



MARS



PERÚ

Ministerio
de Agricultura y Riego

International Symposium on Cocoa Research

2017

Promoting Advances in Research to Enhance
the Profitability of Cocoa Farming



PROGRAMME

13 – 17 November 2017
Swissôtel, Lima, Peru



INTERNATIONAL COCOA ORGANIZATION



icco.org/iscr2017



Monday November 13, 2017

08:00-10:00

Registration

10:00-12:30

PLENARY SESSION 1

Opening of the ISCR 2017

- Welcome speech by **SEM. Ricardo V. Luna Mendoza**, Minister of Foreign Affairs of Peru
- ICCO Executive Director Introductory Speech by **Dr. Jean-Marc Anga**, Executive Director of the International Cocoa Organization
- Inauguration by **SEM. Juan Manuel Hernandez Calderon**, Minister of Agriculture and Irrigation of Peru
- "The Peruvian cocoa sector" by **Mr. Jorge Amaya Castillo**, Director General of agriculture, Chairman of the local organizing committee and focal point
- "The oldest cocoa in the world discovered in the Upper Amazon of Peru and Ecuador" Presentation by **Dr. Segundo Quirino Olivera Núñez**
- Introduction to the ISCR 2017: Programme and logistics by **Dr. Brigitte Laliberte**, Chairperson of the ISCR Scientific Committee

12:30-14:00

Lunch

14:00-15:30

PLENARY SESSION 2

THEMATIC SESSION 4

Climate change adaptation and mitigation

CHAIR - Brigitte Laliberte

Keynote presentation

- **Paul Hadley**, *Overview of advances in cacao and climate change research and future perspectives* - University of Reading (UoR), UK

Oral presentations

- **Christian Bunn**, *Global climate change impacts on cocoa* - International Centre for Tropical Agriculture (CIAT), Colombia
- **Fiona Lahive**, *The impacts of climate change variables on vegetative and reproductive development of six genotypes of cacao* - University of Reading (UoR), UK
- **Viviana Medina**, *Exploring cacao genetic diversity for resilience to climate change - validating or contradicting current predictive models of production suitability* - Bioversity International, Costa Rica

Poster slam sessions

- **Wiebke Niether**, *Reciprocal effects of soil moisture dynamics and land-use systems with cacao in Alto Beni, Bolivia* - University of Gottingen, Germany
- **Isabel Urueta Cortes**, *Influence Of The "El Niño" Weather Phenomenon On Cocoa Growth And Development In Premontane Rainforest (Bh-Pm) And Tropical Rainforest (Bh-T)* - Universidad Nacional de Colombia, Colombia

15:30-16:00

Coffee break

16:00-17:30

PLENARY SESSION 2

THEMATIC SESSION 4

Climate change adaptation and mitigation continued

CHAIR - Verina Ingram

Oral presentations

- **Virupax Baligar**, *Impact of drought on morphological, physiological and nutrient use efficiency of elite Cacao genotypes from Bahia* - Beltaville Agricultural Research Center (USDA, ARS), USA
- **Paula Bermeo Fúquene**, *Evaluation of current and future water requirements, under climate change scenarios in cocoa crops in Nilo Cundinamarca* - Universidad Nacional de Colombia, Colombia

PLEASE NOTE THAT EACH THEMATIC SESSION
INCLUDES DISCUSSION TIME BETWEEN AND
AFTER ORAL PRESENTATIONS

Monday November 13, 2017

Poster slam sessions

- **Christian Bunn**, *Scaling pathways for a climate smart cocoa sector* - International Centre for Tropical Agriculture (CIAT), Colombia
 - **Enrique Martínez Bustamante**, *The Effect of Water Deficit on Cocoa Physiology in Colombia, South America* - Universidad Nacional de Colombia, Colombia
 - **Alina Camacho**, *Fertirrigation in cacao crop, an alternative for mitigation of climate change for the Ucayali region* - Instituto Nacional de Innovación Agraria (INIA), Peru
- Close of day

