoS ONE** 8(5): e62795 (DOI: 10.1371/journal.pone.0062795).
 - ii. Maiti D, Singh CV, Variar M, **Mandal NP** and Anantha MS (2012). Impact of rainfall pattern on native arbuscular-mycorrhizal activity influencing phosphorus utilization by direct seeded rainfed upland rice (*Oryza sativa* L.). **Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.** (DOI 10.1007/s40011-012-0132-z).
 - iii. Raman A, Verulkar SB, **Mandal NP**, Variar M, Shukla VD, Dwivedi JL, Singh BN, Singh ON, Swain P, Mall AK, Robin S, Chandrababu R, Jain A, Ram T, Hittalmani S,

- Haefele S, Piepho HP and Kumar A (2012). Drought yield index to select high yielding rice lines under different drought stress severities. **Rice** 5: 31.
- iv. Kumar A, Verulkar SB, **Mandal NP**, Variar M, Shukla VD, Dwivedi JL, Singh BN, Singh ON, Swain P, Mall AK, Robin S, Chandrababu R, Jain A, Haefele S, Piepho HP and Raman A (2012). High-yielding, drought-tolerant, stable rice genotypes for the shallow rainfed lowland drought-prone ecosystem. **Field Crops Research** 133: 37-47.
 - v. **Mandal NP**, Sinha PK, Variar M, Shukla VD, Perraju P, Mehta A, Pathak AR, Dwivedi JL, Rathi SPS, Bhandarkar S, Singh BN, Singh DN, Panda S, Mishra NC, Singh YV, Pandya R, Singh MK, Sanger RBS, Bhatt JC, Sharma RK, Raman A, Kumar A and Atlin G (2010). Implications of genotype×input interactions in breeding superior genotypes for favorable and unfavorable rainfed upland environment. **Field Crops Research** 118: 135-144.
 - vi. Verulkar SB, **Mandal NP**, Dwivedi JL, Singh BN, Sinha PK, Mahato RN, Dongre P, Singh ON, Bose LK, Swain P, Robin S, Chandrababu R, Senthil S, Jain A, Shashidhar HE, Hittalmani S, Vera Cruz C, Paris T, Raman A, Haefele S, Serraj R, Atlin G and Kumar A (2010). Breeding resilient and productive genotypes adapted to drought-prone rainfed ecosystem of India. **Field Crops Research** 117: 197-208.
 - vii. Bernier J, Kumar A, Venuprasad R, Spaner D, Verulkar S, **Mandal NP**, Sinha PK, Perraju P, Dongre PR, Mahato RN and Atlin G (2009). Characterization of the effect of a QTL for drought resistance in rice, qtl12.1, over a range of environments in the Philippines and eastern India. **Euphytica** 166(2): 207-217.
 - viii. Sinha PK, **Mandal NP**, Prasad C and Prasad K (2006). Genetic analysis for grain yield and its components in upland rice. **Oryza** 43(1): 5-9.
 - ix. Courtois B, Bartholome B, Chaudhary D, McLaren G, Mishra CH, **Mandal NP**, Pandey S, Paris T, Piggitt C, Prasad K, Roy AT, Sahu RK, Sahu VN, Sarkarung S, Sharma SK, Singh A, Singh HN, Singh ON, Singh NK, Singh RK, Singh RK, Singh S, Sinha PK, Sisodia, BVS and Thakur R (2001). Comparing farmers' and breeders' ranking varietal selection for low-input environments: A case study of rainfed rice in Eastern India. **Euphytica** 122(3): 537-550.
 - x. Sinha PK, Prasad C, Prasad K and **Mandal NP** (2000). Translocation of stored pre-anthesis assimilate to grain in rice genotypes. **Oryza** 37(4): 346-348.