

Sustainable and ecological intensification of maize farming systems in South East Asia:

Identifying key research needs and partnerships

November 9-11 in Cambodia



MEETING BACKGROUND:

Welcome and thank you for coming to Cambodia! This meeting has been organized as a joint effort between the *Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)* and the International Maize and Wheat Improvement Center's (CIMMYT) Sustainable Intensification Program, in alignment with the MAIZE CGIAR Research Program. We are coming together to explore opportunities for new partnerships and enhanced research collaborations that respond to key problems associated with the South East Asia's rapidly changing maize farming systems. Our objective is to explore ideas and opportunities for key research issues in Myanmar, Laos, Cambodia, Thailand, Vietnam and Indonesia. Topics we expect to discuss include (but are not limited to) the following:

- Environmental and social sustainability of production systems that involve maize
- Trajectories of farming systems change and opportunities for diversification involving maize
- Development of value chains involving maize that support smallholder income generation
- Genotype × management × environment interactions in cropping systems with maize as a component
- Interdisciplinary research methods and approaches to the multi-scale study of farming systems involving maize components
- Opportunities for participatory action research, innovation systems, and scaling-out research results into real-world impact



The meeting includes a the field trip at Battambang that will allow participants see CIRAD's field trials in conservation agriculture, ecological management, and scale-appropriate farm mechanization, and to visit and interact with farmers in their own fields and farms. By the conclusion of this highly interactive meeting, we hope to have identified new research issues, interdisciplinary partnerships, potential funding sources and preliminary strategies to develop enhanced research programs that have impact on these topics across South

East Asia. Your participation will help enormously in meeting these objectives, and we are very excited to see you in Sim Reap!

Please note that meeting participants biographies can be found in Annex 1.

DAY 1 (November 9, 2018):

Location: The first day of the meeting will take place in Champa Meeting room in the hotel's first floor.

	TIME	SESSION	FACILITATOR/PRESENTER
	7:45 - 8:15	Registration, tea, coffee	Fahmida (potential)
	8:15 - 8:30	Icebreaker and overview of workshop objectives	Timothy J. Krupnik
	8:30 - 9:00	Rapid 1-2 minute verbal introductions (no power points please)	All attendees
	9:00 – 9:20	Overview of CIMMYT's SI program and interest in South East Asia	Timothy J. Krupnik (CIMMYT)
	9:20 - 9:50	Maize and post-maize boom farming systems in SEA: Crucial research initiatives and topics	Jean-Christophe Castella (CIRAD)
<i>Tea and refreshments to be made available during remaining presentations and discussion.</i>			
Country presentations on the status of maize farming systems. Options for research on key environmental and socioeconomic issues by country.	9:50 – 10:10	Cambodia	Florent Tivet
	10:10 – 10:30	Indonesia	Teddy Tambu
	10:30 - 10:50	Thailand	Thilde Bech Bruun
	10:50 – 11:10	Laos	Thisadee Chounlamountry
	11:10 – 11:30	Vietnam (1): Focus on production constraints and soils	Le Quy Kha and Quang Nguyen Chon
	11:30 – 11:50	Vietnam (2): Focus on environment & forest interactions	Quang Nguyen Tan (ICRAF)
	11:50 – 12:10	Myanmar	Dr. Horst Weyerhaeuser
	12:10 – 12:30	Open discussion reflecting on the presentations	Thilde Bech and Jean-Christophe Castella
	12:30 – 1:30	<i>Lunch</i>	
	1:30 – 2:45	Country-wise 'mapping' of potential partner organizations, initiatives, donors and alignment with research opportunities	Participants with knowledge and interest in each country form small groups and map research and partnership priorities (T. Krupnik and J.C. Castella facilitate)
	2:45 – 3:30	First round of maps presented and discussed	
	3:30 – 3:45	<i>Tea and health break</i>	
	3:45 – 4:30	Second round of maps presented and discussed	
	4:30 – 5:15	Summary of the day	T.J. Krupnik and J.C. Castella
	5:15 – 7:00	Break and free time	
	7:00 – 9:00	Group dinner (held at the hotel)	

DAY 2 (November 10, 2018):

We will check out of the hotel at 6:15 AM sharp and board minivans by 6:30 AM to travel to Battambang town (approximately 3-3.5 hours drive). We will join an additional research group from the Sustainable Intensification Innovation Laboratory and visit CIRAD’s research activities around Battambang according to the schedule below.

