Curriculum Vitae

Prof. Dillip Kumar Swain, Ph. D.
Professor, Agronomy
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Vision

My long-term goal is to design sustainable farming system model for small and marginal farmers, which is expected to enhance food grain productivity and economy of rural India. To cope with the climate change/variability and food security issues, I am pursuing research on Climate Change Adaptations/Mitigations and Organic Farming for sustainable agricultural growth and quality food production.

Research Areas

- Sustainable & Precision Production Agriculture
- Climate Change Adaptation & Mitigation
- Organic Farming & Crop Quality
- Crop Growth & Yield Simulation

Professional Career

- Professor (August 2018): Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India.
- Associate Professor (June 2013 to August 2018): Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India.
- Assistant Professor (March 2007 to June 2013): Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India.
- Visiting Faculty (January 2006 to March 2007): Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India.
- JSPS Post-Doctoral Fellow (November 2003 to November 2005): United Nations University, Tokyo, Japan
- Research Associate (March 2001 to October 2003): ICAR-National Rice Research Institute (Central Rice Research Institute), Cuttack, India

Professional Activities

- Research Advisor of Nan Yang Academy of Sciences (Singapore), with effect from 14 October 2018.
- Editorial Board Member, Journal of Environmental & Earth Sciences, Bilingual Publishing Co. (27 December 2018 to 26 December 2019).

Education

- Doctor of Philosophy (2002): Agricultural and Food Engineering Department, Indian Institute of Technoilogy Kharagpur, India.
- M. Sc. (Ag) in Agronomy (1996): Orissa University of Agriculture and Technology, Bhubaneswar, India.
- B. Sc. (Ag) (1993): Orissa University of Agriculture and Technology, Bhubaneswar, India.

Teaching

At the undergraduate and postgraduate level:

- Soil-Plant-Water Relationships
- Crop Production Systems
- Agricultural Systems Modeling Lab
- Systems Approach in Agriculture
- Organic Food Chain Management
- Management and Productivity
- Crop Production Technology

Student Guidance

- M. Tech: Degree awarded –27, In-progress – 4
- Ph. D.: Degree awarded – 6, In-progress – 12

Awards

- Japan Society for the Promotion of Science (JSPS) fellowship award for postdoctoral research during 2003-2005
- The Fertiliser Association of India (FAI) Silver Jubilee Award for 'Outstanding Doctoral Research in Fertiliser Usage' in 2003
- Certificate of Reviewing by Elsevier (European Journal of Agronomy) in recognition of review made for the Journal in 2016

International Collaboration

- Research and Development Center of Nippon Koei Co. Ltd. (Rdcnk), Tsukuba, Japan: Mr. Shigeru Nakamura
- United Nations University, Tokyo, Japan: Dr. Srikantha Herath
- Asian Disaster Preparedness Centre, Bangkok, Thailand: Dr. Rishiraj Dutta
- Institute for Hydrology and Water Resources Management, Leibniz Universität Hannover, Hannover, Germany: Dr.-Ing. Jörg Dietrich

On-going Sponsored Projects (As Principal Investigator**)**

Total cost of the sponsored project: Rs. 276.00 lakhs

- Experimental Agro-meteorological Advisory Service unit (AAS), Sponsored by Ministry of Earth Science, Government of India, India Meteorological Department, Mausam Bhawan, Lodhi Road, New Delhi.

- Forecasting Agricultural Output using Space, Agrometeorology, and Land based observations (AAL), Sponsored by Ministry of Earth Science, Government of India, India Meteorological Department, Mausam Bhawan, Lodhi Road, New Delhi.
- Agronomic management Technologies for Reduced Greenhouse gas emission from Rice-based production system in eastern India: A simulation study (MTV), Sponsored by Department of Science and Technology, New Delhi

