

FARMER INNOVATIONS AND BEST PRACTICES BY SHIFTING CULTIVATORS IN ASIA-PACIFIC

Edited by Malcolm Cairns
with the assistance of Bob Hill and Tossaporn Kurupunya



VOLUME 3



Farmer Innovations and Best Practices by Shifting Cultivators in Asia-Pacific

(working title)

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with the assistance of
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– by **DR. DO DINH SAM**, Senior Researcher on Forest Ecology and Environment; Vice President of Vietnam Soil Science Association, 61 Hang Chuoi Street, Hanoi, Vietnam. Email: dodinh.sam@gmail.com

46. *“Fallow Management in Transforming Shifting Cultivation Systems.”*

– by **KAMAL P. ARYAL**, Natural Resources Management (NRM) Analyst, ICIMOD, Kathmandu, Nepal. E-mail: Kamal.Aryal@icimod.org; **KESHAB THAPA**, Programme Officer, Local Initiatives for Biodiversity, Research and Development (LI-BIRD), Pokhara, Nepal; **DR. RAJAN KOTRU**, Regional Programme Manager, Transboundary Landscapes, ICIMOD, Kathmandu, Nepal; and **KARMA PHUNTSHO**, Senior NRM Specialist, ICIMOD, Kathmandu, Nepal.

47. *“Fallowed Swidden Fields in Vietnam: Floral Composition, Successional Dynamics and Farmer Management.”*

– by **DR. MAI VAN THANH**, Lecturer, Faculty of Natural Resources and Environment, Research Fellow of CARES, Hanoi University of Agriculture, Gia Lam, Hanoi, Vietnam. E-mail: thanhmv@yahoo.com; and **DR. TRAN DUC VIEN**, corresponding author, Senior Research Fellow of CARES (Center for Agroecological Research and Environmental Studies), Professor of Faculty of Natural Resources and Environment, Hanoi University of Agriculture, Gia Lam, Hanoi, Vietnam.

A. When Shifting Cultivators Expand Forest Cover

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– by **DR. STEPHEN F. SIEBERT**, Professor Emeritus of Tropical Forest Conservation and Management, W.A. Franke College of Forestry and Conservation, University of Montana, Missoula, MT 59812, USA. E-mail: steve.siebert@mso.umt.edu

48. *“Dahas: Innovations in Shifting Cultivation by the Dayak of West Kalimantan to Fight Deforestation and Climate Change.”*

– by **JOHN BAMBA**, Co-founder and Director of Institut Dayakologi 1999–2015; Chairperson of Pancur Kasih Movement (GPPK) 2011–present. Jln. Budi Utomo Blok A3/2–4, Pontianak 78241, West Kalimantan, Indonesia. E-mail: jbamba1@gmail.com; and **ARIES MUNANDAR**, Senior Journalist of Media Indonesia, Jln. Sungai Raya Dalam, Kompleks Taman Sungai Raya No. D-20, Kubu Raya, West Kalimantan, Indonesia.

49. *“The Muyong System: Assisting Forest Regrowth to Protect Water Supplies and Food Security.”*

– by **FLORENCE DAGUITAN**, Program Coordinator, Indigenous Peoples and Biodiversity Program, Tebtebba (Indigenous Peoples’ International Centre for Policy Research and Education), No. 1 Roman Ayson Rd., Baguio City 2600, Philippines. Tel. +63 74 4447703 Tel/Fax. +63 74 4439459; **PROF. ROBERT T. NGIDLO**, Professor of Silviculture, Department of Forestry, College of Agriculture and Forestry, Ifugao State University, Nayon, Lamut, Ifugao, Philippines; and **IRISH P. BAGUILAT**, Program Manager, Food and Nutrition Security, International Institute of Rural Reconstruction (IIRR), Philippines Country Office, Y.C. James Yen Center, Silang, Cavite 4118, Philippines, Telefax: +63 46 430 0016, E-mail: irish.baguilat@iirr.org.

50. “An Inventory of Tree Stands in Forest Fallows of Nagaland.”

– by **VENGOTA NAKRO**, NEPED, Nagaland, NE India. E-mail: veengo@yahoo.com; and **ANGO KONYAK**, Forest Ranger, Nagaland Forest Department, and member of NEPED, Nagaland, NE India.

51. “Shifting Cultivation and Rehabilitation of Natural Forest Ecosystems in the Central Highlands of Vietnam.”

– by **PROF. BAO HUY**, Consultancy for Forest Resources and Environment Management (FREM), Tay Nguyen University, 567 Le Duan, Buon Ma Thuot, Dak Lak, 630000, Vietnam. website: <http://baohuy-frem.org>, Email: baohuy.frem@gmail.com

52. “Calculating the Carbon Balance: Questioning the Contribution of Shifting Cultivation to Climate Change in Kayah State, Myanmar.”

