

Sponsored:



Organized:





### **Event Report**

### COLOMBIA CONSORTIUM

### RESEARCHERS MEETUP 2019

Sponsored:



Organized:



### **ORGANIZING COMMITEE**

### Julio César Alonso Cifuentes

Universidad Icesi

Director of the Economics and Finance Research Center and Researchers Meetup Project Director

### Luisa Fernanda Prado Herdoiza, M. Sc.

Director of the Research Area

### **Licelly Canizalez**

Universidad Icesi

Administrative assistant and coordinator of the Researchers Meetup 2019

### Diana Patiño

U.S. Embassy in Bogotá Senior Cultural Affairs Specialist

### Liliana Gómez

**Purdue University** 

Director, Colombian Partnerships and Engagement Office

### Siela Maximova

Pennsylvania State University

Research Professor of Plant Biotechnology,

Department Of Plant Science. Co- Director, Program of the molecular biology of Cacao. Strategic Research initiative coordinator, Collage of Agricultural Sciences. Faculty coordinator, Plans sciences Major: Plant Genetics and Biotecnology

### Rodrick McSherry

New Mexico State University

Associate Provost for International and Border Programs

### Miguel Gómez

Cornell University

Associate professor at the Charles H. Dyson School of Applied Economics and Management

### ACADEMIC COMMITEE - UNIVERSIDAD ICESI

### Piedad Gómez Franco, M. Sc.

Director of International Relations

### Carlos Andrés Álvarez Vasco, Ph.D.

Full time professor at Industrial engineering Department

### Katherine Ortegón Mosquera, Ph.D.

Full time professor at Industrial engineering Department

### María Francisca Villegas Torres, Ph.D.

Full time professor at Chemistry Department

### Thaura Ghneim Herrera, Ph.D.

Director of Biotechnology Master, Natural sciences Faculty

### Enrique Rodriguez Caporalli, Ph.D.

Director of CIES, Law and social sciences Faculty

### Juan Guillermo Albarracín Dierolf, Ph.D.

Director of the Political Science Program

### Jhon James Mora, Ph.D.

Director of Ph.D. Program in Business Economics

### José Roberto Concha Velásquez, Ph.D.

Chief Marketing and International Business Department

### Julio César Alonso Cifuentes, Ph.D.

Director of the Economics and Finance Research Center

### **TABLES COORDINATORS**

### Katherine Ortegón Mosquera, Ph.D.

Full time professor at Industrial engineering Department

### María Francisca Villegas Torres, Ph.D.

Full time professor at Chemistry Department

### Thaura Ghneim Herrera, Ph.D.

Director of Biotechnology Master, Natural sciences Faculty

### Lina Buchely Ibarra, Ph.D.

Director of the Observatory for the Equity for Women, Law and social sciences Faculty

### **INDEX**

**PRESENTATION** 

1

01

### INTRODUCTION

2 - 5

The Land Grant University Colombia Consortium

02

**OBJECTIVES** 

6 - 7

03

**OUR JOURNEY** 

8 - 16

- 4.1 Preamble
- 4.2 Methodological work
- 4.3 Event agenda



04

**PROJECT IDEAS** 

17 - 26

- 4.1 Cacao
- 4.2 Vegetables
- 4.3 Fruits
- 4.4 Medicial plants

05

**PARTICIPANTS** 

27 - 28





### **PRESENTATION**

J U L I O C É S A R A L O N S O

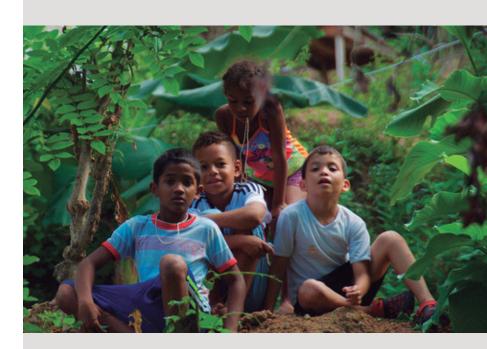
Universidad Icesi Director of the Economics and Finance Research Center and Researchers Meetup Project Director On behalf of Land Grant Universities Colombia Consortium and Universidad ICESI, we are pleased to send you the report of what was the past June 6 - 7, 2019 in Santiago de Cali- Colombia, invited participants included scientists, policymakers, decision-makers, and funding agencies. This event aimed to foster collaboration between researchers from Colombia and the Land Grant Universities from the United States and sponsored by the US Embassy at Bogotá, in support of rural development and prosperity in the Santiago de Cali region and throughout Colombia. The two-day sessions included thematic round tables where potential collaborations and research on rural development in Colombia were explored. The results of the meetup will be beneficial for the development of peacebuilding in Colombia. After two days of the meetup, six preliminary projects were identified in different thematic areas with a multidisciplinary work that will allow the construction of a collaborative network between American universities and Colombian universities and institutions.





