



Role of the Universidad Nacional de Colombia in strengthening the cacao chain value in Colombia

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Cacao for Peace Research Meeting
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The UNAL, was founded in 1867,
it's public belong to the State and
it's the largest one in the
Country.

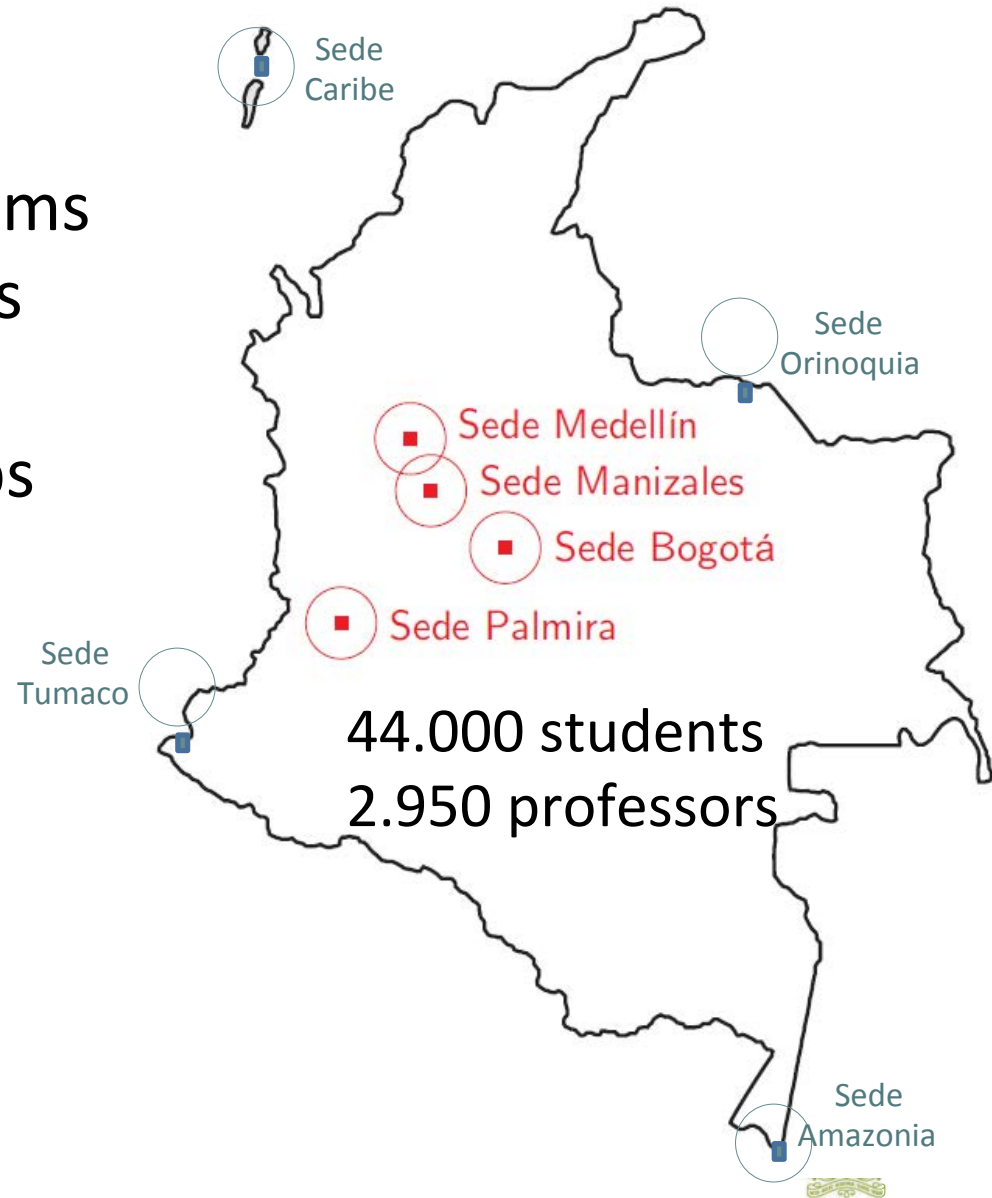


- Institutional Accreditation for 10 years by CAN
- International Evaluation by IEP
- Number 9 in the QS ranking of universities in Latin America



