

Cacao for Peace Research Meeting: Event Report



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Background

The USAID/USDA Cacao for Peace Program (CfP) vision is to contribute to improvement of rural well-being of Colombian cacao farmers through agricultural development and to have positive impact on income, economic opportunities, stability and peace. In recognition of the important role of agricultural research and education for sustainable economic development, the main goals of CfP project include strengthening key public and private institutions and building their capacity to support the cacao sector in Colombia. Therefore, to jumpstart the project activities, CfP sponsored the organization of a research strategy and networking meeting in May 2017 in Barranquilla, Colombia. The meeting involved participants from a wide variety of institutions in Colombia and selected international experts from USA. Building upon existing national efforts and programs, and national and international experience, the aims of the meeting sessions were to improve the overall understanding of the current needs, identify gaps and to promote the development a shared vision among the stakeholders (national and international) for future research and education activities for the cacao sector in Colombia and more specifically in the Caribbean region of Colombia. This report includes summary of the main events and presentations that took place as well as the conclusions, as well as the recommendations and outcomes from the meeting. The intent of this report is to inform the broader science community and funding agencies, and to guide CfP management in the establishment of funding priorities for the current and future project activities.

Meeting Objectives

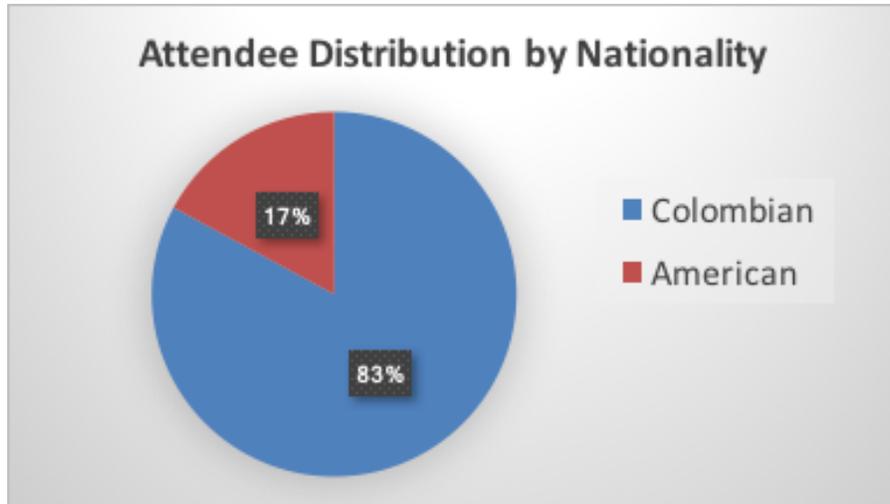
- I. Identify current needs and gaps for Colombia and the Caribbean Region by reviewing and understanding existing national and international research efforts.
- II. Develop a shared vision for the Caribbean region among CfP's stakeholders.
- III. Facilitate collaboration relevant to the priorities of the cacao sector in Colombia and the Caribbean region.
- IV. Educate cacao value chain members about CfP's research activities in benefit of Colombia and particularly of the Caribbean region.

Attendees

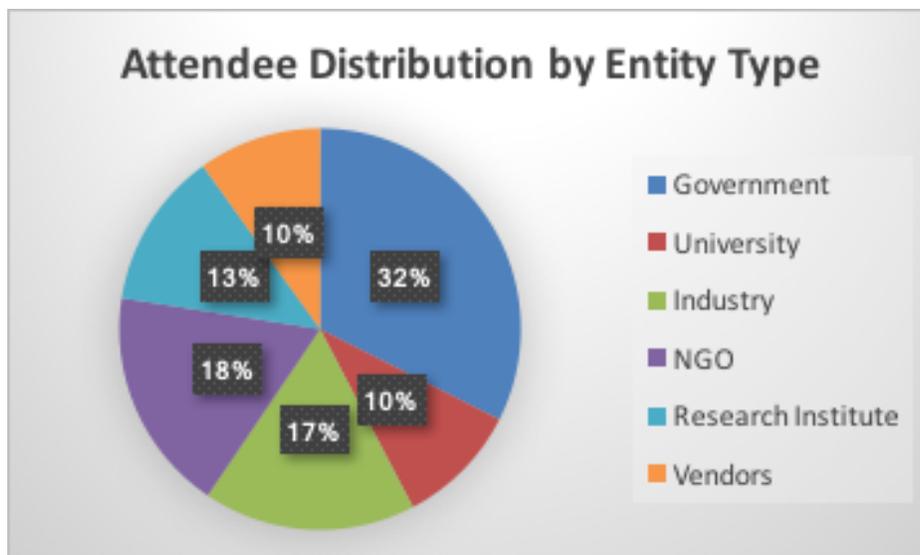
A list of invitees was developed by USDA-FAS, The American-Colombian Chamber of Commerce, Barranquilla (AmCham), USAID Colombia and Penn State to represent the major stakeholders of CfP and the cacao value chain. In total, 112

participants representing 52 institutions registered for the event, which represented a large majority of the invitees. The high attendance rate indicated that there is a generally high interest in the CfP and willingness to participate. The attendees represented a largely even distribution of entities from Government, industry, universities, NGOs, Research institutes and vendors exhibiting their products, with a majority (>80% of Colombian nationality) (see Appendix 1 for full list).

Attendee Distribution by Nationality



Attendee Distribution by Entity Type



Overview of the Main Activities of the Meeting

To address the main meeting objectives, a series of discreet activities were developed to educate and involve all meeting participants and to promote active communication and collaborations within the Colombian cacao research sector and the international CfP research partners (see Annex 2 for the full agenda).

Information Exchange

The agenda for the first day of the meeting was designed to provide all participants with a broad overview of the CfP program and research activities of each of the participating CfP partner organizations. This was followed by a series of scientific presentations relevant to the goals of CfP that are underway in the partner organizations.

Research Priority Setting

To identify and build consensus on research priorities for cacao research in Colombia and the Caribbean region an interactive and participatory approach was implemented that included formal presentations of priorities by the individual groups, anonymous pre-meeting survey, breakout group discussions and reports, and individual voting.

Promoting Collaborative Research

To promote research ideas generation and inter-institutional interactions, team-building exercises were conducted during the second day of the meeting with approximately 50 participants representing research institutions involved or interested to be included in the project. Participants were self-assigned to groups based on research interests. The individual groups were tasked with the development of a team-based research project concept that would be potentially submitted to the CfP competitive seed grants program (announced at the meeting) or to other potential funding sources. The concepts were presented to the entire group in a joint session.

Increasing CfP Project Visibility

During the closing session of the meeting the CfP project and the conclusions of meeting were presented to government officials from the Caribbean region of Colombia and representatives of the media. Key participants from all sectors in attendance presented summaries of the symposium and concluding remarks.

Networking

Networking opportunities were provided during the organized coffee breaks, group lunches, during the end-of-the-day receptions and during the research poster session.

Session Summaries

Opening Sessions and Overview Presentations

The meeting was opened with remarks by Anatolio Santos, the Economic Development Secretary, State of Atlántico and Michael Conlon, Agriculture Counselor, Embassy of the United States who highlighted the importance of the cacao value chain in the development of the Colombian economy in the post-violence era.

Fifteen-minute overview presentations were made by the major CfP partners and other invited institutions including representatives from Ministerio de Agricultura y Desarrollo Rural, Concejo Nacional del Cacao, CORPOICA, FEDECACAO, Universidad Nacional de Colombia, Universidad de Antioquia, Compañía Nacional de Chocolates, CASA LUKER, USDA-ARS, CIAT, USDA-FAS, Bogota, USDA-FAS, Washington DC, and Penn State. These presentations were helpful in setting the stage and information exchange for all participants related to the overall capacities and activities of the institutions as well as the goals for CfP. Our general observation is that there was a great need for this kind of sessions and exchange because many of the participants were not aware of each other's work nor of the general goals of CfP. This observation was supported by the questions and comments during the open discussion session following the presentations.

