



Simposio “Cacao para la Paz” Mapeo del futuro de investigación del cacao en la Región del Caribe Colombiano

MAYO 17 - 19. BARRANQUILLA, COLOMBIA



Summary of Research Presentations May 17, 2017

Main Goals of the Meeting

- Research Presentations relevant to Colombia and the Caribbean region.
- Network and get to know each other's work, expertise and future plans.
- Identify the future research priorities Colombia and the Caribbean region.
- Discuss potential collaborative projects relevant to the priorities identified.

Summary and Conclusions from the Presentations

- Overview Presentations of CfP Partner Institutions Research Programs and Goals
- Cacao Genetic Diversity and Breeding Programs in Colombia
- Cacao Diseases and Resistance
- Issues Related to Production

Overview Presentations of CfP Partner Institutions Research Programs and Goals

- Opening remarks Santos, Conlon, Granados and Zambrano highlighted that importance of the cacao sector for Colombia and the and the importance for research in the development of the sector
- Overview of CfP activities – Romero

Overview Presentations of CfP Partner Institutions Research Programs and Goals

- Carlos Munoz for the Consejo: Research topics of importance
 - Selection of genetic material
 - Agronomy
 - Diseases and Pests
 - Fertilization
 - Cadmium mapping

Overview Presentations of CfP Partner Institutions Research Programs and Goals

10 different research institutions presented overviews on their programs spanning all aspects of research related to

- Genetic diversity
- Breeding and Selection
- Soils Science
- Mapping
- Pest Management
- Agroforestry
- Harvest and Post Harvest Management
- Quality
- Plant propagation (biotech)

Genetic Diversity and Breeding Programs in Colombia

- **ARS** - Main Goals: Improvement of accuracy of efficiency of conservations an utilization
- Evaluate the collection do more collecting using 96 SNP panel
- There is more genetic diversity that has not been discovered in the Amazon and the Inter Andean regions
- **Corpoica** – Collection consists of about 1000 accessions: in the process of characterization

Genetic Diversity and Breeding Programs in Colombia

- Starting breeding program cadmium, diseases, quality and compatibility
- Gene discovery for resistance to Phytophthora
- Gene discovery Cadmium uptake gene
- Screening plants for Cadmium uptake
- **Fedecacao**: germplasm collection, evaluating resistance to monilia, released 8 new varieties, collected 27 criollo varieties

Genetic Diversity and Breeding Programs in Colombia

- MARS: extensive experience in selection and breeding using molecular markers for MAS, GWAS, Genomic Selection for Breeding
- Genomic Selection for Breeding for Resistance

Cacao Diseases and Resistance

ARS:

- All major cacao pathogens are sequenced
- The center for diversity of *Monilia* is in the Magdalena valley
- Exploring the divergences in biology of *P. megakarya* and *P. palmivora*
- Pathogens are always changing

Cacao Diseases and Resistance

Corpoica:

- Objective to identify strategies to control all diseases (7 different projects with multiple strategies)
- Genetic diversity of Monilia
- Screening for plant resistance to Monilia
- Strategy for controlling the root insect Carmenta

Cacao Diseases and Resistance

Penn State:

- Genomic Approach to study plant immunity
- Large scale discovery of genes for disease resistance

Issues Related to Production

ARS:

- Cadmium regulations in EU are changing in 2019
- Urgent need to reduce cadmium accumulation in cacao beans
- Cadmium cycle in the soil: sources, accumulation, and mobility, bioavailability
- Cacao genotypes vary in their ability to accumulate cadmium
- Need of multidisciplinary team to combat the problem
- Main strategies: screening genotypes and accessing soil, reduction of bioavailability , need to look at all heavy metals

Issues Related to Production

Corpoica:

- Large team equipment availability working on cadmium
- Working on cadmium mapping
- Screening for germplasm
- Strategies for blocking uptake

Issues Related to Production

National University

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

UPRA

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