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Curriculum Vitae

Full Name: Falguni Guharay
Birthday: 6th March 1956
Home Address: Bosque de Altamira A-193, Managua, Nicaragua 14260,
Email address: fguharay@gmail.com
Current position: Program manager, Latin America, Climate Smart Cocoa,
World Cocoa Foundation

1. Educational records

1971-1975 B.Sc.: G.B. Pant University of Ag & Tech/College of Agriculture/ Plant Protection
1975-1977 M.Sc.: Indian Agricultural Research Institute/PG School/Division of Entomology
1979-1982 Ph.D..: University of Nottingham/School of Biology/Department of Zoology
1982-1985 Post-Doc: State University of New York, Buffalo/Department of Biophysics

2. Degrees obtained

1975 May B.Sc. (Hons) Ag. & A. H (G.B. Pant University of Ag & Tech, Pantnagar, India)
1977 August M.Sc. Entomology (Indian Agricultural Research Institute, New Delhi, India)
1982 August Ph.D. Zoology (University of Nottingham, Nottingham, UK)

3. Employment record reflecting teaching, research and administrative experience

From	To	Name of employing institution and title of the job	Budget holding and supervision of employees
2016 Oct	Present	World Cocoa Foundation, U.S.A, Program manager Central America and Caribbean, Climate Smart Cocoa	Annual budget of USD 150,000 and supervised 2-3 employees
2013 Dec	2016 Aug	International Center for Tropical Agriculture (CIAT), Colombia and Nicaragua, Research for Development Scientist	Annual budget of USD 200,000 and supervised 5 employees
2013 Jan	2013 Nov	European Union, IFC-World Bank, Norwegian Embassy, International Consultant	Annual budget of USD 100,000 and supervised 6 employees
2008 Jan	2012 Dec	Mesoamerican Information Service for Sustainable Agriculture (SIMAS), Nicaragua. Coordinator	Annual budget of USD 500,000 and supervised 12 employees
2005 Jan	2007 Dec	JICA, European Union, World Bank, Norwegian and Danish Cooperation, Consultant Central America	Annual budget of USD 100,000 and supervised 5 employees
2001 Jan	2004 Dec	Tropical Agronomic Center for Research and Education (CATIE) , Central America, Regional Program Leader, IPM and Agroforestry and Associate Professor	Annual budget of USD 2,000,000 and supervised 25 employees

1991 Jun	2000 Dec	Tropical Agronomic Center for Research and Education (CATIE), Central America, Senior Scientist, IPM and Agroforestry, Associate Professor	Annual budget of USD 1,500,000 and supervised 25 employees
1985 Aug	1990 Dec	School of Plant protection, National Agricultural University, Nicaragua, Professor and Research Director	Annual budget of USD 100,000 and supervised 15 employees
1982 Nov	1985 July	Department of Biophysics, SUNY Buffalo, USA Research Associate Professor	Annual budget of USD 400,000 and supervised 2 employees

4. Innovations

1996-1999 *How to implement and scale Community monitoring of vector population and decision-making for disease control (Malaria and Leptospirosis)?* Brought together epidemiologists, vector control experts and educational specialists of Local Health system (SILAIS) and Ministry of health to implement biological control of vectors in Managua, based on observations and analysis in 30 km long coastal area of Managua, Nicaragua, resulting in reduction of Malaria from 20,000 in 1996 to 2,000 in 1998 and there was no incidence of Leptospirosis in the capital. Since then biological control of vectors has become the national strategy in Nicaragua, eliminating incidence of malaria in Nicaragua by 2014.

1985-2004 *How can we use bio-control agents based on entomopathogenous fungus for control of pests of coffee, rice, sugarcane and cabbage?* Lead a multi-disciplinary research program to develop and disseminate technologies for utilizing biological control agents like Beauveria bassiana and Metarhizium anisopliae for the control of coffee berry borer, rice stink bug, cabbage diamond back moth, sweet pepper weevil and spittle bug in sugarcane. Currently these agents are utilized for control of many key pests in nearly 100,000 ha in Nicaragua and Central America eliminating partially or totally the use of extremely toxic pesticides.

2008-2012 *How can we use Internet for public monitoring of development cooperation and impact?* Developed local capacity to construct Internet based license free data systems to carry out participatory assessment of knowledge, attitude, practice, perception and current state of affair of a wide range of themes including sustainable agriculture, governance of natural resources, equity and diversity, tailored to the capacity and need of a wide range of users with little or no previous ITC experience. A wide range of public information platforms based on such systems are now being used as knowledge harvesting centers all across Nicaragua and Central America.

