



Linking agrobiodiversity value chains, climate adaptation and nutrition: empowering the poor to manage risk

RESULTS YEAR ONE, GUATEMALA

Silvana Maselli, Ph.D.
Plant Genetic Resources Unit
Center for Agriculture and Food Studies, CEAA
Universidad del Valle de Guatemala

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**4 ACTIVITIES AND 5 SUBACTIVITIES WERE CONFIRMED, DURING
FIRST PROJECT'S WORKSHOP JUNE 25, 2015
December 015-January 016
Project's extension April-May 016**



GUATEMALA'S GEOGRAPHICAL LOCATION

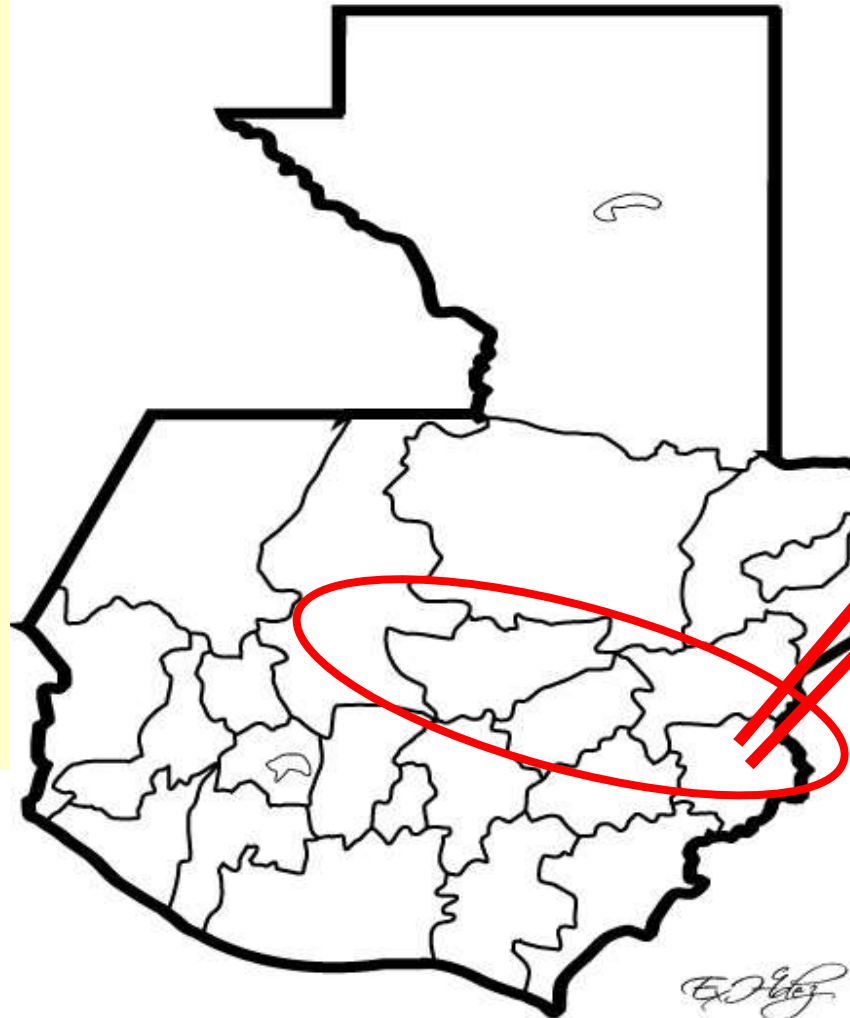


PROJECT'S ACTIVITIES: DRY CORRIDOR (7 Departments)

Activities started in December, 2015

Guatemala

- 5 communities were invited through an alliance with Mancomunidad Copanch'ortí
- 3 villages very vulnerable to climate conditions and food security, villages, accepted to participate



- | | |
|-----------------------|--------------------------|
| 1. Chiquimula | 7. San José La Arada |
| 2. Jocotán | 8. San Jacinto |
| 3. Camotán | 9. Ipala |
| 4. Esquipulas | 10. Quetzaltepeque |
| 5. Olopa | 11. Concepción Las Minas |
| 6. San Juan La Ermita | |