Time	Activities and Location
November 10: Siem Reap to Battambang, departure at 6:30 am sharp	
Morning	10:00 am: Exchange with farmers on rice-based cropping systems (diversification, use of cover/relay crops after wet season rice) 11:30: Discussion on appropriate-scale machinery
Afternoon	Lunch in Sdao, Rattanak Mondoul district Visit of uplands farmers in Ratanak Mondul: historical drivers of changes, land use and land cover changes over the last 20 years, farm trajectories, diversity of farming systems, CA-based cropping systems and seed production of cover crops (seed production of cover crops)
Evening	Night in Battambang (Seng Hout Hotel)

DAY 3 (November 11, 2018):

- **Moring (time to be determined by participants):** Following breakfast, we will spend 2-3 hours debriefing from our meeting in Siem Reap and the field trip in the Battambang area. The goal will be to discuss further ideas for researchable issues and partnerships on sustainable and ecological intensification of maize systems in South East Asia, and to identify ways in which CIMMYT can engage to support partners in their research for development agendas.
- **Lunch:** Will be taken in Battambang town (location to be determined)
- **After lunch:** We will depart from Battambang and return to Siem Reap. Participants departing for the airport will be able to transfer from the Apsara Palace Resort to the airport. Participants remaining in Cambodia will check back into the Apsara Palace Resort.

OPTIONAL DAY 4 (November 12, 2018):

If you wish to visit the holy city of Angkor (Angkor Wat, Bayon and Ta Phrom), we will be visiting on 12 November (this is an optional visit to the 3 main temples you should see). The ticket fee (37\$ for 1-day visit) will be covered by CIMMYT. Timing and logistics of the visit will be discussed during days 1- 3 of our meetings.



The holy city of Angkor

LOGISTICS:

AIRPORT ARRIVAL:

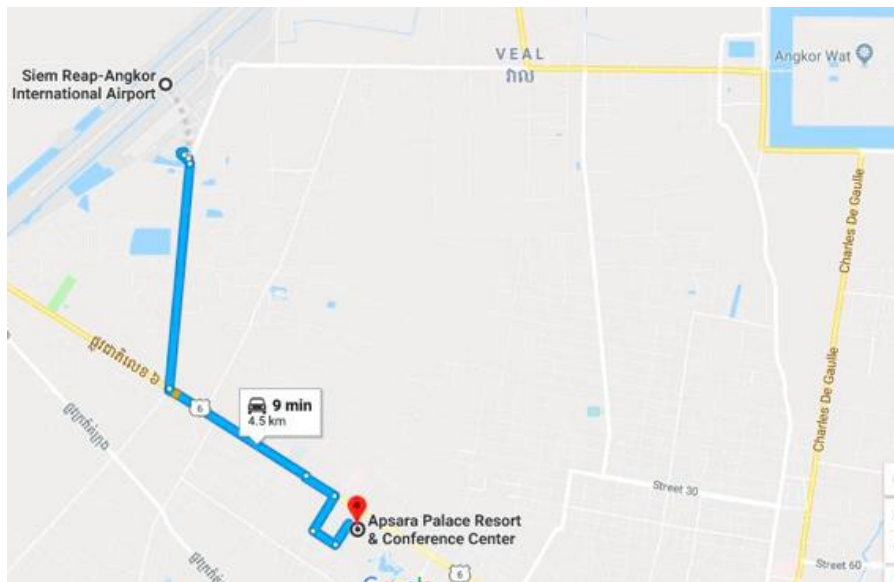
If any problems are experienced on arrival at the airport, please contact Axel MOURGUE. Who can provide advice. Tel : +85593954371 Mail : agroecologynetworksea@gmail.com

Meeting Venue and Hotel:

- Apsara Palace Resort. Address: National Road 6, Phum Kaksekam, Sangkat Sra Ngae, Siem Reap City
- Contact: Tel: +855-63-962-888 +855-63-962-789
- Email: sales@apsarapalacehotel.com
- Check-in time is 2:00 PM and Check-out is 12 noon.
- Your hotel booking includes the breakfast for one person for each morning. Participants will also have free access to the swimming pool.
- Breakfast is served from 6:00 am.