19:30

Conference dinner offered by the Government of Peru

Tuesday November 14, 2017

08:00 - 10:00

TRACK SESSION 1	TRACK SESSION 2
THEMATIC SESSION 1 Genetics and Breeding CHAIR - Siela Maximova	THEMATIC SESSION 7 Marketing and Technology Transfer CHAIR - David Guest
Keynote presentation	Oral presentations
<ul style="list-style-type: none"> • Mark Gultinan, <i>The Future of Cacao Research: Systems Science in Support of Cacao Farmers</i> - Penn State University, USA 	<ul style="list-style-type: none"> • Verina Ingram, <i>Impacts of cocoa sustainability initiatives in West Africa</i> - Wageningen University, The Netherlands • Anna Laven, <i>Demystifying the cocoa sector</i> - Royal Tropical Institute (KIT), The Netherlands • Olusoji Oduwole, <i>Constraints to Youth Involvement in Cocoa Production in Nigeria</i> - Cocoa Research Institute of Nigeria (CRIN), Nigeria • Noemie Schaad, <i>Analysis of the Sustainable Cocoa Production Program (SCPP) and its impact on farm-level quality and productivity in Southeast Sulawesi, Indonesia</i> - Bern University of Applied Sciences, Switzerland
Oral presentations	Poster slam sessions
<ul style="list-style-type: none"> • Brigitte Laliberte, <i>Cacao Genetic Resources - Legal and policy aspects of germplasm exchange (access and benefit sharing)</i> - Bioversity International, Italy • Wilton Céspedes Del Pozo, <i>Evaluation of the genetic diversity of native "Chuncho" cocoa (Theobroma cacao L.) in La Convención, Cusco, Peru</i> - UNSAAC/UNIQ, Peru • Evert Thomas, <i>A genetic origin of fine or flavour cacao in southern Peru?</i> - Bioversity International, Peru • Nubia Martínez Guerrero, <i>Morpho-agronomic and molecular characterisation of the cocoa collection held by the Colombia National Federation of Cocoa Farmers</i> - Federación Nacional de Cacaoteros (FEDECACAO), Colombia 	<ul style="list-style-type: none"> • Jimmy Gonzalez, <i>Chocolate revolution-</i> Choba Choba AG and ACCC (Asociación de Cacaoteros Choba Choba), Peru • Frederick Amon-Armah, <i>A Typology of Young Cocoa Farmers in Ghana - Attitudes, Motivation and Aspirations</i> - Cocoa Research Institute of Ghana (CRIG), Ghana • Mercy Assamoah, <i>The Role Of Cocoa Cultivation In The Livelihood Strategies, Socio-Economic Characteristics And The Living Conditions Of Cocoa Farmers: Evidence From Ghana</i> - Cocoa Research Institute of Ghana (CRIG), Ghana • Justina Lawal, <i>Shocks and Factors Influencing Welfare among Cocoa Farming Households in Cross-Rivers State, Nigeria</i> - Cocoa Research Institute of Nigeria (CRIN), Nigeria

PLEASE NOTE THAT EACH THEMATIC SESSION INCLUDES DISCUSSION TIME BETWEEN AND AFTER ORAL PRESENTATIONS

Tuesday November 14, 2017

10:00-10:30

Coffee break

10:30-12:30

TRACK SESSION 1	TRACK SESSION 2
THEMATIC SESSION 1 Genetics and Breeding CHAIR - Elizabeth Johnson	THEMATIC SESSION 7 Marketing and Technology Transfer CHAIR - Verina Ingram
Oral presentations: <ul style="list-style-type: none"> • Rey Loor Solórzano, <i>Development of specific niches for high-yield and high-sensory-quality cocoa: Ecuador's experience</i> - Instituto Nacional de Investigaciones Agropecuarias (INIAP), Ecuador • Allan Mata Quiros, <i>Revealing the genetic structure and kinship of cocoa clonal series UF, CC, ARF and PMCT kept in the CATIE international collection (IC3)</i> - CATIE, Costa Rica • Adriana Gallego, <i>Integrating the transcriptomics for study of antioxidants in cacao cell cultures</i> - Universidad de Antioquia, Peru • Lambert Motilal, <i>Candidate SSR tags for fruit and seed traits of Theobroma cacao L. in the International Cocoa Genebank Trinidad</i> - The University of the West Indies (UWI), Trinidad and Tobago • Christopher Turnbull, <i>Digital Data Capture in Cocoa Breeding: A Practical Barcode-based System</i> - University of Reading (UoR), UK 	Keynote presentation <ul style="list-style-type: none"> • Frederick Amon-Armah, <i>From labour demand to business prospects for rural youth: A study in the Fanteakwa district of Ghana- Cocoa Research Institute of Ghana (CRIG), Ghana</i>
Poster slam sessions <ul style="list-style-type: none"> • David Gopaulchan, <i>An assessment of the genetic diversity of Trinitario cacao using SNP markers</i> - Cocoa Research Centre (CRC), Trinidad and Tobago • Desiré Pokou, <i>Genetic Quality control of cacao seed gardens output in Cote-d'Ivoire using SNP markers</i> -Centre National de Recherche Agronomique (CNRA), Côte d'Ivoire • Enrique Arévalo-Gardini, <i>New wild and domesticated cocoa germplasm collections in Peru and their implications for genetic breeding</i> - Instituto de Cultivos Tropicales (ICT), Peru • Lambert Motilal, <i>Cocoa Research Centre (CRC), Identification of a core SNP panel for cacao identity and population analysis</i> - The University of the West Indies (The UWI), Trinidad and Tobago • Christopher Turnbull, <i>Adopting Reference Genotypes to Identify Off-types in Cacao Collections</i> - School of Agriculture, Policy and Development, University of Reading, UK 	Oral presentations <ul style="list-style-type: none"> • David Lujan Tantarico, <i>Analysis of the technical and economic feasibility of obtaining frozen cocoa pulp using a semi-automatic collection system: Case study "Cooperativa Agroindustrial Y De Servicios"</i> - Centro Innovación Del Cacao (CIC), Peru • Diana Kos, <i>Impact evaluation of different savings accounts on income smoothing and access to credit: the case of cocoa farmers in Ghana</i> - Wageningen University, The Netherlands • Diany Hartatri, <i>Direct partnership on cocoa processing in Papua Island, Indonesia For improving farmers access to Japan market</i> - Indonesian Coffee and Cocoa Research Institute (ICCRI), Indonesia • Trent Blare, <i>Intensification of cocoa in the Peruvian Amazon: Gender relations and options for deeper engagement by women</i> - World Agroforestry Centre (ICRAF), Peru
	Poster slam sessions <ul style="list-style-type: none"> • Ignacio Antonio Sotomayor Cantos, <i>Costs and temporary distribution of investment for the genetic improvement and development of a variety clonal cocoa (Theobroma cacao L.) high productivity Economic - income - profitability</i> - Instituto Nacional de Investigaciones Agropecuarias (INIAP), Ecuador • Christian Cilas, <i>Towards The Creation Of A Cocoa Sector Of Excellence In Martinique</i> - Pôle Agroalimentaire Régional de Martinique (PARM), France • Friedel Hütz-Adams, <i>Defining a living income: learnings from data collections in Ghana and Côte d'Ivoire</i> - SUDWIND-Institute, Germany • Jose Iturrios, <i>Factors determining cocoa productivity in the regions of San Martín, Huánuco and Ucayali in Peru</i> - Alianza Cacao Perú, Peru