Scientific Presentations Overview

To further exchange information related to the scientific research in progress on cacao in the CfP participating institutions, a series of 20-minute technical scientific presentations were made by representatives of 10 different research institutions including institutional overviews and research results. The topics spanned all aspects related to:

1. Genetic diversity
2. Breeding and Selection
3. Soils Science
4. Cadmium and Suitability Mapping
5. Pest Management
6. Agroforestry
7. Harvest and Post-Harvest Management
8. Cacao quality
9. Plant propagation (biotech)

Summaries of the Scientific Presentations

Genetic Diversity and Breeding Programs in Colombia

1. USDA-ARS

Main Goals: Improvement of accuracy of efficiency of conservations and utilization of genetic diversity

Methodology: Use the international 96 SNP panel to evaluate the genetic structure of the Corpoica cacao collection (1000 accessions) and additional material collected by the CfP projects participants.

Comment: New genetic diversity can be discovered in the Amazon and the Inter Andean regions

2. Corpoica

Main Goals:

- Finalize the characterization of the CORPOICA cacao diversity collection, consisting of about 1000 accessions.
- Initiate a breeding program for improved varieties for low cadmium accumulation, diseases resistance, high bean quality and self-compatibility.
- Conduct research on gene discovery for resistance to Phytophthora.
- Conduct research on gene discovery for cadmium uptake genes.
- Conduct research screening plants for cadmium uptake.

3. Fedecacao

Main Projects:

- Cacao germplasm collection.
- Evaluating germplasm for resistance to monilia.
- Released 8 new varieties.
- Collected and evaluating 27 cacao Criollo varieties.

4. MARS Inc.

Main Projects:

- Extensive experience in selection and breeding for cacao using molecular markers for MAS, GWAS, Genomic Selection for Breeding
- New approaches including genomic Selection for breeding for disease resistance.
- Not currently working in Peru.

Cacao Diseases and Resistance

1. USDA-ARS

Main Projects:

- Participated in the sequencing of all major cacao pathogens.
- Exploring the divergences in biology of *P. megakarya* and *P. palmivora*

Conclusions:

- The center for diversity of *Monilia* is in the Magdalena valley.

- Pathogens are always changing.

2. Corpoica

Main Projects:

- To identify strategies to control all diseases (7 different projects with multiple strategies).
- Characterization of the genetic diversity of Monilia.
- Screening for plant resistance to Monilia.
- Developing strategy for controlling the root insect Carmenta.

3. Penn State

Main Projects:

- Genomics approach to study plant immunity.
 - Examination of genetic diversity in defense genes in geographically separated populations of cacao in South America.
 - Applying CRISPR/Cas9 strategy for application in studying gene function in cacao.
 - Improving understanding of the specific defense response of trees to diverse pathogen species
 - Large scale discovery of genes for disease resistance
 - Secondary metabolites and their genes that are produced by cacao that provide protection to Phytophthora spp
- Cacao propagation via somatic embryogenesis.
- Cadmium transporter proteins in cacao.

Issues Related to Production

1. USDA-ARS

Main Projects:

- Cadmium cycle in the soil: sources, accumulation, and mobility, bioavailability.
- Cacao genotypes vary in their ability to accumulate cadmium.

Main strategies:

- Screening genotypes and accessing soil.
- Reduction of bioavailability.

Comments:

- Cadmium regulations in EU are changing in 2019.
- Urgent need to reduce cadmium accumulation in cacao beans.
- Need of multidisciplinary team to combat the problem.
- Need to research at all heavy metals not only cadmium.

2. Corpoica:

Main Projects:

- Large team is working on cadmium related issues:
 - Cadmium mapping.
 - Screening for cacao germplasm.
 - Strategies for blocking uptake of cadmium by the cacao plants.

3. National University

Main Projects:

- Research on cadmium in Nilo and Yacopi.
- Cadmium accumulation from different plant tissues.
- Constructing cadmium maps.

4. UPRA

Main Projects:

- Main mapping organization in Colombia.
- Creating various maps assessing suitability to grow cacao on 1:100 000 scale.
- Next steps would be: finer detail mapping.

General Observations and Conclusions of the Research Preservations Sessions

Ten different research institutions presented institutional overviews and research results on varieties of topics spanning all aspects related to: genetic diversity, breeding and selection, soils and water science, cadmium and suitability mapping, pest management, agroforestry, harvest and post-harvest management, cacao beans quality and plant propagation. These general topics presented, with exception of the cadmium issues are relevant to research worldwide. The cadmium issue is relatively new and the urgency and importance of this topic stem by the fact that the European Union has proposed to enforce on January, 1, 2019 a limit for Cd in cocoa powders of 0.6 µg per gram of cocoa powder. Cadmium related research currently is of major importance not only for Colombia, but also for Peru, Ecuador and Venezuela. Another issue of great importance specifically for Central and Latin America is the crop loss due to frosty pot infection. As a consequence, the presentations at the meeting reflected the great efforts and variety of approaches undertaken by all institutions that are focused on these 2 issues related to cacao cultivation in Colombia.

In general, the research and the presentations from the Colombian and US participants were at high level reflecting the meeting's participation of the leading Colombian and US institutions involved in cacao research. USDA-ARS, Penn State and Mars Inc. are international leaders in cacao research and major collaborators in a number of research projects in Colombia. One major observation is that although many of the Colombian institutions have similar goals and complimentary expertise and resources, there are limited collaboration efforts. It became obvious from the presentations that there is duplication of efforts. Unfortunately, despite the limited availability of research funding this situation is common for the cacao research community in general and Colombia is not an exception. This fact highlights the necessity and the opportunity for the CfP project to contribute to coordination of the research efforts in Colombia in partnership with leading research institutions in US.

Research Priority Setting

One of the major goals of the meeting was to identify and build consensus on research priorities for cacao research in Colombia and the Caribbean region. To achieve this goal a series of activities were implemented including general presentations (as discussed above), anonymous pre-meeting survey, group discussions and individual voting. The anonymous survey was conducted to give an opportunity to the participants to express their individual opinion and vision related to the priorities and the future of cacao research. The survey took place in the beginning of the meeting with the intention to direct attention to the issue prior and during the institutional presentations. Each participant was given the following survey form.

Cacao Research Priorities Survey

Survey Text:

To prepare for our discussions tomorrow, we would like to ask for your opinion on what are the priorities for cacao research for Colombia. Please take your time to decide during the course of the day and briefly answer the questions below. Please, return this sheet to the organizers by the end of the day (May 17, 2017). The results of the survey will be summarized and reported during the morning session on May 18, 2017.

Please, answer these questions:

In your opinion, what are the top priority areas for cacao research? List only your top four priorities for each of the two categories below. If necessary the priority areas can be listed in both categories.

- 1) For all cacao regions in Colombia.
- 2) For the Caribbean region of Colombia.

A total of 36 participants responded to this survey. To summarize this prioritization, the number of votes and priority level were combined for each topic to determine a total weighted score (high number = higher priority). This was repeated for prioritization of research needs for Colombia in general and for the Caribbean specifically. The results of this are shown below.