How to reach Apsara Palace Resort

Siem Reap airport is located 10 minutes' drive from Apsara Palace Resort. An airport shuttle arranged by Apsara Palace Resort will pick up participants at the time of their arrival. The airport shuttle will also bring back participants to the airport on the day of their departure.



COSTS

CIMMYT through the MAIZE CRP will cover accommodation costs for funded participants as well as meals. Reimbursements for visa fees will be available at the meeting with supply of a visa receipt. No per-diems will be offered; CIMMYT will cover lodging, food and transport expenses. Expenses for food costs during transit will be reimbursed in Sim Reap only if receipts for meals and refreshments are supplied.

If participants use anything from their room refrigerator, they will need to cover the costs. Any additional guest - not funded by CIMMYT - will have to cover the costs for their own room (if not shared), breakfasts and dinners.

The local currency is RIEL (approximately 1 \$ = 4000 Riel), but the US Dollars is used and accepted almost everywhere in Cambodia.

ANNEX 1: MEETING PARTICIPANTS



Dr. Brendan Brown has nearly ten years of experience in agricultural research for development in Asia, Africa and the Middle East working with NGOs, ACIAR, FAO, CSIRO and CIMMYT. His original undergraduate studies were in agricultural science majoring in soil science, while his postgraduate studies focus on impact pathways and scaling science. Brendan is part of the Socioeconomics program at CIMMYT as an agricultural innovation scientist. His current research explores issues around adoption, impact and scaling for the 'Sustainable and Resilient Farming Systems Intensification' project across the Eastern Gangetic Plains of South Asia. Mechanization of small scale systems, business development models, extension mechanisms, institutionalization of CASI capacity building, development of participatory implementation strategies and inclusiveness are core foci, where participatory mixed methods are applied. His passion is in moving research 'from shelf to field'.



Dr. Thilde Bech Bruun: I am a geographer specialized in soil science and tropical farming systems. I have more than 15 years of experience with research on the environmental and social effects of some of the dominant land use changes that are taking place in Southeast Asia - for example the transitions from shifting cultivation to intensive cultivation of maize in northern Thailand and Laos or to systems dominated by oil palm cultivation in Malaysia and Indonesia. I am currently engaged in research projects investigating land use decisions among maize farmers in Northern Thailand, the sustainability of domestic food value chains in Thailand and a part of a consortium that is developing a new MSc in Agricultural Development in Thailand. Apart from these projects I am also working on an assessment of Carbon stocks in different land use systems of the Peruvian Amazon, an investigation of the sustainability of different types of coffee value chains based in Columbia and a research project on unintended effects of certification on palm oil with a regional focus on Malaysia and Indonesia. Moreover, I am teaching an international MSc program in Climate Change, supervising four PhD students and a bunch of MSc students that are doing their thesis within the area of agricultural development or adaptation to climate change within the land use sector.



Dr. Jean-Christophe Castella is a senior researcher of the Institute of Research for Development (IRD, France), currently seconded to CIRAD, who is specialized in land use and livelihood systems analysis. Over the past 20 years, he has been involved in international research programs in Southeast Asia. He investigates the impact of agroecological and socioeconomic changes on farmers' practices and decision-making. He also contributes to methodological developments on community-based natural resource management and policy mechanisms related to climate change mitigation and adaptation.



Thisadee Chounlamoutry is a researcher in the Department of Agricultural Land Management. He has extensive experience in Uplands development and Land use planning. His recent duty includes research on maize production systems in Houaphan province with Vietnam under an ACIAR project called "Improving maize-based farming systems on sloping lands in Vietnam and Lao PDR"



Dr. Marc Corbeels is a senior researcher at the French Agricultural Research and International Cooperation Organization (CIRAD). Since 2015, he is seconded to the International Maize and Wheat Improvement Center (CIMMYT) in Nairobi, Kenya. He holds a PhD in Agronomy (1997) from the University of Ghent, Belgium and an HDR (Accreditation to supervise doctoral research, 2013) from the University of Montpellier, France. His current research focuses on ecological intensification options in the context of climate change for smallholder farmers in sub-Saharan Africa. He has worked for more than 15 years in the tropical regions of Africa and Brazil. He has authored more than 80 journal articles and book chapters and >100 conference papers on farming systems research and agricultural production in smallholder agriculture covering diverse topics including soil and water management, soil carbon and nitrogen cycling, crop growth simulation modelling, climatic risk management, adaptation to climate change and farming systems analysis and design. Marc is associate editor of *Field Crops Research*.



