



GLOBAL AGENDA FOR
SUSTAINABLE LIVESTOCK

SUSTAINABLE LIVESTOCK PRODUCTION SYSTEMS AND POLICY OUTCOMES IN LATIN AMERICA

Muhammad Ibrahim, PhD
General Director– CATIE
mibrahim@catie.ac.cr

Ana María Majano
Chief of Party USAID's Regional
Climate Change Program- CATIE

BUILDING TOGETHER SUSTAINABLE LIVESTOCK
for people, for the planet

Panama, 20-23 June 2016

Sustainable livestock production is a complex issue

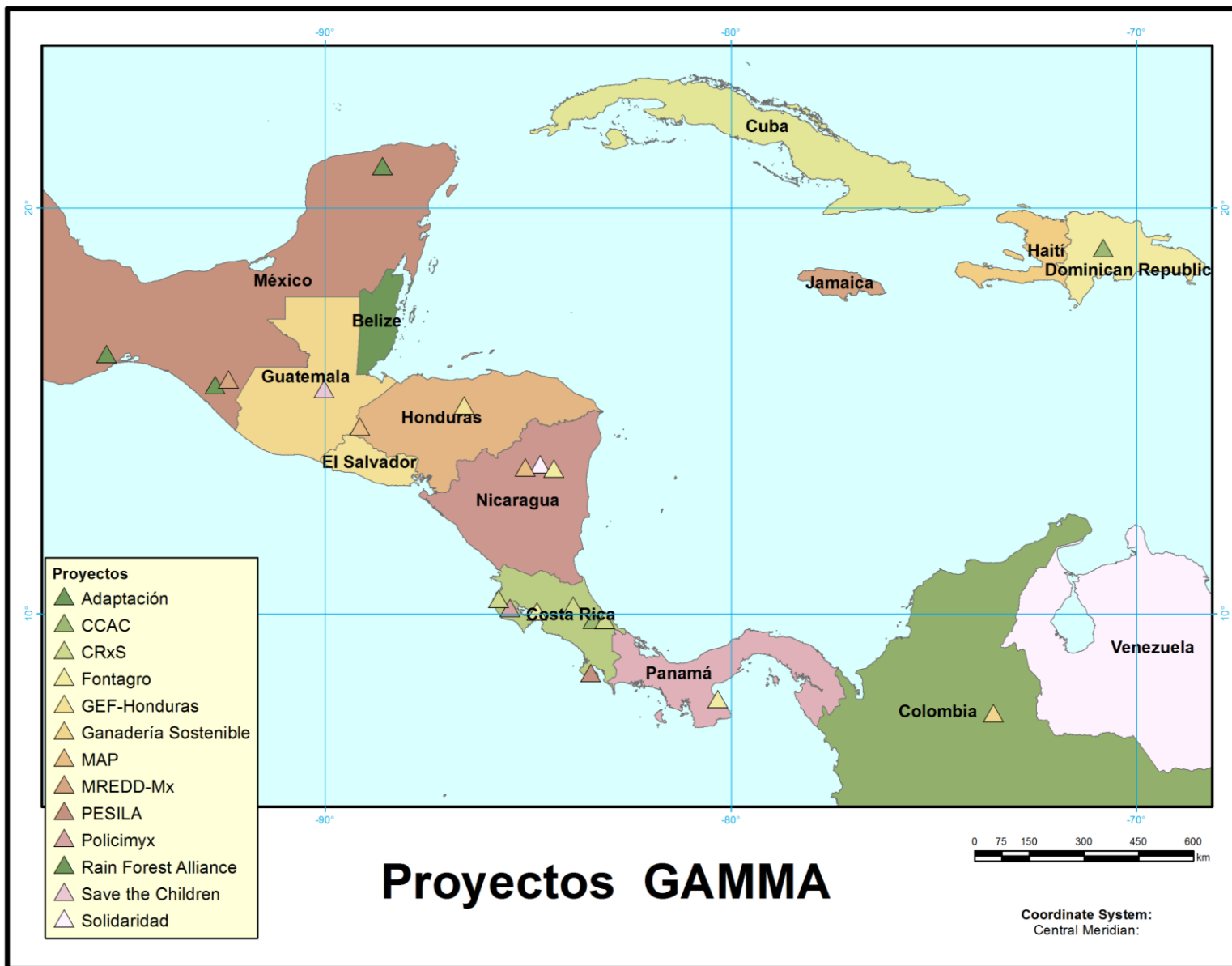
- Multi-stakeholder (sectors)
- Multiple scales (spatial, temporal)
- Multiple themes....for instance
 - Application of good management practices (silvipastoral Systems, herd and pasture management, animal welfare, manure management, etc.)
 - Climate Smart (mitigation and adaptation)
 - Inclusive value chains (farmers organizations, markets, footprinting, certification, etc.)
 - Landscape restoration and management
 - Biodiversity conservation and provision of ecosystem services (e.g. water)
 - Governance, both public and private (laws, institutions, policies, programs and projects)

Sustainable livestock production is
knowledge-intensive...: local and
scientific knowledge.

Policy development must be
grounded on solid science...