### INTRODUCTION

# The Land Grant Consortium: Researchers meetup 2019



The Land Grant University Colombia Consortium is a pioneering initiative of nine U.S. public and land grant universities committed to contributing to lasting peace in Colombia through rural and agricultural development. Created in 2015 with the assistance of the U.S. Embassy in Bogotá, the consortium seeks to leverage the land grant mission and expertise in applied agriculture and extension services in order to create a prosperous, inclusive and sustainable rural economy in support of Colombia's peacebuilding efforts. The Land Grant University Consortium: Researchers meetup 2019 was an event that bring the LGUs and Colombian universities to identify projects of interest and to expand their cooperation in support of greater rural development and prosperity in the Cali region-a region critical to a lasting peace in Colombia. Universidad ICESI developed (with the coordination board) the agenda and methodology to



leverage the exchange of information on research interests and projects, as well, to build new partnerships for short and long term collaborations between Colombia and the U.S.

The researchers' meetup 2019 focus on 4 high value Colombian crops

1.



Cacac

2.



**Vegetables** 

3.



**Fruits** 

4.



Medicinal Plants

And reunited specialist from 4 different areas:



Agricultural waste as source to generate energy and other products



Value chain enhancement



Cultivation and productivity of high value crops



**Labor and gender** 







## 3. MAIN OBJECTIVES

- To enable networking among researchers from Colombia and the U.S. in topics related to the LGUs consortium's areas of expertise.
- To generate ideas and opportunities that bring positive impact to the Cali area and Colombia in the field of agricultural development as a key component for peacebuilding

CALI
COLOMBIA
NETWORKING
POSITIVE
IMPACT







### 4. OUR JOURNEY

PREAMBLE
METHODOLOGICAL WORK
EVENT AGENDA
ROUND TABLES DISCUSSIONS

### 4.1 Preamble

Prior to the start of the event. Universidad ICESI contacted the nine Land Grant Universities from the Colombian Consortium and only eight responded to the call for attend the event (no communication was received from the Texas A&M University). Seven of the eight representatives were in the United States and one of them was in the host city at the dates of the event. According with the previous, we sent a request to the Cultural Affairs Officer to allow us to use the money intended to purchase the airfares from the two representatives who did not use it, to sponsor the participation of three additional researchers, one from Pennsylvania State University and two from Purdue University (this distribution was previously discussed with the organizational committee). In this way, the event sponsored the participation of eight LGU representatives, seven Colombian researchers and one speaker.



Universidad ICESI got corporate rates with different airlines and the NH Royal hotel for the LGU Colombia representatives and Colombian researchers to hold the event. In the other hand, our team designed a website with the information about the event and the Land Grant University Colombia Consortium, for more information please go to: www.icesi.edu.co/lqu-colombia-2019/.

During the event held at Universidad ICESI campus, we had the presence of 65 researchers from U.S. and Colombian universities (see below-Appendix 1) and several Colombian institutions. From U.S., Eight LGU Universities participated: Purdue University, Washington State University, University of California – Davis, Michigan State University, Cornell University, New México State University, University of Florida and Pennsylvania State University and sixteen Colombian Universities: Universidad del Valle, Universidad Católica de Manizales, Universidad Manizales, Universidad Autónoma de Occidente, Universidad de Los Andes,

Universidad La Salle, Universidad Mariana, Universidad del Rosario, Universidad de Antioquia, Fundación Universitaria del Área Andina, Universidad del Norte, Universidad Militar, Universidad Jorge Tadeo Lozano, Universidad Tecnológica de Pereira, CESA, Universidad Icesi, and five Institutes/Research centers: Max Planck Institute-Universidad del Valle, Cenicaña, Centro Internacional de Agricultura Tropical – CIAT, Agrosavia and Cámara de Comercio de Cali...

