CLIFF-GRADS Workshop

6-7 October 2019
Royal Tulip Hotel, Jimbaran, Bali, Indonesia

WORKSHOP DAY 1: October 6, 2019

Time	Agenda	Who
Session 1: Introduction		
08:30 – 09:00	**Participant arrival and registration** • Students to register and collect per-diems if they have not yet done so • Sign-up sheet and distribution of name tags	Alexandra Krendelsberger (CCAFS) & Hazelle Tomlin (GRA)
09:00 – 09:20	**Welcome and workshop objectives**	
	Welcome on behalf of CCAFS	Lini Wollenberg (CCAFS)
	Welcome on behalf of GRA	Hayden Montgomery (GRA)
	Program introduction Workshop program introduction with brief overview of each session	Ciniro Costa Junior (CCAFS)
9:20 – 09:50	**Participant introductions**	Ciniro Costa Junior (CCAFS)
09:50 – 10:00	**The future of mitigation: new technologies and emerging solutions**	Hayden Montgomery (GRA)
10:00 – 10:30	Short Break: Tea/Coffee	

Session 2: Modelling GHG Emissions for Mitigation Options		
Chair: Lini Wollenberg (CCAFS) Rapporteur: Hazelle Tomlin (GRA)		
10:30 – 12:00	**Modeling GHG emissions and carbon sequestration (30 min presentation)** • Emission factor and activity data needs and availability • Process v statistical/empirical models • Examples of common process models: DNDC, DayCent, Roth C • Use of modeling methods/tools and challenges: assessing model performance, questions to ask when choosing a model • Special considerations in modeling mitigation and emission factors for the IPCC/inventories Resources: Tonnito et al. 2018, Olander and Haugen-Kozyra 2013; GRAMP	Presentation: Ciniro Costa Junior (CCAFS)
	Presentation questions and discussion (15 min)	Ciniro Costa Junior (CCAFS), Ngonidzashe Chirinda (CIAT), Tek Sapkota (CIMMYT)
	Exercise: simple emission calculations for the students (30 min)	Students
	Exercise questions and discussion (15 min)	Ciniro Costa Junior (CCAFS), Ngonidzashe Chirinda (CIAT), Tek Sapkota (CIMMYT)
12:00 – 13:00	Lunch (Students voluntarily can network and have side discussions)	Free time at lunch
Parallel Sessions: Five-minute speed talks by students on their research Session Moderator: Lini Wollenberg (CCAFS)		
13:00 – 13:40	**PS 1: Manure and pasturelands:** • Targeting N2O emission hot-spots in intensive dairy pastures for mitigation action: **Camila Almeida dos Santos (Brazil)** • Understanding the controls of N2O emissions in grazed upland and lowland systems**: Mónica Gabriela Perez (Argentina)** • Measuring ammonia emissions and collecting farm data from Costa Rican dairies: **Ricardo González Quintero (Colombia)** • Cover crop and animal manure impacts on soil N2O emissions: **Lucélia de Cássia Rodrigues de Brito (Brazil)** • Pasture type influence on soil N2O emission for cattle excreta: **Banira Lombardi (Argentina)**	Moderator: Ciniro Costa Junior (CCAFS)

