

SCIENTIST PROFILE



1. Name of the Scientist : Dr. Trilochan Mohapatra

2. Bio-data

- a) Designation : Director
b) Email : director.cri@icar.gov.in
c) Telephone No. (O) : 0671-2367757
d) Joining date in ICAR : 3 December, 1991
e) Discipline and specialization : Genetics
(Molecular Genetics and Plant Biotechnology)

g) Training/advance exposure in the area of work:

- Received training on Rice Genome Sequencing at the Arizona Genomics Institute, University of Arizona, Arizona, USA from 20-08-2003 to 30-01-04.
- Worked on physical mapping of Rice Genome at the Clemson University Genomics Institute, Clemson, South Carolina, USA from 09-10-2000 to 30-12-2000.

3. Contribution to scientific advancement:

- Contributed to the physical mapping and sequencing of rice chromosome 11 and tomato chromosome 5.
- Developed the first set of RFLP markers in mustard; 4045 unigene derived microsatellite markers in five cereal crops and 2267 new microsatellite markers in sugarcane.
- Constructed the first genome map of Indian mustard, and used this map to tag a major gene for resistance against white rust disease in this crop.
- Designed the first SNA Chip based on stress responsive genes and used it to map loci for salinity tolerance in rice through association mapping.
- Integrated marker assisted foreground selection with map based background analysis to combine two genes for bacterial blight resistance from a non-Basmati source with quality characteristics of Pusa Basmati 1 in rice lines, one of which has been identified and released after multilocation testing as a new variety named Improved Pusa Basmati 1.
- Contributed as the lead worker to generation of 22,292 mutagenised lines of the upland rice variety Nagina22 and identified mutants for a range of traits including drought tolerance. Some of the identified mutants have already been used to identify novel alleles for different genes.

4. Current area of research: Genomics of rice yield and stress tolerance.

5. Publications:

- i. Kumar V, Singh A, Mithra SVA, Krishnamunrthy SL, Parida SK, Jain S, Tiwari KK, Kumar P, Rao AR, Sharma SK, Khurana JP, Singh NK and **Mohapatra T** (2015). Genome-wide association mapping of salinity tolerance in rice (*Oryza sativa*). **DNA Research**, 1-13. (Doi: 10.1093/dnares/dsu046)
- ii. The Tomato Genome Consortium (2012). The tomato genome sequence provides insights into fleshy fruit evolution. **Nature** 485: 635-641. (**T. Mohapatra** worked as Co-PI of the Indian Initiative at the NRCPB, IARI, New Delhi).
- iii. Parida SK, Mukerji M, Singh AK, Singh NK and **Mohapatra T** (2012). SNPs in stress-responsive rice genes: validation, genotyping, functional relevance and population structure. **BMC Genomics** 13:426.

- iv. Ngangkham U, Parida SK, De S, Raj Kumar KA, Singh AK, Singh NK and **Mohapatra T** (2010). Genic markers for wild abortive (WA) cytoplasm based male sterility and its fertility restoration in rice. **Molecular Breeding** 26:275–292.
- v. Parida SK, Dalal V, Singh AK, Singh NK and **Mohapatra T** (2009). Genic non-coding microsatellites in the rice genome: characterization, marker design and use in assessing genetic and evolutionary relationship among domesticated groups. **BMC Genomics** 10:40.
- vi. Parida S, Kumar KAR, Dalal V, Singh NK and **Mohapatra T** (2006). Unigene derived microsatellite markers for the cereal genomes. **Theor. Appl. Genet.** 112: 808-817.
- vii. International Rice Genome Sequencing Project (2005) The map-based sequence of the rice genome. **Nature** 436:793-800 (**T. Mohapatra** worked as Co-PI of the Indian Initiative at the NRCPB, IARI, New Delhi).
- viii. Joseph M, Gopalakrishnan S, Sharma RK, Singh VP, Singh AK, Singh NK and **Mohapatra T** (2004) Combining bacterial blight resistance and Basmati quality characteristics by phenotypic and molecular marker-assisted selection in rice. **Molecular Breeding** 13: 377-387.
- ix. Singh RK, Sharma RK, Singh AK, Singh VP, Singh NK, Tiwari SP and **Mohapatra T** (2004) Suitability of mapped sequence tagged microsatellite site markers for establishing distinctness, uniformity and stability in aromatic rice. **Euphytica** 135:135-143.
- x. Chen M, Presting G, Barbazuk WB, Goicoechea JL, Blackmon B, Fang G, Kim H, Frisch D, Yu Y, Sun S, Higingbottom S, Phimphilai J, Phimphilai D, Thurmond S, Gaudette B, Li P, Liu J, Hatfield J, Main D, Farrar K, Henderson C, Barnett L, Costa R, Williams B, Walser S, Atkins M, Hall C, Budiman MA, Tomkins JP, Luo M, Bancroft I, Salse J, Regad F, **Mohapatra T**, Singh NK, Tyagi AK, Soderlund C, Dean RA, Wing RA. (2002). An integrated physical and genetic map of the rice genome. **Plant Cell**, 14(3): 537-545.

6. Awards and Fellowship:

- Young Scientist Award-1994 of the Indian National Science Academy, New Delhi.
- Prof. L.S.S. Kumar Memorial Award-1994, instituted by Indian National Science Academy, New Delhi.
- NAAS-Tata Young Scientist Award of the National Academy of Agricultural Sciences, New Delhi for the Year 2000-2001.
- Dr. B.P. Pal Memorial Award of the Indian Agricultural Research Institute, New Delhi for the year 2002.
- National Bioscience Award for Career Advancement of the Department of Biotechnology, Govt. of India for the year 2003-04.
- NASI–Reliance Industries Platinum Jubilee Award of the National Academy of Sciences India, Allahabad for Application Oriented Research for the year 2007.
- Special Recognition Award carrying a cash prize and citation by the Indian Council of Agricultural Research in the year 2009 for significant contribution to genetic improvement of Basmati rice.
- Member, Editorial Board, Journal of Plant Biochemistry and Biotechnology from 2002-2008.
- Associate Editor, BMC Genetics from 2011.
- Associated Editor, Journal of Genetics, being published by the Indian Academy of Science, Bangalore from 2012 to 2014.
- 3rd Prasanna Kumar Dash Memorial Lecture Award of the Orissa Environmental Society, Bhubaneswar in 2013.

- Dr. Gopal Chandra Patnaik Memorial Lecture Award of the Bigyan Prachar Samiti, Cuttack, Odisha for the year 2013.
- Best Agricultural Scientist Award of Chalachitra Jagata, Odisha for the year 2013.
- Platinum Jubilee Lecture Award of 101st Indian Science Congress from 3-7 February, 2014 at University of Jammu.
- 1st Prof. S.N. Patnaik Memorial Lecture Award of Postgraduate Department of Botany, Utkal University, Bhubaneswar on 5 September 2014.
- Recognition Award of the National Academy of Agricultural Sciences for the biennium 2013-14 for significant contributions in Plant Improvement.
- Bioved Agri-Innovation Award 2015 of Bioved Research Institute of Agriculture and Technology, Allahabad.
- Lifetime Achievement Award of the Indian Genetics Congress at SRM University, Kattankulattur, Tamil Nadu on 4 March 2015.
- Elected Fellow of the National Academy of Sciences India, Allahabad in the year 2005.
- Elected Fellow of the National Academy of Agricultural Sciences, New Delhi in the year 2006.
- Elected Fellow of the Indian National Science Academy, New Delhi in the year 2013.