Some examples from Meso-America





Trees on farms





Silvopastoral
systems



Forage trees and shrubs- adaptation to climate change

- Regrowth capacities of trees
- Productivity and quality in prolonged dry season
- Use of functional nutritional traits of species to design feeding strategies
- Evaluate impacts on animal performance and emissions

Guazaum
a
ulmifolia



Cordia
dentata

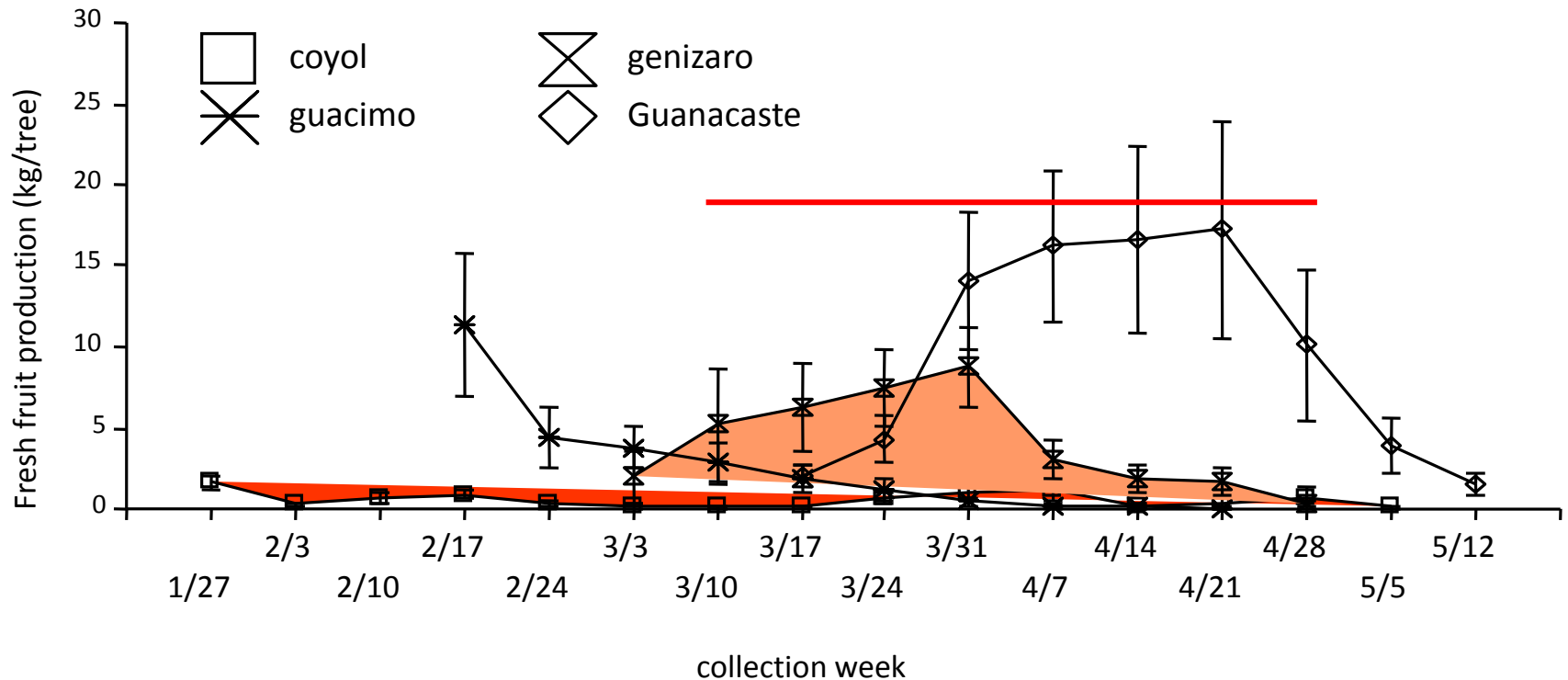


Albizia
nipoides



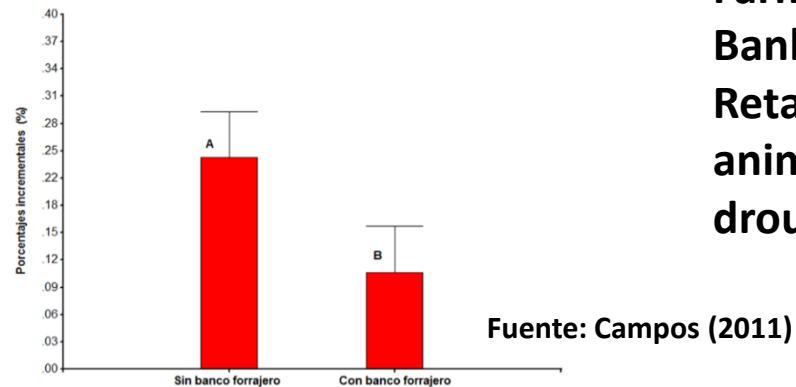
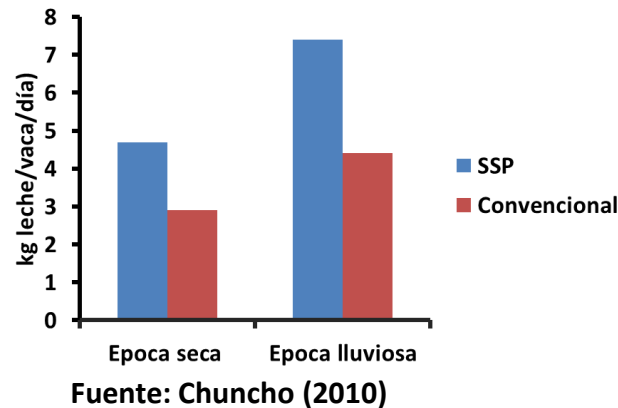
Fruits as dry season fodder for cattle in Central America

Especie	kg arbol ¹	% PC	% DIVMS
<i>Acrocomia aculeata</i>	8.6	5.5	66.4
<i>Guazuma ulmifolia</i>	26.4	7.5	62.8
<i>Samanea saman</i>	36.1	15.6	71.5
<i>Enterolobium cyclocarpum</i>	86.0	13.2	67.8
<i>Brachiaria brizantha</i> (grass)		4.9	46.2





Small Farms managing fodder banks have higher milk productivity and resilience to climate change



**Farms with fodder
Banks
Retained more
animals in prolonged
drought**

Manure management



El biogás es una fuente de energía térmica y eléctrica



Disponibilidad de nutrientes para cultivos agrícolas a partir del compostaje y del biol