### 4.2 Methodological work

This methodology was chosen based to previous reports and news on the needs of the region and the country by governmental and non-governmental entities and idea was to focus our experts that would allow better interaction between them.

### METHODOLOGICAL WORK

### PHASE 1:

Selection of tablés topics



The researchers will participate in a survey to select the method that will be addressed the topics of the meetup.



### PHASE 2:

Table's discussion



The participants will be divided into small groups according to their topics of interest. Each person will have 5 min to present

his research to the group then, the group will have a discussion and brainstorming. All participants will participate to define the "hot spots" of their research topics.



### PHASE 4:

Project wrap-up



With the feedback received, participants will make a technical brief of each project.



### PHASE 3:

Mix up



We will give a space to the researchers to share with other tables ideas that a allow better work in different thematic axes during the meetup.



### 4.3 Event agenda

.

DAY 1 – THURSDAY 6TH JUNE 2019				
Time	Module	Locale		
8:00 - 8:30 A.M.	Registration			
8:30 - 8:45 A.M. 8:30 - 8:45 A.M.	Welcome Speech by Dr. Héctor Ochoa, Dean of the Faculty of Business and Economics, Universidad Icesi			
8:45 – 9:00 A.M.	Welcome Speech by Michelle Riebeling, Cultural Affairs Officer, U.S. Embassy in Colombia	Banco de Occidente Auditorium		
9:00 – 9:30 A.M.	Presentation of Colciencias by Mrs. Diana P. Saavedra, National Program of CTE in Agricultural Sciences, Colciencias	E Building		
9:30 – 10:00 A.M.	Laser/ Pulse program by Mrs. Liliana González, Director, Colombian Partnerships and Engagement Office, Purdue University			
10:00- 10:30 A.M.	Break			
10: 30 – 11:00 A.M.	Cacao program by Dr. Siela Maximova, Senior scientist, Pennsylvania State University.	Banco de Occidente Auditorium E Building		
11: 00 – 11:35 P.M.	Socio- economic region context by Mr. Carlos Andrés Pérez, Director of the Economic and competitiveness area, Cámara de comercio de Cali.			
11: 35 – 12:15 P.M.	Concurrent round tables contect by Dr. Julio César Alonso, Coordinator Project Director, Researcher Meetup, Universidad Icesi.			
12:15 - 2:00 P.M.	Lunch			
2:00 – 4:00 P.M.	Concurrent Round Tables.	N building		
4:00 - 4:30 P.M.	Break			
4:30 -5:00 P.M.	Concurrent Round Tables.	N building		
5:00 6:00 P.M.	Wrap Up- Day 1			
END OF DAY 1				
7:00 – 9:00 P.M.	Welcome cocktail	NH royal Hotel Cali		



DAY 1 – THURSDAY 6TH JUNE 2019				
Time	Module	Locale		
8:00 - 8:30 A.M.	Arrival	SIDOC Auditorium		
8:30 - 9:00 A.M.	Plenary session- Tables coordinators share her/his group's work			
9:30 - 9:45 A.M.	Climatic region context by Dr. Andrés Javier Peña, Colombian Sugarcane Research Center (CENICAÑA)			
9:45 - 10:00 A.M.	Geographic region context by Dr. Fernando Muñoz, Colombian Sugarcane Research Center (CENICAÑA)			
10:00 -10:30 P.M.	Break			
10:30 - 12:00 P.M.	Concurrent Round Tables.	N building		
12:00 -2:30 P.M.	Lunch			
2:00 - 4:00 P.M.	Concurrent Round Tables.	N building		
4:00 - 4:30 P.M.	Break			
4:30 - 5:00 P.M.	Wrap Up- Day 2			
5:00 - 6:00 P.M.	Plenary session Tables' coordinators share her/his group's work	SIDOC Auditorium		
END OF DAY 2				
6:30 - 8:00 P.M.	Close meetup and Cocktail	Flag Square (Library hall)		



## CACAO PROJECT

"COCOA-CD: Community-driven agronomic techniques to optimize cocoa microbiomes for the reduction of Cd levels in marketable products in Colombian small farms" Cacao has been identified as one of the key post-conflict crops in Colombia due to the opportunities that exist to productivity, sustainability increase competitiveness. Our experts approached the discussion between the 4 main research meetup areas focusing on an environmental and social discussion about Cocoa, in order to identified key points for multidisciplinary work with this crop. The cadmium concentration and the research on microbiome interactions led the dialogue, as well the integration of environmental into social system, focused on the transfer and management of information surrounding the effect of cadmium on health, cacao quality and marketability, and how the farm and community practices can affect cadmium levels in the cacao beans.