Completed Projects (As Principal Investigator**)**

- Development of climate adaptive agro-technologies for sustainable wheat and corn production in eastern India (ATI), Sponsored by MHRD, Department of Higher Education, New Delhi
- Precision nutrient management technologies for sustainable food grain production (PNG), Sponsored by MHRD, Department of Higher Education, New Delhi.
- Simulation of the Impact of Climate Change on Rice-based Cropping System in Parts of Indo-Gangetic Plains, Sponsored by Space Application Centre (ISRO), Ahmedabad (2009-2011)
- Modeling the performance of a few major cropping systems in eastern India in the light of projected climate change, Sponsored by Indian Council of Agricultural Research, New Delhi (2009-2014)
- Climate change and rice-based crop production system of eastern and south eastern India: Impact assessment and risk management through simulation study, Sponsored by CSIR Centre for Mathematical Modeling and Computer Simulation, Bangalore (2010-2014).

Publications in Peer Reviewed Journals:

International:

- Singh P., **Swain D. K**., Bhadoria P.B.S., and Jagadamma S. 2019. Effect of Planting System and Elevated CO2 Environment on Soil NH4+–N and NO3−–N Content and Yield of Hybrid Rice in Subtropical India. International Journal of Plant Production, DOI: https://doi.org/10.1007/s42106-019-00039-7
- Hazra S**., Swain D. K**., and Bhadoria P.B.S. 2019. Wheat grown under elevated CO2 was more responsive to nitrogen fertilizer in Eastern India. European Journal of Agronomy, (105):1-12.
- Lamichaney A., **Swain D.K**., Biswal P., Kumar V., Singh N.P., Hazra K.K. 2019. Elevated atmospheric carbon–dioxide affects seed vigour of rice (Oryza sativa L.). Environmental and Experimental Botany (Elsevier), 157: 171–176.
- Rajwade Y. A., **Swain D. K**., Tiwari K. N. 2018. Effect of Irrigation Method on Adaptation Capacity of Rice to Climate Change in Subtropical India. International Journal of Plant Production, 12:203-217
- Hazra K. K., Singh S. S., Nath C. P., Borase D.N., Kumar N., Parihar A.K., and **Swain D. K.** 2018. Adaptation Mechanisms of Winter Pulses Through Rhizospheric Modification in Mild-Alkaline. National Academy Science Letters (Springer), 41(4): 193-196.
- Jena U.R., **Swain D. K.,** Hazra K. K., and Maiti M. 2018. Effect of elevated [CO2] on yield, intra-plant nutrient dynamics, and grain quality of rice cultivars in eastern India. Journal of The Science of Food and Agriculture, 98: 5841-5852

- Rajwade Y. A., **Swain D. K.,** Tiwari K. N., and Bhadoria P.B.S. 2018. Grain Yield, Water Productivity, and Soil Nitrogen Dynamics in Drip Irrigated Rice under Varying Nitrogen Rates. Agronomy Journal, 110:868-878.
- Ashok Kumar K., **Swain D. K**., and Bhadoria P.B.S. 2018. Split application of organic nutrient improved productivity, nutritional quality and economics of rice-chickpea cropping system in lateritic soil. Field Crops Research (Elsevier), 223: 125–136.
- Ashok Kumar K., **Swain D. K**., Pallavi, and Ghosh BC. 2018. Effect of organic and inorganic nutrient management on soil nutrient dynamics and productivity of rice-chickpea system in lateritic soil. Organic Agriculture, 8:15-28
- Hazra K. K., **Swain D. K.,** Bohra A., Singh S. S., Kumar N., and Nath C. P. 2018. Organic rice: potential production strategies, challenges and prospects. Organic Agriculture, 8:39-56.
- Dhekale B. S., Nageswararao M. M., Nair, A., Mohanty U. C., **Swain D. K**.., Singh K. K., and Arunbabu T. 2018. Prediction of kharif rice yield at Kharagpur using disaggregated extended range rainfall forecasts. Theoretical and Applied Climatology, 133:1075–1091
- Ghosh M., **Swain D.K**., Jha M.K., and Tewari V.K. 2018. Chlorophyllmeter-based Nitrogen Management of Wheat in Eastern India. Experimental Agriculture (Cambridge University Press), 54 (3): 349-362.
- Talla Arunbabu, **Swain D.K**., Tewari V.K., and Biswal M.P. 2017. Significance of Weather Variables During Critical Growth Stages for Hybrid Rice Production in Subtropical India, Agronomy Journal, 109(5):1-9.
- Bagchi A, **Swain D. K**, Bera N, and Mitra A. 2016. Tea Polyphenolics and their Effect on Neurodegenerative Disorders- A Review, Research & Reviews: Journal of Medicinal & Organic Chemistry, 2(2): 01-10.
- Murmu K., **Swain D. K**., and Ghosh B. C. 2016. Effect of Mineral and Organic Nutrient Management on Sweet Corn Production System in Acid Lateritic Soil of India, Journal of Earth, Environment and Health Sciences, 2(2): 70-76.
- Satapathy S. S., Swain, D. K., Pasupalak, S., and Bhadoria, P. B. S. 2015. Effect of elevated [CO2] and nutrient management on wet and dry season rice production in subtropical India. The Crop Journal (Elsevier), 3: 468-480
- Rajwade Y. A., Swain D. K., Tiwari K. N., Mohanty U. C., and Goswami P. 2015. Evaluation of Field Level Adaptation Measures Under the Climate Change Scenarios in Rice Based Cropping System in India, Environmental Processes (Springer), 2(4): 669-687.
- Bagchi A, Ghosh BC, **Swain DK**, Bera N (2015) Organic Farming Practice for Quality Improvement of Tea and Its Anti Parkinsonism Effect on Health Defense. J Phys Chem Biophys 5 (2): 178. doi:10.4172/2161-0398.1000178
- Bagchi A, **Swain DK**, Mitra A, and Bera N (2015) Antioxidant property and Acetylcholinesterase inhibitory activity by Tea Polyphenolics Grown in different Agricultural Practices. Research Journal of Recent Sciences 5:1-5.
- Satapathy S.S., Swain D. K., and Herath S. 2014. Field experiments and simulation to evaluate rice cultivar adaptation to elevated carbon dioxide and temperature in sub-tropical India. European Journal of Agronomy (Elsevier). 54:21-33 (**IF: 3.3**).

- Satapathy S. S., Swain, D. K., Shrivastava, S. L., and Bhadoria, P. B. S. 2014. Effect of elevated carbon dioxide and nitrogen management on rice milling qualities. European Food Research Technology (Springer), 238:699-704 (**IF: 1.86**).
- Murmu K., **Swain D. K., and** Ghosh B. C. **2013**. Comparative assessment of conventional and organic nutrient management on crop growth and yield and soil fertility in tomato-sweet corn production system. Australian Journal of Crop Science (Southern Cross Publishing Group Australia). 7(11):1617-1626. (**IF: 1.63**).
- Ghosh M., **Swain D.K.,** Jha M.K., and Tewari V.K. 2013. Precision Nitrogen Management Using Chlorophyll Meter for Improving Growth, Productivity and N Use Efficiency of Rice in Subtropical Climate. Journal of Agricultural Science (Canadian Centre of Science and Education), 5(2):256-266.
- Satapathy S.S., **Swain D.K.,** and Ghosh M. 2013. Effect of Climate Change on Growth, Phenology and Yield of Rice Crop Grown in Open Top Chamber in Eastern India, Global Journal of Applied Agricultural Research (Research India Publications), 3 (1): 19-30
- Murmu K., Ghosh B. C., and Swain D. K. 2013. Yield and Quality of Tomato Grown under Organic and Conventional Nutrient Management. Archives of Agronomy and Soil Science (Taylor & Francis), 59 (10):1311-1321.
- Babel M.S., Agarwal A., **Swain, D.K.**, and Herath, S. 2011. Evaluation of climate change impacts and adaptation measures for rice cultivation in Northeast Thailand. Climate research (Inter-Research; Impact Factor:2.25) (46):137-146.
- **Swain D. K**., and Thomas D. 2010.Climate Change Impact Assessment and Evaluation of Agro-Adaptation Measures for Rice Production in Eastern India. Journal of Environmental Informatics (International Society for Environmental Information Sciences), 16(2):94-101**.**
- **Swain D. K**., and Sandip S. Jagtap. 2010. Development of SPAD values of medium- and long-duration rice variety for site-specific nitrogen management. Journal of Agronomy (Asian Network for Scientific Information), 9(2):38-44.
- **Swain D. K.** and Yadav A. 2009. Simulating the Impact of Climate Change on Rice Yield Using CERES-Rice Model. Journal of Environmental Informatics (International Society for Environmental Information Sciences), 13(2):104-110.
- Rautray S. K., **Swain D. K**., and Ghosh, B. C. 2009. Direct and Residual Effect of Fly Ash, Organic Materials and Mineral Fertilisers on Performance of Rice-based Cropping System under Acid Lateritic Soil Conditions. Asian Journal of Water, Environment and Pollution (IOS Press), 6 (1): 59-65.
- Palit S., Ghosh B. C., Dutta Gupta S., and **Swain D. K**. 2008. Studies on tea quality grown through conventional and organic management practices: Its impact on antioxidant and antidiarrhoeal activity. Transactions of the ASABE (American Society of Agricultural and Biological Engineers), 51(6): 2227-2238
- **Swain D. K.,** Herath S., Bhaskar B.C., Krishnan P., Rao K. S., Nayak S.K., and Dash R. N. 2007. Developing ORYZA 1N for Medium- and Long-Duration Rice: Variety Selection under Nonwaterstress Conditions. Agronomy Journal (American Society of Agronomy), 99: 428-440.
- Krishnan P., **Swain D. K**., Bhaskar, B.C., Nayak S.K., and Dash R. N. 2007. Impact of elevated CO2 and temperature on rice yield and methods of adaptation as evaluated by crop simulation study. Agriculture, Ecosystems & Environment, 122: 233-242

- **Swain D. K**., Rautray S., and Ghosh B. C. 2007. Alkaline coal fly ash amendments are recommended for improving rice-peanut crops. Acta Agriculturae Scandinavica-section B Soil & Plant Science 57 (3): 201-211.
- Pathirana A., Herath S., Yamada T., and **Swain D. K**. 2007. Impact of absorbing aerosols on South Asian Rainfall: A modeling study. Climatic Change, 85 (1-2): 103-118.
- Rautaray, S.K., **Swain D.K.,** and Ghosh B.C. 2007. Direct and Residual Effect of Fly Ash, Organic Materials and Mineral Fertilisers on Performance of Rice-based Cropping System under Acid Lateritic Soil Conditions, 6(1):59-65
- **Swain, D. K**., Bhaskar B.C., Krishnan P., Rao K. S., Nayak S.K., and Dash R. N. 2006. Variation in yield, N uptake and N use efficiency of medium and late duration rice varieties. Journal of Agricultural Science, 144: 69-83.
- Mittra B. N., Karmakar S., **Swain D. K.,** and Ghosh B. C. 2005. Fly ash-a potential source of soil amendment and a component of integrated plant nutrient supply system. Fuel, 84: 1447-51.
- **Swain D. K.,** Herath S., Pathirana A., and Dash R. N. 2005. Nitrogen fertilizer optimization and cultivar selection for rice grown near mountainous slopes in Orissa, India: A field experiment and simulation model study. Journal of Mountain Science, 2(4): 329-335.

National:

- **Swain D. K.,** Herath S., Saha S. and Dash R. N. .2007. CERES- Rice model: Calibration, evaluation and application for solar radiation stress assessment on rice production. Journal of Agrometeorology 9 (2): 138-148
- **Swain D. K.,** Mittra B. N., and Ghosh B. C. 2004. Effect of fly ash alone or in combination with organic material and mineral fertilizer on crop yield and economics of rice-peanut cropping system. Fertilizer News, 49(5): 51-55.
- Rautaray S. K., and **Swain D.K**. 2003. Direct and Residual effect of fertilization sources and time of application on equivalent yield of rice-potato cropping sequence and soil properties. Indian Journal of Hill Farming, 16(1&2):56-60

Book chapters:

- Bagchi A., Swain D.K., Mitra A., and Bera N. 2016. Antioxidant Property and Acetylcholinesterase Inhibitory Activity of Polyphenolics Extracted from Tea Grown in Different Agricultural Practices, In Precision Farming and Resource management (Editors: Tewari et. al., 2016), Excel India Publishers, Pp: 378-383.
- McDermid, S. P.; Alexander Ruane, Swain, D.K. et al. (50 authors). 2015. The AgMIP Coordinated Climate-Crop Modeling Project (C3MP) : Methods and Protocols. In. Handbook of Climate Change and Agroecosystems: The Agricultural Model Intercomparison and Improvement Project (AgMIP), Edited by Rosenzweig C., Hillel D., 03/2015: pages 1100; World Scientific Publishing Co Pte Ltd., ISBN: 978-1-78326-563-3
- Self-learning study material for Indira Gandhi National Open University

  Unit 1: Paddy processing: PRODUCTION, MORPHOLOGY, COMPOSITION AND UTILIZATION. By B. N. Mittra and D. K. Swain
- Contributor of 'Agronomic Terminology' (5th Revised edition: A. R. Sharma and B. Gangaiah (2009)), Indian Society of Agronomy, Division of Agronomy, IARI, New Delhi

- Swain, D. K., Y. A. Rajwade, and U. C. Mohanty, 2013: Climate Impact Analysis and Adaptations for Sustainable Rice Production System. Climate Vulnerability: Understanding and Addressing Threats to Essential Resources. Elsevier Inc., Academic Press, 25–36 pp.

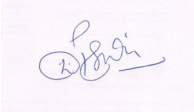
Invited Lectures

- Delivered an Invited lecture on Climate Change Impacts on Food Security: Evaluation of Adaptations and Mitigations using Decision Support System, at Indian Statistical Institute, Kolkata on 14 February 2019.
- Delivered a talk on Technological Intervention in Horticultural Production for Sustainable Food security in Merchant's Chamber of Commerce & Industry, Kolkata on 12 February 2019.
- Delivered lecture on Building Resilience to Climate Change: Climate Change Impacts on Food Security in a Training programme on " Agro-Ecosystem Resilience in a Changing Climate" during 12 to 15 June 2017 at Colombo, Sri lanka: Supported by Asian Disaster Preparedness Centre, Bangkok.
- Global Students Competition for Shell Idea 360 during 26 June to 01 July 2016 in London, UK.
- Delivered lead lecture on "Field experiments and simulations to evaluate agro-adaptations to climate change for rice production in sub-tropical India" in International conference on climate and food security in Asia at National University of Singapore on 5 June 2015.
- Use of crop model for rice production management at Colombo, Sri Lanka (June, 2015)
- Climate change impacts on food security at United Nations University, Tokyo, JAPAN (22 October 2013)
- Use of crop model for rice production management at AIT, Bangkok, Thailand (19-21 November 2012)
- Climate change impacts on food security at United Nations University, Tokyo, JAPAN (02 March 2012).
- Concept of crop model and introduction to DSSAT at AIT, Bangkok, Thailand (20 and 21 December 2011).
- Analysis of future climate extremes, impacts on rice production at United Nations University, Tokyo, JAPAN (13 November 2011).

Short-term course

- Coordinated the short-term On-line Post graduate course on Building Resilience to Climate Change (BRCC 2015) during 14 July to 05 August 2015 at IIT Kharagpur, sponsored by United Nations University, Tokyo, JAPAN

Website: http://www.facweb.iitkgp.ernet.in/~dkswain/



(Dillip Kumar Swain) **01 April 2019**