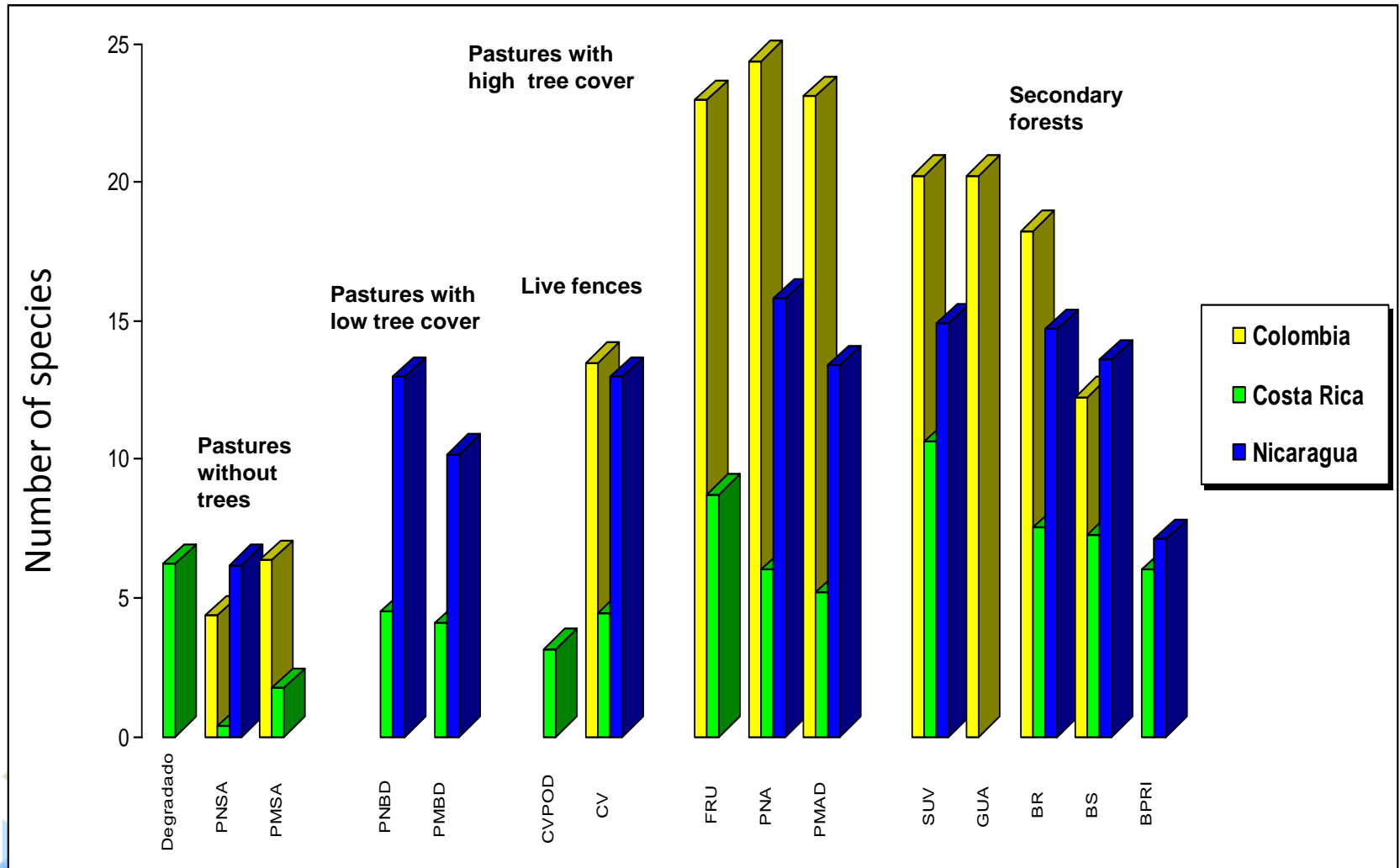
Territorios saludables contribuyendo con el bienestar sostenible de las familias

El manejo integral del estiércol de los sistemas ganaderos significa beneficios para el suelo, el aire, el agua y la salud pública.

Ecosystem services



Conservation of biodiversity (birds)