Survey Rankings of Research Priorities for Colombia

| Priorities for Colombia | Scores | | | | TOTAL WEIGHTED SCORE |
|---|---------|---|---|----------|----------------------|
| | 1 (low) | 2 | 3 | 4 (high) | |
| Priority levels | | | | | |
| Cadmium & heavy metals in general - mitigation, remediation, abiotic stress | 12 | 8 | 4 | 2 | 82 |
| Productivity (sustainability, best practices, recommendations, postharvest, site specificities, agronomics) | 9 | 4 | 4 | 2 | 58 |
| Soils-water (irrigation, fertilization, nutrients, characterization, treatment, evaluation) | 8 | 2 | 3 | 3 | 47 |
| Genetic materials (germplasm collection, varieties, breeding, improvement) | 9 | 1 | 2 | 3 | 46 |
| Tech Transfer (innovation, tech package development, best practices) | 3 | 3 | | | 21 |
| Resistance to diseases | 2 | 2 | 3 | 1 | 21 |
| Mapping (scale, accuracy, risk, genetic varieties) | | 4 | 4 | 1 | 21 |
| Agroforestry systems | | 3 | 2 | | 13 |
| Inventories - germplasm collections | 2 | 1 | | | 11 |
| Market (development, processes, networking, business model) | | 1 | 1 | 1 | 6 |
| Climate change | | 1 | | | 3 |
| Pruning | | 1 | | | 3 |
| Post-harvest | | | 1 | | 2 |
| Sensory profile | | | 1 | | 2 |

Survey Rankings of Research Priorities for the Caribbean Region

| Priorities for the Caribbean region of Colombia | Scores | | | | TOTAL WEIGHTED SCORE |
|---|------------|---|---|-------------|----------------------------|
| | 1 (low) | 2 | 3 | 4 (high) | |
| Priority levels | | | | | |
| Soils-water (Irrigation, Fertilization, Nutrients, Characterization, Treatment, Evaluation) | 10 | 5 | 3 | 3 | 64 |
| Genetic materials (germplasm collection, varieties - drought-resistance, breeding, improvement) | 7 | 8 | 1 | 6 | 60 |
| Productivity (sustainability, best practices, recommendations, postharvest, site specificities, agronomics) | 4 | 6 | 8 | 4 | 54 |
| Cadmium & heavy metals in general-mitigation, remediation, abiotic stress | 4 | | 3 | 1 | 23 |
| Technology transfer (Innovation, tech package development, best practices) | 1 | 3 | 3 | 1 | 20 |
| Farmers (support, training, funding, profitability, training young farmers, certification, associations) | 1 | 2 | 4 | 2 | 20 |
| Resistance to diseases | | 3 | 3 | 1 | 16 |
| Market (development, processes, networking, business model) | 1 | 2 | 2 | 1 | 15 |
| Agroforestry Systems (farm surveys, technical studies, suitability) | 2 | | 2 | | 12 |
| Sensory profile | 1 | | 2 | | 8 |
| Irrigation | | | 3 | | 6 |
| Value added (finished product) | 1 | | | | 4 |

Conclusions from the Research Priorities Pre-meeting Survey

Based on the data from the surveys, it can be concluded that the participants strongly prioritized research on cadmium as a very high priority issue for Colombia in general, but less so for the Caribbean region. Water and soil issues, along with genetics (especially drought resistance) were highly prioritized for the Caribbean region, which were the two second tier priorities for Colombia in general. Surprisingly, the respondents gave very low priorities for both surveys for issues related to production systems (agroforestry, pruning, post-harvest), farmer support as well as market development and sensory profiling. These conclusions should be taken with some caution as the surveys were of research scientists who are very much focused on plant productivity for the most part and thus are biased against social or economic intervention research. Interestingly although the main focus of the day one presentations was on disease resistance the initial survey indicated that this issue is not considered of very high importance for the survey participants. Within the sampled group however, several clear conclusions can be made:

Top Issues for Colombia

- Cadmium Mitigation
- Integrated Crop Management/ sustainability: water, soil, nutrients
- Genetic Crop Improvement

Top Issues for Caribbean Region

- Soil and Water
- Integrated Crop Management/ productivity and sustainability
- Genetic Crop Improvement

Group Discussions and Voting on Research Priorities

Following the presentations of the survey results, a breakout exercise was conducted to provide additional opportunity to the participants to voice their opinions and to discuss with others the prioritization of the research topics. The goal was to justify and refine the priorities set out in the pre-meeting survey after participants had a chance to listen to the research presentation and consider additional points of view.



The attendees were distributed randomly into breakout groups where they discussed the top research priorities for cacao in Colombia and the Caribbean region. The groups were asked to address the following questions over a 20-minute period.

1. Importance and potential impact of each research topic for Colombia and the Caribbean region.
2. Key challenges to progress for each research topic.
3. Existing projects in progress on this topic.

Following the individual group discussion, each group summarized and reported their conclusions to the entire group. The top priorities were recorded in a compiled list. The new combined list was then additionally discussed with the whole group for a period of time after which each attendee was asked to select and vote on their top five research priorities. The total number of votes for each research topic were calculated and the list was sorted by priority score, after which further discussions were held. The results of this exercise are shown below.

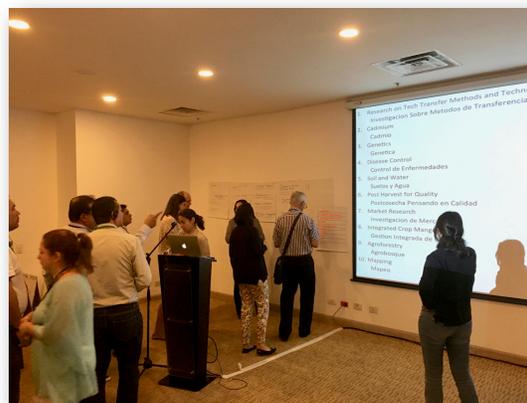


Table of Consensus Research Priorities

| | |
|--|------------|
| 1. Cadmium | – 35 votes |
| 2. Soil and Water | – 28 votes |
| 3. Genetics | – 24 votes |
| 4. Tech Transfer Methods and Technology Adoption | – 21 votes |
| 5. Market Research | – 17 votes |
| 6. Disease Control | – 11 votes |
| 7. Post-Harvest for Quality | – 10 votes |
| 8. Mapping | – 8 votes |

| | |
|-------------------------------|-----------|
| 9. Integrated Crop Management | – 8 votes |
| 10. Agroforestry | – 2 votes |

Conclusions from Priority Setting Session

Based on the results of this activity, we can conclude that the highest priority topics identified were generally consistent with the priorities identified in the initial surveys with a few notable differences. Cadmium, soils, water and genetic were prioritized high in all of the surveys except the initial Caribbean specific survey which did not rank Cd high. However, after the group discussion and prioritization exercise, the topics of technology transfer and market research were ranked much higher while integrated crop management was ranked lower. From this exercise, we can conclude that in the view of the participants the following topics can be considered high priority consensus research topics for Colombia:

1. Soil (including Cd) and water
2. Genetic crop improvement
3. Technology transfer and adoption
4. Market research

Again surprisingly, disease resistance, agroforestry, crop management and farm mapping were clearly of lower priority. It should be stated that all of the above topics are of importance to the development of a sustainable cacao value chain. These conclusions are simply reflecting the perceived relative importance of them when compared to each other, and do not imply that the lower priority issues are not of importance.

Research Teams Building Session

Description of the approach

In order to develop research ideas and collaborative networks, a team-building exercise was held. Participants were asked to join a group with a focus on each of the top research priorities identified. Two sessions of 20 minutes each were held. Groups were instructed as follows:

1. Select a research topic and take a seat at the table with the corresponding sign.
2. Each group needs to complete the following:
 - a. Select a research question to be addressed by inter-institutional collaboration. It could be a new project or an existing project that could be expanded with finding from CfP to bring new inter-institutional collaborators.
 - b. Discuss the research objectives and research approach.

- c. Discuss potential roles of collaborators: The projects should be inter-institutional and interdisciplinary, so the developed ideas and teams should include a wide diversity of participants and approaches.
- d. Select a reporter to summarize and report on the discussion.
- e. For the second session, participants can change to new table if interested on a different topic.

Research Teams formed

The following teams were formed:

1. Cadmium: UPRA, National Geo, Fedecacao, National Univ. other univ. Corpoica, National Chocolate Co., CIAT, Casa Luker
2. Genetics: USDA-ARS, CIAT, MARS PSU, CORPOICA others
3. Soil and water: UPRA, National Geo, Fedecacao, National Univ. other univ. Corpoica, National Chocolate Co., CIAT, Casa Luker
4. Research on Tech Transfer: Corpoica, Fedecaco, Penn State, USDA-FAS, other
5. Marketing: Fedecacao, Corpoica, National Chocolate Co., Casa Luker, other
6. Disease control: USDA-ARS, Mars, Corpoica, Penn State
7. Post-harvest Issues: CORPOICA, Fedecacao other
8. Mapping: CORPOICA (lead), Agustin Codazi, IGAC, ICA, Humboldt Inst., MOA, MOE, local Universities and governments, UPRA, IDEAM? PSU Center for Environmental Informatics

Research Teams Summary Reports

Cadmium

Research Objectives:

1. Investigate cadmium content in:
 - In plants
 - In soils
 - In post-harvest
2. Investigate soil-plant Cd relations:
 - How does the Cd cycle effect soil-Cd relations
 - Mapping Cd hot spots in soil
 - Bioremediation (bacteria, fungi, mycorrhizae)
 - Cacao genotypes and molecular basis of differential Cd uptake.
 - Cd in chocolate

- Potential participants:
UPRA, National Geo, Fedecacao, National Univ. other universities,
Corpoica, National Chocolate Co., CIAT, Casa Luker

Genetics

Research Question:

Farmers use old low yielding varieties, are there new clones that will perform well in Caribbean region?