### **VEGETABLES**PROJECT

"Agricultural waste management framework for sustainable rural development in Colombia"

Colombia has been consolidating its potential as a producer of vegetables throughout the years and the global recognition of this potential is encouraging farmers to promote a greater rural development. The vegetables table approached the discussion focused on the idea of excelerate rural development based on adequate agricultural waste and wastewater management practices for a sustainable transition to biobased economies. This idea has 3 main areas: 1. social base-line, as a way to acquire knowledge about the community and its current practices. 2. Waste base-line, with a waste characterization and the understanding of its distribution and availability, and the 3. Technological prospection, with the used technologies.



- 1. Influence of climate variability in land use/crop diversification.
- 2. "Dignidad Agropecuaria": building an agricultural community from the small holder to the world via an assessment of Valle del Cauca.
- 3. Development and conservation of germplasm of fruits species at the Cauca Valley.

Colombia has been consolidating as the second most bio-diverse country in the world, with a tremendous number of "typical" and tropical fruits giving the region a massive importance around the world. The fruits table discussion approached the debate taking into account 3 main aspects:

- 1. Social
- 2. Genetic
- 3. Productivity

Looking for specific benefit to improved profits for growers through the development of new varieties, the development of a pipeline to stimulate the land use in order to generate diversification of it and, to understand and evaluate the role distribution of the farmers by gender to know the level of organization of the communities to detect the key points where is necessary to intervene and strengthen the production process.



## **FRUITS**PROJECT

INFLUENCE OF CLIMATE VARIABILITY
DIGNIDAD AGROPECUARIA
DEVELOPMENT AND CONSERVATION





## MEDICINAL PLANT PROJECT

"Community based participatory research with three communities on medicinal plants, intellectual rights and poverty reduction"

Medicinal plant species constitute important alternatives to conventional medicine in a large number of developing countries, especially within poor communities that inhabit rural areas and lack access to health services. The medicinal plants round table focused its discussion on the social impact of these crops, in order to outline the legal framework on the intellectual property rights and ancestral communities and its impact of 3 pacific towns. Additionally, obtain information that allows them to understand the bottlenecks on the medicinal plants corps (laboratories, equipment, human capital, skills) and how to address it.





### COCOA-CD

Community-driven agronomic techniques to optimize cocoa microbiomes for the reduction of Cd levels in marketable products in Colombian small farms.

### **Project Description**

### Project Description/ Meetup agreements

Advance basic scientific understanding of the cacao production and marketing system, and the complex interactions within and among cadmium uptake (biological, physical and chemical) processes and the socioeconomic components of such a system.

This will include two main approaches:

- 1. Research in microbiome interaction with Cd uptake in plants.
- Siela Maximova and Patrick, Penn State, snm104(a)psu.edu
- Daniel Bravo, Agrosavia, microbiomes, dbravo(a)agrosavia.co
- David Johnson, Univalle, microbiomes, david.johnston@correounivalle.edu.co
- David Coral, U. Mariana,microbiomes and waste, jdecoralm@qmail.com
- Laura Conde, U. Jorge Tadeo Lozano, waste-biochars, laurar.conder@utadeo.edu.co
- 2. Knowledge creation, transfer and management
- Pilar Useche, UFL, useche@ufl.edu
- Sarah Eissler, Penn State, socio-economic and gender, sarah.e.eissler@gmail.com
- Holmes Rodriguez, Ude Antioquia, knowledge transfer, holmes.rodriguez@udea.edu.co
- Adriana Arango, Ude Santander, knowledge transfer, adrianaarangocorrea@qmail.co
- Jairo Baquero, U del Rosario, communities, Jairo.baquero@urosario.edu.co
- Angelica Burbano, U. Icesi, supply chain value creation, aburbano@icesi.edu.co Katherine Ortegon, U. Icesi, supply chain value creation, kortegon@icesi.edu.co

### **Goals and Scope**

1. Environmental system: Cacao <-> cadmium system (trees, microbes, soil).

(Research on microbiome interaction with cadmium uptake in plants).