Our Campus is Colombia: 8 (5)

- ✓ 96 graduate programs
- ✓ 161 Master degrees
- ✓ 58 doctorates
- ✓ 931 research groups
- ✓ 43 Research institutions
- ✓ Peace and Conflict Center





Faculty of Agricultural Sciences - 1963

Areas: Genetic and Breeding, Crop Physiology and Production, Plant Protection (Entomology, Diseases, Weed); Soil, Water, Geomatics

- ✓ 1 graduate program
- ✓ 1 Specialization
- ✓ 4 Master degrees
- ✓ 2 doctorates
- ✓ 11 research groups
- ✓ 15 Lab
- ✓ 1 Marengo (94.7 ha)

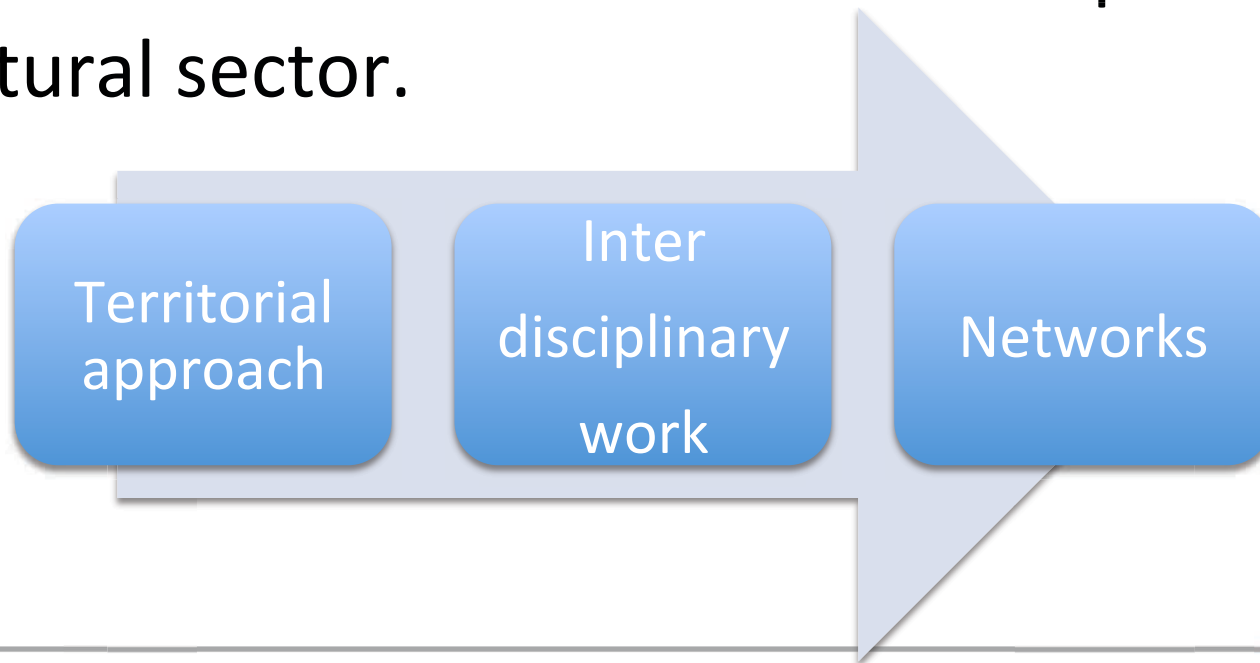


638 graduate, 250 postgraduate students and 42 professors



What is the reason?

To promote the formation of human resources at high level in order to develop scientific knowledge and contribute to the solution of problems of agricultural sector.