– by **DR. CHRISTIAN ERNI**, formerly with the International Work Group for Indigenous Affairs (IWGIA) and now an independent researcher and consultant, based out of Chiang Mai, Thailand. E-mail: chriserni56@gmail.com; and the **LIVELIHOOD PROGRAMME TEAM OF KARUNA MISSION SOCIAL SOLIDARITY (KMSS) LOIKAW**, Kayah State, Myanmar.

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– by **DR. SHARIF A. MUKUL**, Assistant Professor, Department of Environmental Management, Independent University, Bangladesh. E-mail: smukul@usc.edu.au; **DR. JOHN HERBOHN**, Professor, Tropical Forests and People Research Centre, University of the Sunshine Coast, Australia; **DR. JENNIFER FIRN**, Associate Professor, Earth, Environmental and Biological Sciences, Queensland University of Technology, Australia; and **DR. NESTOR GREGORIO**, Research Fellow, the Tropical Forests and People Research Centre, University of the Sunshine Coast, Australia.

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– by **DR. DENNIS GARRITY**, former Director General and Senior Fellow of ICRAF; Drylands Ambassador, UN Convention to Combat Desertification; Senior Fellow, World Resources Institute; Chair, EverGreening Global Alliance; and Chair, Landcare International. E-mail: D.GARRITY@cgiar.org

54. “Pakukui: The Productive Fallow of Ancient Hawaii.”

– by **PROF. NOA KEKUEWA LINCOLN**, Department of Tropical Plant and Soil Sciences, College of Tropical Agriculture and Human Resources, University of Hawai’i, Honolulu, USA. E-mail: nlincoln@alumni.stanford.edu

55. “Composite Farming Systems in an Era of Change in Nagaland, Northeast India.”

– by **DR. MALCOLM CAIRNS**, Freelance Editor, Rm. #811, The Trio Condo, 188/9 Moo 2, Thanon Huay Kaew, Tambol Chang Puak, Amphur Muang, Thailand 50300, Tel: 063- 891- 3381, Email: mfcairns@gmail.com; and **DR. HAROLD BROOKFIELD**, Professor Emeritus, Department of Anthropology, School of Culture, History, and Language, ANU College of Asia and the Pacific, The Australian National University, Canberra, A.C.T. O200, Australia.

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57. “Maintaining Soil Fertility and Sustainable Swidden Cultivation with Albizia Trees: An Innovation of the Outer Baduy Community, South Banten, Indonesia.”

– by **PROF. JOHAN ISKANDAR**, Professor in Ethnobiology, Department of Biology, Faculty of Mathematics and Natural Sciences, and School of Postgraduate Studies on Environmental Science, and Senior Researcher at The Centre for Environment and Sustainability Science, Universitas Padjadjaran, Bandung, Indonesia. E-mail: johan.iskandar@unpad.ac.id

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– by **DR. NIKEN SAKUNTALADEWI**, Researcher, Centre for Research and Development on Social, Economy, Forest Policy, and Climate Change, Indonesia. E-mail: niken_sakuntaladewi@yahoo.co.uk; **E.P. SETYAWAN**, Social Development Coordinator, World Wide Fund for Nature Indonesia, Indonesia; **DR. S. EKAWATI**, Researcher, Centre for Research and Development on Social, Economy, Forest Policy, and Climate Change, Indonesia; and **A. WIBOWO**, Community Organizer, World Wide Fund for Nature Indonesia, Indonesia.

59. “Traditional Use of Macaranga Trees for Soil Fertility by Naga Shifting Cultivators in Northeast India.”

– by **PROF. SAPU CHANGKIJIA**, Department of Genetics and Plant Breeding, School of Agricultural Sciences and Rural Development, Nagaland University, Medziphema Campus, Nagaland, India. E-mail: sapuchangkija@gmail.com; **PROF. DWIPENDRA THAKURIA**, Central Agricultural University (CAU), Imphal, Manipur, India; and **DR. ALOMI CYNTHIA**, Department of Sociology, Nagaland University Lumami (Hq)., Nagaland, India.

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– by **DR. RANDOLPH R. THAMAN**, Professor of Pacific Islands Biogeography, The University of the South Pacific in Suva, Fiji Islands, and founding member of the Fiji National Food and Nutrition Committee (NFNC). E-mail: randolph.thaman@usp.ac.fj

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– by **DR. ARCHANA GODBOLE**, Member of IUCN’s Commission on Ecosystems Management and Director, Applied Environmental Research Foundation (AERF), Pune, Maharashtra, India. E-mail: archanagodbole64@gmail.com; and **JAYANT SARNAIK**, Deputy Director, AERF, India.

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– by **DR. JAMES M. ROSHETKO**, World Agroforestry Centre (ICRAF), Southeast Asia Regional Research Programme, Bogor, Indonesia. E-mail: J.Roshetko@cgiar.org; **DR. GERHARD E. SABASTIAN**, World

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– by **DR. VIOLA SCHREER**, Postdoc, Global Lives of the Orangutan’ (GLO) Project, Brunel University, London, United Kingdom. E-mail: viola.schreer@posteo.de

64. “Fallow Management through Cultivation of Broom Grass: A Potential Cash Crop in Northeast India.”