Dr. Jeroen Groot is associate professor at the Farming Systems Ecology group of Wageningen University. This research group focuses on the analysis, evaluation and design of socially acceptable, low-input and sustainable agroecological systems. Dr Groot is specialized in farming systems analysis, model-based landscape planning and design, and participatory modelling and gaming. He holds a PhD in Agronomy and MSc in grassland science, animal physiology and tropical animal husbandry. He performed post-doc research in national and international projects concerning nutrient cycling, modeling of sustainability indicators and design of mixed farms in multifunctional landscapes dominated by dairy farming systems. The models developed by the research group constitute the COMPASS framework, which comprises models at field, farm and landscape levels. The tools combine models of complex biological processes with economic calculations and algorithms from operations research (in particular evolutionary algorithms and other optimization

approaches). Dr Groot contributes to integrated farming systems analysis addressing multi-scale issues of productivity, natural resource management, human nutrition and gender equity for CGIAR Research Programs on MAIZE, WHEAT, RICE and Roots Tubers and Bananas (RTB).



Dr. Jon Hellin currently leads the International Rice Research Institute's research on Sustainable Impact. Prior to joining IRRI, he worked for 13 years with the International Maize and Wheat Improvement Center (CIMMYT). He has thirty years' agricultural research-for-development experience from Latin America and the Caribbean, Sub-Saharan Africa and Asia. His research has focused on farmers' access to markets within globalized food systems; soil and water conservation; agro-forestry; climate change adaptation and mitigation; and the fostering of agricultural innovation systems. He has authored and co-authored two books, and over 70 articles in peer-reviewed journals.



Dr. Rada Kong is an agronomist and agro-economist specialized in tropical agrarian systems and Conservation Agriculture. He actively involves in cropping system development through multi-scale and multi-stakeholder participatory approach for rain-fed upland and lowland field annual crops (cassava, maize, rice and soybean). He is pursuing his PhD on "land scape and livelihood changes in the northwestern uplands of Cambodia: opportunities to build resilient farming systems" at Montpellier SupAgro (France).



Dr. Le Quy Kha is a maize breeder and agronomist and Deputy Director General, Institute of Agricultural Sciences for Southern Vietnam (IAS). He holds a PhD in Agriculture from the Vietnam Academy of Agricultural Sciences (2000 - 2005) and an M.Sc. in Agriculture Science, Melbourne University, Australia and has developed seven maize hybrids in Vietnam. He began collaboration with CIMMYT as a trainee in 1986 and has taken part in AMBIONET, AMDROUT, ATMA, Maize Inducer projects between Vietnam and CIMMYT. He is presently the national director of a program on maize hybrid breeding and cultivation techniques for land under transition from rice to maize in the Mekong river delta of Vietnam.



Fahmida Khanam is currently working as a Program Assistant under *Climate Services for Resilient Development in South Asia (CSRSD)* project (part of the Sustainable Intensification Program) at CIMMYT-Bangladesh. Before she joined CIMMYT worked at IRRI under social science division and Lee Kuan Yew School of Public Policy, National Singapore University as a research assistant. Over the last five years she has involved in various socioeconomics studies focusing on impact of climate change on farmers' adaptation and preferences specially on crop index insurance by using choice experimental tool in Bangladesh. Besides her administrative work, she is also involved in research studies on greenhouse gas mitigation from the agriculture sector of Bangladesh. Her main interests are research work related to environmental and resource economics especially in agriculture sector, gender-based climate service and crop index insurance. She

finished her BS in Economics from North South University, Bangladesh and now she is doing her Masters in applied economics at BRAC University.