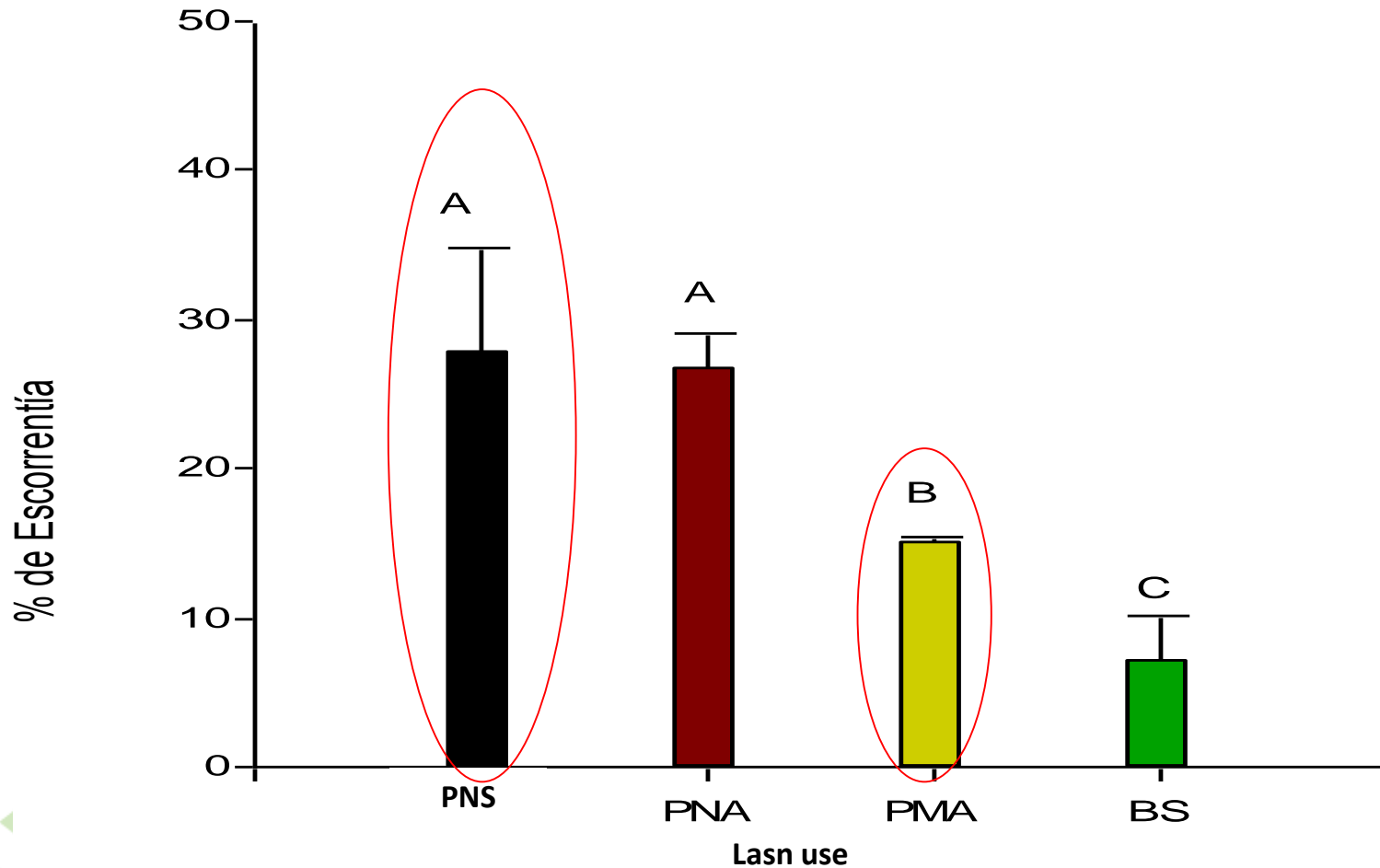
Conservation value increased by adoption of SPS

Project				Control		
Intensification	Total (ha)	BCI 2009	BCI 2012	Total (ha)	BCI 2009	BCI 2012
Small	677	0,31	0,34	1151	0,24	0,23
Medium	1212	0,24	0,28	299	0,30	0,27
Large	2089	0,27	0,30	292	0,26	0,26
Total	3978			1742		

BCI: Biodiversity conservationIndex

Water runoff

PNS = Native pasture overgrazed; PNA = Native pasture with trees; PMA = Improved pasture with trees; BS = Secondary forest.



Adaptation and mitigation strategies

Action	Adaptation	Mitigation
Use of shade trees to reduce heat stress	x	
Compatibility between grasses and woody	x	x
Use of tree to N fix	x	x
Use of tree and pasture resistance to dry season	x	x
Food resources diversification on farm	x	x
Animal genetics	x	x
Reduction of chemical inputs		x
Solid waste management		x