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Tuesday November 14, 2017

- **Atta Ofori**, *Genetic analysis of Guiana cacao (*Theobroma cacao* L.) families for black pod disease resistance in Ghana* - Cocoa Research Institute of Ghana (CRIG), Ghana
- **Antoinette Sankar**, *Genetic Diversity and Genetic Structure of a Wild Cacao Population using Single Nucleotide Polymorphisms* - The University of the West Indies (UWI), Trinidad and Tobago
- **Xavier Argout**, *The Cocoa Genome Hub, an integrated platform to access the Criollo genome V2* - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France

12:30-13:15

Lunch

13:15-14:00

Poster sessions to be indicated during the Symposium

14:00-16:00

TRACK SESSION 1	TRACK SESSION 2
THEMATIC SESSION 1 Genetics and Breeding CHAIR -Paul Hadley	THEMATIC SESSION 7 Marketing and Technology Transfer CHAIR - Soetanto Abdoellah
Keynote presentation	Oral presentations
<ul style="list-style-type: none"> • Claire Lanaud, <i>Exploration of the <i>T. cacao</i> genome sequence to decipher the incompatibility system of <i>Theobroma cacao</i> and to identify diagnostic markers</i> - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France 	<ul style="list-style-type: none"> • David Guest, <i>Labour as a constraint to technology adoption: Understanding the role of farmer health</i> - The University of Sydney, Australia • Eric Boa, <i>Helping cocoa farmers to help themselves: an overview of extension methods and how to choose the best ones</i> - Institute of Biological and Environmental Sciences, University of Aberdeen, UK • Monika Schneider, <i>Knowledge gap, small farms and insecure land tenure limit the adoption of research-based recommendations for cocoa swollen shoot virus disease control</i> - Research Institute of Organic Agriculture (FiBL), Department of International Cooperation, Switzerland • Path Umaharan, <i>Supporting Entrepreneurship and Development within the Fine/Flavour Sector using Science Technology and Innovation: the Case of the International Fine Cocoa Innovation Centre Cocoa Research Centre</i> - The University of the West Indies (CRC-UWI), Trinidad and Tobago • Mark Gultinan, <i>The Future of Cacao Research: Systems Science in Support of Cacao Farmers</i> - The Pennsylvania State University (PSU), USA • Amanda Berlan, <i>What works? A review of the contribution academic knowledge can make to building a stronger and more resilient cocoa economy</i> - Leicester Castle Business School, De Montfort University, UK
Oral presentations	
<ul style="list-style-type: none"> • Olivier Sounigo, <i>Comparative assessment of agronomical performances of six commercial cocoa varieties in on farm progeny trials in Cameroon</i> - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France • Tahi Mathias, <i>Second cycle of recurrent selection of cocoa (<i>theobroma cacao</i> L.) in côte d'ivoire: genetic parameters in two constitutive groups after thirteen years of observation</i> - Centre National de Recherche Agronomique (CNRA), Côte d' Ivoire • Fabienne Ribeyre, <i>The Genomic Selection of <i>Theobroma cacao</i>: A new strategy of marker assisted selection to improve breeding efficiency and predict useful traits in new populations</i> - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France 	

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Tuesday November 14, 2017

- **Francis Padi**, *Potential of recurrent selection for developing improved cocoa varieties in Ghana* - Cocoa Research Institute of Ghana (CRIG), Ghana
- **Rene Rafael Espino**, *DNA Profiling of Cacao (Theobroma cacao L.) Varieties in the Philippines Using Microsatellite Markers* -, University of the Philippines Los BanoS, Philippines