Approach:

- Take top 25 new clones and do multi-locational trial in Caribbean region
- Select 5 best (what is best: Yield, quality)
- Demonstration trials
- Deliver best to farmers

Potential participants:

USDA-ARS, CIAT, MARS, Penn State, CORPOICA others

Soil and Water

Proposal to Create a “Rapid response soil fertility system” that will provide information on:

- Nutrients
- Cd
- On the spot analysis and recommendations
- Cell phones image analysis
- Fertility diagnosis using photos
- Ground up data delivery, farmer-farmer dialog to spread the word
- Soil health program, minimum data set, microorganisms, organic carbon content etc.

Potential participants:

Penn State, CIAT, CORPOICA, Fedecacao, UPRA others, National

Research on Technology Transfer

Research Goal: To improve adoption of new technologies

Research Questions:

- What do farmers think they need and their motivators?
- Discover main limitations to adoption
- Public and private institutions
- Surveys, in main producing areas
- Systems that are more feasible, less expensive
 - Knowledge networks, producer to producer projects

Potential participants:

Corpoica, Penn State, Fedecacao, others

Marketing

Research Question: How to position Colombia in the world-wide cacao market with specific focus in US?

Approach:

- Identify market niches
- Incentivize consumption in Colombia and US
 - Business agendas
 - Participation in international cacao fairs
 - What niches are there and what cacao can satisfy these niches
 - Promote image of Colombian Cacao
 - Maria del Campo: strengthen this marketing effort
 - Marketing of cacao story
 - Certification of child labor
 - Post conflict era story, added value

Potential participants:

Fedecacao, Corpoica, Casa Luker, Nutressa others

Disease Control

Background: Diversity of cacao diseases

- Linked to genetics projects
- Sampling of pathogens and diversity analysis

Approach: Integrated crop management

- Many good technological packages exist, can we make a unified agreement on best practices?
- Multi-locational trials of IPM packages
- Demo trials on best IPM packages
- Once validated, distribute the information

Potential participants:

USDA-ARS, Mars Inc., Corpoica, Fedecacao, others

Post-harvest Issues

Research question:

Transportation of wet beans is a problem in SNSM, unfermented or under-fermented beans

- How to improve?

Approach:

- Biochemical and genetic data to develop quantitative model to predict sensory profiles of the cacao
- Methods to respond to different market niches
- To reduce toxins produced by fungi (aflotoxins)
- Developing co-products
- Cacao purchasing strategies to increase to same or better level than for coca

Potential participants:

Corpoica, Asociaciones de productores, Fedecacao, Universidad de Antioquia, Peace corps, Penn State

Mapping

Not a research issue, but need for planning purposes: Integrate with new techniques to provide farmers with specific actionable information

Needs for research sector

- Cd presence (1:100,000 map of Cd, more detailed in some areas)
- Biodiversity mapping
- Disease presence maps
- Underground water mapping for irrigation

Potential Participants: CORPOICA, Agustin Codazi, IGAC, ICA, Humboldt Inst., MOA, MOE, local Universities and governments, UPRA, PSU Center for Environmental Informatics, CIAT



Summary of Closing Session

The closing session of the meeting was designed to increase the visibility of the CfP project and to inform administrators from the Caribbean region about the project activities and possibilities for contribution to the cacao development goals of region. The Colombian and US administration was represented by Eduardo Verano, Governor of the Department of Atlántico; Anatolio Santos, Economic Development Secretary, Department of Atlántico; Carlos Gutierrez Caballero, Economic Development Secretary, Department of Magdalena; Cesar Riqui Oliveros, Director of Agricultural and Forestry Chains, Ministry of Agriculture and Rural Development of Colombia; Andres Romero, Cacao for Peace Program Manager, USDA-FAS Washington; Juan Fernando Gallego USDA-FAS Bogota; and Fernando Gomez, Development Officer, Office of Rural and Economic Development, USAID Colombia.

Aaron-Micael Beydoun, Fenicia Trading presented possibilities on “How Colombia can become a world- level cacao production center”. Additional presentations included: overview of the CfP project by Andres Romero, USDA-FAS; overview of USAID agenda Fernando Gomez; Meeting summary and conclusions by Siela Maximova, Penn State.

Post-Meeting Survey

Purpose of the Survey

A post-meeting survey was conducted to provide opportunity to the participants to offer feedback and express their opinions regarding the quality and impact of the meeting, as well as to solicit suggestions for planning of future CfP activities. The short post-meeting survey was developed, distributed and analyzed in collaboration with faculty from the Penn State College of Communications.

Methodology

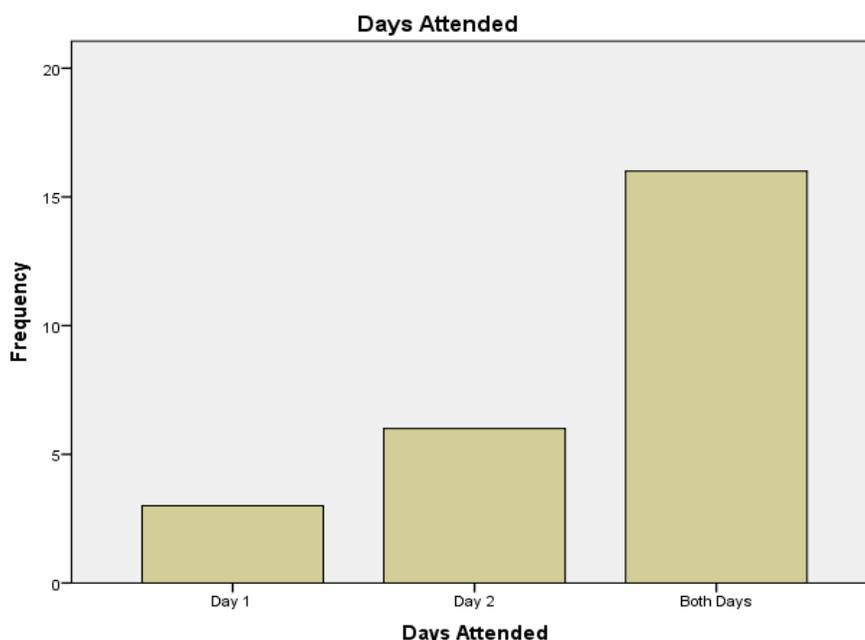
The final list of registered participants was obtained from AmCham, the local organizing entity. An on-line survey was created in an online survey platform in collaborations with Dr. Lee Ahern from the College of Communication and sent out to 110 registered participants (all provided email addresses at registration). The full text of the survey is attached in Appendix 3: Post-Meeting Survey Questions. The list excluded the organizers Mark Gultinan and Siela Maximova. The survey was first sent on June 20, 2017 with one reminder sent on July 5, 2017.

The results were analyzed using excel. Frequencies of responses for each question in the survey and thematic categorization of open-ended responses was conducted to analyze the data.

Results

Overall Results

By June 30, 2017 only 20% of the participants have responded to the survey. On July 5, a reminder was automatically generated and was sent to the participants that have not responded. The survey was closed on July 18. The final number of valid completions was 25 representing 22.7% of responses. The 25 responses included only 2 representatives from US research institutions. Twenty-three responses were provided by Colombian participants. The majority of responses (13) were from Colombian researchers. Additionally, there were 4 responses from representatives of the local governments, 2 responses from participants representing industry, 2 from the Peace Corps, and 2 from the local organizers. Most survey responders attended both days of the meeting.



Answers to multiple choice questions

On the key questions of overall satisfaction, day one satisfaction, day two satisfaction and networking opportunity satisfaction, scores were very high (**scale of 1 to 7, 1 indicated highest satisfaction**), indicating that in general the respondents were very satisfied with the meeting. The means and the standard deviations of the means confirm that the majority of the respondents are in agreement and give very high scores for satisfaction.

Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|----|---------|---------|------|----------------|
| How satisfied are you with the overall experience at the 2017 Cacao for Peace Research Symposium? | 25 | 1 | 3 | 1.36 | .569 |
| Please indicate the degree to which you found the Research presentations on day one of the Symposium? | 18 | 1 | 2 | 1.11 | .323 |
| Please indicate the degree to which you found the priority setting and team building activities on day two of the Symposium to be useful? | 17 | 1 | 4 | 1.47 | .800 |
| How satisfied are you with the quality of the networking opportunities at the meeting? | 21 | 1 | 5 | 1.52 | .981 |
| Valid N (list wise) | 14 | | | | |

Answers to open-ended questions

Q6. What did you like the MOST about day two of the conference?

Summary of Responses to Q6

There were 22 responses to this question that were classified in 4 different categories:

1. Very positive opinions were shared related to the participation of variety of stakeholders in the meeting, representing entities involved in the entire cacao value chain in Colombia and the major research institutions nationally and from the US. Appreciation for the opportunity provided for networking and close interactions among the participants was expressed by the majority of respondents. The value of knowledge sharing among scientists, investors and agricultural agencies related to the cocoa crop was highlighted. The responses also indicated that it was important to share and learn about the commitments, projects and the experiences in research from the different institutions including the private industry. Opinion was shared that the networking and the participatory discussion help to building trust among the participants and will help them “to become relevant stakeholders within the value chain”.
2. A majority of respondents indicated that they appreciated the opportunity to hear the research presentations on different topics and from the different institutions. The quality and technical depth of the presentations was evaluated as high. In general, the respondents share opinion that the research presentations will contribute to inform “national actors associated with chocolate industry about the value of doing science”. A majority of respondents felt that the presentations during the first day set the base line for the follow up discussions.
3. A few participants indicated that they appreciated the participation of the vendors and the ability to taste local chocolates.
4. The workshop methodology in order to determine research priorities was selected as favorite by one participant.
5. Few participants indicated that this is the first event of this kind and that they liked everything about the meeting, “all the interventions were very good, and it is very important to hold these kinds of events”.

Q7. What did you like the LEAST about day two of the conference?

Summary of Responses to Q7

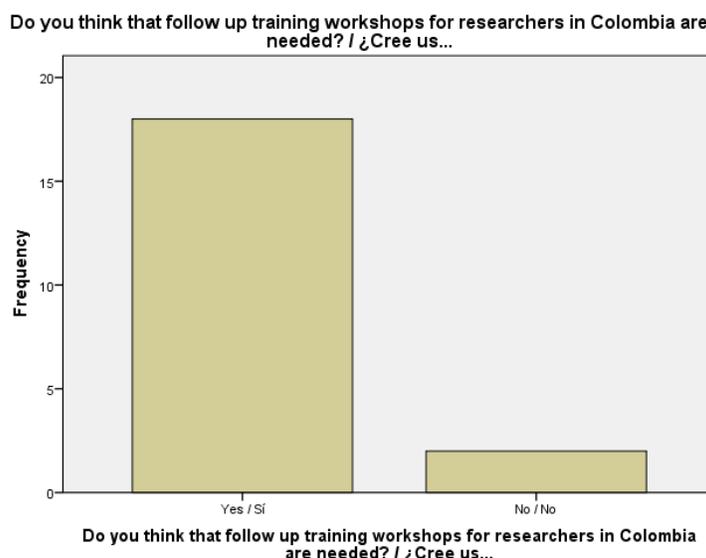
Ten responses were collected for this question. A majority of the responders expressed an opinion that the large number of presentations covering different topics during the first day was somewhat overwhelming and that more time should be given for the research presentations in general. A majority of the respondents also expressed that the total conference time was too short and there was not enough time allocated for each topic, for the poster presenters and the exhibitors. An additional day potentially could provide more time to relax the oral presentations and provide more time for the posters and the exhibitors.

Individual responses also included:

1. More time should be allocated for the team building activities like the activities on day 2.
2. There was a repetition of the topics presented by the different institutions.
3. Attendance of official agencies could be better.
4. No funding opportunities were provided for future research activities for collaboration of several institutions.
5. Low representation of farmers “I would like to ask for a space for the farmers too, it will be extremely positive if some farmers associations could have the chance to share their experiences too”.

Q8. Do you think that follow-up training workshops for researchers in Colombia are needed?

The vast majority of respondents indicated a need for follow-up training.



The proposed topics for training varied. Below is the summary of the main categories. Due the relatively small number of responses no priority was established.

Topics related to natural sciences

1. Training on establishment of new varieties with relationship to local adaptation, taking into account the variety of climate conditions in Colombia.
2. Focused on phytopathology: characterization, identification, conservation of pathogenic fungi, bacteria, etc.
3. Disease management and control.
4. Soil sampling and analysis, field techniques for evaluating soil health, Cd risk areas.

5. Phytoremediation and micro-remediation methods that contribute to the management of cadmium in soil.
6. Training in sensory evaluation
7. Training on cacao quality

Topics related to social sciences

8. Creation of associations and unions
9. Marketing
10. Technology Transfer and Transfer of Knowledge

General professional development

11. General and specific training in experimental design and data collection. Specific training in statistical analysis and interpretation of results.
12. Science communication
13. Exchange for English language learning
14. Methodologies to share information and establishment of priorities (in research, economy and actual challenges) in cacao value chain

Q9. Please enter any feedback or suggestions you would like to share with the organizers.

All comments included:

1. "I would like to thank you for having given the region (and especially the people of Atlántico) the opportunity to get to know the benefits of a product such as cacao, and for a program like Cacao for Peace."
2. "AMCHAM (Erica and Vicky) is an excellent partner. And the food of the event, the place, the samples of cacao. Everything was spectacular."
3. "It was an interesting activity where sharing with other institutions allows to nourish the knowledge acquired, hopefully the progress made in this day will allow the Caribbean region to activate and dynamize cacao cultivation a little more, providing tools to farmers for the advancement and expansion of cultivation in Colombia."
4. "Organizers should conduct activities that are a little more practical; for example: 1) When talking about highly productive materials, we should see them in the field; and 2) if we talk about new research, we should see results."
5. "This initiative is very interesting, but it requires more time. It is not feasible to hope to reach conclusions in one morning."
6. "In my opinion, this work must be done with a national – rather than a regional – approach, without sidetracking the work being done in the regions. Thus, the mind map that (I think) should be built could include the places where each agency is working."
7. "I only have feelings of gratitude for all the benefits received during the event."
8. "Congratulations!"
9. "Great meeting!"

10. “Thanks for your incredible effort.”

Conclusions of post-meeting survey

- Of the 25 persons who responded to the survey, most attended both days.
- Most responders (17 of 25 respondents) indicated very positive general impressions and opinions about the conference experience (e.g. “Extremely satisfied”)
- Most responders made positive remarks about the networking and knowledge sharing opportunities.
- Papers were noted for their high quality.
- The responders highlighted:
 - The critical need fulfilled by this meeting,
 - The need of coordination among the researchers and the projects
 - The need to organize follow up training in the variety of topics (requested by 23 of 25 respondents).
 - The need to provide funding opportunities for collaborative activities
 - Ten responders indicated that the felt the meeting was too short.

CfP Project and Meeting Website

A very brief orientation to the Cacao for Peace website was presented by Mark Guiltinan (A website was developed to permanently host the materials and outcomes from the meeting. Additionally a post-meeting email announcement has been sent to all participant with information on the website. The site is located within the research section of the main Cacao for Peace website hosted by Penn State University and can be accessed at the following URL:
<https://tinyurl.com/l7f5483>.