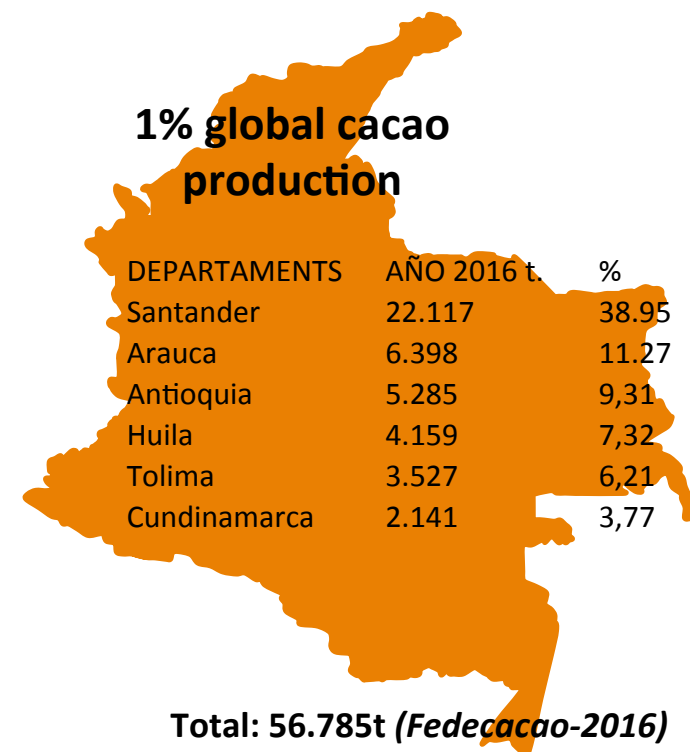
Key aspects of Cacao Crop

- Cacao is a millennial crop and essential for the survival of 40-50 million people of the world.
- Cacao is an American crop

Production of cocoa beans
(thousand tonnes)

	2013/14		Estimates 2014/15		Forecasts 2015/16	
Africa	3199	73.1%	3073	72.5%	2942	73.8%
Cameroon	211		232		250	
Côte d'Ivoire	1746		1796		1570	
Ghana	897		740		820	
Nigeria	248		195		190	
Others	97		109		112	
America	727	16.6%	763	18.0%	639	16.0%
Brazil	228		230		135	
Ecuador	234		250		230	
Others	265		283		274	
Asia & Oceania	447	10.2%	400	9.4%	408	10.2%
Indonesia	375		325		330	
Papua New Guinea	36		36		36	
Others	36		39		42	
World total	4373	100.0%	4236	100.0%	3988	100.0%

1% global cacao production





Key aspects of Cacao Crop

- Potential for increased cultivation area from 140.000 to 670.000 ha (MADR-CNC, 2015)
- Cacao cultivation offers to farmer communities in Colombia a great opportunity to increase their income and social benefits.
- It is considered as a one alternatives for post-conflict and for the substitute of illicit crops.



La producción actual de cacao en Colombia no es para enorgullecerse



Limiting factors of the crop



- Old planting materials (mainly hybrids, with 60% of them over 20 years)
- Low densities (less than 1000 pl.ha⁻¹)
- Low yield: 0,5 t/ha (DANE, 2013).
- Pathogens
- Poor management of agroforestry systems and processing of the grain