Reduced emissions



Reducción de emisiones



BUENA ALIMENTACIÓN



LEGUMINOSAS EN PASTURAS



DESCARTE DE ANIMALES



MANEJO DE RESIDUOS: BIODIGESTOR

Fijación de carbono



Siembra de Sistemas silvopastoriles



BANCOS FORRAJEROS



CERCAS VIVAS

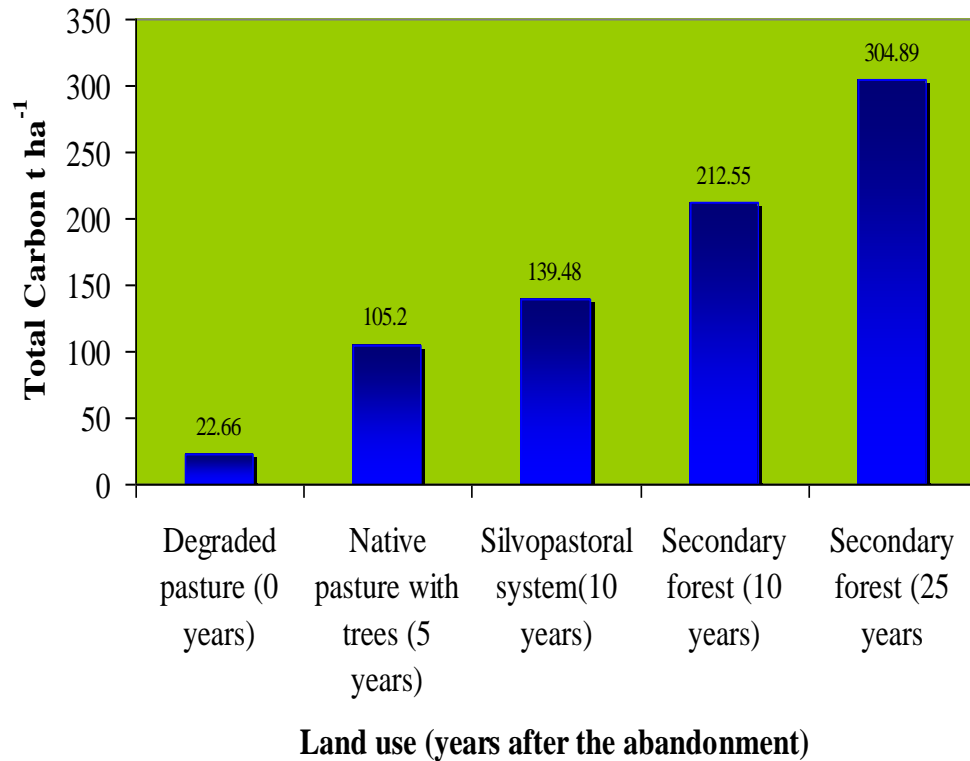


BOSQUES SECUNDARIOS

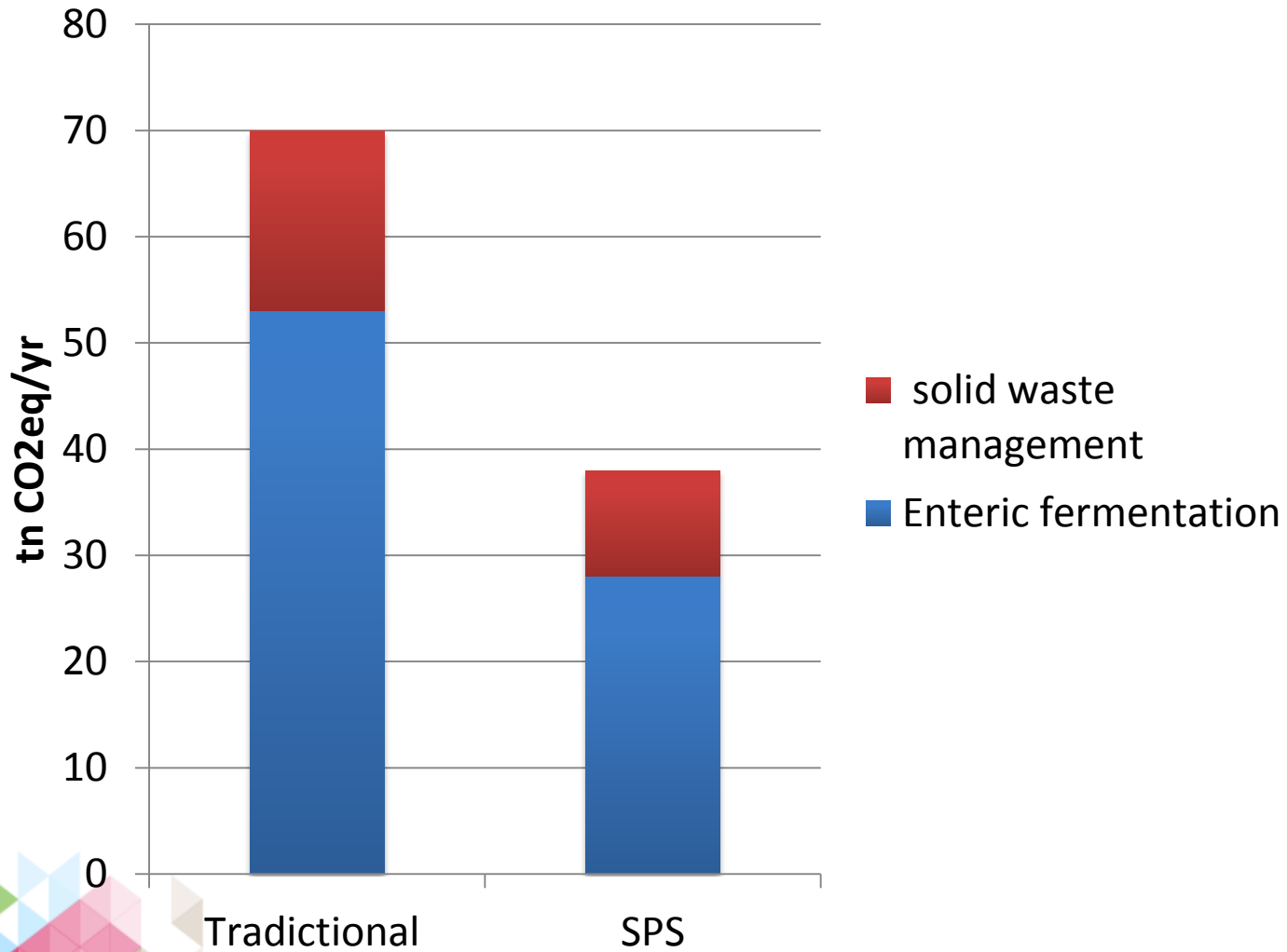
Carbon capture and storage



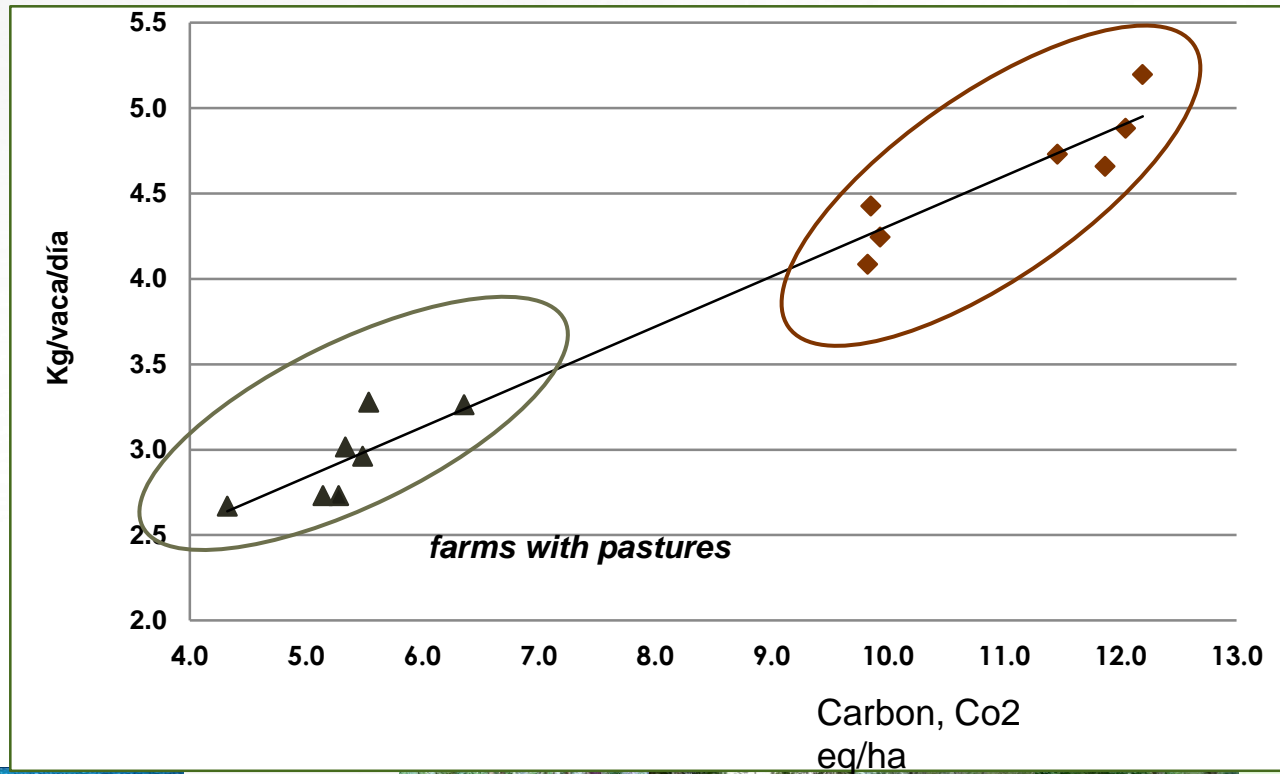
Carbon stocks (capture 1-2 t C/ha/year)



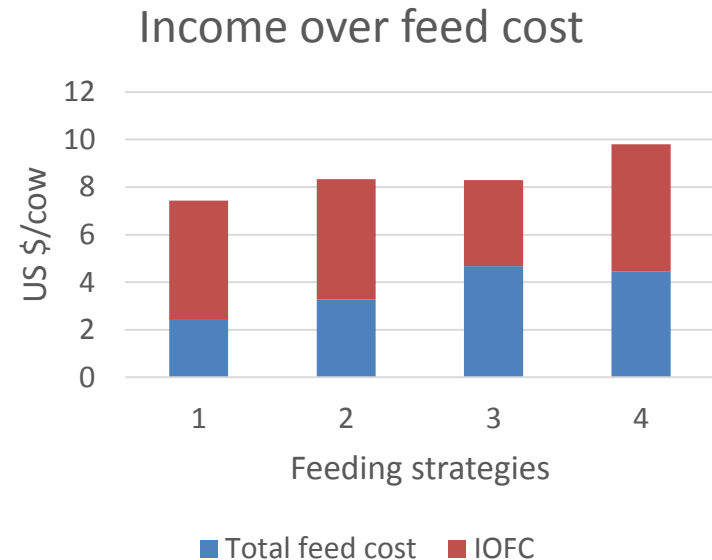
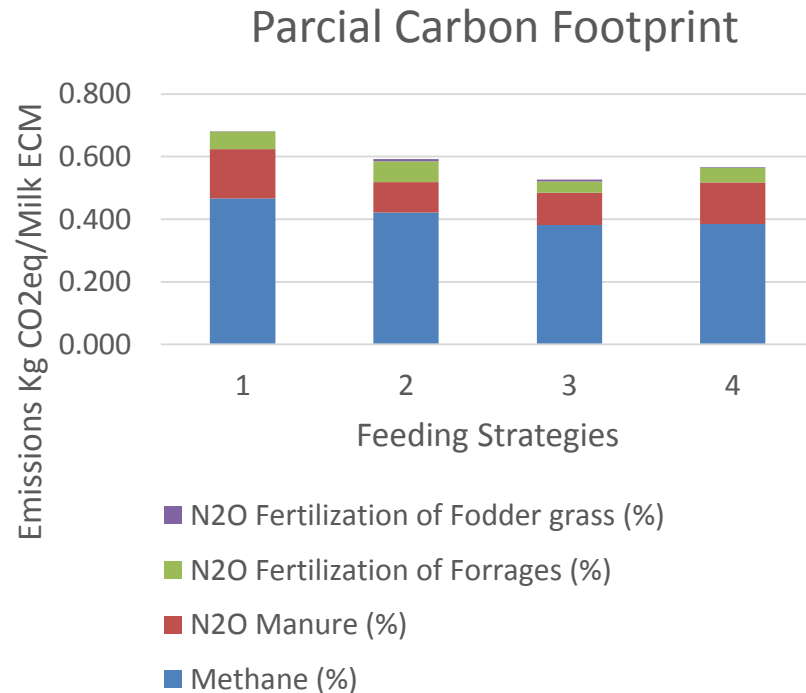
Reduced emissions of greenhouse gases



Farms with silvopastoral systems



GHG emissions are influenced by feeding strategies and diets



- Farms on pasture management tend to have a higher footprint