Copanch'ortí
Mancomunidad

Workshop I in Chiquimula

Men and women leaders from five communities participated in workshop, to present the Project. Three villages (Tesoro Abajo, Petentá and La Brea) accepted to participate in December, 2015



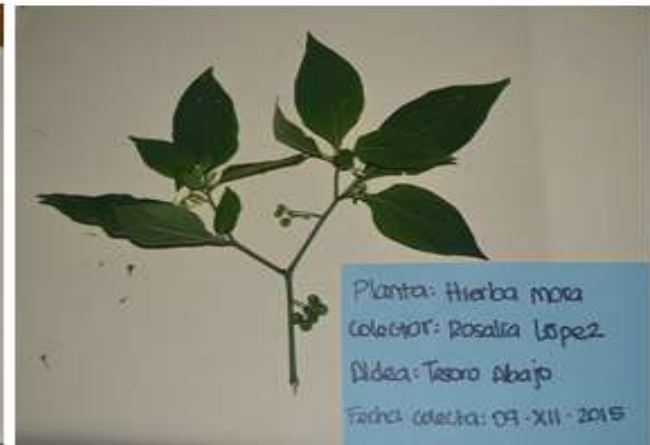
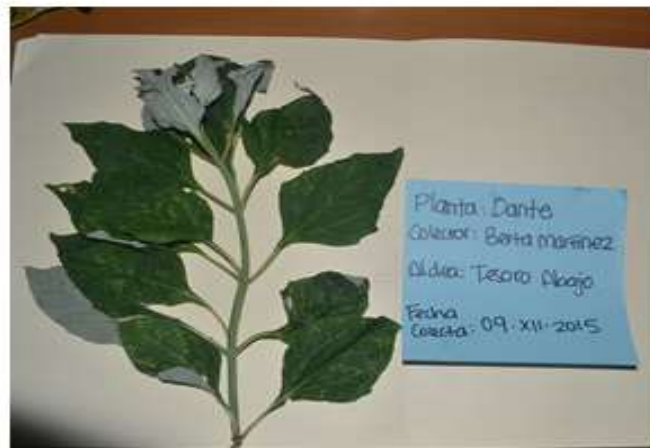
1. Identify and document the type of crops, local food plants tolerant to abiotic factors, nutritional value (Lab. Analysis included) in the villages participating in the project

Annex 5.1. Samples of native plants collected for the bromathological analysis



Left: Moringa sprouts; right: Criolle Amaranthus

Left: Probable *Verbenaceae*
Right: *Solanum americanum*



20 samples from 7 different species of NUS, used as nutritional plants by the community, were provided by women in the villages for the bromathological analysis and were botanically classified

Table 1. Moisture content, yield percentage and protein content of native Plants´ samples.

Person that provided the sample	Location	Date of collection	Plant	Whole plant moisture wet basis (%)	Performance whole plant dry matter(%)	Average protein on a dry basis(%)
Candelaria Ohajaca	Aldea Tesoro Abajo	09-XII-2015	Chaya	92.85	7.15	31.55 ± 0.14
Berta Martínez	Aldea Tesoro Abajo	09-XII-2015	Chaya	85.77	14.23	27.28 ± 0.56
Olga Rosalbina Alonso	Aldea Tesoro Abajo	09-XII-2015	Chaya	91.85	8.15	29.39 ± 0.61
Adelina García	Aldea Tesoro Abajo	09-XII-2015	Chaya	84.34	15.66	29.62 ± 0.18
Rosalía López	Aldea Tesoro Abajo	09-XII-2015	Moringa sprouts	77.25	22.75	31.73 ± 0.22
Juana García	Aldea Tesoro Abajo	09-XII-2015	Chaya	81.70	18.30	30.21 ± 0.69
Ingrid López	Aldea Tesoro Abajo	09-XII-2015	Chaya	81.78	18.22	30.90 ± 0.68
Berta Reyes	Aldea Tesoro Abajo	09-XII-2015	Chaya	83.08	16.92	27.26 ± 0.51
Francisca Martínez Méndez	Aldea Tesoro Abajo	09-XII-2015	Chaya	83.33	16.67	28.94 ± 0.60
Rosalía López	Aldea Tesoro Abajo	09-XII-2015	Chipilín	74.36	25.64	27.11 ± 0.56