Timothy Krupnik is a Senior Scientist and Systems Agronomist with the Sustainable Intensification Program at the International Maize and Wheat Improvement Center (CIMMYT). He leads a portfolio of applied research projects that deliver evidence-based knowledge and activities that improve the sustainability and resilience of smallholder farming systems considering agronomic, ecological, and socioeconomic objectives, methods, and indicators. Timothy holds a PhD in Environmental Studies (Agroecology) and an MSc in International Agricultural Development. Timothy prioritizes interdisciplinary and multi-scale research, with core interests in tropical farming systems, systems analysis, climate services, and agricultural extension and pedagogy. He has authored over 50 peer-reviewed papers, books and technical reports, and has worked widely in Asia, sub-Saharan Africa, and the Caribbean. He maintains a strong desire to translate science into impact, and has developed numerous extension materials including ten award-winning farmer educational videos.



Dr. Jennifer Lee is a Senior Manager for Impact Terra and is responsible for overseeing the development and implementation of digital services for smallholder farmers in Myanmar. Dr. Lee has been working in Southeast Asia for over four years in livelihood development, supporting farmers of cacao, shrimp and rice in Indonesia and maize, sesame and melon in Myanmar. Jennifer's research interests are in the role of smallholder farmers in food security and the improvement of value chains for rural development. Prior to her work in Southeast Asia, Jennifer worked for the World Health Organization for four years after completing her PhD in Public Health at the University of California, Los Angeles.



Pascal Lienhard is an agronomist with CIRAD, a French agricultural research and international cooperation organization working for the sustainable development of tropical and Mediterranean regions. He has been working for more than 15 years in South East Asia and notably in Laos on innovative Conservation Agriculture (CA)-based cropping system design and assessment. During the past 4 years, he has been the Chief Technical Advisor of the Eco-Friendly Intensification and Climate-resilient Agricultural Systems (EFICAS) project whose objective was to support the agroecology transition in Lao northern Uplands.



Dr. Santiago Lopez Ridaura is a scientist at the *Centro Internacional de Mejoramiento de Maiz y Trigo* (CIMMYT), based in its headquarters in Mexico. His research interests are the integrated assessment of farming systems and the use of modeling tools to explore scenarios and understand tradeoffs among different objectives. He has over 15 years of experience in the development of approaches and tools for farming systems analysis and has worked in developed and developing countries.



Dr. Quang Nguyen Chon is a Soil Scientist and Agronomist and Deputy Head of Soil Science Department, Institute of Agricultural Sciences for Southern Vietnam. H holds a PhD in Soil Science and Agronomy from the University of New England, NSW, Australia and MSc in Tropical Agriculture at Leuven University, Belgium. Dr. Nguyen has been a member of the International Plant Nutrition Institute (IPIN) since 1998 and has worked as a core member of several ACIAR projects namely 'Utilizing basic soil data for the sustainable management of upland soils in Vietnam and Australia (2002-2006)', 'Sustainable and profitable crop and livestock systems for South Central Coast Viet Nam 2012-2013', 'Climate change affecting land use in the Mekong Delta: Adaptation of rice-based cropping systems (2012-2015)', 'Integrated water, soil and nutrient management for sustainable farming systems in South Central Coastal Vietnam and Australia (2014-2018)', and with an IRRI project 'The development of site-specific nutrient management (SSNM) recommendations for more efficient fertilizer management for rice production in the Mekong Delta, Vietnam (2015-2016)'. Currently, Dr. Nguyen is a leader of project on application of bentonite to enhance soil moisture and nutrients retention in order to improve the efficiency of agricultural production on sandy soil under drought conditions in South Central Coastal Vietnam.



Dr. Carlo Montes is Agricultural Engineer and MSc. in Meteorology and Climatology from Universidad de Chile (Santiago, Chile), MSc. in Terrestrial Biosphere Sciences from Université Pierre et Marie Curie (Paris, France) and PhD in Environmental Physics from Université de Montpellier (Montpellier, France). After spending 3 years at NASA Goddard Institute for Space Studies in New York City working in terrestrial biosphere processes and agriculture in climate modeling, Carlo joined the International Maize and Wheat Improvement Center (CIMMYT) in Bangladesh as Agricultural Climatologist to perform climate science applied to agricultural regions in South Asia, and also to work on the design and implementation of climate services for agriculture over the region.



Dr. Koy Ra finished his Ph.D in 2006 in the field of forest management. He used to be a lecturer at Royal University of Agriculture and also the Research Fellow and Programme Coordinator of Natural Resources and Environment Programme of Cambodia Development Resource Institute, the leading research institute in Cambodia. Currently, he am a Director of Department of Agricultural Land Management of General Directorate of Agriculture, MAFF.