– by **DR. INDRANI P. BORA**, E-mail: borahip@icfre.org; and **DR. KUNTALA N. BARUAH**, both of the Shifting Cultivation Division, Rainforest Research Institute, Indian Council of Forestry Research & Education, Jorhat, Assam, India; and **DR. PAWAN K. KAUSHIK**, Regional Director, Centre for Forest-based Livelihoods & Extension (CFLE), Shal Bagan Forest Campus, P. O. – Gandhigram, Agartala - 799012, Tripura, India. TeleFax - 0381 2397097 (O), Mobile - +91 9402140041.

65. “Drawing on Past Practices to Secure the Future: Innovative Applications of Traditional Lac Rearing in the Fallows of Karbi Farmers in Assam, Northeast India.”

– by **SANAT K CHAKRABORTY**, Freelance Journalist and Researcher, with a special interest in environment, development issues and policies, Shillong, India. E-mail: gosanat@rediffmail.com; and **DR. DHRUPAD CHOUDHURY**, Chief, Scaling Operations across Regional Programmes, and Regional Programme Manager, Adaptation and Resilience Building, ICIMOD, Nepal.

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– by **DR. PRASERT TRAKANSUPHAKON**, Director, Pgzaz K’ Nyau Association for Sustainable Development (PASD), 146 Moo 2, T. Sanpapao, A. Sansai, Chiang Mai, 50210, Thailand. Tel/Fax: +66-(0) 53 398591, Mobile: +66 (0) 819934641, E-mail: ptrakan@gmail.com; and **DR. MAURIZIO FARHAN FERRARI**, Senior Policy Adviser, Forest Peoples Programme (FPP), 1c Fosseyway Business Centre, Moreton-in-Marsh, GL56 9NQ, England, UK.

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– by **SIMONE VONGKHAMHO**, Senior Researcher, Forestry Research Center, National Agriculture and Forestry Research Institute, Lao PDR. E-mail: simonevkh@gmail.com; and **DR. MICAH L. INGALLS**, Senior Scientist, Center for Development and Environment, University of Bern, Switzerland.

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– by **PROF. SUPRATMAN**, Department of Forestry, Universitas Hasanuddin, Makassar, Indonesia; **DR. MUHAMMAD ALIF K. SAHIDE** (corresponding author), Associate Professor, Department of Forestry, Universitas Hasanuddin, Makassar, Indonesia. E-mail: alif.mksr@gmail.com; and **MICAH R. FISHER**, Doctoral Candidate, Geography, University of Hawaii, Manoa – East West Center, United States.

70. “Rotating Agroforests: Using Shifting Cultivation Practices to Construct a Sustainable Livelihood.”

– by **DR. PAUL BURGERS**, Director, CO2 Operate BV, Schermerhornlanen 45, 3445 EV, Woerden, The Netherlands, website: www.gulagula.org. E-mail: p.burgers@co2operate.nl

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– by **DR. HUBERT DE FORESTA**, Editor, “*Forests, Trees and Livelihoods*”, Senior Scientist, AMAP, IRD, CNRS, INRA, Université Montpellier, Montpellier, France. E-mail: hubert.de.foresta@ird.fr

72. “Researching Tithonia and Other Daisies as Fallow Species in Southeast Asia.”

– by **DR. MEINE VAN NOORDWIJK**. E-mail: M.vanNoordwijk@cgiar.org and **DR. MALCOLM CAIRNS**, both formerly of ICRAF – S.E. Asia, P.O. Box 161, Bogor 16001, Indonesia; and **DR. KURNIATUN HAIRIAH**, Dept. of Soil Science, Brawijaya University, Malang, Indonesia.

73. “The Effectiveness of Wild Sunflower as a Fallow Crop in Uma Cultivation.”

– by **MONTAÑOSA RESEARCH AND DEVELOPMENT CENTER (MRDC)**, Makamkamlis, Sagada 2619, Mountain Province, Philippines. E-mail: mattcordillera@yahoo.com.ph; and **TOMIANGAN UNITY FOR PEOPLE’S ACTION**, Tomiangan, Dupag, Tabuk City, Philippines.

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– by **DR. NICHOLAS MENZIES**, former Program Officer at Ford Foundation, Beijing, China; now Li Research Fellow, East Asian Garden Research Center, The Huntington Library, Art Galleries and Botanical Gardens, San Marino, California, USA. E-mail: nickmenzies@earthlink.net

74. “The Talun-Kebun System: Biodiversity Conservation and Poverty Alleviation in West Java, Indonesia.”