Poster slam sessions

- **Olivier Sounigo**, *Experimental cocoa cultivations systems in Cameroon: agronomical and economical performances assessment* - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France
- **Rany Susanti**, *The Role of Light Interception in Photosynthetic Activity of Cocoa Novel Cropping System* - University of Reading, UK
- **Olivier Sounigo**, *Assessing the impact of self-incompatibility on cocoa trees in Cameroon* - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France

Poster slam sessions

- **David Guest**, *Market led technology adoption in Solomon Islands* - The University of Sydney, Australia
- **Michelle End**, *The Incocoa Website And Virtual Library: Improving Information Sharing Within The Cocoa Research Community* - Incocoa/Cocoa Research Association Ltd, UK
- **Selim Louafi**, *Design and Implementation of a Global Collaborative Framework on Cacao Genetic Resources Research: incentives, constraints and institutional structures* - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France
- **Antoinette Sankar**, *CocoaNexT – the nexus of technology for cocoa research dissemination and sharing Cocoa Research Centre* - The University of the West Indies (CRC, The UWI), Trinidad and Tobacco
- **Jayne Crozier**, *A Different Approach To Communicating Plant Health Messages: The Case For Cocoa In Ghana* - CABI, UK
- **Mercy Assamoah**, *Farmers' Knowledge, Utilization And Perceptions Of Crig Recommended Technologies And Government Policies To Enhance Cocoa Productivity* - Cocoa Research Institute Of Ghana (CRIG), Ghana
- **Juan Barrientos Fuentes**, *Study of the adoption of cocoa production technology in Nilo and Yacopí (Cundinamarca, Colombia)* - Universidad Nacional de Colombia, Colombia
- **Justina Lawal**, *Factors Influencing the Use Of Labour Saving Technologies on Cocoa Farms in Nigeria* - Cocoa Research Institute of Nigeria (CRIN), Nigeria
- **Famuyiwa Solomon**, *Cocoa production and processing technology transfer (CPPTT) in Nigeria: issues and challenges* - Cocoa Research Institute of Nigeria (CRIN), Nigeria
- **Enrique Arévalo-Gardini**, *Technological progress and effective solutions for increasing cocoa productivity and minimising the impact of climate change in Peru* Instituto de Cultivos Tropicales - ICT. PERU - Instituto de Cultivos Tropicales (ICT), Peru
- **Famuyiwa Solomon**, *Farmers Knowledge Attitude and Practice on Cocoa Certification in Southwest Nigeria* - Cocoa Research Institute of Nigeria (CRIN), Nigeria

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Tuesday November 14, 2017

16:00-16:30

Coffee Break

16:30-18:00

TRACK SESSION 3

TO BE CONFIRMED

THEMATIC SESSION 2

Agronomy

CHAIR – Christian Cilas

Keynote presentation

- **Philippe Bastide**, *Agronomic Challenges for productive and sustainable cocoa production: taking stock and perspectives* - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France

Oral presentations

- **Edna Ivonne Leiva**, *Water dynamics in cocoa (*Theobroma cacao* L.) in tropical rainforests* - Universidad Nacional de Colombia, Colombia
- **Eduardo Gutiérrez Brito**, *Pruning in the production of cocoa (*Theobroma cacao* L.)* - Universidad Nacional de Colombia, Colombia
- **Enrique Martínez Bustamante**, *The effect of canopy management on cocoa ecophysiology in antioquia, Colombia* - Universidad Nacional de Colombia, Colombia
- **Enrique Arévalo-Gardini**, *Influence of Agroforestry Systems with Cacao on Soil Properties (Physical, Chemical and Microbiological) and Selection of cocoa genotypes tolerant to acid soils in Peruvian Amazon* - Instituto de Cultivos Tropicales – (ICT), Peru

Wednesday November 15, 2017

08:00-10:00

TRACK SESSION 4

TRACK SESSION 5

THEMATIC SESSION 3

THEMATIC SESSION 5

Pests and Diseases

Quality and Flavour Assessment

CHAIR - Wilbert Phillips-Mora

CHAIR - Martin Gilmour

Keynote presentation

Keynote presentation

- **Julie Flood**, *A review on the effect of climate change on cacao pests and diseases* - CABI, UK

- **Darin Sukha**, *Elements of a harmonized international standard for cocoa flavour assessment and evidence of Evidence for applying the concept of "Terroir" in cocoa flavour and quality attributes* - The University of the West Indies (UWI), Trinidad and Tobago

Oral presentations

Oral presentations

- **Mark Guiltinan**, *Application of CRISPER/CAS9 Mediated Genome Editing to Enhancement of Disease Resistance in Cacao* - The Pennsylvania State University (PSU), USA
- **Desiré Pokou**, *Phytophthora megakarya Stress response changes in the Theobroma cacao transcriptomes analyzed using RNAseq* - Centre National de Recherche Agronomique (CNRA). Côte d'Ivoire

- **Julia Baumgartner & David Contreras**, *Creating inclusive practical systems for the sensory analysis of cocoa* - Equal Exchange, USA

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Wednesday November 15, 2017

- **Mireille Ndoungue Djeumekop**, *Combining field epidemiological and genetic diversity information to understand *Phytophthora megakarya* dispersion in young cocoa plantations in Cameroon* - Institut de Recherche Agricole pour le Développement (IRAD)& Université de SupAgro Montpellier, Cameroon& France