**It is necessary to strengthen each of the links
of the cacao value chain**




Cacao Crop Program


Climatic aspects and Good Practices

Increased Crop Productivity

PARTICIPATIVE RESEARCH



Cacao crop

Postharvest




Commercialization

Genetic Breeding

Physiology and Production

Crop Protection

Soil and water

Beneficiation process and grain quality
Dry/fermentation

Transformation products for industrial applications

Organoleptic analysis and nutrition

Farmer Management

Economic analysis

Commercialization

Organization

Technology generated

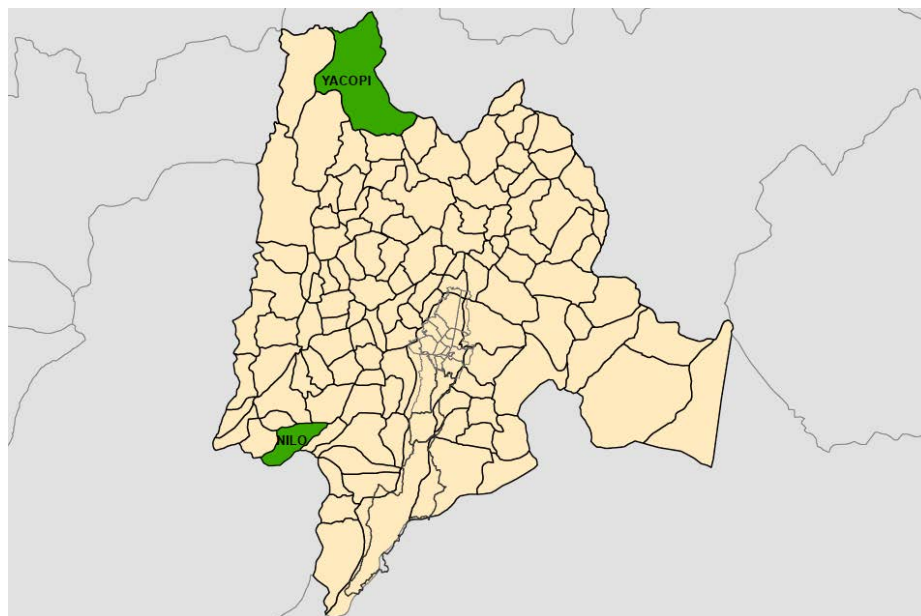


TRAINING AND EXTENSION



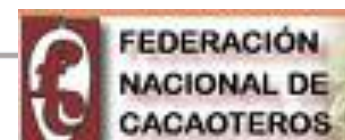
Cacao Project

- ❑ **YACOPI** -- Aprox. 2.000 ha
- ❑ **NILO** -- Aprox. 300 ha



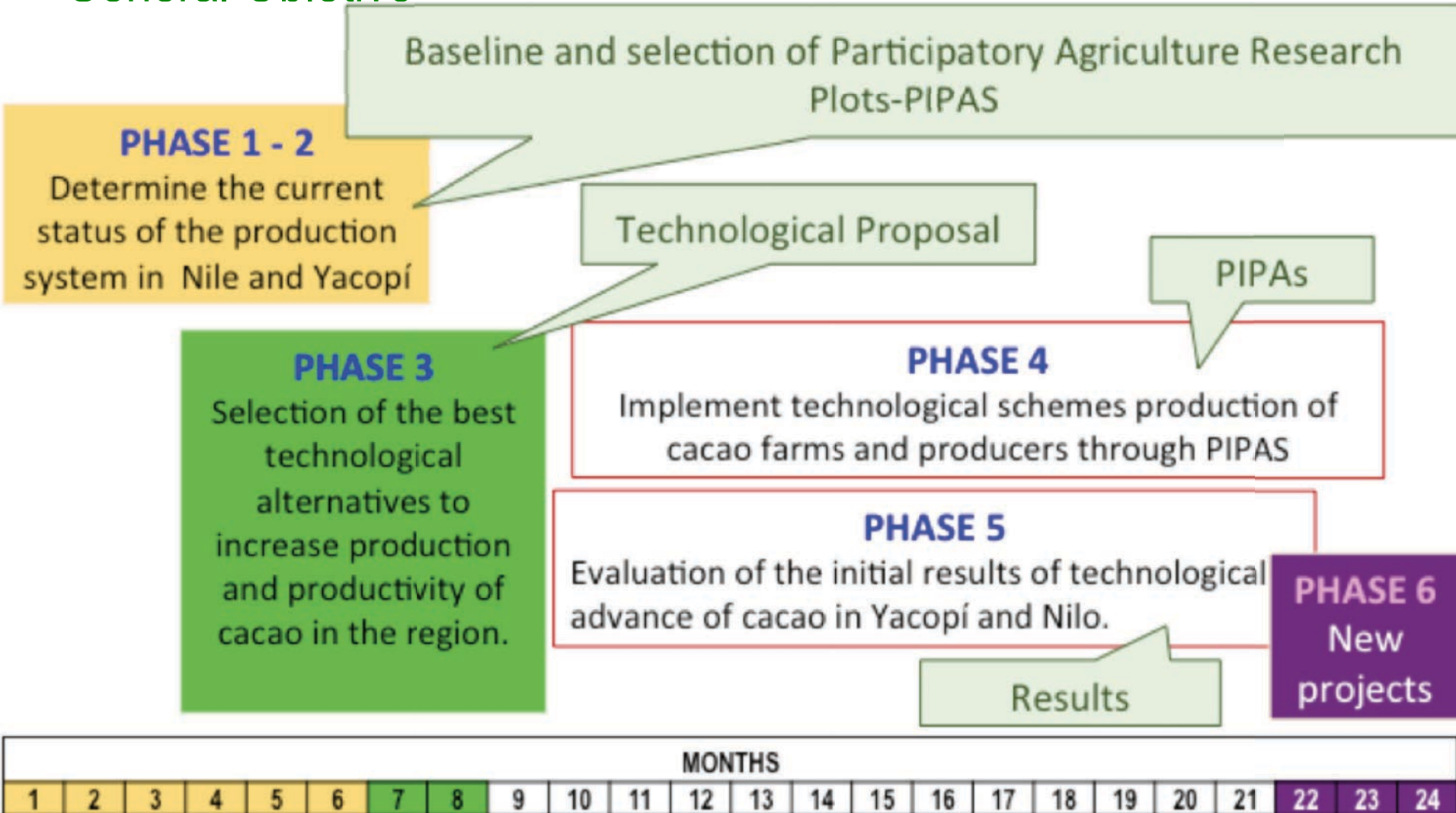
CUNDINAMARCA

- 2.141 ha. (6)
- Yield: 0,4 t/ha (DANE, 2013).
- **Potential for increased acreage to 46,000 has** (MADR-CNC, 2012: 14).





General Obietive





Interdisciplinary and Participative Research

COMPONENTS	RESEARCHERS
Socio-economics	UNAL: Juan Carlos Barrientos and Yesid Aranda. CORPOICA: Carlos Herrera.
Fertilization	UNAL: Marta Henao, Roberto Villalobos and Stanislav Magnitskiy; Esperanza Torres.
Crop Protection	UNAL: Augusto Ramírez , Esperanza Torres and Sandra Gómez CORPOICA: Camilo Beltrán.
Cultural Managment	FEDECACAO: Hernando Morales and Oscar Ramírez. CORPOICA: Gildardo Palencia and Luis Enrique Ramírez.
Postharvest	FEDECACAO: Nubia Martínez. UNAL: Alfonso Parra, Aníbal Herrera, Carolina Sánchez and Marta Henao.
Clime and Good farmes Practices	CORPOICA: Carlos Herrera. UNAL: Efrén Ospina.