- Fodder crop production reduces the footprint
- Farms with higher use of by-products tend to have low footprint
- Income higher (but statistically significant) for farms on pasture and concentrate diets

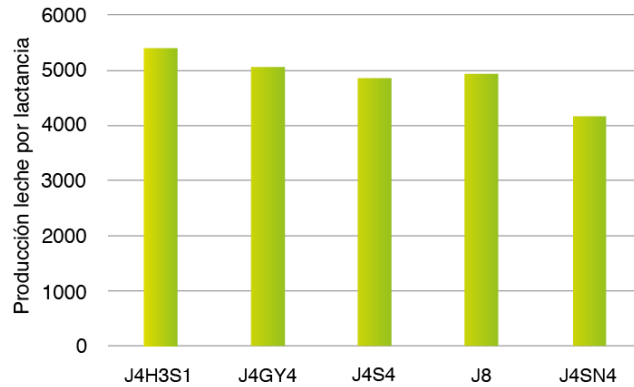
The role of tree shading (10-15% tree canopy cover) on dairy production and respiration rates in Jersey cows

Treatment	Milk (kg/vaca/día)	Respiration rate (breathing/min)
Without tree	11.37 b	80 a
With tree*	12.48 a	65 b

**Increase in financial yield
215 \$US /ha/yr**



Climate Change: livestock genetics - adaptation & mitigation



Crossbred cows, such as Jersey x Holstein x Sahiwal and Jersey x Gyr, have more dairy production than Jersey breeds.