Poster slam sessions

- **Andrew Daymond**, *Safe Movement of Cocoa Germplasm* -University of Reading, UK
- **Monika Schneider**, *Monitoring pest and diseases under different production systems in a long-term trial in Bolivia* - FiBL, Research Institute of Organic Agriculture, Switzerland

- **Carla Martin**, *Cocoa quality evaluation: lessons from social science and producer-centric approaches* - Fine Cacao and Chocolate Institute (FCCI) Harvard University, UK
- **Christina Rohsius**, *Participatory approaches conducted in Ecuador, Trinidad and Costa Rica using simple and cost-effective methods to enhance the cocoa bean quality substantially* - Rausch GmbH, Germany
- **Zoé Deucher**, *Does aroma composition allow to discriminate groups of dark chocolates categorized on the basis of their organoleptic properties? Inputs of direct-injection mass spectrometry (PTR-ToF-MS) and GC-Olfac* - CIRAD-UMR 95 QUALISUD et Centre des Sciences du Goût et de l'Alimentation (CSGA), France
- **Ines Drouault**, *The Cocoa of Excellence Programme: celebrating high quality cocoa production and diversity of flavours around the world - key lessons learnt from 5 Editions since its launch in 2008* - Bioversity International, Italy

10:00-10:30

Coffee Break

10:30-12:30

TRACK SESSION 4	TRACK SESSION 5
THEMATIC SESSION 3 Pests and Diseases CHAIR - David Guest	THEMATIC SESSION 5 Quality And Flavour Assessment CHAIR - Path Umaharan
Oral presentations	Oral Presentations
<ul style="list-style-type: none"> • Monika Schneider, <i>Cocoa Swollen Shoot Virus Disease: how can it be prevented, and do shade trees mitigate the severity and help maintaining productivity?</i> - Research Institute of Organic Agriculture (FiBL), Department of International Cooperation, Switzerland • Emmanuelle Muller, <i>A Next Generation Sequencing approach to elucidate CSSV species profiles</i> - Centre de coopération International en Recherche Agronomique pour le Développement (CIRAD), France • Henry Kwame Dzahini-Obiatey, <i>Pest and Pathogen Project CF/ICCO/43 - the Journey so far: Achievements, Constraints and the Outlook for the Future</i> - Cocoa Research Institute Of Ghana (CRIG), Ghana 	<ul style="list-style-type: none"> • Elsa Hegmann, <i>New Resistant Cocoa Selections From Costa Rica Have Fine Aroma Potential</i> - Rausch GmbH, Germany • Albertus Eskes, <i>Advances On Genetical And Naturally Induced Variations For Fine And "Extra-Fine" Flavours And Aromas In Theobroma Cacao</i> - Ex- CIRAD And Bioversity International, France • Noémie Fayeulle, <i>Two Molecules Newly Identified By Mass Spectrometry In Fermented Cocoa Beans Have A Strong Impact On Chocolate Sensory Quality. Plateforme Polyphénols</i> - UMR SPO, INRA, France • Renaud Boulanger, <i>Classification Of Chocolates Based On Their Global Fluorescent Imprint?</i> - Centre De Coopération International En Recherche Agronomique Pour Le Développement (CIRAD), France

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Wednesday November 15, 2017

Poster slam sessions

- **Joel Allainguillaume**, *Rapid and cost effective 'on-site' detection of Cacao swollen-shoot virus (CSSV)* - University of the West of England (UWE), UK
- **Judith Brown**, *Infectivity of cloned CSS-associated badnaviral genomes in *Nicotiana benthamiana* and *T. cacao* seedlings* - University of Arizona (UA), USA
- **Emmanuelle Morel**, *A new quantitative PCR test for the early detection of CSSV in cocoa leaves and policy aspects of germplasm exchange (access and benefit sharing)* - NESTLE, France

Poster Slam Sessions

- **Stephanie Nottelmann**, *Sensory And GC-O Analyses Of Cocoa And Chocolate Along The Cocoa Production Chain* Department Nutrition & Home Economics - Faculty Of Life Sciences, Hamburg University Of Applied Sciences, Haw Hamburg, Germany
- **Luis Lopez-Giraldo**, *Evaluation Of Cocoa Residues As A Source Of Dietary Fibre For Human Consumption* - Universidad Industrial De Santander, Colombia
- **Rena Kalloo**, *The Varietal Effect On The Chemical Composition Of Cacao (*Theobroma Cacao* L.) Pulp* - Cocoa Research Centre, Trinidad and Tobago
- **Victor Vargas**, *Fine And Aroma Cocoa An Alternative For Agro Export* - Instituto Nacional de Innovación Agraria (INIA), Peru
- **Darin Sukha**, *The Impact of Pollen Donor on Flavor in Cocoa (*Theobroma cacao* L.)* - The University of the West Indies (UWI), Trinidad and Tobago