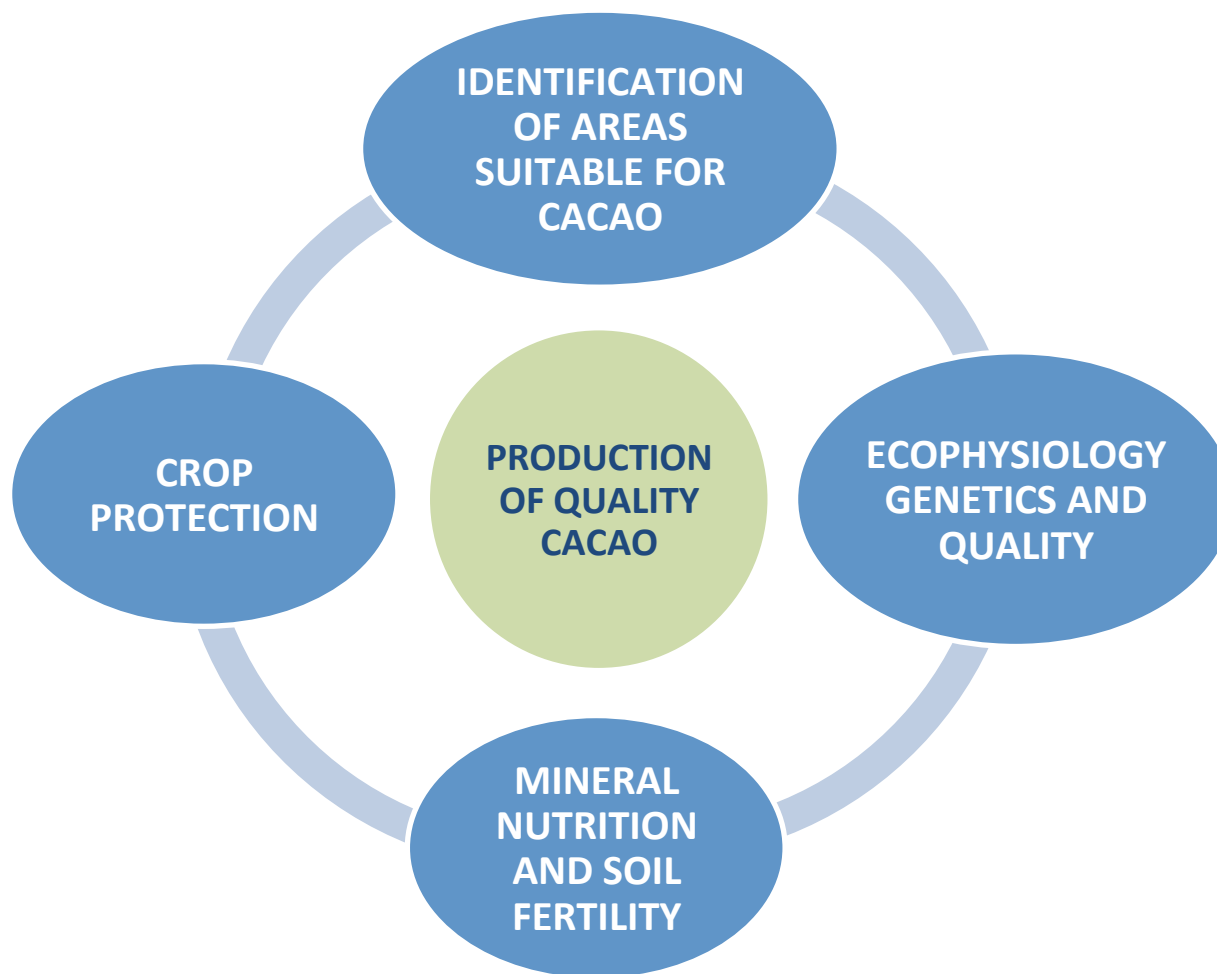


Results

- ✓ The current status of the production system in Yacopi and Nilo (baseline).
- ✓ Diagnosis of Cd levels in the soil and its distribution in leaves and fruits of cultivated cacao in Nilo and Yacopi, Cundinamarca.
- ✓ Characterization of the soil microbiota community associated with and without fertilization (C, N, P) as to as contribution of management of soil fertility.
- ✓ Characterization of the soil microbiota community tolerant to Cd as a strategy to soil bioremediation.
- ✓ Diagnosis of the major cacao diseases in Nilo-Yacopi, Cundinamarca and its control strategies



Future Plans





IDENTIFICATION OF AREAS SUITABLE FOR CACAO CROPS



Biophysical Parameters

Climate
Soil
Water



Socioeconomic Aspects
Access to roads and markets
Promotion of food security
Employment generation



Methodology of land evaluation
for zoning for agricultural
purposes
scale (1: 25,000) developed by
UNAL for the Rural Agricultural
Planning Unit (UPRA)





ECOPHYSIOLOGY GENETICS AND QUALITY



Ecophysiology

To Identify cacao materials with better physiological performance in the region



Genetics

To Identify the genetic groups of cacao that are grown in the region



Quality

To identify the cocoa materials with higher fruit quality at the time of harvest in growing conditions

Integrated analysis of information



MINERAL NUTRITION AND SOIL FERTILITY



Physical, chemical Properties and microbial diversity



Calibration of soil and plant analysis for N, P and K



To evaluate the Chemical fertilization effect on the soil microbial diversity and plant yield



To evaluate the organic fertilization effect on the soil microbial diversity and plant yield



Elaboration of compost and biofertilization



CROP PROTECTION



To identify the main diseases of cacao crop



To identify the insects of the cacao crop



Biology control of the main diseases and pests of cacao crops



Use of nanoparticles to control the main disease



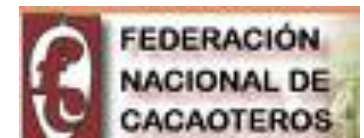
Acknowledgment



SESQUICENTENARIO
UNIVERSIDAD NACIONAL DE COLOMBIA



CONVENIO DERIVADO No 2 DEL CONVENIO MARCO 395 DE 2012
COMITÉ TÉCNICO CIENTÍFICO DEL CONVENIO DERIVADO No 2



SEDE BOGOTÁ

Dirección Académica



SESQUICENTENARIO
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escuelainternacional2017



DEL 5 AL 27 DE JUNIO

**ASPECTS IN SCIENCE AND
TECHNOLOGY ASSOCIATED
TO THE VALUE CHAIN
OF CACAO CULTIVATION**

PREINSCRIPCIONES ABIERTAS

<http://diracad.bogota.unal.edu.co/einternacional17-2>

Facultad de
**Ciencias
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