**Table No. 2: Mineral content in samples of native plants leaves
atomic absorption technique**

Nombre	Procedencia	Planta		Cu (mg/100)	Fe (mg/100)	Mg (mg/100)	Mn (mg/100)	Na (mg/100)	K (mg/100)	Zn (mg/100)	Ca (mg/100)
Candelaria Ohajaca	Aldea Tesoro Abajo	Chaya	promedio	1.15	9.19	410.76	3.12	255.25	1674.25	5.32	866.15
			sd	0.1	0.0	39.7	0.0	3.2	82.4	0.2	105.52
Berta Martínez	Aldea Tesoro Abajo	Chatate	promedio	0.99	12.20	583.08	8.96	184.25	1703.25	6.05	872.22
			sd	0.0	2.1	1.8	0.2	42.8	53.4	0.0	8.57
Olga Rosalbina	Aldea Tesoro Abajo	Chaya	promedio	0.87	12.97	635.58	4.27	236.75	1630.00	5.39	1806.87
			sd	0.1	4.9	45.7	0.0	3.2	45.3	0.1	77.72
Adelina García	Aldea Tesoro Abajo	Chatate	promedio	0.93	12.52	528.26	4.98	139.50	1529.75	5.66	1970.10
			sd	0.0	0.2	8.2	0.1	1.4	146.7	0.0	53.76
Rosalia López	Aldea Tesoro Abajo	Brotos de Moringa	promedio	0.67	7.21	458.56	5.71	134.75	1465.25	3.35	1039.37
			sd	0.0	1.0	16.8	0.4	13.8	298.0	0.3	52.53
Juana García	Aldea Tesoro Abajo	Chaya	promedio	1.00	11.29	552.15	5.87	185.25	1524.50	6.40	842.82
			sd	0.1	1.0	121.8	0.0	15.2	10.6	0.4	338.21
Ingrid López	Aldea Tesoro Abajo	Chaya	promedio	1.08	18.70	526.95	3.39	148.25	1578.75	7.45	1419.12

NATIVE PLANTS' CONTRIBUTION TO FAMILIES NUTRITION



CHAYA:

- Important source of protein
> 30 g
- Important source of Iron
- Important source of Zinc.

BLEDO AND CHIPILIN:

- Good sources of protein
< 30 g

CHIPILIN.

Important source of Manganese

Sample collection and documentation at Tesoro Abajo, Jocotán

**88 NUTRITIONAL SURVEYS (I-PHONE APPLICATION)
82, 24 HOUR RECALLS, WERE CARRIED OUT IN THE THREE VILLAGES**



Training Workshop IV

Food diversity index results, food preparation with vegetable mixes and Chaya tortillas, recomendations to improve families nutrition status



WORKSHOP IV: FOOD PREPARATION USING CHAYA IN THREE COMMUNITIES



Training Workshop III. Agrobiodiversity and the importance of its conservation and seed bank establishment

18 participants

- 9 presidents of Current Seed Banks
- 9 representatives of Banks to be established

Diversity Lab:

- Lab. guide developed for farmers
- Maize descriptor to learn about diversity and the importance of its conservation

18 expressed their interest in becoming custodian farmers and participate in national net



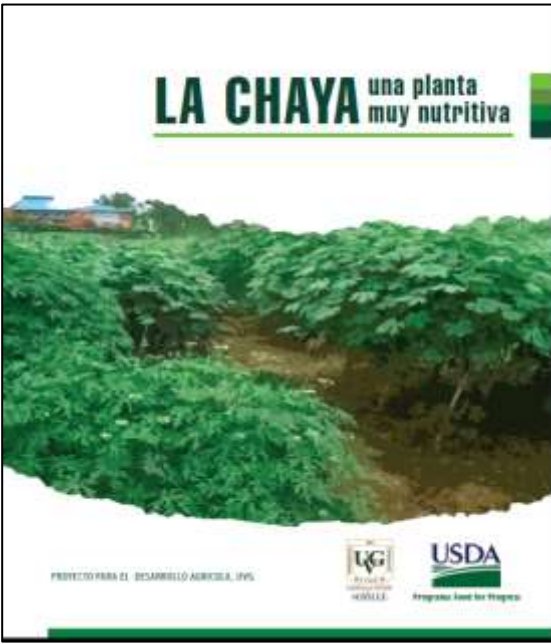
Activity 1.2: Production of high quality Chaya