- 2. Social system: Farmers in cacao growing regions.
- 3. Integration of environmental into social system: Knowledge creation, transfer and management surrounding the effect of cadmium on health, cacao quality and marketability.
- 4. Integration of social system in environmental system: Farm and community practices that affect cadmium levels in the cacao beans.

### Potential Results / Deliveries

- NSF and COLCIENCIAS
- \*\*Taking under consideration the CNH2: Dynamics of Integrated Socio-Environmental Systems (CNH2)



### **VEGETABLES**

### Agricultural waste management framework for sustainable rural development in Colombia.

Tatiana Daza - CENICAÑA - tdaza@cenicana.org - technical | Eduardo Ximenez - Purdue - e.ximenes@purdue.edu - technical | Ngonidzashe Chirinda - CIAT - n.chirinda@cgiar.org - technical \* | María Francisca Villegas - Universidad Icesi - mfvillegas@icesi.edu.co - technical | Laila Bernal Bechara - Universidad La Salle - Labernal@unisalle.edu.co - technical | Rachel Brennan - Pennsylvania State - University rab44@psu.edu | Maria Alejandra Garcia - Michigan State University garci425@msu.edu - Community

### IT expert/ computer scientist:

Felipe Henao - Jfhenao@icesi.edu.co | Andres Osorio - afosorio@icesi.edu.co Universidad Icesi\*

### Social experts-local/NGOs:

Fredy Paez - Universidad Javeriana | fredy.paez@javerianacali.edu.co

Sanitary conditions assesment LCA – S-LCA practitioners (TE)

### **Project Description**

### **Project Description/ Meetup agreements**

Prioritization Areas:

- Waste distrubition and availability (Atlas)
- Socio-demographic characteristics

How new is this idea?

Projects on the areas!

Experience with communities Drawdown -

### **Goals and Scope**

General scope (big budget + objective) – Model of waste management technologies.

Specific scope (small budget + objective) – Case study for community development on a specific area of high potential.

### Goal:

Excelerate rural development based on adequate agricultural waste and wastewater management practices for a sustainable transition to biobased economies.

Is the current use the best use for the community and the environment?

### 1. Social base-line

Knowledge and current practices by the community.

Who does what – labour and responsabilities [community structure] divison of labour (community and household level).



Main problems from the community: e.g. food security, low income, health, energy security, water and air quality (environmental).

Sanitary conditions assesment.

### 2. Waste base-line

Waste characterization. Inventory: distribution and availability. Environmental impacts of current practices.

### 3. Technological prospection

Used technologies

Potential technologies to transfer

- Biochar
- Silage
- AD
- Compost
- Fermentation

### 4. Decision Making tool for agricultural waste and wastewater management practices.

Constraints

Objectives – KEY Optimise the value of the waste from the community perspective. Weighting strategies.

### 5. Validation

Implementation
Training
Feedback from the community
6. Disemination

Reach decision making institutions.

Reach communities.

Social innovation programme with the young people to get involve into technology transfer activities – focused on gender.

### Potential Results / Deliveries

- Model
- Data base: quantitative and qualitative database
- App
- Communication material Scientific and public
- Technology pilots

- US Embassy
- COLCIENCIAS SGR
- SDGs OCDE funding mechanisms
- Green Climate Fund
- IKI Funding





### **FRUITS**

Development and conservation of improved germplasm of fruits species at the Cauca Valley, Colombia.

Liliana Gómez - Purdue University | Luis Duque - Pennsylvania State University | Jherson López - CENICAÑA | Thaura Ghneim - Universidad Icesi | Ana María Arboleda - Universidad Icesi

### **Project Description**

### Project Description/ Meetup agreements

Development of varieties of fruit crops (define crop) with high nutritional content, highly efficient in the use of water and nitrogen, and resistant to pests and diseases, suitable for adoption in intensive systems with high, profitability, and according with the needs of the consumer. This effort will be matched to the creation of strategies to educate the consumer. to maintain sustainability.