12:30-13:15

Lunch

13:15-14:00

Poster sessions to be indicated during the Symposium

14:00-16:00

TRACK SESSION 4	TRACK SESSION 6
THEMATIC SESSION 3 Pests and Diseases CHAIR - Nanga Coulibaly	THEMATIC SESSION 2 Agronomy CHAIR - Franklin Manu Amoah
Oral presentations	Keynote presentation
<ul style="list-style-type: none"> • Wilbert Phillips-Mora, <i>Generation of cacao clones with durable resistant against frosty pod rot (<i>Moniliophthora roreri</i>)</i> - CATIE, Costa Rica • Rolando Ríos-Ruiz, <i>Sanitisation as a key strategy in the integrated management of cocoa diseases in Peru: Three and a half decades of epidemiological and control-efficacy research</i> - Facultad de Agronomía, Universidad Nacional Agraria de la Selva (UNAS), Peru • Yeirme Jaimes Suárez, <i>Population structure and spatiotemporal dynamics of <i>Moniliophthora roreri</i> in different environments in Colombia</i> - Corporación Colombiana de Investigación Agropecuaria - CORPOICA, Colombia • Mariela Leandro-Munoz, <i>Effects of microclimatic variables on the onset of symptoms and signs of <i>Moniliophthora roreri</i> for three cacao clones in a range of incomplete resistance</i> - CATIE, Costa Rica • Oscar Cabezas Huayllas, <i>Phytosanitary Status In Cocoa (<i>Theobroma Cacao</i> L.) Production In The Huánuco Region Of Peru</i> - Universidad Nacional Agraria de la Selva, Peru 	<ul style="list-style-type: none"> • Weibke Neither, <i>Tree management in monocultures and agroforestry systems affect microclimatic growing conditions and fine-root growth</i> - University of Gottingen, Germany
	Oral presentations
	<ul style="list-style-type: none"> • Andrew Daymond, <i>Mapping Cocoa Productivity in Ghana, Indonesia and Côte d'Ivoire</i> - University of Reading, UK • Christophe Kouame, <i>Towards a sustainable intensification of cocoa production systems in Cote d'Ivoire: approach and lessons learnt from a pilot research</i> - World Agroforestry Centre (ICRAF), Côte d'Ivoire • Siela Maximova, <i>Regulating transcription factors to alleviate plant tissue and genotype limitations of cacao somatic embryogenesis</i> - Penn State University, USA • Ramiro Ramirez Pisco, <i>Constructing the mupv1 cocoa nutrition model</i> - Universidad Nacional de Colombia, Colombia

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Wednesday November 15, 2017

- **Pierre N'Guessan**, *The Achaea catocaloides Guenee caterpillar (Lepidoptera, Erebididae): a new threat to cocoa farming in Côte d'Ivoire* - Centre National de Recherche Agronomique (CNRA), Côte d'Ivoire
- **Richard Adu-Acheampong**, *Habitat Adaptation and Population of Nymphal and Adult Stages of Two Cocoa Mirid Species (*Distantiella theobroma* [Dist.] and *Sahlbergella singularis* Hagl.)* - Cocoa Research Institute Of Ghana (CRIG), Ghana

Poster slam sessions

- **Ignacio Sotomayor**, *Selection of high-yield cocoa (*Theobroma cacao* L.) genotypes with tolerance to the main diseases affecting cocoa in Ecuador* - Instituto Nacional de Investigaciones Agropecuarias (INIAP) - Ecuador
- **Enrique Arévalo Gardini**, *Response of cocoa clones in the ICT collection to *Moniliophthora roreri* in Tarapoto, Peru* - Instituto de Cultivos Tropicales (ICT), Peru
- **Leila Bagny Beilhe**, *Analysis on the destructive relationship between mirids and cocoa* - (CIRAD), Costa Rica

- **Henry Cordoba Novoa**, *Characterization of microbial community isolated from cocoa crop soils in a producer region in Colombia, as a contribution to soil fertility management* - Universidad Nacional de Colombia, Colombia

Poster slam sessions

- **Stephan Weise**, *Supplying New Cocoa (*Theobroma Cacao* L.) Planting Material to Farmers: A review of cacao propagation methodologies* - Bioversity International, France
- **Esther Djan**, *A possible role of potassium in mediating cacao seedling responses to soil water stress* Cocoa Research - Institute Of Ghana (CRIG), Ghana
- **Julián Andrés Velasquez Carvajal**, *Characterisation of microorganisms potentially able to degrade cellulose, fix nitrogen and solubilise phosphates in cocoa-growing soils in the district of Yacopí (Cundinamarca)* - Universidad Nacional de Colombia, Colombia
- **Leila Bagny Beilhe**, *Diversity of cocoa pollinators in Cameroon, Peru and Costa Rica* - CIRAD/ Institut de Recherche pour le Développement (IRAD), Costa Rica