The following materials are hosted at this site in both English and Spanish language:

- Invitación al Simposio - Symposium Invitation
- Agenda del Simposio - Symposium Agenda
- Lista de Asistentes - List of Participants
- Resúmenes Científicos - Presentation Abstracts
- Presentaciones - Presentations
- Perfiles de los Presentadores - Speakers Bios

- Priorización de la investigación - Research Prioritization
- Resultados del Ejercicio en Equipos - Team Building Exercise Results
- Encuesta Post-Simposio - Post-Symposium Survey
¡MUY PRONTO! COMING SOON!
- Fotos del Simposio de Investigación - Research Symposium Photos
- Fotos y Videos Adicionales - Additional Photos and Videos
Proporcionados por la Cámara de Comercio de los Estados Unidos en Colombia - Provided by AmCham
- Material Educativo sobre el Cacao - Cacao Educational Material

Overall Conclusions and Recommendations Resulting for the Meeting

One of the main goals of the first CfP research meeting was to review the current status of cacao research activities of the main institutions in Colombia and the current and potential partner institutions from the US. Although the participants included the majority of institutions interested in cacao research in Colombia, as requested by USDA-FAS Bogota, the research program for the first day of the meeting was designed to feature the CfP USDA-ARS/Corpoica agreement. Thus, the main research sessions were organized according to the major components of the agreement: genetics, pest and diseases and agronomy of cacao. For each of the sessions presenters included representatives from USDA-ARS and Corpoica and scientists from other institutions as appropriate. In conclusion: by the end of first day of the meeting all participants had a good understanding of the issues and the current status of the activities related to these three areas of research.

Additional goals of the meeting were to develop consensus and a shared vision among the meeting participants related to research priorities for Colombia and the Caribbean region and to facilitate future research collaborations. Therefore the activities of the second day of the meeting were design to accomplish that goal. The 3-step process (anonymous pre-survey, group discussions and voting) provided opportunities for all participants to review, deliberate and agree on the final priorities as follows:

1. Soil (including Cd) and water
2. Genetic crop improvement
3. Technology transfer and adoption
4. Market research

These priorities differ to some extent from the National Cacao Council priorities mentioned in the oral presentation of Carlos Alberto Muñoz Venegas in the opening session of the meeting (listed below). However, we need to note that in personal communication between Julieta Gometz, Edwin Rodriguez from Corpoica has indicated that: “the National Cacao Council has not established their priorities for cacao research. The Council recognizes the importance of the demands for the cacao value chain established in Colombia’s PECTIA (Strategic Plan for Science,

Technology and Innovation of the Colombian Agricultural Sector) but the Council itself has not published an official document to set priorities”. Considering this statement, our findings could be useful to inform the National Cacao Council in their future decisions.

National Cacao Council Priorities as presented at the CfP meeting:

1. Selection of genetic material
2. Agronomy
3. Diseases and Pests
4. Fertilization
5. Cadmium mapping

We can argue that the five priorities reported by the National Cacao Council could be considered subcategories of areas one and two identified during the CfP meeting. The major difference is the addition of the technology transfer and adoption, and market research areas by the meeting participants. The first two areas (soils and water and genetic improvement) represent more traditional approach to agricultural research focused on natural sciences. The inclusion of the social components in the priority areas embodies better systems approach to the improvement and development if the value chain and it is aligned with the recent global trends in agricultural research that promote interdisciplinary research and integration of the natural and social sciences for developing solutions for complex problems. Thus, the recommendation is that future programs are designed to promote the development of research lines in both the natural and the social sciences and promote the interactions. One opportunity for this integration is presented by the research and the training activities of the upcoming CfP graduate students at Penn State and potentially Purdue that will be involved in both natural and social sciences.

During the entire meeting and especially during the priority setting and the research team building sessions, in general the participants expressed very high enthusiasm. More detailed feedback will be provided as the results of the post-meeting survey are analyzed.

During the last working session of the meeting potential new research teams were formed in alignment with the new set priorities defined by the participants. The teams included multi-institutional representation and generated ideas that were focused on conducting research to provide solutions to the major problems that are hindering the current cacao production and development in Colombia and the Caribbean and also the potential issues related cadmium. Our recommendations are that USDA-FAS and USAID should take under consideration the outcomes of the meeting and create a future strategy to support these teams and the proposed research. This will require substantial funding; far beyond the CfP proposed seed grant funding.

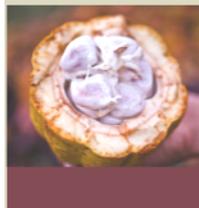
Appendix 1: Participants List (role and days registered indicated)

| Entity | Title | Day 1 | Day 2 |
|---------------------------------------|--|-------|-------|
| Fenicia Trading | CEO | | X |
| Gobernación del Atlántico | Analista de Com. de Sec. de Desarrollo Econ. | X | X |
| ASPV Talento SAS | Gerente | X | |
| Compañía Nacional de Chocolates | Investigador | X | X |
| Fundación Grupo Argollas | CEO | X | |
| Gobernación del Atlántico | Asesor Agrícola | X | X |
| Gobernación del Atlántico | Secretario de Desarrollo Económico | X | X |
| FEDECACAO | Dir. Commc. Y Mercadeo | X | X |
| USDA/FAS | Program Manager | X | X |
| Besos de Mulata | | X | X |
| Peace Corps Colombia | Directora proyecto CED | X | |
| Dpto. de Agricultura/Embajada de EEUU | Agregado Agrícola | | X |
| SPCL, USDA/ARS | Research Plant Pathologist | X | X |
| CORPOICA | Researcher | X | X |
| Consejo Nacional Cacaotero - MADR | SECRETARIO TÉCNICO | X | X |
| Cacau Colombia Chocolatería | Gerente | X | X |
| Gobernación del Magdalena | Secretario de Desarrollo Económico | | X |
| MADR | Vice Ministerio de Agricultura | X | X |
| Gobernación del Atlántico | | X | |
| Fundacion Agrotech BMA | Director de Proyectos | X | |
| USDA/ARS, SPCL | Research Geneticist | X | X |
| Peace Corps Colombia | Volunteer | X | X |
| FEDECACAO | Profesional de apoyo programa de Investigación | X | X |
| Gobernación del Atlántico | | X | |
| La Equitativa Fair Trade | Gerente General | X | X |

| | | | |
|--|---|---|---|
| Company SAS | | | |
| FEDECACAO | Prof. Apoyo Prog. de Investigación | X | X |
| FEDECACAO | Presidente Ejecutivo | X | X |
| FEDECACAO | Gestor Investigación | X | X |
| CORPOICA | Gerstor de Innovación | X | X |
| Universidad de la Costa | | | X |
| Productos Dulcao | | X | X |
| AmCham Barranquilla | Proyectos Especiales | X | X |
| Universidad Nacional de Colombia | Profesor Asociado, PhD | X | X |
| Besos de Mulata | Gerente | X | X |
| USAID | Oficial de Desarrollo | X | X |
| SiGaia | Gerente | X | |
| UPRA | Profesional Especializado | X | X |
| Mountain Food | | X | X |
| | | X | |
| Peace Corps Colombia | Country Director | X | |
| Intern. Center for Tropical Agriculture (CIAT) | Jefe Laboratorio Biotecnología | X | X |
| Productos Dulcao | Gerente | X | X |
| Corposebú | | X | X |
| Chemonics | Lider Corredor de Conservación | X | X |
| FEDECACAO | Investigador | X | X |
| Universidad de Córdoba | Vicerrector de Investigación y Extensión | X | |
| Gobernación del Atlántico | Subsecretario de Desarrollo Económico | X | X |
| La Vinoteca Francesa | | X | |
| Mars Inc | Program Director | X | X |
| Gobernación del Atlántico | Sub- Secretario Fortalecimiento institucional municipal | X | |
| Grupo inv. ILAMA, Universidad del Valle | Investigador agrícola | X | X |
| Fulbright | Scholar | X | X |
| UNODC | Asesor Agrícola Experto en Cacao | X | X |
| Peace Corps Colombia | | X | |
| Gobernación del Atlántico | | X | |
| Gobernación del Atlántico | | X | X |
| Fundación FINTRAC Colombia | SUBDIRECTOR PMA | X | X |
| Gobernación de La | Secretario de Desarrollo Económico | | X |