### **Goals and Scope**

- 1. Characterization of germplasm to identify sources of resistance to pests and diseases, tolerance toward environmental stress and promising characteristics to face the adversities of climate change.
- 2. Characterization of soilssuitable for the cultivation of the selected germplasm and identification of specific crop requirements.
- 3. Development of strategies for the genetic improvement of crops, according to defined targets: productivity of new species, resistance to biotic or abiotic stress.
- 4. Variety design according to consumer needs. Our long-term goal is to maintain the dynamics, sustainability and economic competitiveness of crops in Colombia, from the improvement of resistanceand tolerance traits and crop management practices, making use of last generation tools for phenotyping and phenosensing

### Potential Results / Deliveries

The specific benefits of this project include: 1) increased breeding efficiency, which will enable breeders to provide supervisor varieties to stakeholders through the application of new high-throughput genomic and phenomic tools, incluiding genomic selection and high-throughput phenotyping technologies; 2) improved profits for growers through the development of new varieties; 3) reduced yield losses, 4) Paticipatory breeding, 5) Propagation of seed available for growers.

- Purdue University,
- PennState
- ICESI
- Cenicaña
- Agrosavia
- Camara de Comercio de Cali (CCC)
- USDA FAS.
- USDA AID,
- Colciencias,
- Bill& Melinda gates Foundation,
- FFAR (Foundation for food and agriculture Research).



### **FRUITS**

"Dignidad Agropecuaria": building an agricultural community from the small holder to the world via an assessment of Valle del Cauca.

Sociologists: Leif Jensen | Leland Glenna | Penn State | Maria Alejandra\*
Agroeconomist: Pilar Useche
Lawyers: Robinson Sanchez | Maria Victoria Vasquez (chamber of commerce, Cali)
For questions: Patrick Drohan

### **Project Description**

### Project Description/ Meetup agreements

JUSTIFICATION (this idea applies to any small holder crop: small holder, farmer tend to have a life that's harder from life in urban areas)

Small holders that are typically groing in the hill side are the demographic we are asked to target (50% of small holder farmers make agriculture in Valle del Cauca):

- Small holder, farmer income is typically lower because of difficulties marketing, transportation, logistics.
- Small holder, farmer education is limited.
- Economic expantion is limted by access to education, transport, markets and technology.
- Identification of marketing strategy on the country side, to promote a stable agro-cultural economy.
- Identification of current workers needs vs conditions.
- Identification of "dignidad agropecuaria" as a measure of future farmer well being.

- Level of organization of the communities, if they have a strong organization it is easier to detect the key pointswhere is necessary to intervene and strengthen the production process: cooperative, religios, ethnic, political.
- Explore the possibilities that the communities have to transform and adapt to climate change in the production process.
- Evaluate age and genre demographics
- Evaluate information access: pears, formal cooperative, government entity, paper vs digital, mental barrier between technology and agriculture.
- -Recognize the traditional knowledge.
- Connect farmer and buyer.
- Identify current health, economic and well being in compare to the UN or FAO assessment goals.

### **Goals and Scope**

- Understand the role distribution by gender, how this limits to individual, vs community vs agricultural production success.
- Understand the regulatory framework, if it's a limit or an opportunity.

### Potential Results / Deliveries

### 1. Identification of knowledge access

- Identify mechanisms to facilitate better access by underrepresented groups (hypotheses: women, indigenous, afrocolombians are these groups).



- Identify new information sharing strategies.
- Identification of cultural barriers due to economics, cultural beliefs, ethnicity, education, technology.
- Cooperative service/sharing of technological access that limits costs to farmers but helps increase the productions can help increase the production of small holder farmer; overall result increasing yield for export.

### 2. Propose a new regulatory framework

- Identify mechanisms to facilitate and promote participation in the whole production process.
- -Identification of mechanisms gender roles distribution, how this limits to individual, vs community vs agricultural production success.
- Map out community organization and identify weak links due to lack of cooperative arrangements, ethnic, political.
- Strategies for communities to transform and adapt to climate change for maintaining agricultural production.
- -Basic mapping of age and gender.
- -Network analysis of information access for small holder producers: peers, formal cooperative, government entity, paper vs digital, mental barrier between technology and agriculture.
- Identify the exisiting vs alternative framework for production success.
- Comparison of current production chain to other commodities in the region.
- Identify buissness opportunity.
- Identification of profit parity between farmer