	PS 2: Emission from croplands: • Nitrogen fertilizer rate, crop residue amount and soil water content influence on N2O emissions: **Kofi Boateng (Ghana**) • Compiling a structured Rice Policy Information Portal and demonstrating its potential use in mitigation projects: **Lai Lai (Malaysia)** • Toward low methane-emitting rice varieties: **Noriel Angeles (Philippines)** • More rice with lower emissions and lower water consumptions: **Abubakar Halilu (Nigeria)** • Turning to rice cultivars for solving the methane puzzle in irrigated rice systems: **Paul Soremi (Nigeria)**	Moderator: Alexandra Krendelsberger (CCAFS)
	PS 3: Soil carbon measurement: • Using a Tier II Model (CQESTR) to Predict Soil Organic Carbon Storage and CO_2 Emissions: **Adnan Zahid (Pakistan)** • Accounting for errors in SOC estimates introduced by proximal sensing methods: **Bertin Takoutsing (The Netherlands)** • Comparing deep soil carbon stocks under kiwifruit and pasture land use: **Ntwanano Moirah Malepfane (South Africa)** • Soil organic matter sensitivity to land management impact on grasslands and croplands: **Pierre Ekef (Cameroon)** • Net greenhouse gas emissions and soil carbon sequestration in response to tillage systems and cropping sequences: **Sikiru Yusuf Alasinrin (Nigeria)** • Assessing the impact of land use change scenarios on soil organic carbon stocks: **Yuri Gelsleichter (Brazil)**	Moderator: Tek Sapkota (CIMMYT)
	PS 4: Mitigation options: • Quantification of carbon footprints in livestock production systems under contrasting management of Argentina: **Deysi Ruiz Llontop (Peru)** • Just how smart are the climate smart options promoted in the Climate Smart Villages of Nicaragua?: **Samuel Anuga (Ghana)** • N2O emissions from pastures using novel fertilizer formulations: **Maria de Bernardia (Argentina)** • Productivity, reduced methane emissions and reduced dependency on external inputs on tropical livestock farms: **Isabel Cristina Molina Botero (Colombia)** • Identifying greenhouse gas emission hotspots and mitigation options from the agricultural sector in Bangladesh: **Ofonime Ime Eyo (Nigeria)** • Bringing Climate Smart practices to scale: assessing their contributions to narrow nutrient and yield gaps: **Yohannes Gelan Regassa (Ethiopia)**	Moderator: Hazelle Tomlin (GRA)

	PS 5: Emission from FLW: • Measure FLW reduction and associated emission reductions of Brazilian entrepreneurship initiatives in fruits and vegetables that do not meet retail aesthetic standards: **Daniele Eckert Matzembacher (Brazil)** • Quantifying GHG emissions of agrifood chain and associated food loss and food waste in China: an input-output analysis: **Li Xue (China)** • Understanding smallholder farmers' storage habits in Malawi: **Tabitha Nindi (USA)** • Evidence base for the mitigation of nitrous oxide emission from reduced food loss and waste in China and Myanmar: **Xia Liang (China)** • Effects of organic matter soil amendments on population dynamics of Aspergillus flavus and its natural antagonists; and on groundnut aflatoxin contamination in Malawi: **Norah Titiya Machinjiri (Ethiopia)**	Moderator: Rosa Roman Cuesta (CIFOR)
	PS 6: Dairy and rangeland: • GHG mitigation strategies on cow/calf production systems: **Victor Ilich Alvarado Bolovich (Peru)** • Effects of rangeland management on soil carbon sequestration: **Hillaire Sanni Worogo Sorebu (Benin)** • GHG emissions from adequately managed rangelands in Kenya: **Rangarirayi Lucia Mhindu (Zimbbwe)** • Economic implications of greenhouse gas mitigation from dairy and beef systems: **Titis Apdini (The Netherlands)** • Identifying hotspots of GHG emissions in dairy systems and associated efficiency gains: **Ridhi Ibidhi (Tunisia)**	Lini Wollenberg (CCAFS)
	PS 7: Quantifying livestock emissions: • Effect of modulating interspecies electron transfer exchanges on methane production and rumen microbiota composition: **Abimael Ortiz-Chura (Argentina)** • Directed evolution of rumen microbial cultures towards the identification and stimulation of electron sinks alternative to methanogenesis: **María Carolina Scorcione Turcato (Argentina)** • RumenPredict: Predicting appropriate GHG mitigation strategies based on modelling variables that contribute to ruminant environmental impact: **Mariana Eloisa Garcia Ascolani (USA)** • Structure and data requirements to develop higher tier agricultural GHG inventory: **Sebastian Vangeli (Argentina)** • Effects of inhibiting rumen methanogenesis on microbial biomass production and composition: **Florencia Garcia (Argentina)**	Ngonidzashe Chirinda (CIAT)