5. Other Achievements and Performances

(1) Appreciable academic achievements

Academic achievements	*Knowledge development and impact*
Elucidated biophysical basis of mechanoreception by discovering stretch activated ion channels. *1984-85*	A milestone discovery that generated first direct evidence of functioning a mechano-receptive ion channel as a prototype mechanism of stretch sensitivity. Results published two highly referenced papers in Journal of Physiology opened up a new area of research which has been pursued by many groups to develop academic and practical knowledge which may lead to therapy of a number of physiological disorders.
Elucidated host-plant relation and population dynamics of green hoppers as vectors of Micoplasma and Spiroplasma in Maize *1985-1995*	Ten years of rigorous field work generated the knowledge base of management of green hoppers as vector of Micoplasma and Spiroplasma, including development of tolerant varieties, resulting in recovering production and yield of white maize in dry tropics of Nicaragua, thus contributing to long-term food security in the region.
Elucidated host-plant relation and population dynamics of white fly as vectors of Gemini Virus of tomatoes and beans *1990-2000*	Ten years of rigorous field work generated the knowledge base of integrated pest management of white flies as vector of Gemini Virus of tomatoes and beans, resulting in recovering production and yield of these crops in dry tropics of Nicaragua, thus contributing to long-term food security in the region.
Elucidated food web dynamics of coffee and cocoa pests as influenced by Agroforestry systems design and management *1990-2010*	Twenty years of rigorous field work generated the knowledge base for the management of coffee and cocoa pests and diseases via improved design and management of agroforestry systems, resulting in recovering production and yield of these crops in highlands and wetlands Nicaragua and the region, thus contributing to long-term improvement of farm household income in the region.

(2) Experience of collaborative international research

2014-2016 *How to implement a diverse portfolio of research for development projects with local stakeholders?* Based on the entry themes a diverse portfolio of research-for-development project was implemented by the partner organizations in Nicaragua, Haiti and Dominican Republic. Themes included decision-making tools, management of soil fertility, common codes and practices for multiple certifications, public policy and agency of rural women and market access by remote communities. Project portfolios were able to generate new and relevant knowledge in a very short time (Funded by CGIAR).

2014-2015 *How to carry out territorial analysis with a wide range of stakeholders*? An integrated and systemic analytical framework was used to carry out participatory territorial analysis that took into account farm realities, families, communities, markets, and policies. It was collective learning process in which the local actors analyzed territorial data and information, identified gaps in knowledge and built a collective vision that would be become the basis for developing theories of change for each field site (Funded by CGIAR).

2013-2014 *How to carry out situational analysis with a wide range of stakeholders*? Existing data and information on human development, natural resource management, production systems, and markets was processed to generate outputs in form of maps that depicted the current state of development indicators. At the same time, a collective vision of the dynamics of the local innovation process was constructed. Collective analysis of the information resulted in convergence of interests and identification of priority to land use systems and field sites in which to work (Funded by CGIAR).

2008-2012 *How can we use the internet for public monitoring of development cooperation and impact?* Participatory assessment of knowledge, attitude, practice and perception of a wide range of themes including sustainable agriculture, governance of natural resources, equity and diversity was embedded in Internet based license free systems customized to the capacity and need of a wide range of users with little or no previous ITC experience. The public information platforms are now being used as knowledge harvesting centers (Funded by multiple donors).

2001-2009 *How can we improve local innovation networks?* Participatory methods were developed to analyze and study roles and capacity of rural organizations to access and analyze information. The research demonstrated how local systems are producing innovations at a slow rate and low efficiency. Ideas were developed for improving information seeking routines, using collaborative projects and strategic alliances. (Funded by World Bank)

1998-2003 *How to strengthen local capacity and access information to manage ecological variability?* Multi-disciplinary research was conducted for developing training and research in Crop management, based on ecology and participation. Key elements included: farmer group learning, technician training, multi-institutional groups of scientist-trainers *and* multi-institutional planning and monitoring of capacity for IPM implementation (Funded by NORAD)

1998-2003 *How to experiment and learn about natural control of pests and develop better understanding of the role of bio-diversity for pest management?* Small have a weaker understanding of life cycles and trophic relationships, are not familiar with specific diseases and their causes and often employ poorly-timed and ill-directed pest management practices. A participatory group learning approach by crop stage was developed and put into practice with more than 15,000 farm households to strengthen farmers' capacity for field observation, ecological reasoning, and planning and decision-making (Funded by NORAD)

1985-1998 *How can we use bio-control agents for control of pests of coffee, rice, sugarcane and cabbage*? Multi-disciplinary research program was carried out to develop and disseminate technologies for utilizing biological control agents like *Beauveria bassiana* and *Metarhizium anisopliae* for the control of coffee berry borer, rice stink bug, cabbage diamond back moth, sweet pepper weevil and spittle bug in sugarcane. Currently these agents are utilized for control of many key pests in nearly 100,000 ha in Nicaragua and Central America (funded by MFA, Norway; World Bank; Inter-American development Bank)

1996-1999 *How to implement and scale Community monitoring of vector population and decision-making for disease control (Malaria and Leptospirosis)?* Epidemiologists, vector control experts and educational specialists of Local Health system (SILAIS) and Ministry of health came together to implement biological control of vectors in Managua resulting in reduction of Malaria from 20,000 in 1996 to 2,000 in 1998 and there was no incidence of Leptospirosis in the capital. Since then biological control of vectors has become the national strategy in Nicaragua, eliminating incidence of malaria by 2014. (Funded by European Union ECHO and Movimondo MOLISV)

(3) Achievements of educational activity, human resource development and social action program:

2015 Theory of change of the learning alliances and its members (CIAT, Bioversity) Technicians
2014 Situation and territorial analysis (CIAT, Bioversity). Technicians, Producers
2013 Preparation and delivery of effective extension methodologies for FFS (SIRDI IICA) Technicians.
2012 Effective learning campaigns in the territories with study circle, radio and video (SIMAS)
2011 Formulation of renewable energy projects. National Engineering University (UNI). M.Sc. students
2010 Participatory natural resource management. Central American University (UCA). M.Sc. students
2009 Communication for development, Central American University (UCA) M.Sc. students
2007 Participatory natural resource management. Central American University (UCA). M.Sc. students
2006 Ecological management of Cocoa, IPADE-IP, Rio San Juan, Nicaragua. Field technicians
2006 Agroecology and Rural development, University of California, Santa Barbara-SIMAS
2005 Innovation and Rural development. American University (UAM), Nicaragua M.Sc. students
2004 Biological control of agricultural pests, CATIE, UNAN León, UNA, Nicaragua B.Sc. students
2003 IPM and Agroforestry implementation based on ecology and participation, CATIE M.Sc. students
2002 Ecological management of vegetable pests, CATIE M.Sc. students
2001 Ecological management of coffee pests, CATIE M.Sc. students
1995 Basic concepts of IPM, CATIE M.Sc. students
1988 Experimental methods, National Agricultural University, Managua Nicaragua. B.Sc. students
1987 Ecological management of vegetables, National Agricultural University, Nicaragua B.Sc. students
1986 Agricultural Pesticides, National Agricultural University, Managua Nicaragua B.Sc. students
1983 Neurobiology, State University of NY, Buffalo, USA, Students of Medical School.
1981 Neurobiology, Open University, Nottingham, U.K, Undergraduate Science students.
1978 Insect physiology, IARI, New Delhi, Teaching Assistant, M.Sc. Students

9. Membership and Services in Professional Societies

- Fellow of The World Academy of Science for the advancement of science in developing countries (TWAS) 2019-
- Member of Agroecological Society of Latin America (SOCLA) 2019-
- Member of National Academy of Science, Nicaragua 2019-
- Member of Learning network on Small Farmers Agency for Globalized Markets, IIED and HIVOS 2009-2010
- Member of Latin American team for International assessment of Science and technology for development (www.iaastd.org) 2004-2008
- Science and technology advisor to RAMACAFE: an international coffee event (www.ramacafe.org) 2005-2007

10. Outstanding Achievement

- National Merit Scholarship for resident students, Govt. of India 1966-1972
- National Scholarship for Ph.D. studies, Govt. of India 1978-1981
- Research Scientist of the year, CATIE 2003
- Coffee personality Nicaragua, RAMACAFE, 2006
- Outstanding staff, WCF, 2017, 2018

11. Research and development Funds Raised

2016-2017	Scaling **Climate Smart Coffee agroforestry of high value** in northern Nicaragua to plant 1000 ha of coffee agroforestry plots with diversity of products and ecosystem services. (US$ 4,000,000 funded by IBD FOMIN and Aldea Global)
2014-2015	I and II phase of **Mass media campaign project** for fostering community stewardship to prevent youth violence and drug abuse in Caribbean Coast and Pacific area of Nicaragua (US$2,500,000, funded by U.S. Embassy to FADCANIC)
2014-2015	**Capacity development projects** for organizational analysis and analysis of public policy with gender lens (US$ 20,000, funded by ILRI to CIAT)
2014-2016	**Research for development projects**: Development of toolkit for improved decision-making, Development of common codes and practices for multiple certifications, Impact of public policy and programs on the agency of rural women and Market access by remote communities (US$ 220,000 funded by IITA to CIAT)
2009-2012	**Development projects** on fostering local innovation capacity for sustainable and equitable development of dryland and highland territories of Nicaragua (US$2.000.000 funded by ICCO, HIVOS, EED-PPM, CAFOD, TROCAIRE, APN, SWISSAID, INFOAGRAR, GREENGRANT to SIMAS).
2004-2005	**Strengthening local capacity for innovation** to face the challenges of sustainable development in dryland, highland and high watershed territories of Central America (US$ 5,000,000 NORAD to CATIE)
1998-2004	III phase of **Regional program** for implementation of integrated pest management and agroforestry based on ecology and participation in Nicaragua, Honduras, El Salvador, Guatemala and Costa Rica (US$10,000,000 NORAD to CATIE).

1995-1998 II phase of **National program** for scaling integrated pest management and agroforestry based on ecology and participation in Nicaragua, (US$4,000,000 NORAD to CATIE).

1990-1995 I phase of **National program** for developing technology and methods for scaling integrated pest management and agroforestry based on ecology and participation in Nicaragua, (US$5,000,000 NORAD to CATIE).

12. Languages: Read, Write and speak fluently:
English, Spanish, Bengali, Hindi

13. References

Name: **Dr. Marie-Soleil Turmel,**
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