Workshop II on Manual use, Chaya agricultural management, sustrate preparation, cutting's sowing and cutting's rooting. 3000 cuttigs delivered



Chaya nurseries were established in three villages

Manual to establish chaya plantations and plant delivery for familie's home gardens (7-10 plants per family)



Activity 2: Workshop I in Sololá

Strengthening of conservationist farmers and communal seed bank's networks



TALLER I

Fortalecimiento de Redes de Bancos Comunitarios de Semillas y Agricultores Conservacionistas

"Proyecto integrando la agrobiodiversidad a cadenas de valor para afrontar el cambio climático y el riesgo nutricional, en áreas vulnerables del corredor seco de Guatemala"

ORGANIZACIÓN Y FUNCIONES DEL COMITÉ		GRUPO 1. DIAGNÓSTICO COMITES DE BANCOS ESTABLECIDOS		DISPONIBILIDAD DE SEMILLA		INTERCAMBIO DE SEMILLA CON OTRAS COMUNIDADES O BANCOS	
1. ¿Ha podido el Comité cumplir el reglamento y realizar sus funciones con facilidad? Sí _____ No _____		1. ¿Ha podido el Comité seguir la metodología del manual? Sí _____ No _____		1. ¿La semilla del banco ha estado disponible para los socios? Sí _____ No _____		1. ¿Se han hecho intercambios de semilla con otros bancos o comunidades? Sí _____ No _____	
Listado de experiencias positivas que les han permitido realizar sus funciones.		Listado de actividades que han sido fáciles de seguir de acuerdo al manual.		Listado de actividades que han sido difíciles de seguir de acuerdo al manual.		Listado de comunidades.	
2. ¿Qué necesitamos mejorar para que el Comité se fortalezca y funcione?		2. ¿Qué necesitamos mejorar para cumplir con la metodología aprendida en las capacitaciones?		2. ¿Qué se necesita mejorar para que la semilla esté disponible para los socios?		2. ¿Por qué no se ha tenido intercambio?	
Listado de experiencias a adoptar por el comité.		Listado de temas en los que necesitamos mejorar para aplicar la metodología.		Listado de temas para mejorar la disponibilidad de semillas para los socios.		3. ¿Le gustaría que su Banco intercambiara semilla con otros Bancos o grupos de agricultores de Guatemala? Sí _____ No _____	



Guides used to analyze Bank's performance after one year of establishment and to identify elements, actors and methodology to establish a new sharing mechanism in a national Net.