- and value-added producer (snacks).
- Evaluate participation in the regulatory framework and assess if it doesnt recognize the ideas or knoweledge of the communities. Communication between state and farmer.
- Facilitate participation of underrepresentated groups in the policies.
- Identification of farmer economic, educational or health stresses: metrics would include health ensurance, frecue ncy of doctor visits, job injurees, children injured, equipment injuries, cronic health issues caused by farming vs non farming lifestyle, degree on socialization, salaraes, parter status, general satisfaction.
- Identification of traditional knowledge use and

- Peace proposal
- Colciencias
- Chamber of comerce
- US NSF, AID, EMBASSY



### **FRUITS**

### Influence of climate variability in land use/crop diversification.

Victor Romero Cano, UAO | Melba Salazar, WSU | Patrick Dohan – Penn State | Luis Duque – Penn State

### **Project Description**

### **Project Description/ Meetup agreements**

We will use and probably develop machine learning and data analytics technology for analyzing the available data. We propose to use data collected by CENICAÑA in order to run the proposed analytics. Through crop diversification growers spread production and income risk over a wider range of crops reducing vulnerability to weather or environmental conditions.

### **Goals and Scope**

This proyect aims at developing a pipeline for estimulating land use diversification. Climate change presents real threats to the agricultural production, agricultural resources and rural economies, also affects the sustainability of predominant crops. These threats have significant implications not only for farmers but also for the general comunity.

The main goal of this proposal is to identify crops that can be planted under the changing environmental conditions of the Valle del Cauca region. Modelling and forecasting these conditions can help finding a crop system that is aproppriate and adaptable to the predicted climate conditions of Valle del Cauca.

These crops will help to span the regional agricultural sector, contributing and increasing productivity and stabilizing smallholders income significantly to improve rural prosperity and job creation in the region.

### Potential Results / Deliveries

- A geographical information system with crop diversification suggestions in different areas that provides a guide/decision aid tool especially appropriate for farmers, stakeholders and policy makers.
- -The results will be diseminated through grower meetings, conferences and workshops.





### MEDICINAL PLANTS

Community based participatory research with three communities on medicinal plants, intelectual rights and poverty reduction.

### Social componet

Aurora Vergara – ICESI | Natalia Deeb-Sossa – UC Davis CEAF team (Icesi): Bela Henriquez, Lina Lucumí OEM Team: Salomé Arias, Lina Buchely La Javeriana, Bogota – Antropologia, Ciencia Politica Cali (Studios de Centros Intercurturales)

### Select plants/ techno-economic (feasibility) study (list gotten from indigenous communities)

Engineers & Economists | Guillermo Sinisterra – CESA | Paola Palacios – ICESI | Blanca Zuluiaga – ICESI | Julio Cesar Alonzo – ICESI | Guillermo Montoya – ICESI | Alvaro Roero – NMSU Rachel Brennon – Penn State

### IP regulation in Colombia on plants and traditional knowledge

Lina Césspedes- Baez – Universidad del Rosario | Alvaro Henao – Universisad del Rosario Juan Carlos Martinez – Universidad Militar | Robinson Sanchez – Universidad Militar

NSF – no commercialization | USDA – commercialization

Guillermo Montoya - ICESI

### Production & optimization

Josh Lambert – Penn State | Rachel Brennon – Penn State | Guillermo Montoya – ICESI

### Community - based organizations

Escuela de participación política de mujeres (Bellavista- Bojayá) | Fundación Chinyangua (Guapi- Cauca) | Bámbara emprendimiento social (Quinamayó- Valle del Cauca)

### **Project Description**

### Project Description/ Meetup agreements

To validate and make socially profitable the medicinal plants and plants that can be used in developing cosmetics by understanding the legal regulatory market and social environments of this kind of products on the Pacific Region used the evidence provide by Bellavista (Chocó), Quinamayó (Valle) and Guapi (Cauca).

### **Goals and Scope**

1. Validate the traditional believes on PAMCA that Bellavista (Choco) Quinamayó (Valle del Cauca) and Guapi (Cauca) communities have by collecting scientific evidence.