16:00-16:30

Coffee Break

16:30-18:00

TRACK SESSION 5	TRACK SESSION 6
THEMATIC SESSION 5 Quality and Flavour Assessment CHAIR - Michelle End	THEMATIC SESSION 2 Agronomy CHAIR - Elizabeth Johnson
Oral presentations	Oral presentations
<ul style="list-style-type: none"> • Joël Allainguillaume, <i>The use of chloroplast markers for the traceability of certified sustainably produced cacao (<i>Theobroma cacao</i>) in the chocolate industry</i> - University of the West of England (UWE), United Kingdom • Juzhong Tan, <i>Sensing Fermentation Degree of Cocoa (<i>Theobroma cacao</i> L.) beans by Machine Learning and Traditional Classification Models based Electronic Nose System</i> - University of Georgia, USA • Naailah Ali, <i>Profiling Fermentation Progression and Quality Attributes of Trinitario and Refractario Cacao (<i>Theobroma cacao</i> L.) Hybrid Populations at the International Cocoa Genebank Trinidad (ICGT)</i> - Opportunities Cocoa Research Centre (CRC), The University of the West Indies (UWI), Trinidad and Tobago 	<ul style="list-style-type: none"> • Monika Schneider, <i>Comparing productivity and profitability of agroforests and monocultures in Bolivia</i> - Research Institute of Organic Agriculture FiBL, Switzerland • Enrique Arévalo-Gardini, <i>Influence of Agroforestry Systems with Cacao on Soil Properties (Physical, Chemical and Microbiological) in Peruvian Amazon</i>, Instituto de Cultivos Tropicales - ICT, Peru • Olivier Deheuvels, <i>How habitat heterogeneity affects pollinator's communities in cocoa-based agroforestry systems?</i> - Agricultural Research Centre for International Development (CIRAD), France

PLEASE NOTE THAT EACH THEMATIC SESSION INCLUDES DISCUSSION TIME BETWEEN AND AFTER ORAL PRESENTATIONS

Wednesday November 15, 2017

- **Wiebke Niether**, *Physiological response in beans of three cacao cultivars to micro-environmental growing conditions in cacao agroforestry systems and monocultures under conventional and organic management* - University of Goettingen, Germany

Poster slam sessions

- **William Ipanaqué Alama**, *Development and implementation of a prototype stainless-steel fermenter for cocoa beans* - Universidad De Piura (UDEP), Peru
- **William Ipanaqué Alama**, *Development and implementation of software using embedded systems for the remote web-based monitoring of cocoa bean fermentation* - Universidad De Piura (UDEP), Peru
- **Matthew Escalante**, *An assessment of the effect of cinnamon spice on cocoa nibs (*Theobroma cacao* L.) - An approach to change flavor in stored roasted cocoa nibs* - The University of the West Indies (CRC-UWI), Trinidad and Tobago
- **Shamsideen Aroyeun**, *Fungal And Bacterial Metabolites Contamination Of Cocoa Beans In Three Agro Ecological Zones Of Nigeria* - Cocoa Research Institute Of Nigeria (CRIN), Nigeria
- **Fabrice Davrieux**, *Adapting The Fermentation Process To Local Limitations: Using The Case Of Cocoa From Sambirano In Madagascar* - (CIRAD), France
- **Oluwaseun Kolawole**, *Status of Ochratoxin A in Seemingly Healthy Stored Cocoa Beans Sampled across Harvest Seasons in Southwest Nigeria* - Cocoa Research Institute of Nigeria (CRIN), Nigeria
- **Saheeda Mujaffar**, *Comparison of the drying behavior of fermented cocoa (*Theobroma cacao* L.) beans dried in a cocoa house, greenhouse and mechanical oven* - The University of the West Indies (UWI), Trinidad and Tobago
- **William Teneda**, *Rheological properties in chocolate manufacture* - Universidad Técnica de Ambato, Ecuador
- **Jesús Blancas Cortez**, *Chemical Study and Antioxidant Activity of Piura's White Cocoa* - Universidad Nacional de Ingeniería (UNI), Peru
- **Juzhong Tan**, *Particle Size Measurements and Scanning Electron Microscopy (SEM) of Cocoa Particles Refined/Conched by Conical and Cylindrical Roller Stone Melangers* - University of Georgia, USA

Poster slam sessions

- **Stephane Saj**, *Traditional cacao agroforestry in Central Africa can provide both respectable yields and levels of ecosystem services* - (CIRAD), France
- **Michael Opoku-Agyemam**, *Evaluation of cocoa in fruit tree species' shade system in Ghana* - Cocoa Research Institute of Ghana (CRIG), Ghana
- **Juan Suárez Salazar**, *Models to predict cocoa-tree sap flow under different agroforestry arrangements in the Western Amazon region of Colombia* - Universidad de la Amazonia, Colombia
- **Leïla Bagny Beilhe**, *Diversity of cocoa pollinators in Cameroon, Peru and Costa Rica* - CIRAD/ Institut de Recherche pour le Développement (IRAD), Costa Rica

PLEASE NOTE THAT EACH THEMATIC SESSION INCLUDES DISCUSSION TIME BETWEEN AND AFTER ORAL PRESENTATIONS

Thursday November 16, 2017

08:30

PLENARY SESSION 3

THEMATIC SESSION 6

Contaminants and food safety with focus on Cadmium

CHAIR - Carlos Leyva

Keynote presentation

- **Gideon Ramtahal**, *Mitigation of cadmium bioaccumulation in cacao through soil remediation* - The University of the West Indies, Trinidad and Tobago