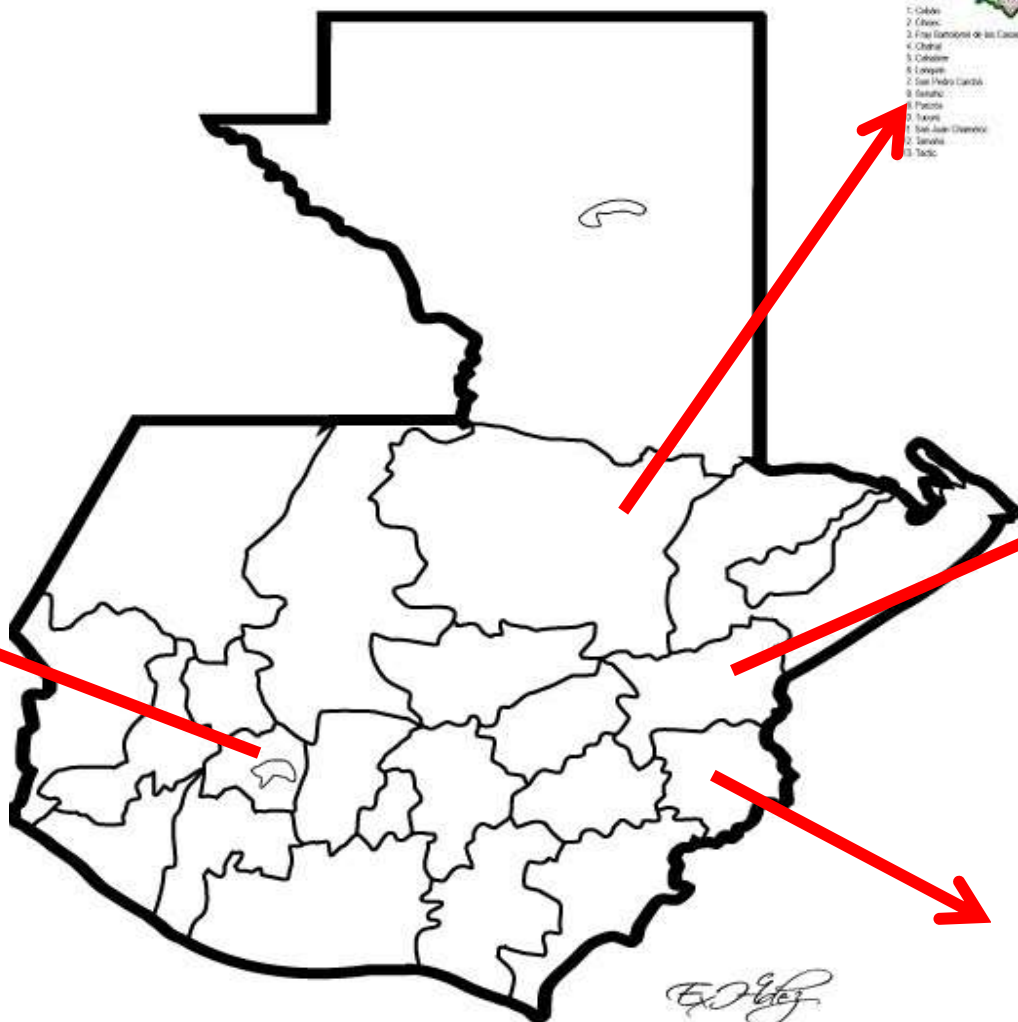




Tratado internacional

SOBRE LOS RECURSOS FITOGENÉTICOS PARA LA ALIMENTACIÓN Y LA AGRICULTURA

Guatemala



Alta Verapaz



- 1. Cobán
- 2. Chiantón
- 3. Fraj Cortesón de las Casas
- 4. Chahal
- 5. Chelam
- 6. Escuintla
- 7. San Pedro Carchá
- 8. Santiago
- 9. Patzún
- 10. Sayre
- 11. San Juan Chamelán
- 12. Sanuxá
- 13. Tactic
- 14. Santa Cruz Itz'apatz
- 15. San Cristóbal Verapaz
- 16. Sanjo Colón La Tola, segregada del municipio de Patzún pero no se ha publicado sus límites territoriales.
- 17. Sacubá, actualmente en proceso de publicación. En 2008 el Congreso de la República, se ordenó establecer sus límites territoriales.

Zacapa



- 1. Quilón
- 2. La Unión
- 3. Zacapa
- 4. Río Honda
- 5. Patzún
- 6. Teculután
- 7. Usumacintán
- 8. Huab
- 9. Cabañas
- 10. San Diego

Sololá



- 1. Nohutlá
- 2. Santa Clara La Laguna
- 3. Santa María Visitación
- 4. San Juan La Laguna
- 5. San Pedro La Laguna
- 6. Santiago Atitlán
- 7. San Lucas Totolmán
- 8. San Antonio Palopó
- 9. Santa Catarina Ixtehuacán
- 10. San Andrés Semetabaj
- 11. Panajachel
- 12. Concepción
- 13. Sololá
- 14. Santa Cruz La Laguna
- 15. San Marcos La Laguna
- 16. San Pablo La Laguna
- 17. Santa Catarina Palopó
- 18. Santa Lucía Utatlán
- 19. San José Chacayá
- L. Lago de Atitlán

Chiquimula



- 1. Chiquimula
- 2. Jocotán
- 3. Carmolán
- 4. Esquipulas
- 5. Cingoá
- 6. San Juan La Ermita
- 7. San José La Arada
- 8. San Jacinto
- 9. Soledad
- 10. Cuertalpeque
- 11. Concepción Las Minas

Ed. 2010

2010

2010

Activity 2: Workshop I in Olopa Chiquimula

Strengthening of conservationist farmers and communal seed bank's networks



Figure 1.
Workshop participants,

Figure 2 and 3,
conformation of working groups

Figures 4-6
results presentation

Activity 2: Workshop I

Strengthening of conservationist farmers and communal seed bank's networks. El Terrero, Zacapa



Figuras 1 y 2 workshop participants expressed their will to participate in the project.