– by **PROF. OEKAN S. ABDOELLAH**, Professor in Human Ecology, Department of Anthropology, Faculty of Social and Political Sciences, and School of Postgraduate Studies on Environmental Science, Senior Researcher at The Centre for Environment and Sustainability Science – Universitas Padjadjaran, Bandung, Indonesia. E-mail: oekan.abdoellah54@gmail.com; and **PROF. JOHAN ISKANDAR**, Professor in Ethnobiology, Department of Biology, Faculty of Mathematics and Natural Sciences, and School of Postgraduate Studies on Environmental Science, and Senior Researcher at The Centre for Environment and Sustainability Science, Universitas Padjadjaran, Bandung, Indonesia.

75. “The Role of Bamboo in Fallow-Vegetation Recovery: Viewed from the Land-Use History of Karen Swidden Cultivation in the Bago Mountains, Myanmar.”

– by **DR. REIJI SUZUKI**, Professor, Faculty of Bioenvironmental Sciences, Kyoto University of Advanced Science, Japan. E-mail: suzuki.reiji@kuas.ac.jp; **DR. SHINYA TAKEDA**, Professor, Graduate School of Asian and African Area Studies, Kyoto University, Japan; and **HLA MAUNG THEIN**, Director General, Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation, Myanmar.

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– by **DR. ISAO HIROTA**, Assistant Professor, Faculty of Applied Biological Sciences, Gifu University, Japan. E-mail: i_hirota@gifu-u.ac.jp; and **MR. SINGKONE XAYALATH**, Officer of Forest Science Research Center, National Agriculture and Forestry Research Institute, Laos.

77. “Indigenous Bamboo-Based Fallow Practices in Sablan, Benguet, the Philippines.”

– by **FATIMA T. TANGAN**, Chief Science Research Specialist, Ecosystems Research and Development Service (ERDS), Department of Environment and Natural Resources (DENR), Baguio City, Philippines. E-mail: ftbamboos@gmail.com

VIII. MOUNDING TECHNOLOGIES

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– by **DR. HAROLD BROOKFIELD**, Professor Emeritus, Department of Anthropology, School of Culture, History, and Language, ANU College of Asia and the Pacific, The Australian National University, Canberra, A.C.T. 0200, Australia. E-mail: harold.brookfield@anu.edu.au

78. “Composting and Sweet Potato Mounds in the Highlands of Papua New Guinea.”

– by **DR. R. MICHAEL BOURKE**, Honorary Associate Professor, College of Asia and the Pacific, The Australian National University, Canberra, Australia. E-mail: mike.bourke@anu.edu.au; **DR. CHRIS BALLARD**, Associate Professor, College of Asia and the Pacific, The Australian National University, Canberra, Australia; and **DR. BRYANT J. ALLEN**, Honorary Associate Professor, College of Asia and the Pacific, The Australian National University, Canberra, Australia.

79. “The Mound-and-Ditch Taro Gardens of the Bensbach, in the Torassi River Area of South-west Papua New Guinea.”

– by **DR. GARRICK HITCHCOCK**, Honorary Senior Lecturer, School of Culture, History & Language, The Australian National University (ANU), Canberra, Australia. E-mail: garrickhitchcock@hotmail.com

80. “Temporal Changes and Innovations in Raised-Bed Shifting Cultivation at Higher Elevations in Meghalaya, Northeast India.”

– by **PROF. B. K. TIWARI**, Department of Environmental Studies, North-Eastern Hill University (NEHU), Shillong -793022, India. E-mail: bktiwarinphu@gmail.com

IX. SWIDDENING IN THE SWAMPS

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– by **TIMOTHY C. JESSUP**, Peatland Development Advisor, Global Green Growth Institute (GGGI), Jakarta, Indonesia. E-mail: tcjessup@gmail.com; and **PROF. ANDREW P. VAYDA**, Distinguished Professor Emeritus of Anthropology and Ecology, Rutgers University, New Brunswick, NJ, USA.

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– by **JOHAN KIEFT**, MSc., Senior Technical Specialist, Land Use, and Green Economy, UNEP- Indonesia, Menara Thamrin 10th Floor, Jl. M. H. Thamrin Kav 3, Jakarta, Indonesia. E-mail: johan.kieft@un.org

82. “Shifting Cultivation and Agroforestry Practices on Peatlands in Central Sumatra.”

– by **DR. HESTI LESTARI TATA**, Researcher, Forest Research and Development Centre, Jalan Gunung Batu 5, Bogor 16610, West Java, Indonesia. E-mail: hl.tata@gmail.com; and **MR. BASTONI**, Researcher, Forest and Environment Research and Development Institute of Palembang, Jalan Kol. Burlian km.6.5, Punti Kayu, Palembang, South Sumatra, Indonesia.

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– by **NASRUDIN A. BUISAN**, Research and Extension Coordinator, College of Agriculture and Fisheries, Cotabato City State Polytechnic College, Philippines. E-mail: nazppy39@gmail.com; and **DR. LIWAYWAY S. VILORIA**, Professor, College of Arts and Social Sciences, Mindanao State University-Iligan Institute of Technology, Philippines.