More adaptation to climate change
Reduce GHE

J: Jersey; H: Holstein; S: Sahiwal; GY: Gyr; SN: Senepol



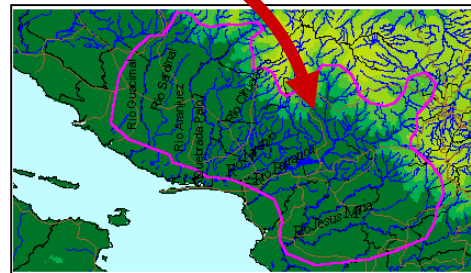
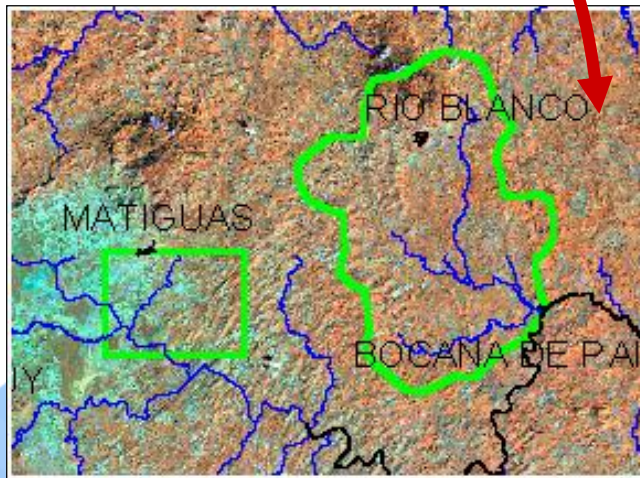
Supporting policy development



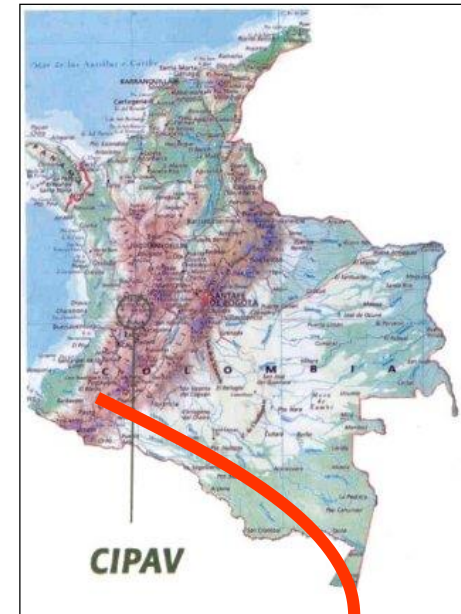
GEF/SPS: Payment for Environmental Services in cattle farms (2003 - 2007)



Bul-Bul, Paiwas, Nicaragua



Esparza, Costa Rica



Quindio, Colombia





Standard for Sustainable Cattle Production Systems



© Sustainable Agriculture Network

Success story of Costa Rica policy measure

- **1970s-** CR one of the most deforested country-hamburger connection
- **1997-** policies – forest law, Payment for environmental services
- **2000-** innovation for the agriculture/livestock sector
- **2014 to date:** Carbon neutral 2021, NAMAS-livestock- insitutional framework, silvopastoral systems

Evolution of area under pastures, production and forest cover

	1980	1990	2000	2010	2013 (4)
Pasture, ha ¹	2.4	2.2	1.4	1.3	1.3
Beef Prod (thousand TM) ²	76.5	87.5	82.3	97.5	85.0
Milk Production (Thousand TM) ³	308	434	722	953	1066
Forest cover, % (5)	26	25	43	56	58