Dr. Leonard Rusinamhodzi is a Scientist within the Sustainable Intensification Program of CIMMYT based in Nairobi, Kenya. Leonard Rusinamhodzi holds a PhD in Production Ecology and Resource Conservation from Wageningen University and Research Center, The Netherlands. His work involves advanced analyses to study the effects of sustainable intensification on system productivity, soil quality, water and nutrient use efficiency across east and southern Africa. Leonard has extensive experience spanning more than a decade in participatory research in smallholder farming systems, with a deep understanding of the complex barriers to improved crop productivity. He has published extensively in the field of agronomy and targeting sustainable intensification options to the biophysical and socio-economic conditions of smallholder farmers. Leonard is particularly interested in learning and managing science that develops and uses tools that combine social, economic and bio-physical aspects of farmers to improve productivity and reduce hunger for smallholder farmers in Africa and beyond.



Teddy Tambu joined Syngenta foundation in 2014, having most recently worked extensively on corn, rice and vegetable seeds. As well as agronomy, he has considerable experience in analysis & strategy, marketing & sales, retail, distribution, operations and business development. Conducting trial or screening to select the best variety and fits smallholder farmer needs part of the work thus mechanization and post-harvest equipment, beside also doing research or impact study.



Dr. Nguyen Quang Tan is the Country Coordinator of ICRAF Viet Nam. He holds a Doctoral degree in agricultural science from Humboldt University Berlin, Germany, and a Master degree in Agricultural and Resource Economics from the University of Arizona, USA. He has 25 years of work experience in agricultural and rural development (ARD) sector in Viet Nam and in the region. His research interests include land tenure, community forestry, forest governance, policy analysis, poverty alleviation, value chain analysis, climate change stakeholder participation, and local livelihoods.



Herve Thieblemont grew up in an arable farm in the wheat belt of France, East of Paris. He has an engineering degree in Agronomy and a Master of Business Administration and has worked for seed companies such as Limagrain, HybriTech and Syngenta mainly in Europe, North America and Asia. Herve brings more than 30 years of experience in leadership positions in Commercial and Business Development and recently joined SFSA in Asia as Seeds Business Development Director where his main mission is to develop business plans and establish partnerships to accelerate poor-resource smallholders' access to high quality seeds.



Dr. Florent Tivet is an agronomist from CIRAD, French Agricultural Research Center for Development. His areas of expertise include conservation agriculture, cropping system design, soil fertility management and assessment, preservation of a large germplasm of plants, and seed production. He holds a PhD in Crop Science and a post doctorate in soil organic carbon dynamics. He is based in Cambodia, working with the Department of Agricultural Land Resources Management, General Directorate of Agriculture from the Ministry of Agriculture, Forestry and Fisheries, the Royal University of Agriculture, The university of Battambang, and the Institute of Technology of Cambodia. He coordinates the activities of the Conservation Agriculture Service Center.



Dr. B. S. Vivek is currently working at CIMMYT-India (Hyderabad) as Maize Breeder and Principal Scientist. Vivek has been at CIMMYT for the last 21 years in various capacities and locations – Mexico (2 years), Zimbabwe (10 years) and India (last 9 years). Research interests have included development of climate resilient maize (for drought, low N, heat, and biotic stresses) and breeding for nutritional quality, primarily, quality protein maize. He is currently leading the International Maize Improvement Consortium for Asia (a partnership with more than 25 seed companies) and other projects dealing with maize germplasm development and deployment.



Dr. Horst Weyerhaeuser has more than 25 years of experience in forestry, agriculture and natural resource management in Eastern Africa, China, SE Asia, South Asia and Central Asia. His assignments included leading and implementing country and regional programs for the UN, ICRAF, Sida and the Aga Khan Development Network and Foundation, and supporting regional and international research institutions in capacity and institution building. His latest assignment was with UNOPS in Myanmar as the Program Coordinator for LIFT, the Livelihoods and Food Security Trust Fund. Horst graduated from Cranfield University in the UK with a MSc in Resource Mgt. and GIS/RS; and from Freiburg University with a PhD in Silvicultural Mgt.