| | | | |
|--|--|---|---|
| Guajira | | | |
| Casa Luker | Gerente Desarrollo Agrícola | X | |
| U. Nacional de Colombia, sede Bogotá | Profesor asociado | X | X |
| MARS, Incorporated | Research Director | X | X |
| CORPOICA | Dir. Centro de Investigación Caribia - Magdalena | X | X |
| USDA-FAS | Agricultural Specialist | X | X |
| Compañía Nacional de Chocolates | Director de Fomento Agrícola | X | X |
| CORPOICA | Investigador MSc | X | X |
| MADR | Enlace Cooperación | X | X |
| AmCham Barranquilla | Trade Center Coordinator | X | X |
| Peace Corps Colombia | | X | X |
| Peace Corps Colombia | Community Economic Development Volunteer | X | X |
| AGAPE | Directora de Operaciones | X | X |
| FEDECACAO | MARIA DEL CAMPO | X | X |
| CORPOICA | Asesor Dirección Ejecutiva | X | X |
| Universidad de Antioquia | Dir. Prog. Biotecnología. U. Antioquia | X | X |
| Mariana Cocoa Export | | | X |
| AmCham Barranquilla | Asistente Trade Center | X | X |
| AmCham Barranquilla | Asistente Comercial | X | X |
| AmCham Barranquilla | Asistente Comercial | X | X |
| Penn State University | Professor | X | X |
| Universidad Nacional de Colombia | Profesora Asociada | X | X |
| Gobernación del Atlántico | Subsecretario Agrícola | X | X |
| Intern. Center for Tropical Agriculture (CIAT) | Soil Scientist | X | |
| Gobernación del Atlántico | Comunicaciones Desarrollo Económico | X | X |
| Fundación FINTRAC Colombia | Vicepresidente Innovación de Negocios | X | X |
| FAS/USDA | Agricultural Counselor | X | |
| Asoc. Campesinos Sur del Atlántico | | X | X |
| FEDECACAO | Jefe de Comercialización y exportaciones | X | X |
| Prodesarrollo | Asesor Despacho | | X |
| Chocobox | Representante Legal | X | X |
| AmCham Barranquilla | Asistente Proyectos | X | X |

| | | | |
|--|--|-----|----|
| AGROBIZ - CHUCULAT | Dir. Nuevos Proyectos | X | X |
| Fundación Agrotech | | X | |
| Chocobox | Gerente General | X | X |
| Fundacion Agrotech BMA | Director Ejecutivo | X | |
| FEDECACAO | Gerente tecnico | X | X |
| Fondo de Estabilizacion de Precios del Cacao | Secretario Técnico del FEPCACAO | X | X |
| Gobernación del Atántico | | X | |
| Procolombia | Directora regional | X | |
| Penn State University | Associate Professor of Pedology | X | X |
| UPRA | Dirección de Ordenamiento de la Propiedad y Mercado de Tierras | X | |
| CORPOICA | Investigador PhD asociado | X | X |
| USDA/ARS | | X | X |
| Agro Cultura Caribe | | X | |
| Gobernación del Atántico | | X | |
| Penn State University | Professor | X | X |
| USDA/ARS TARS | Horticulturist/Curator | X | X |
| AmCham Barranquilla | Directora Ejecutiva | X | X |
| USDA-ARS-Beltsville Agricultural Research Center | Lead Research Scientist | X | X |
| Agropocodea | | X | |
| MADR | Coordinador de Productos Permanentes y Hortifrutícolas. | X | |
| Asoviles | | X | |
| CORPOICA | | X | X |
| Mariana Cocoa Export | Comercial Cacao | X | X |
| | | 105 | 85 |



Symposium “Cacao for Peace” Mapping the Future of Cacao Research for the Caribbean Region of Colombia

MAY 17 - 19. BARRANQUILLA, COLOMBIA



The vision for the Cacao for Peace Program (CfP) is to contribute to improvement of rural well-being of Colombian cacao farmers through agricultural development and to have positive impact on income, economic opportunities, stability and peace. The main goals of the project include strengthening key public and private institutions and building their capacity to support the cacao sector in Colombia.

This symposium aims to foster discussions among researchers and varieties of stakeholders in order to:

- Identify current needs and gaps for the Caribbean Region by reviewing and understanding existing national and international research efforts.
- Develop a shared vision for the Caribbean region among CfP’s stakeholders.
- Facilitate collaboration relevant to the priorities of the cacao sector in the Caribbean region of Colombia.
- Educate cacao value chain members about CfP’s research activities in benefit of Colombia and particularly of the Caribbean region

| <i>May 17, 2017</i> | | | | |
|---------------------|---|--|--|--|
| 7:00 - 8:00 | Registration | | Blue Gardens Convention Centers. 4th Floor. Amadeus Room | |
| 8:00 - 8:30 | Welcome Remarks | | Session Chair: Victoria E. Ibáñez | Executive Director, AmCham, Barranquilla Colombia |
| | 8:10 - 8:20 | Opening Remarks | Anatolio Santos | Economic Development Secretary, State of Atlántico Colombia |
| | 8:20 - 8:30 | Opening Remarks | Michael Conlon | Agriculture Counselor, Embassy of the United States USA |
| 8:30- 10:30 | Session 1: Overview Presentations of CfP Partner Institutions Research Programs and Goals | | Session Chair: Juan Gallego | USDA-FAS, Bogota Colombia |
| | 8:30 - 8:45 | The Cacao for Peace USAID-USDA program | Andres Romero | USDA-FAS, Washington DC USA |

| | | | | | |
|----------------------|--|---|--|--|-------------|
| | 8:45 - 9:00 | National policies supporting the development of the cacao sector | William Granados | Ministerio de Agricultura y Desarrollo Rural | Colombia |
| | 9:00 - 9:15 | National Cacao Research Agenda for Colombia | Carlos Alberto Muñoz Venegas | Concejo Nacional del Cacao | Colombia |
| | 9:15-9:30 | Overview of CORPOICA cacao research programs | Edwin Alirio Rodríguez | CORPOICA | Colombia |
| | 9:30 - 9:45 | Cacao research activities at FEDECACAO | Oscar Ramírez | FEDECACAO | Colombia |
| | 9:45 - 10:00 | Role of the Universidad Nacional de Colombia in strengthening the cacao chain value in the Country | Esperanza Torres | Universidad Nacional de Colombia | Colombia |
| | 10:00 - 10:15 | Cacao Research Projects in Antioquia | Lucía Atehortua | Universidad de Antioquia | Colombia |
| | 10:15 - 10:30 | Cacao research program at Casa Luker | Juan Carlos Arroyave Giraldo | CASA LUKER | Colombia |
| | | | | | |
| 10:30-11:00 | Break and Poster Session | | The coffee break will be inside of the room. Posters session outside of the Amadeus Room. | | |
| | | | | | |
| 11:00 - 12:30 | Session 2: Overview Presentations of CFP Partner Institutions Research Programs and Goals | | Session Chair: Siela Maximova | Penn State | USA |
| | 11:00 - 11:15 | Cacao research program at Compañía Nacional de Chocolates | Juan Fernando Valenzuela Arango | Compañía Nacional de Chocolates | Colombia |
| | 11:15 - 11:30 | Overview of USDA-ARS cacao research programs | Bryan Bailey | USDA-ARS | USA |
| | 11:30 - 11:45 | The Cacao Research Program at USDA-ARS-TARS, Mayaguez, PR | Tomas Ayala-Silva | USDA-ARS | Puerto Rico |
| | 11:45 - 12:00 | Soil to bar: how research can contribute to Cacao in Colombia | Mayesse Da Silva | CIAT | Colombia |
| | 12:00 - 12:15 | Cacao science and education at Penn State | Siela Maximova | Penn State | USA |
| | 12:15 - 12:30 | Questions and Open Discussion | | | |
| | | | | | |
| 12:30 - 13:00 | Lunch | | Blue Gardens Convention Centers. 4th Floor. Amadeus Room | | |
| | | | | | |
| 13:30 - 15:30 | Session 3: Cacao Genetic Diversity and Breeding Programs in Colombia | | Session Chair: Mark Gultinan | Penn State | USA |
| | 13:30 - 13:50 | Assessing genetic diversity of T. cacao in Colombia - the action plan | Dapeng Zhang | USDA-ARS | USA |
| | 13:50 - 14:10 | Characterization of genetic material of cacao aimed to selection of parents with traits of interest | Roxana Yockteng | CORPOICA | Colombia |
| | 14:10 - 14:30 | Genetic improvement through participative selection | Edwin Gutierrez | FEDECACAO | Colombia |
| | 14:30 - 14:50 | Experiences with Cacao Genetics Research and Planting Material Development | Juan Carlos Motamayor | MARS Inc. | USA |