X. GENDER ANALYSIS

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– by **DR. CAROL J. PIERCE COLFER**, Senior Associate, Center for International Forestry Research (CIFOR), Bogor, Indonesia; and a visiting scholar in Cornell University’s Southeast Asia Program in Ithaca, USA. E-mail: C.Colfer@cgiar.org

84. “Jhum Practices and Innovations in the Naga Hills: Women’s Stories of Resilience and Ecological Regeneration.”

– by **SENO TSUHAH**, Team Leader, North East Network (NEN) Nagaland, India. E-mail: senotsuhah@gmail.com; **WEKOWEU TSUHAH**, Programme Manager, North East Network (NEN), Nagaland, India; and **SAMHITA BAROOAH**, Doctoral student, TISS Guwahati & Independent Researcher, India.

XI. CONCLUSIONS

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– by **PROF. ROY ELLEN**, Emeritus Professor of Anthropology and Human Ecology, School of Anthropology and Conservation, Marlowe Building, University of Kent, Canterbury, Kent CT2 7NR, U.K., Tel +44 1227 823421, Fax +44 1227 827289, E-mail: r.f.ellen@kent.ac.uk

POSTSCRIPT

“The Unimagined Country: The Past and Present Future of Swidden.”

– by **DR. MICHAEL DOVE**, Margaret K. Musser Professor of Social Ecology, School of Forestry and Environmental Studies; Chair, Council on Southeast Asian Studies; Professor, Department of Anthropology; Curator, Peabody Museum of Natural History, Yale University, USA. E-mail: michael.dove@yale.edu

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PREFACE – by **PROFESSOR JEFF SAYER**, formerly Director General of CIFOR, and presently Professor, Department of Forest and Conservation Science, Faculty of Forestry, University of British Columbia, Vancouver, British Columbia, Canada, E-mail: Jeffrey.sayer@ubc.ca

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Synthesis: (“Title Pending”)

– by **DR. HENRY SAPLALRINLIANA**, Senior Scientist & Head, Krishi Vigyan Kendra, Champhai District, Mizoram, Northeast India, Tel: 9436190701/9612177705.

“Perspectives on Shifting Cultivation: The NE India Experience.”

– by **DR. B P MAITHANI**, Professor & Director, North East India Centre, National Institute of Rural Development (NIRD), Hyderabad, India, E-mail: maithani_56@yahoo.com

A1. “Improved Practices among the Jhum Cultivators of Nagaland, Northeast India.”

– by **DR. SUPONG KEITZAR**, formerly Director, Department of Agriculture, House No. 15, Diphupar-A, Dimapur-797112, Nagaland, N.E. India. Email: skeitzar@hotmail.com

A2. “Jhum Farmers’ Innovations in Northeast India.”

– by **DR. JOLI R. BORAH**, Conservation Officer, Royal Society for the Protection of Birds, Northern Ireland, U.K. E-mail: joliborah@gmail.com; **DR. KARL L. EVANS**, Senior Lecturer, Department of Animal and Plant Sciences, University of Sheffield, Sheffield, U.K.; and **DR. DAVID P. EDWARDS**, Senior Lecturer, Department of Animal and Plant Sciences, University of Sheffield, Sheffield, U.K.

A3. *“The Shifting Cultivators’ Way of ‘Scientific’ Innovation: Insights from Nagaland, Northeast India.”*

– by **DR. ABHINANDAN SAIKIA**, Chairperson, Centre for Ecology, Environment and Sustainable Development, Tata Institute of Social Sciences (TISS), Guwahati Campus, Guwahati, Assam, India. E-mail: asaikia77@gmail.com; and **DR. SARADINDU BHADURI**, Chairperson, Centre for Studies in Science Policy, Jawaharlal Nehru University, New Delhi, India.

A4. *“Naga Jhum Shifting Cultivation: Indigenous Knowledge, Innovation and Cultural Tradition.”*

– by **DR. N.K. DAS**, Visiting Fellow, Anthropological Survey of India (ASI), and Social Protection Consultant for UNICEF in Assam (2014) and Madhya Pradesh (2016), India. E-mail: nkdas49@gmail.com

A5. *“Sustainable Land and Ecosystem Management in Shifting Cultivation Areas of Nagaland.”*

– by **DR. MONALISA SEN**, InsPIRE Network for Environment, and ICLEI-Local Governments for Sustainability, South Asia, both New Delhi, India, E-mail: senmonalisa16@gmail.com; and **DR. K. M. JAYAHARI**, InsPIRE Network for Environment, and FOLU Coalition, both New Delhi, India.

A6. *“Shifting Cultivation Innovation in Eastern Nagaland: The Story of the Yimchunger Nagas.”*

– by **DR. DEBOJYOTI DAS**, Research Associate, Department of Anthropology, School of Humanities, Bristol University, Senate House, Tyndall Avenue, Bristol, BS8 1TH, United Kingdom. E-mail: dd17982@bristol.ac.uk

A7. *“Futuristic Jhum Cultivation: Opportunities in the Cropping Phase and the Current Fallow Phase for Enhancing Productivity and Lengthening of Jhum Cycle.”*

– by **DR. DWIPENDRA THAKURIA**, Professor (Soil Science and Microbiology) and Principal Investigator, College of Post Graduate Studies, Central Agricultural University–Imphal, Umroi Road, Umiam-793103, Meghalaya, India. Tel: +91-943676700. E-mail: thakuria.dwipendra@yahoo.co.in

A8. *“Innovative Farming Practices and Bio-resource Utilization Patterns by Tribals of Arunachal Pradesh, Northeastern India.”*

– by **DR. CHOWLANI MANPOONG**, Assistant Professor, Department of Agricultural Sciences, Arunachal University of Studies - 792103, Namsai, Arunachal Pradesh, India. E-mail: chowhani18@gmail.com; and **PROF. SHRI KANT TRIPATHI**, Professor, Ecosystem Analysis Lab, Department of Forestry, School of Earth Sciences and Natural Resource Management, Mizoram University 796004, Tanhril, Aizawl, Mizoram, India.

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– by **DR. BOMCHAK RIBA**, Senior Cartographer, Faculty of Environmental Sciences, Department of Geography, Rajiv Gandhi University, Rono Hills, Arunachal Pradesh, India. E-mail: dr.bomchakriba@rediffmail.com

A10. *“Innovations in Shifting Cultivation by Three Indigenous Groups in Meghalaya, India.”*

– by **PROF. B. K. TIWARI**, Department of Environmental Studies, North–Eastern Hill University, Shillong, India. E-mail: bktiwarinehu@gmail.com; **DR. M. M. LYNRAH**, Department of Environmental Studies, North–Eastern Hill University, Shillong, India; and **DR. S. DEB**, Department of Forestry and Biodiversity, Tripura University, Agartala, India.

A11. *“Innovative Shifting Cultivation Practices by the Indigenous Population of Mizoram, Northeast India.”*

– by **PROF. S.K. TRIPATHI**, E-mail: sk_tripathi@rediffmail.com, **RAMCHHANLIANA HAUCHHUM**, **ETSOSHAN YINGA OVUNG**, **DR. DAVID C. VANLALFAKAWMA**; **K. K. UPADHYAY**, all of the Department of Forestry, Mizoram University, Aizawl-796004, India; and **PROF. H. LALRAMINGHLOVA**, Department of Environmental Science, Mizoram University, Aizawl, India.

A12. *“Farmers’ Innovative Practices in Jhum (Shifting Cultivation) Farming Systems in Nagaland, Mizoram, Odisha and Jharkhand, India.”*

– by **DR. VIRENDRA PAL SINGH**, Senior Advisor for Policy and Impact, World Agroforestry Centre (ICRAF), Permanent Member, Inter-Ministerial Committee on Agroforestry, Government of India, and Chair, Standing Working Group on Agroforestry, Chhatisgarh State Planning Commission. E-mail: v.p.singh.cgiar@gmail.com; **Ms. DEVASHREE NAYAK**, Agroforestry and Gender Scientist, World Agroforestry Centre (ICRAF), South Asia Program, New Delhi, India; **DR. DENNIS GARRITY**, Drylands Ambassador, UN Convention to Combat Desertification, Senior Fellow, World Agroforestry Centre (ICRAF), Senior Fellow, World Resources Institute, Chair, EverGreen Agriculture Partnership, Chair, Landcare International, UN Avenue, Nairobi, Kenya. Mobile: +254 722 521204, Skype: [garrity.d](https://www.skype.com/user/garrity.d); and **DR. ASHOK K. SAHOO**, Professor of Forestry, College of Forestry, Orissa University of Agriculture and Technology, Bhubaneswar, Orissa, India.

A13. *“Innovative Management of Shifting Cultivation in Harmony with the Environment, Climate and Livelihood Security in India’s Eastern Ghats.”*

– by **DR. ANIL KUMAR SRIVASTVA**, ICAR–NAIP Consultant on Integrated Farming Systems; Emeritus Scientist, and Ex Director, Vivekananda Parvatiya Krishi Anusandhan Sansthan, (Vivekananda Institute of Hill Agriculture), Indian Council of Agricultural Research, Almora- 263601, India. E-mail: aksrivastva4@yahoo.com

A14. *“Innovations and Knowledge Systems around Shifting Landscapes: Cases from India.”*

– by **DR. NITIN MAURYA**, Innovation Officer, National Innovation Foundation – India, Guwahati, Assam, India. E-mail: nitinmaurya@gmail.com; **MR. SETHRICHEM SANGTAM**, Developmental Professional, Tuensang, Nagaland, India; **DR. CHARU MAKHIJA**, Post-Doctoral Researcher, Indian Institute of Technology, Guwahati, Assam, India; and **PROF. ANIL GUPTA**, Founder of The Honey Bee Network, SRISTI, GIAN, and NIF, and Visiting Faculty, Indian Institute of Management, Ahmedabad, and Distinguished Visiting Professor, Indian Institute of Technology, Bombay, India.

COLOURED PLATES ...Part III - Field-Level Innovations

Myanmar:

Synthesis: (“Title Pending”)

– by **DR. HILARY OLIVA FAXON**, Ciriacy–Wantrup Postdoctoral Fellow, University of California, Berkeley, Berkeley, CA USA, E-mail: faxon@berkeley.edu

A15. *“Climate Change and the Adaptive Practices of Swidden Farmers: Perspectives from Myanmar.”*

– by **PROF. HELEN JAMES**, Hon. Professor, Room E3.14, Baldessin Precinct, Ellery Crescent, Director IRDR ICoE for Integrated Research on Disaster Risk Science, Anthropology Department, School of Culture, History and Language, College of Asia Pacific, The Australian National University, Canberra, ACT, 2600, Australia. E-mail: waldenent@hotmail.com

A16. “Investigation of Farming Practices by Different Hill Tribes in Myanmar.”

– by **DR. U. SAN WIN**, Pro-rector, University of Forestry, Ministry of Environmental Conservation and Forestry, Yezin, Nay Pyi Taw, Myanmar. E-mail: sanwin.env@gmail.com

A17. “Farmer Innovations and Good Practices under Swidden Cultivation in Southern Chin State, Myanmar.”

– by **XAVIER BOUAN**, Senior Technical Advisor, Sustainable Cropland and Forest Management in Priority Agro-ecosystems (SLM-GEF Project) of Myanmar, Global Environment Facility (GEF), Forest Department –MONREC, Naypitaw – Myanmar, Mob +95 9894097710, E-mail: Xavier.Bouan@fao.org, xavierbouan@yahoo.com; **DR. NYEIN CHAN**, former Lecturer, University of Forestry and Environmental Science, Yezin, Myanmar, and Post-doctoral Research Associate, National Institute for Environmental Studies, Tsukuba, Japan; and **KEE THANG**, Graduate, University of Forestry and Environmental Science, Yezin, Myanmar.

A18. “Hka rang Yi’ or Shifting Cultivation in Kachin State.”

– by **DR. SENG AUNG**, Professor, Geography Department, Patheingyi University, Ayeyawady Delta Region, Myanmar. E-mail: sengaung@gmail.com

Thailand:

Synthesis: (“Title Pending”)

– by **NAME**, Position. **TO BE IDENTIFIED**

Lao PDR:

Synthesis: (“Title Pending”)

– by **DR. PETER KURT HANSEN**, Chief Technical Adviser, Local Development Programme for Bokeo, Bolikhamxay, Khammouane and Vientiane Province – LAO/030, Mobile +856 (0)20 5966 7628, E-mail peter.hansen@luxdev.lu

A19. “Innovations and Adaptive Land Use Management by the Khmu Ethnic Group in Northern Laos.”

– by **DR. LAURENT CHAZÉE**, International Project Manager, Research Institute for Mediterranean Wetlands Protection, Tour du Valat, France. E-mail: chazlau60@gmail.com

Vietnam:

Synthesis: (“Title Pending”)

– by **DR. DELIA C CATAUTAN**, Regional Coordinator Southeast Asia, World Agroforestry (ICRAF) Southeast Asia Regional Program / Indonesia Office | Jl. CIFOR, Situ Gede, Sindang Barang, Bogor 16115 | P.O. Box 161, Bogor 16001, West Java, Indonesia, E-mail: d.c.catacutan@cgiar.org

A20. “Some Results of Research on the Recovery of Degraded Upland Fields in Northwestern Vietnam.”

– by **NGÔ ĐÌNH QUẾ**, PhD candidate, Faculty of Agriculture, National University of Laos. E-mail: ngoque@gmail.com; and **LE DUC THANG**, Institute of Regional Research and Development (IRRD), under the Ministry of Science and Technology of Vietnam, Floor 5, No. 70, Tran Hung Dao Street, Hoan Kiem District, Hanoi City, Vietnam, E-mail: thangs.accr@gmail.com

The Philippines:

Synthesis: (“Title Pending”)

– by **PROFESSOR JUNE PRILL-BRETT**, Dr./Professor Emeritus of Social Anthropology, College of Social Sciences, Department of Anthropology, Sociology, and Psychology, University of the Philippines Baguio, Baguio City, Philippines. Email: jpbchayapan@yahoo.com

A21. *“Grass and Spirits’: The Transition from Long to Short Fallows and Grasslands on Palawan Island (the Philippines).”*

– by **DR. DARIO NOVELLINO**, Centre for Biocultural Diversity (CBCD), School of Anthropology and Conservation, University of Kent – UK. E-mail: indigenouseoples.advocacy@gmail.com

A22. *“Sustainable Upland Agricultural Practices of Some Indigenous Peoples in the Philippines.”*

– by **OSCAR B. ZAMORA**, PhD, Professor Emeritus, University of the Philippines Los Baños, College, Laguna 4031, The Philippines, Tel (63-49) 536- 0310, Mobile : (63) 917-851-4898, E- mail: obzamora@uplb.edu.ph, obzamora@yahoo.com; **LUCILLE ELNA PARREÑO-DE GUZMAN**, PhD, University Researcher, Institute of Crop Science, College of Agriculture and Food Science, University of the Philippines Los Baños, the Philippines; and **JOAN PAULINE P. TALUBO**, MSc., Assistant Professor, College of Human Ecology, University of the Philippines Los Baños, the Philippines.

A23. *“Traditional Knowledge in Upland Farming Practices: Key to Ecological Restoration.”*

– by **DR. CELEDONIA R. HILARIO**, E-mail: celedoniahilario@yahoo.com; **DR. ERSYL T. BIRAY**, and **DR. BENEDICTA D. REPAYO**, all Professors, College of Teacher Education, Aklan State University, Aklan, the Philippines.

A24. *“Sustainable Farming Systems in an Ancestral Domain in the Cordilleras Mountains in the Philippines.”*

– by **DR. DAMASA B. MAGCALE-MACANDOG**, Professor, Institute of Biological Sciences, University of the Philippines Los Banos, College, Laguna 4031, Philippines, Tel./Fax No. +63 49 536 2893, Email: dmmacandog@up.edu.ph, dmmacandog@gmail.com; and **ATTY. LOVEREAL JOY M. OCAMPO-CARULLO**, Senior Associate, Del Rosario & Del Rosario Law Office, 14th Flr., Del Rosario Law Centre, 21st Drive corner 20th Drive, Bonifacio Global City, Taguig, Metro Manila, Philippines 1634, Tel./Fax No. +63 917 7954 776, Email: loverealjoyocampo@yahoo.com

Malaysia:

Synthesis: (“Title Pending”)

– by **NAME**, Position. **TO BE IDENTIFIED..**

A25. *“Shifting Subsistence Livelihood Strategies in Sabah, Malaysia: Swidden Location and Resource Allocation by Innovative Rungus Farmers”*

– by **DR. PAUL PORODONG**, Senior Lecturer, Faculty of Humanities, Arts, and Heritage, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia. Email: porodong@gmail.com

Indonesia:

Synthesis: (“Title Pending”)

– by **NAME**, Position. **TO BE IDENTIFIED.**

A26. “Responding to a Changing World: Inventing Diverse Strategies to Survive.”

– by **DR. MIA SISCAWATI**, Lecturer, Gender Studies Graduate Program, School of Strategic and Global Studies, Universitas Indonesia, Indonesia. E-mail: miasisca@gmail.com; **DR. YUNITA T. WINARTO**, Professor, Department of Anthropology, Faculty of Social and Political Sciences, University of Indonesia, +62 21 7491153; and **DR. BURHANUDDIN GALA**, Graduate Studies in Anthropology, Department of Anthropology, University of Indonesia, Indonesia.

Papua New Guinea:

Synthesis: “Shifting Cultivation and Village Agriculture Systems in Papua New Guinea”

– by **DR. JOHN SOWEI**, Private Consultant in Agriculture and Rural Development, National Research Institute, P.O. 5854, Boroko, National Capital District, Papua New Guinea, E-mail: pngnri@pngnri.org, and the University of Papua New Guinea, School of Natural and Physical Sciences, P.O. Box 320, University Post Office, National Capital District, Papua New Guinea, E-mail: jwsowei@gmail.com

A27. “Farmer Innovations and Best Practices in Shifting Cultivation in Papua New Guinea.”

– by **DR. RAMAKRISHNA AKKINAPALLY**, Deputy Director General, Papua New Guinea National Agricultural Research Institute (NARI), P.O. Box 4415, Lae 411, Morobe Province, Papua New Guinea (PNG), Tel: 675-4784000; 72521852; Fax: 4751449, E-mail: akkinapally.ramakrishna@gmail.com, a.ramakrishna@nari.org.pg

THE COMIC SECTION

A28. “Closing with a Satirical View of Some of the Issues.”

– by **DR. MALCOLM CAIRNS**, Freelance Editor, Rm. #811, The Trio Condo, 188/9 Moo 2, Thanon Huay Kaew, Tambol Chang Puak, Amphur Muang, Thailand 50300, Tel: 063- 891- 3381, Email: mfcairns@gmail.com; and **PARADORN THREEMAKE**, Artist, Redskin Gallery, 17 Intawarorote, Soi 3, Tambon Sripthum, Amphur Muang, Chiang Mai 50200, Thailand. E-mail: ART_REDSKIN@hotmail.com Tel: 081-884-8701.