Figures 3-4. Working groups and results presentation

MAGA technicians Participated in the meeting



Activity 2: Strengthening of conservationist farmers and communal seed bank's networks.

**TO BE COMPLETED IN ALTA AND BAJA VERAPAZ
AND HUEHUETENANGO WITH 2016 BUDGET**





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Activity 3: Develop a consultation to establish a mechanism for value chain enhancement with target crops (tepany bean and chaya)

TO BE ACOMPLISHED WITH CATIE, WITH 2016 BUDGET





Activity 4.1: Policy development enhancement for the conservation, sustainable use and nutritional value of agrobiodiversity in Guatemala

- **First meeting with FAO International Representative in Guatemala**
- **FAO's Guatemalan Representative and FAO's Project's Director**
- **MAGA's representative for genetic resources**
- **Attendants gave inputs on the activity and on how to propose the discussion among institutions in the country**

- **Meeting with personnel of the Italian Cooperation Agency.**
- **An alliance with UVG to prepare a policy workshop, including the agrobiodiversity one, was discussed.**

TO BE COMPLETED WITH 2016 BUDGET



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Activity 4.2 : Feasibility study to establish a mechanism for the Payment of Agrobiodiversity Conservation Services, PACS, in Guatemala





Workshop I

Feasibility study to establish a mechanism for the Payment of Agrobiodiversity conservation services, PACS, in Guatemala

Coordinator: Dr. Adam Drucker
Bioversity International

LUGAR: Universidad del Valle de Guatemala
Edificio J. salón 101.
FECHA: 21 de septiembre, 2015
PARQUEO: Garita 9, entrada por 18 Ave.



**Dr. Adam Drucker and
Dr. Marleni Ramírez
from
Bioversity
International
participated in
Workshop I at UVG.**



4 CELL EXERCISE TO SELECT MAIN MAIZE AND BEANS VARIETIES IN EL TERRERO ZACAPA





IN DE DESARROLLO INTEGRAL DE LA PARTE ALTA DE ZACAPA
"DIA"

Trabajando

4 CELL EXERCISE WITH FARMERS AT THE COMUNAL SEED BANK IN CUILCO, HUEHUETNANGO





Workshop II

Feasibility study to establish a mechanism for the Payment of Agrobiodiversity conservation services, PACS, in Guatemala:

Technical session to discuss about *Phaseolus* varieties/species to conserve

LUGAR: Universidad del Valle de Guatemala
Edificio H salón 303

FECHA: 25 de abril, 2016

HORA: 8:00 – 13:00 horas

PARQUEO: No.1, o por garita 9, según orden de confirmación

Experts, technicians, teachers and genetic resources students, discussing about Weitzman analysis results, varieties criteria, and conservation risks for *Phaseolus* varieties in Guatemala



- Bioersity International team
- Mancomunidad Copanch'orti'

UVG Team

Chaya:

- Dr. Rolando Cifuentes
- Ing. Emerson Herrera
- Technician Byron Fuentes

Nutrition Department:

- Maria Fernanda Maldonado
Student working in her thesis
- M.Sc. Nidia Pereira
Food preparation manual and training

Bromathological analysis

- Inga. Brenda Rodas

PACs activities/Biology Department

- Mariafernanda Alarcón
Student working in her thesis

Project's activities and coordination:

- Dr. Silvana Maselli
- Lic. Valerie Corado
- Karla Bojorquez
- Jacqueline de León

Aknowledgements



Opportunity for young people to get involved in Plant genetic resources, international projects. (generational shift), and to get training.

THANKS FOR YOUR ATTENTION

PICTURE TAKEN FROM LA BREA, CAMOTAN CHIQUIMULA