13:40 – 14:40	**CLIFF-GRADS Challenge:**	*Moderator:*
	Vision for low emissions in the future: what will agricultural systems look like in 2050?	*Ngonidzashe Chirinda (CIAT)*
	Guidance activities:	
	Provide instructions for facilitation, brainstorming	*Five groups of students discuss their vision for low emission agriculture and food systems in 2050*
	• Choose a facilitator and note taker.	
	• Activity 1: Brainstorm about what agricultural and food production systems will look like in 2050 to stay under a 1.5 ^{0}C temperature increase. The group should choose one element of the agricultural landscape and supply chain to brainstorm about, for example, crop systems, rice, and livestock systems; agroforestry; soil; supply chains; waste management/reuse; energy use; trade; and farmer profiles. Students may choose specific country, region or do this generically (20 min)	
	• Activity 2: design actions that can lead to and support your envisioned 2050 agricultural and food systems. Consider your research, what you have learned through the literature or coursework, the CLIFF-GRAD Workshop, other... (20 min)	
	• Activity 3: Plan how you will report your group's vision and recommended actions using any methods – slides, writing, acting, drawing... on 7th October. Be creative! Find a creative way of presenting your idea to a panel of judges and the CLIFF-GRAD fellows.	
	• Record notes on a PowerPoint slide (20 min)	
	Students are free to think broadly about solutions, some examples:	
	• Addressing sociocultural, economic, technical and political barriers to adoption of mitigation measures	
	• Balancing trade-offs between emission reduction and food security goals	
	• NDC commitments and emission reduction strategies	
	• Identifying the biggest opportunities to reduce greenhouse gas emissions in the food system (from farm to fork)	
	• Challenges and strategies in emission monitoring in food system	
	Group Formation: See a list in the DropBox	
14:40– 15:00	Coffee/tea break	

Session 3: Developing GHG Inventories and MRV		
15:00 – 15:30	Methods of developing GHG inventories, MRV **(30 min presentation)** • Why inventories and MRV? UNFCCC obligations of parties • Project-level v national level reporting • Baselines: BAU projections v base years • Overview of emissions estimation methods for different sources of GHG and IPCC guidelines • Activity data generation, collection, and management • Developing MRV for GHG emissions Resources: See UNFCCC 2006 and 2019 guidelines, UNFCCC reporting, IPCC Emission Factor Data Base, AgMRV, SAMPLES	Presentation: Ngonidzashe Chirinda (CIAT)
15:30 – 16:00	Inventory exercise and questions and discussion on presentation **(30 min)**	
16:00 – 16:30	**HARD-TALK and Discussion: MRV and Inventories** • Key challenges in developing and implementing MRV systems (institutional and policy perspectives) • Inventories in practice: an example from New Zealand	Ngonidzashe Chirinda (CIAT) interviews Hazelle Tomlin (GRA, New Zealand Ministry for Primary Industries)
Session 4: Putting Science into Use: How to have impact		
16:30 – 17:15	**Getting your science into use: how to have impact (20 min presentation)** • Mitigation needs and NDC commitments • Demand v supply driven research • Research partnerships and strategies for engagement: action research; commissioned research, IPCC reviews • Research strategies, impact pathways and theories of change • Adaptive management, learning and complex systems Resources: NDCs, Dickie et al. 2014, Stein and Walters 2012, Learning for Sustainability, Thornton et al. 2017,	Lini Wollenberg (CCAFS)
	Student questions and discussion	
17:15	Leave for dinner	
18:00-20:00	Dinner and group activity	Ngonidzashe Chirinda (CIAT) and Ciniro Costa Junior (CCAFS)