Profile

Dr. Monoranjan Mohanty

Designation: Principal Scientist
Division of Soil Physics

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Research specialization:

- Agricultural system modelling to assess environmental sustainability as affected by climate variability and climate change
- Expertise on use of APSIM model for crops and cropping systems
- Climate change impact analysis on crops, cropping systems and soil organic carbon
- Soil properties estimation using Near Infra-Red and Middle Infrared Spectroscopy
- Estimation of soil quality using Hyperspectral remote sensing (HSRS) approaches
- Soil organic carbon sequestration and climate change mitigation
- Development of low cost hand held sensors for nutrient element estimation in soils
- Development of soil digital database
- Water management strategies to improve water and nutrient use efficiency in crops and cropping systems using modelling approaches.

Professional Experience:

I have more than twenty years of research focussed on improving management of natural resources, agricultural production systems through the application of integrative, multidisciplinary modelling, GIS and remote sensing techniques. I have also dedicated my research in developing proposal with national and international agencies and organisations on carbon sequestration, climate change impact assessment, and adaptive water management strategies to improve livelihood of small and marginal farmers. I have worked with different scientists and Professors from ACIAR, Canberra, Australia; The University of Queensland, Australia; The New York University, New York, USA; ICRISAT India, and CSIRO Australia. I have developed and worked in more than 12 projects with national and international bodies, developed technologies relevant to farmers and other stakeholders. I have also developed software (SQI CAL) on soil quality with other team members, which is very relevant to soil health assessment. I have guided more than 5 Masters and PhD students.

Awards and Honours:

- John AllWright Fellowship from Australian Council for International Agricultural Research , 2006
- Advancement of Agricultural Sciences (AAAS) Junior Award 2006 by Indian Society of Plant Physiology, New Delhi
- The Golden Jubilee Commemoration Young Scientist Awards 2008 by Indian Society of Soil Science, New Delhi
- The 2013 Fertilizer Association of India (FAI) Golden Jubilee Award for Excellence
- Twelfth International Congress Commemoration Award for the year 2019 from the Indian Society of Soil Science, New Delhi

Top Ten publications:

1. **Mohanty, M.,** Probert, M.E., Sammi Reddy, K., Dalal, R.C., Subba Rao, A., Menzies, N.W., 2012. Simulating soybean–wheat cropping system: APSIM model parameterization and validation **Agriculture, Ecosystems & Environment** 152, 68-78.
2. **Mohanty, M.,** Sammi Reddy, K., Probert, M.E., Dalal, R.C., Subba Rao, A., Menzies, N.W., 2011. Modelling N mineralization from green manure and farmyard manure from a laboratory incubation study. ***Ecological Modelling***, 222, 719–726.
3. **Mohanty, M.,** Painuli D.K., 2004. Modeling rice seedling emergence and growth under tillage and *residue* management in a rice-wheat system on a Vertisol in Central India. ***Soil and Tillage Research***, 76, 167-174.
4. **Mohanty M.,** Painuli D.K., Mandal K.G., 2004. Effect of puddling intensity on temporal variation in *soil* physical conditions and yield of rice (*Oryza sativa* L.) in a Vertisol. ***Soil and Tillage Research***, 76, 83-94.
5. **Mohanty, M**., Painuli, D.K., Misra, A.K., Bandyopadhyay, K.K., Ghosh, P.K., 2006. Estimating impact of puddling, tillage and residue management on wheat (Triticum aestivum, L.) seedling emergence and growth in a rice-wheat system using nonlinear regression models**.** ***Soil and Tillage Research***, 87(1), 119-130.
6. **Mohanty, M**., Painuli, D.K., Misra, A.K., Ghosh, P.K., 2007. Soil quality effects of tillage and residue under rice-wheat system on a Vertisol in India. ***Soil and Tillage Research,*** 92, 243-250.
7. **Mohanty, M**., Bandyopadhyay, K.K., Painuli, D.K., Ghosh, P.K., Misra, A.K., Hati, K.M., 2007. Water transmission characteristics of a Vertisol and water use efficiency of rainfed soybean (Glycine *max*. L.) under subsoiling and manuring. ***Soil and Tillage Research,*** 93, 420-428.
8. **Mohanty, M.,** Probert, M.E., Sammi Reddy, K., Dalal, R.C., Subba Rao, A., Menzies, N.W., 2011. Modelling N mineralization from high C:N ratio crop residues. ***Agrochimica,*** 54, (2), 1-15.
9. **Mohanty, M**., Sinha, N.K., Painuli, D.K., Bandyopadhyay, K.K., Hati, K.M., Sammi Reddy, K., Chaudhary, R.S., 2015. Modelling Soil Water Contents at Field Capacity and Permanent Wilting Point Using Artificial Neural Network for Indian Soils. **Natl. Acad. Sci. Lett**. 38(5) 373-377. DOI 10.1007/s40009-015-0358-4.
10. **Mohanty,** M., Sammi Reddy, K., Probert, M.E., Dalal, R.C., Sinha, N.K., Subba Rao, A., Menzies, N.W. 2014. Efficient Nitrogen and Water Management for the Soybean–Wheat System of Madhya Pradesh, Central India, Assessed Using APSIM Model. ***Proceedings of the National Academy of Sciences India, Section B: Biological Sciences***. Volume 86(1), 217-228DOI 10.1007/s40011-014-0443-3.