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|----------------------|--|--|--|----------------------------------|----------|
| | 14:50 - 15:30 | Questions and Open Discussion | | | |
| | | | | | |
| 15:30 - 15:45 | Group Photo | | | | |
| | | | | | |
| 15:30-16:00 | Break and Poster Session | The coffee break will be inside of the room. Posters session outside of the Amadeus Room. | | | |
| | | | | | |
| 16:00 - 17:15 | Session 4: Cacao Diseases and Resistance | | Session Chair: Bryan Bailey | | |
| | 16:00 - 16:20 | Diseases of cacao in Colombia: What we know and what we need to know | Bryan Bailey | USDA-ARS | USA |
| | 16:20 - 16:40 | Research results on the main agents causing cacao diseases in Colombia, and projection thereof | Yeirme Jaimes | CORPOICA | Colombia |
| | 16:40 - 17:00 | Mechanisms of Disease Resistance in Cacao | Mark Gultinan | Penn State | USA |
| | 17:00 - 17:15 | Questions and Open Discussion | | | |
| | | | | | |
| 17:15 - 18:50 | Session 5: Issues Related to Production | | Session Chair: Julián Mateus | | |
| | 17:15 - 17:35 | Cadmium (Cd) Issues in Cacao Plantations of South America | V.C. Baligar | USDA-ARS | USA |
| | 17:35 - 17:55 | Cadmium Ongoing Research at CORPOICA | Julián Mateus | CORPOICA | USA |
| | 17:55 - 18:15 | Diagnostic of Cadmium levels in soils and its distribution in cocoa leaves and beans cultivated in Nilo and Yacopí, Cundinamarca | Martha Henao | Universidad Nacional de Colombia | Colombia |
| | 18:15 - 18:35 | Zoning aptitude for national level of Cacao, 1:100.000 scale. | Fidel Londoño | UPRA | Colombia |
| | 18:35 - 18:50 | Questions and Open Discussion | | | |
| | | | | | |
| 18:50 - 20:00 | Networking Session | | Blue Gardens Convention Centers. 4th Floor. Foyer. | | |
| | | | | | |
| May 18, 2017 | | | | | |
| | | | | | |
| 7:00 - 8:00 | Registration | | Hotel Hilton Garden Inn Conference Center. 2nd Floor. Room Bambú. | | |
| | | | | | |
| 8:00 - 10:30 | Session 6: Setting research priorities for Colombia and the Caribbean | | | | |
| | 8:00 - 8:05 | Introduction | Juan Gallego | USDA-FAS, Bogota | Colombia |
| | 8:05 - 8:15 | Remarks on behalf of USAID | Fernando Gomez | USAID | Colombia |
| | 8:15 - 8:30 | Summary and Conclusions from May 17 | Siela Maximova | Penn State | USA |
| | 8:30 - 10:00 | Facilitated Discussion (priority setting) | | | |

| | | | | | |
|----------------------|---|---|--|-----------------------------|----------|
| | 10:00 - 10:15 | Introduction of the CFP communication and knowledge sharing platform | Mark Gultinan | Penn State | USA |
| | 10:15 - 10:30 | Summary of Discussion | | | |
| | | | | | |
| 10:30 - 11:00 | Break and Poster Session | | The coffee break will be inside of the room. Posters session Outside of the Bambú Room. | | |
| | | | | | |
| 11:00 - 12:30 | Session 7: Team Building for Interdisciplinary Research Projects | | | | |
| | 11:00-11:15 | Cacao for Peace Interdisciplinary Research Seed Grant Program Announcement | Andres Romero | USDA-FAS, Washington DC | USA |
| | 11:15 - 12:30 | Team Building activities | Siela Maximova | Penn State | USA |
| | 12:30 - 13:00 | Summary of Discussion, Project Presentations | | | |
| | | | | | |
| 13:00 - 14:00 | Lunch (by invitation) | | Hilton Garden Inn. Hotel 1st Floor. | | |
| | | | | | |
| 14:00 - 15:30 | 14:00 - 14:10 | Opening Remarks | Juan Gallego | USDA-FAS, Bogota | Colombia |
| | 14:10 - 14:40 | Summary and conclusions from the CFP research symposium | Siela Maximova | Penn State | USA |
| | 14:40 - 15:15 | Address to the participants from local authorities | | | |
| | 15:15 - 15:30 | Discussion and Open Questions | | | |
| | | | | | |
| 15:30 - 15:45 | 15:30 - 15:45 | Presentation: Concurso Cacao de Oro, Casa del Chocolate, Salon du Chocolat | Hilton Garden Inn. Hotel 2nd Floor. Bambú Room. | | |
| 15:45 - 16:15 | 15:45 - 16:15 | Chocolate Tasting | María Del Pilar Gomez. Mariana Cocoa | | |
| 16:15 - 16:30 | 16:15 - 16:30 | Break | Hilton Garden Inn. Hotel 2nd Floor. Bambú Room. | | |
| | | | | | |
| 16:30 - 17:30 | Closing Session | | | | |
| | 16:30 - 17:00 | How Colombia can become a world-level cacao production center | Aaron - Micael Beydoun | Fencia Trading | USA |
| | 17:00 - 17:15 | Remarks | Samuel Zambrano | Viceminister of Agriculture | Colombia |
| | 17:15 - 17:30 | Closing remarks | Eduardo Verano | Governor State of Atlántico | Colombia |
| | | | | | |
| 17:30- 18:30 | Networking Session | | Hilton Garden Inn. Hotel 2nd Floor. Foyer | | |
| | | | | | |

May 19, 2017

9:00 – 14:30 **Barranquitour. Cultural and Gastronomic Day. Tour of emblematic places of the city. (By invitation).
Offered by Government of State of Atlantico and District of Barranquilla**

Centro de Eventos y Exposiciones del Caribe
Intendencia Fluvial
Museo del Caribe
Casa del Carnaval
Restaurante la Cueva

Appendix 3: Post-Meeting Survey Questions

Thank you for your participation in the 2017 Cacao for Peace Research Symposium: Mapping the Future of Cacao Research for the Caribbean Region of Colombia

Please take a few moments to complete this SHORT survey. Your responses will help us improve our future activities.

Thank you in advance!

1. Which day of the conference did you attend (check all that apply)?

Day 1

Day 2

2. How satisfied are you with the overall experience at the 2017 Cacao for Peace Research Symposium?

Extremely satisfied

Moderately satisfied

Slightly satisfied

Neither satisfied or unsatisfied

Slightly unsatisfied

Moderately unsatisfied

Extremely unsatisfied

3. Please indicate the degree to which you found the Research presentations on day one of the Symposium to be useful.

Extremely useful

Moderately useful

Slightly useful

Neither useful or useless

Slightly useless

Moderately useless

Extremely useless

3. Please indicate the degree to which you found the priority setting and team building activities on day two of the Symposium to be useful.

Extremely useful

Moderately useful

Slightly useful

Neither useful or useless

Slightly useless

Moderately useless

Extremely useless

4. How satisfied are you with the quality of the networking opportunities at the meeting?

Extremely satisfied

Moderately satisfied

Slightly satisfied

Neither satisfied or unsatisfied

Slightly unsatisfied

Moderately unsatisfied

Extremely unsatisfied

5. What did you like the MOST about day two of the conference?

6. What did you like the LEAST about day two of the conference?

7. Do you think that follow up training workshops for researchers in Colombia are needed?

Yes

No

Do not know

If yes please indicate what kind of training:

8. Please enter any feedback or suggestions you would like to share with the organizers.