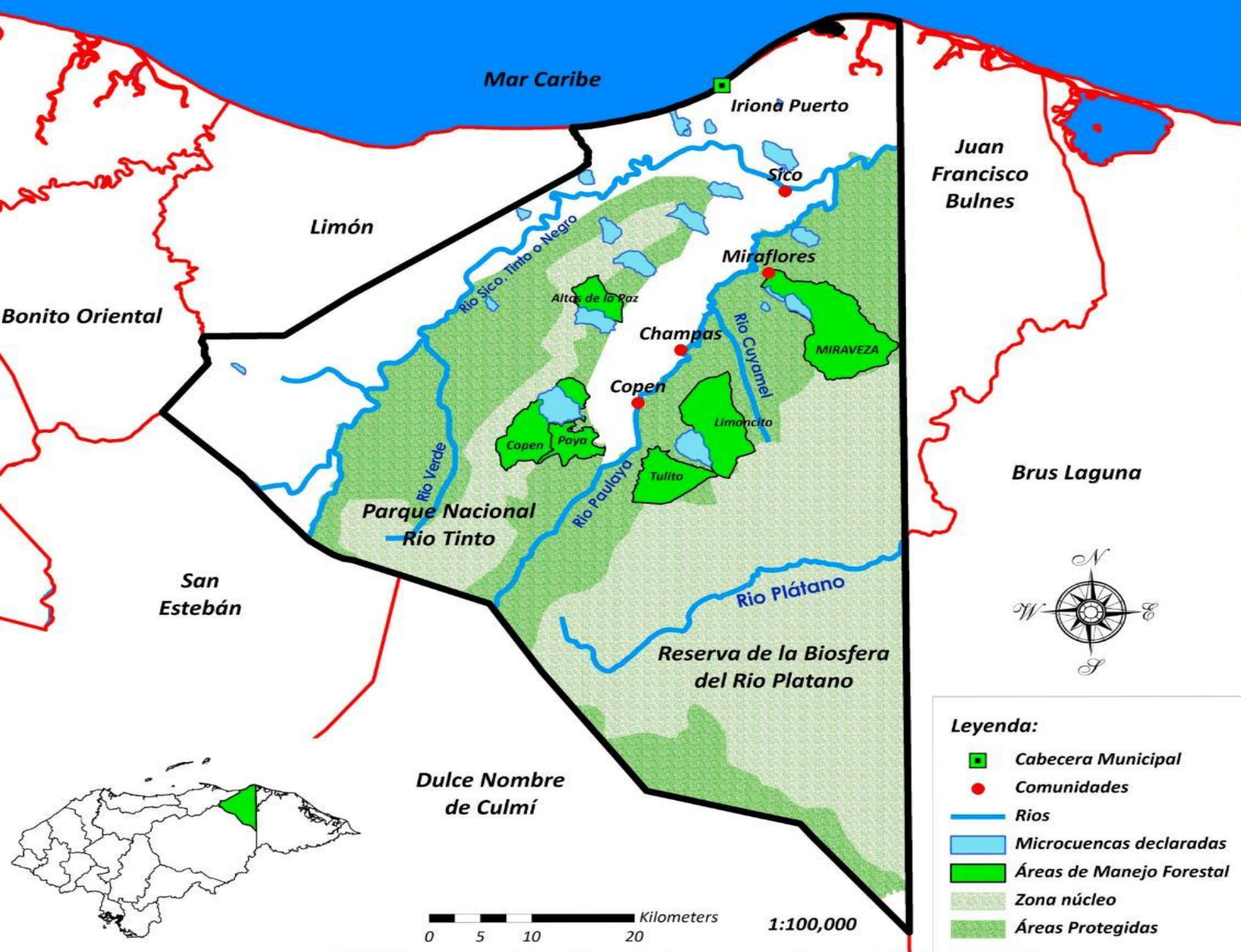
1Sepa, MAG, CATIE, CORFORGA; 2CORFORGA, CNP, IICA, 3 CNPL, CNP, 4. FAOSTAT, 5. FONAFIFO- base de datos

Ibrahim- in preparation

Linking sustainable livestock production to sustainable landscape management: The experience in Sico Paulaya, Honduras

Regional Climate Change Program

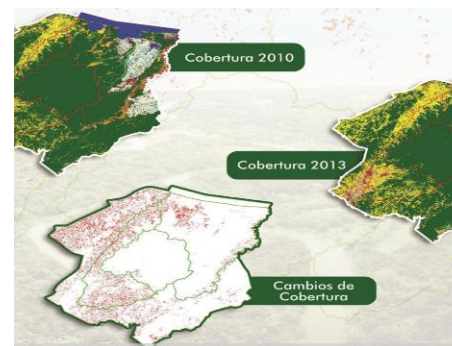




Political – environmental context

High deforestation rate

2010-2013

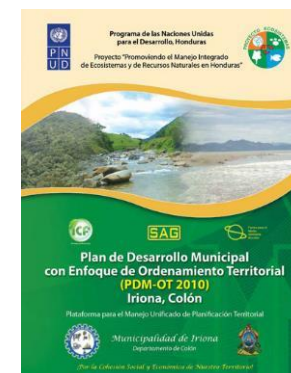


Strategic Plan

Multi-stakeholder negotiation platform (MAPSP)

Land use planning

2010-2030



Th RCCP work in Sico Paulaya includes:

1. Strengthening capacities of the Environment and Productio Table for Sico Paulaya (MAPSP), to ensure participative processes aimed at making sustainable use of natural resources.
2. Promoting implementation of sustainable integrated forest management plans (forest and non-wood forest products)
3. Developing integrated agro-forestry and silvo-pastoral plans
4. Quantifying carbon stocks in the Sico-Paulaya Valley and the buffer zone of the Rio Platano Biosphere Reserve and the Rio Tinto National Park.
5. Communication and incidence acivities to increase the scale and scope of the pilot project.



Sustainable livestock production systems: current actions

- Participation in political spaces and incidence in national policy based on local experiences
- Building local capacities (Farmer schools)
- Baseline for carbon stock and livestock emissions
- Good livestock production practices guide and GHT tools.



Key partners

- Municipality of Iriona
- Ministry of Agriculture, Ministry of Environment
- Fundación Madera Verde
- Instituto de Formación Profesional (INFOP)
- Others



LESSONS LEARNED

The work of RCCP/CATIE in Sico Paulaya has shown the importance of

- Investing time and resources to strengthen local governance
- Link local actions with existing national processes (such as the REDD+ National Strategy and the Agroforestry Program on Sustainable Productive Landscapes)
- Strengthen the presence of the national institutions at the local level (SAG, MiAmbiente)
- Promote local capacity building through practical tools, such as the Farmer Schools (ECAs).



And more.....the future



Opportunities

- Sustainable development goals
- Global Strategy for the Conservation of Biological Biodiversity 2030 (Aichi targets)
- Restoration of degraded landscapes (e.g. 20x20, Bonn Challenge)
- Climate Smart Livestock (e.g. EC LEDS, Unconventions, FAO livestock global agenda, etc.)
- Food and nutrition security
- Value chains with gender equity and inclusion



Thank
you