Oral presentations

- **Monika Schneider**, *Effect of agroforestry and monoculture systems on cadmium availability and uptake* Institute of Terrestrial Ecosystems - Swiss Federal Institute of Technology, Zurich, Switzerland
- **Caleb Lewis**, *The genetic variation of cadmium (Cd) uptake and bioaccumulation in Theobroma cacao L.* - University of the West Indies (UWI), Trinidad and Tobago
- **Jayne Crozier**, *"Cocoasafe": Capacity Building And Knowledge Sharing In Sps In Cocoa In South East Asia And The Pacific* - CABI, United Kingdom
- **Michael Granvogl**, *Mineral oil hydrocarbons (MOSH/MOAH) in cocoa and cocoa products and possible minimization strategies* - Food Chemistry Institute (LCI) of the Association of the German Confectionery Industry (BDSI), Germany
- **Jeimmy Cáceres Zambrano**, *Characterization of culturable cadmium-tolerant microorganisms found in cocoa-growing soils in Cundinamarca, Colombia* - Universidad Nacional De Colombia, Colombia

Poster Slam sessions

- **Cesar Arévalo-Hernández**, *Heavy metals in soils, leaves and beans in cocoa-growing areas of Peru* - Instituto de Cultivos Tropicales (ICT), Peru
- **Santiago Pastor Soplin**, *Cadmium levels in chocolate: MRLs and EQSs are fine, but not TBTs* - Universidad Científica del Sur, Peru
- **Jimmy Chupillon Cubas**, *Cadmium accumulation in six cocoa genotypes used as rootstock* - Instituto de Cultivos Tropicales (ICT), Peru
- **Andrea Revoredo**, *Effect of actinomycete strain inoculation on cadmium accumulation in cocoa plants (Theobroma cacao L.)* - Universidad Peruana Cayetano Heredia, Peru

10:30-11:00

Coffee Break

11:00-12:30

PLENARY SESSION 4

- Reports from each of the 7 Thematic Area sessions

11:00-14:00

Lunch

14:00-15:30

PLENARY SESSION 5

- Discussions and comments from participants
- Conclusion of the Symposium

15:30-16:00

Coffee Break

16:00-17:00

- Recommendations from the ISCR 2017
 - Discussions and comments from participants
 - Proposal for the next ISCR
- ISCR 2017 closing at 17:00

PLEASE NOTE THAT EACH THEMATIC SESSION
INCLUDES DISCUSSION TIME BETWEEN AND
AFTER ORAL PRESENTATIONS

Friday November 17, 2017

09:00-17:00

- 4 IN-COCOA groups meetings (INGENIC, INCOPED, INCOSOM, INAFORRESTA) AND/OR
- Organized visits in Lima

Saturday November 18, 2017

09:00-17:00

- Options of field trips of 2 days and 3 days
- Please see below for the separate programme on field trip

ISCR 2017 – FIELD TRIPS

Field trips registration deadline: **30 of October 2017**

	Field trip	Duration	Point of interest	Included / Not included	Hotel	PRICE ¹
1	Wonderful Cusco (Machu Picchu)	18-20, November 2017 3 days / 2 nights	Visit of the old Inca city of Machu Picchu	Flight Lima-Cusco and bus connection Train tour Bus from/to Machu Picchu SP/EN Guide Visits and entrances as specified Hotel Lunch (Day2) and 2 breakfasts Not included: Meals of the Day 1 ²	Libertador Palacio del Inka Hotel Sonesta	\$1027 \$824
2	The cocoa road in Cusco	18 -19, November 2017 2 days / 1 night	Landscape during the travel Cusco-Ollantaytambo-Abra Malaga-Quillabamba Viewpoint of the morro San Juan Extension centre of the hacienda Potrero (old hydraulic system, sugarcane, cocoa, coffee plantations and cattle) Sambaray swimming pool Andean museum Coffee and cocoa cooperatives / process units	Flight Lima-Cusco and bus connection Hotel and breakfast 2 lunches and 1 dinner SP/EN Guide Visits and entrances as specified	Countryside hotel of Quillabamba	\$592
3	The cocoa and chocolate road in Tarapoto	18 -19 November 2017 2 days / 1 night	Visit of the Tropical Agronomy Institute and experimental fields Orquidea chocolate corporation ³ Fine cocoa fields of Qoya and Mishky Cacao corporation	Flight Lima-Tarapoto Transfer airport / Tropical Agronomy Institute / Hotel Visits and entrances as specified SP/EN Guide 2 lunches 1 dinner at the hotel Hotel and breakfast	Hotel Rio Shilcayo	\$432

¹ Tour Prices includes the hotel fares for a double room. The price is given for a minimum of 20 participants. Below this number, the departure is guaranteed but the price will be recalculated according to the number of participants. The prices of flight ticket cans vary according to availability and demand

² Because of the altitude sickness, meals of the day of arrival in Cusco are not included but can be provided with supplement

³ During the week end, only the shop and the plantation are opened to the public



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