- 2. Outline the legal framework on the intelectual property rights and ancestral communities and its impact of Bellavista, Quinamayó and Guapi kind of iniciatives.
- 3. Understand the impacts on the community of Bellavista, Quinamayó and Guapi.
  - a. Continue documenting the process that create well being in the community incluing traditional plants (i.e. limpias).
  - b. Identify community based methodologies and framework that are considered best practices by the communities.



- 4. Understand the markets of markets of natural, organic health products (national and internacional) to better place the products.
- 5. Understand the bottlenecks (labs, equipment, human capital, skills) and how to adress it.
- 6. Generate community scholarship scholarship to generate community profesionalization

### Project Description/ Meetup agreements

### Market level

There is an interesting opportunity on the market for products that are based on natural components.

### Community level

To strenght and generate emploiment and development opportunities to Guapi, Quinamayó and Bellavista community.

### Legal level

There is a framework within current colombian regulation that could help to protect traditional knowledge from beinh missudes or abused by outsiders from the communities.

- NSF
- Seed Grant
- Colciencias
- UN
- WHO
- FAO
- IDRC







PARTICIPANTS					
Name	Institution	E-mail			
Ana Maria Arboleda	Universidad icesi	amarboleda@icesi.edu.co			
Silvana Botero	Purdue University	silvanab94@hotmail.com			
Rachel Brennan	The Pennsylvania State University	rab44@psu.edu			
Jesus David Coral Medina	Universidad Mariana	jdcoralm@gmail.com			
Tatiana Daza	CENICAÑA	tdaza@cenicana.org			
Luis Duque	The Pennsylvania State University	loduque@psu.edu			
Maria Alejandra Garcia Otero	Michigan State University	garci425@msu.edu			
Thaura Ghneim	Universidad icesi	Tgheim@icesi.edu.co			
Liliana Gomez	Purdue univesity	lgomezdi@purdue.edu			
Diego Hernandez	Universidad de Manizales	diegoh@umanizales.edu.co			
German Daniel Lambardi	Universidad icesi	gdlambardi@icesi.edu.co			
Jershon López	CENICAÑA	jlopez@cenicana.org			
Jairo Alexander Lozano Moreno	Universidad Autónoma de Occidente	jlozano@uao.edu.co			
Milton Humberto Medina Barreto	Universidad Tecnológica de Pereira	mmedina@utp.edu.co			
Maria Fernanda Mideros	Universidad de los Andes	mf.mideros35@uniandes.edu.c			
Guillermo Montoya	Universidad icesi	glmontoya@icesi.edu.co			
Katherine Ortegon	Universidad icesi	kortegon@icesi.edu.co			
Andres Felipe Osorio	Universidad icesi	afosorio@icesi.edu.co			
Mireya Osorio Ramírez	Universidad de los Andes	mireyaosorior@uniandes.edu.			
Paola Palacios	Universidad icesi	p_palaci@hotmail.com			
Miguel Ángel Pérez Uribe		maperez@icesi.edu.co			
Jorge Pineda	Universidad icesi	jepineda@icesi.edu.co			
Yeny Rodriguez	Universidad icesi	Yerodriguez@icesi.edu.co			
Alvaro Romero	Universidad icesi	aromero2@nmsu.edu			
Victor Adolfo Romero Cano	New Mexico State University	varomero@uao.edu.co			
Diana Saavedra	Universidad Autónoma de Occidente	dpsaavedra@colciencias.gov.c			
Melba Ruth Salazar Gutierrez	Colciencias	m.salazar-qutierrez@wsu.edu			
Alfonso Serna Ciro	Washington State University	redesomciro@hotmail.com			
Guillermo Sinisterra	CESA	gsinisterra@cesa.edu.co			
Paola Vasquez	Universidad Autónoma de Occidente	chauxpaola@gmail.com			
Maria Victoria Vasquez	Camará de Comercio de Cali	mvvasquez@ccc.org.co			
Aurora Vergara	Universidad icesi	avergara@icesi.edu.co			
Maria Francisca Villegas	Universidad icesi	mfvillegas@icesi.edu.co			
Juan Felipe Henao	Universidad icesi	Jfhenaocesi.edu.co			
Ngonidzashe Chirinda	CIAT	n.chirinda@cgiar.org			
Lina Buchely	Universidad icesi	Lfbuchely@icesi.edu.co			
Norha Villegas	Universidad icesi	Nvillegas@icesi.edu.co			



Sponsored:



Organized:

