Value chain assessment and marketing consultation for chaya and tepary bean in Guatemala

Nadezda Amaya

Steering Committee Meeting and Workshop
17-19 May 2017

Outline

1. Introduction

2. Methodology

3. Preliminary results

4. Next steps

1. Introduction

- Crops: underutilized crops that can support better nutrition and climate resilience in Guatemala by promoting the cultivation and use of Chaya and tepary bean

- Study area: Different communities in the Department of Chiquimula
  - High rates of extreme poverty and chronic malnutrition

- Consultancy: Value chain assessment and marketing consultation for chaya and tepary bean in Guatemala

  - Define a value chain mapping of Chaya and identify and evaluate key bottlenecks
  - Interview key stakeholders about opportunities for tepary bean to enter the black bean value chain
  - Support consumer acceptability testing for Chaya and tepary bean
  - Conduct investigations into women's involvement in the production and use of chaya and beans in the Project villages
  - Identify opportunities and risks for women's empowerment in value chain development of these crops.

1. Introduction

- Chaya (Mayan spinach)
  - Domesticated shrub grown throughout Mesoamerica (Mexico, Guatemala, Belize and Honduras) (Ross-Ibarra 2003).
  - Has been cultivated since pre-Hispanic times in the Mayan region (Ross-Ibarra & Molina-Cruz 2002).
  - The leaves are consumed for food and medicine. They are highly nutritious
  - Although its nutritive and agronomic potential has been recognized for decades, there has been little research and promotion of its use (Ross-Ibarra & Molina-Cruz 2002).
  - Chaya has strong potential to enhance nutrition in communities in the dry corridor but also more widely in Guatemala and in distant markets
  - Promotion of chaya as a superfood could be an important income generation opportunity

1. Introduction

- Tepary bean:

  - It is a relative of the common bean. It is native to Mexico and the southern USA

  - It is well-adapted to arid conditions, exhibiting drought, heat and cold tolerance, as well as early maturation (Blair et al. 2012, Beebe et al. 2013)

  - It is underutilized, grown at a limited scale in dry parts of Mesoamerica (Blair et al. 2012, Gaur et al. 2015).

  - Tepary bean is fairly high yielding and outperforms common bean in hot environments (Beebe et al 2013).

  - The beans are comparable or superior in nutritional content compared to major pulses (Nabhan & Felger 1978, Scheerens et al. 1983)

  - The crop has strong potential to support climate change adaptation of farming systems in the dry corridor of Guatemala

2. Methodology

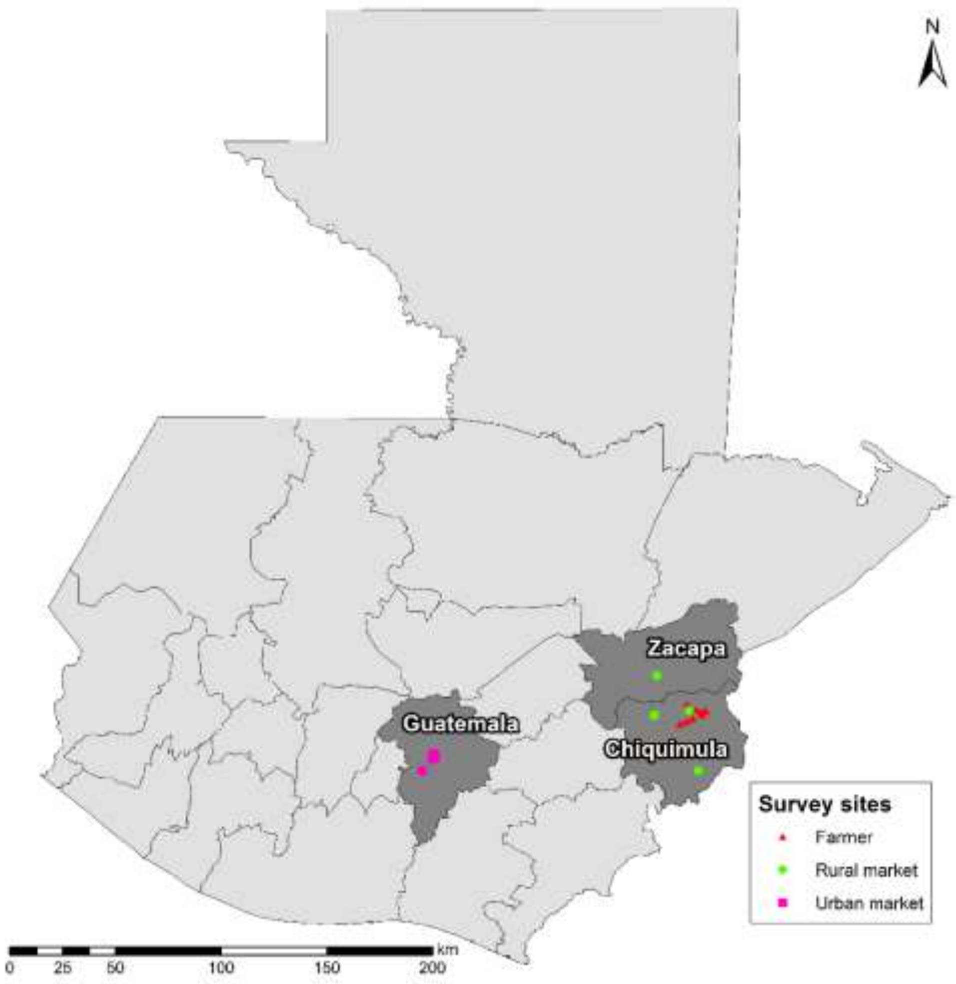
- In order to describe the chaya value chain and tepary bean in Guatemala, a Rapid Market Appraisal (RMA) methodology is being used.
  - Quick, flexible, and effective way of collecting, processing, and analyzing data

- The RMA relies on a combination of secondary and primary data collected through semi-structured interviews
  - Sample size: A minimum of 3-5 interviews for each stage of the marketing chain

- Data collection tools
  - Literature Review
  - Semi-structured interviews of key informants:
    - At different stages of the chaya value chain
    - At the black bean value chain about opportunities for tepary bean to enter the chain
  - Market visits and direct observation
  - Consumer acceptability testing

3. Preliminary results

- Literature review: January – March, and is still on going
- Field work for chaya: March – April
  - Interviewed Chaya producers in 7 communities in Chiquimula
  - Interviewed market actors about Chaya marketing and consumption in:
    - 5 markets in Guatemala city (urban)
    - 5 markets in Chiquimula (rural)
  - Interviewed 10 knowledgeable experts on Chaya

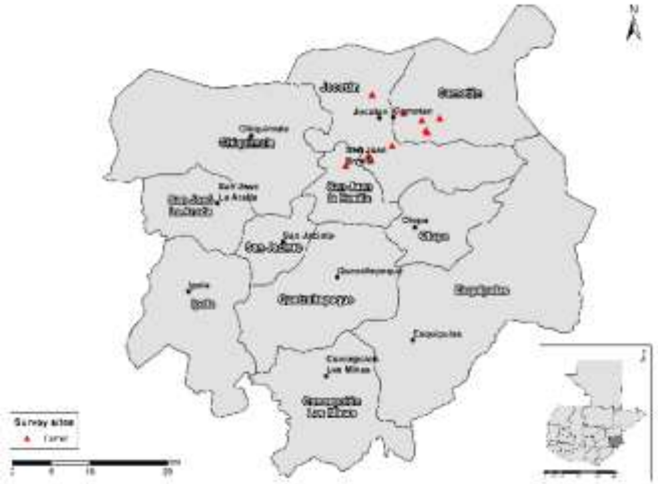


3. Preliminary results

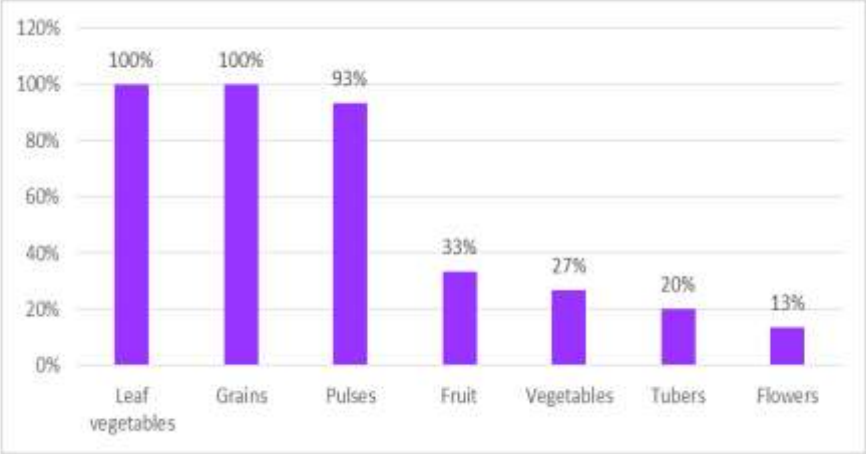
3.1. Chaya producers

- 15 farmers from 7 communities in Chiquimula were interviewed. 77% were women.

Community	Women	Men	Total
Guaraquiche	2	1	3
Chaguiton	2	1	3
La Brea	3		3
Tesoro Abajo	1	1	2
Pacren	1	1	2
San Juan Ermita	1		1
Las Cruces		1	1
Total	**10**	**5**	**15**



- Crops they produce

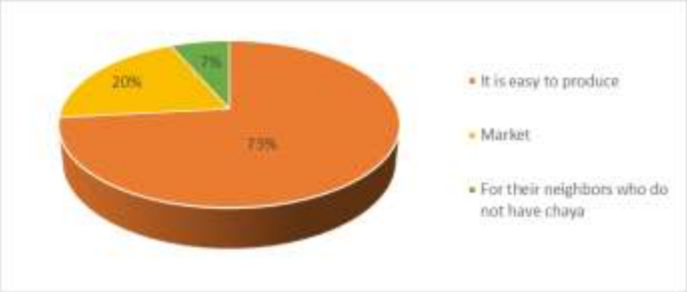


Most important	% of farmers	Why?
Maize	100%	Consumption
Beans	93%	Consumption
Chaya	73%	Consumption and market
Hierbamora	60%	Consumption and market
Chipilin	53%	Consumption and market

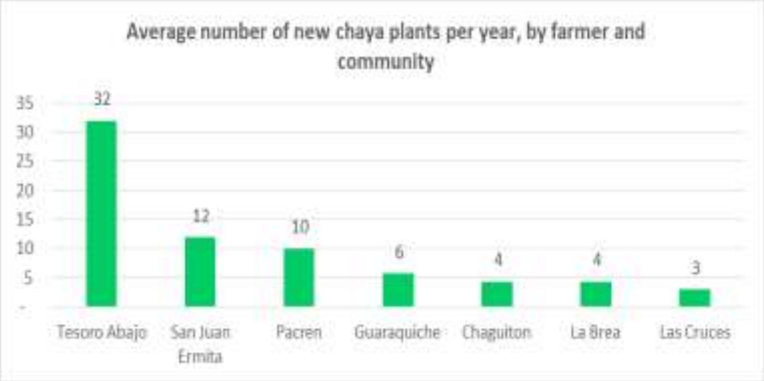
3. Preliminary results

3.1. Chaya producers

- In 60% of the cases Chaya was produced by their grandparents
- Besides consumption, other reasons to produce Chaya include:



- 80% of respondents plant chaya once a year, during the winter season (rainy season) – on average 10 plants/year/farmer



- All farmers interviewed stated that producing chaya is very easy, does not require much labor, costs, care or time

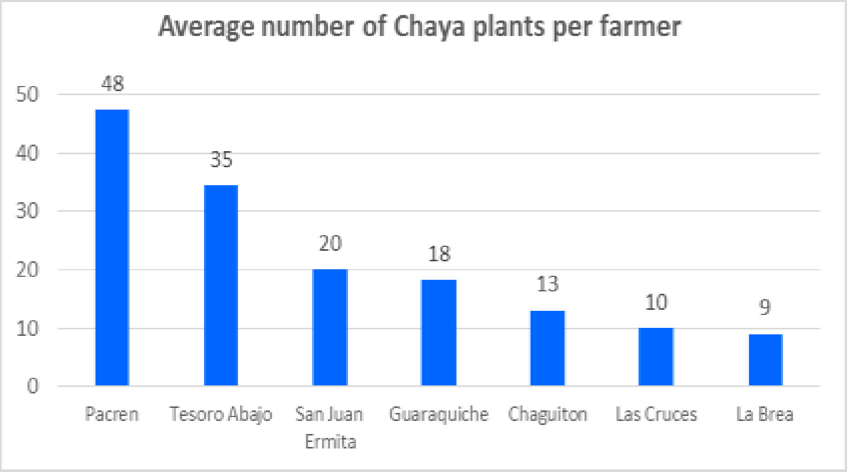
Rosalia Lopez (Tesoro Abajo): "The Chaya plant practically takes care of itself."

3. Preliminary results

3.1. Chaya producers

- **Chaya production**

- 54% argue that production has declined due to drought, limited access to water and more and more people eat less leaf vegetables
- Required inputs to produce Chaya
  - Fertilizers: 80% of the interviewees do not use it, because the plant does not need it
  - Pest Control: 60% of the respondents fumigate, but only if they have chemicals left from other crops
  - Irrigation: 53% of the interviewees have irrigation
  - Labor:
    - It takes between 1 to 1.5 hours a week to take care of 5 plants
    - All family members participate in Chaya production

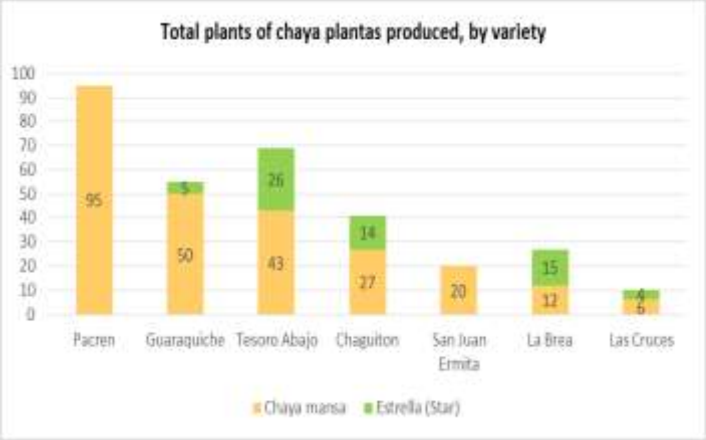


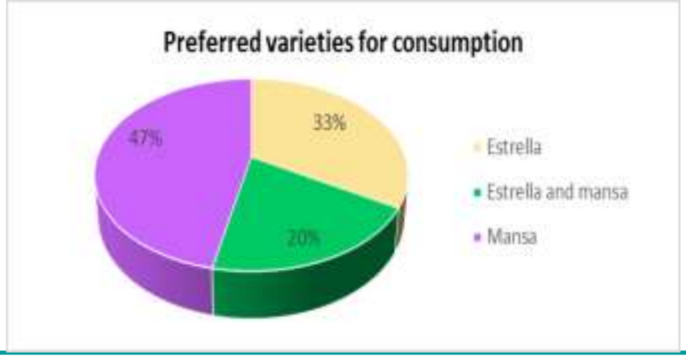
3. Preliminary results

3.1. Chaya producers

- **Chaya production**

- It is estimated that producing 5 plants cost on average 2 US$/month
- Main problems : Drought (93%), pests (73%) and access to water (40%).
- 87% of respondents would like to produce more Chaya: to consume more, to sell more in the markets and for their neighbors
- All the interviewees produce the variety chaya mansa and 67% of them also produce the variety Estrella or star
- The variety that is sold in the market is the Chaya mansa. It is preferred by consumers
- Farmers prefer to consume
  - Estrella: it tastes better and it is softer. Does not itch when harvest
  - Mansa: It is the one that they know and produce more

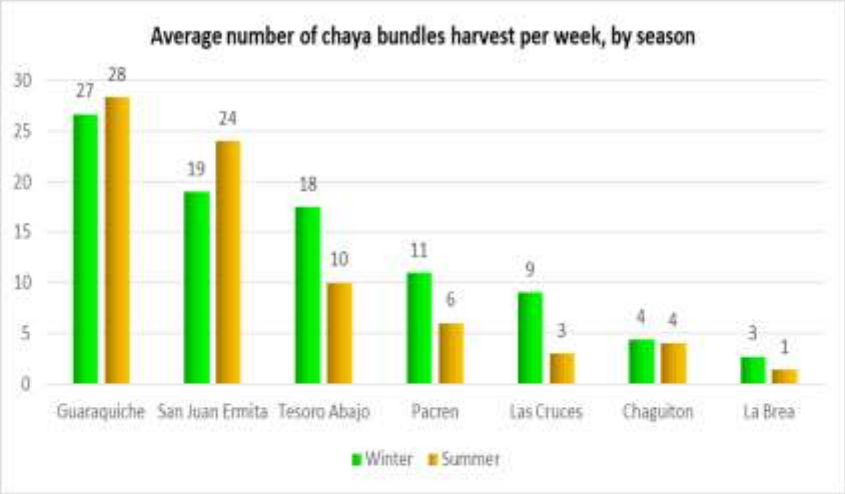




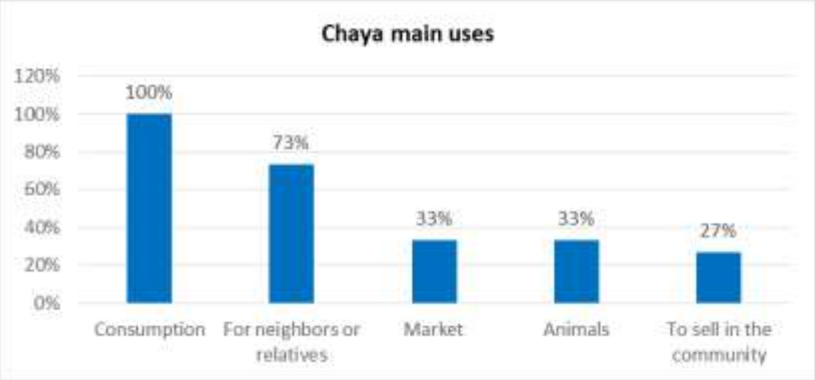
3. Preliminary results

3.1. Chaya producers

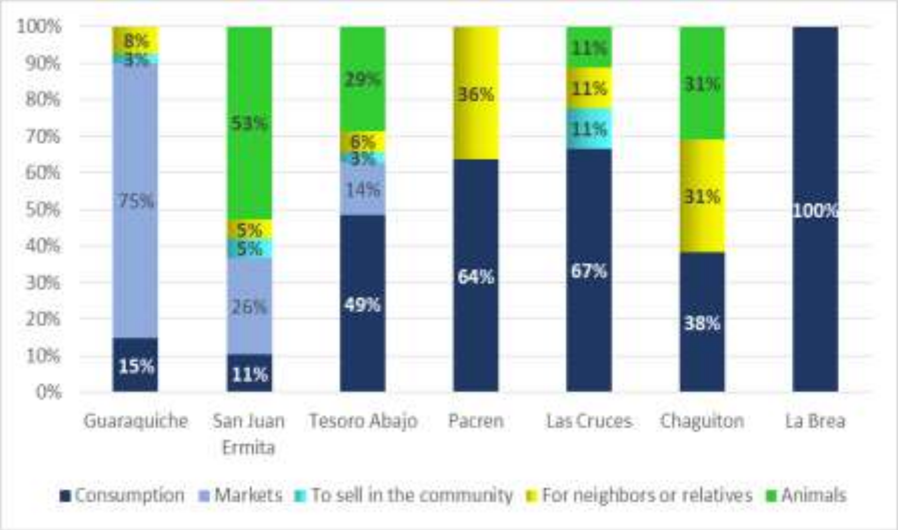
- **Chaya harvest**
- The average number of chaya bundles harvest per family in a week during winter is 12 and in summer 11



- The communities that sell chaya in the market are the ones that harvest more.



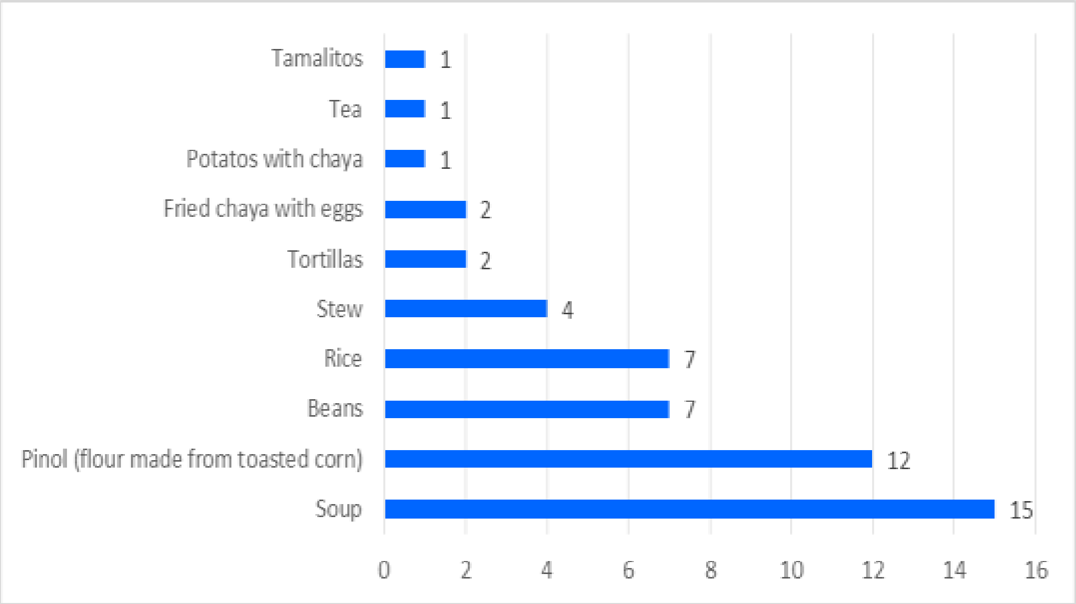
- How the Chaya harvest during winter is used:



3. Preliminary results

3.1. Chaya producers

- **Chaya consumption**
  - 10 ways of cooking chaya were identified



Chaya soup

Beans with chaya

Rice with chaya

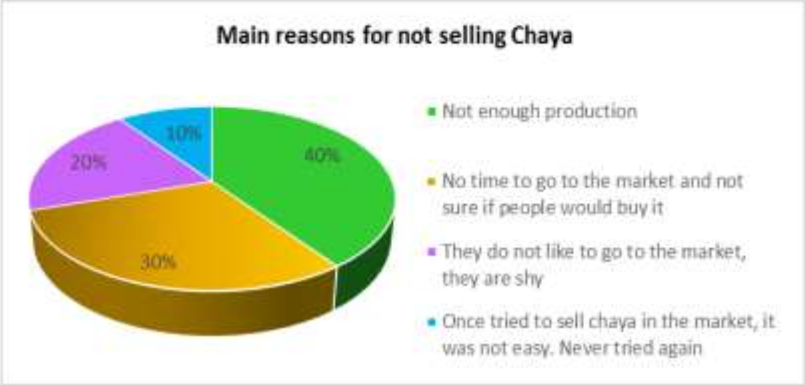
Tamales with chaya

Tortillas with chaya

PHOTOS: MIRACLES IN ACTION

3. Preliminary results

3.1. Chaya producers



- **Chaya marketing**
- Only 5 farmers interviewed (33%) sell chaya in the market. 1 to 3 times per week
  - 80% of them also sell to their neighbors : 1 bundle per week - 3 quetzales / bundle
- All farmers who sell chaya go to the Jocotan market. Only one person goes also to Chiquimula market
- All respondents say they sell more in summer than in winter
  - Summer: 18 bundles / week (average) at 3 quetzales / bundle
  - Winter: 12 bundles / week (average) at 2 quetzales / bundle

- It is estimated that a farmer who sells chaya earns on average 233 US $ per year i.e. 19 US / month.
- Benefit / cost ratio

Average # of chaya plantas per farmer	23.00
Production cost (US$/month)	8.33
Transportation cost (US$/month)	8.73
Montly gross income ($/month)	19.00
Benefit/cost ratio	1.11

3. Preliminary results

3.1. Chaya producers

- **Indirect actors**
- In 5 of the 7 communities visited, 8 institutions that work with different projects were identified

Actor	Chaguiton	La Brea	Las Cruces	Pacren	Tesoro Abajo
UVG	x	x	x		x
Caritas	x			x	x
Catie	x				x
Chortijol					x
Maga	x				
Mancomunidad	x				
Accion contra el Hambre			x		
FAO	x				

- Only 3 have worked with Chaya
  - UVG: It distributed Chaya cutting, taught farmers different ways to cook it and explain farmers the importance of chaya in their diet
  - MAGA and FAO: They distributed chaya cuttings

3. Preliminary results

3.2. Market actors

- 84 actors were interviewed: 85% of them were women

Market	Farmers who sell at the markets	Vendors	Consumers	Small Restaurants	Total
Rural	9	13	15	4	**41**
Urban	4	19	10	10	**43**
Total	**13**	**32**	**25**	**14**	**84**

- Market characteristics

Type of market	Market	Total vendors	Vegetable vendors		Vendors of leaf vegetables		Women who sell leaf vegetables	
			#	%	#	%	#	%
Urbano		**43,375**	**520**	**5%**	**160**	**35%**		**70%**
	La Terminal	40,000	1,000	3%	100	10%	50	50%
	CENMA	1,625	50	3%	10	20%	8	80%
	Mercado Central	850	50	6%	15	30%	10	67%
	Palmita	500	50	10%	20	40%	15	75%
	La Presidenta	400	20	5%	15	75%	12	80%
Rural		**2,650**	**250**	**10%**	**90**	**38%**		**72%**
	Zacapa	900	50	6%	25	50%	15	60%
	Terminal de Chiquimula	600	80	13%	20	25%	15	75%
	Jocotan	450	30	7%	15	50%	15	100%
	Central de Chiquimula	400	40	10%	10	25%	5	50%
	Esquipulas	300	50	17%	20	40%	15	75%
Total general		**46,025**	**770**		**250**		**160**	

3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- 33 different leaf vegetables were identified.

Most important	
Hirbamora (quilete, macuy)	Chard
Chipilin	Watercress
Peppermint	Spinach
Cilantro	Celery
Parsley	Lettuce

- On average a vendor sells:
  - Urban market: 9 different leaf vegetables (min 4 to max 14)
  - Rural Market: 7 different leaf vegetables (min 3 to max 12)

3. Preliminary results

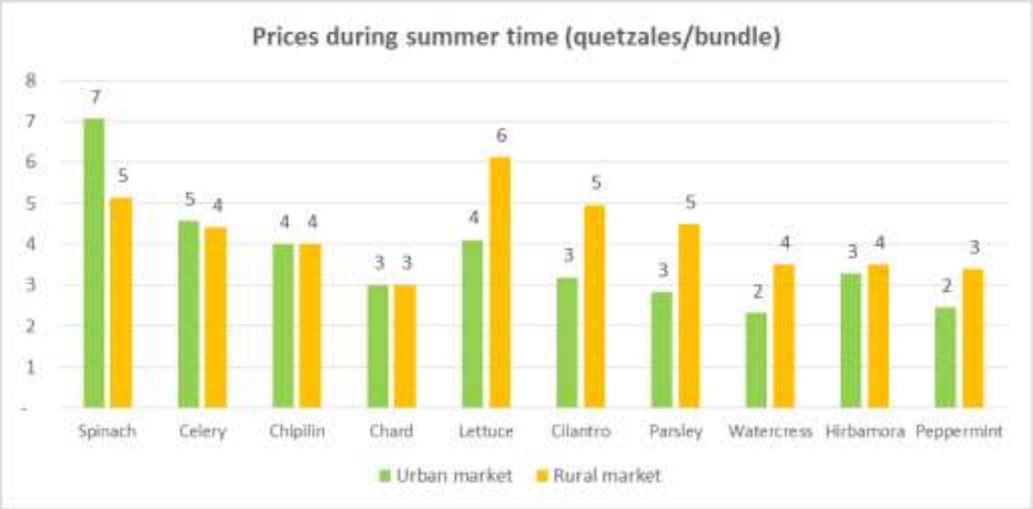
3.2. Market actors: Vendors of leaf vegetables

- Prices and quantity sold

Market	Prices (q/bundle)			Bundles / day		
	Average	Min	Max	Average	Min	Max
Urban	4	2	3	9	4	19
Rural	4	7	6	8	2	17

- Estimated sale of leaf vegetables (in US$)

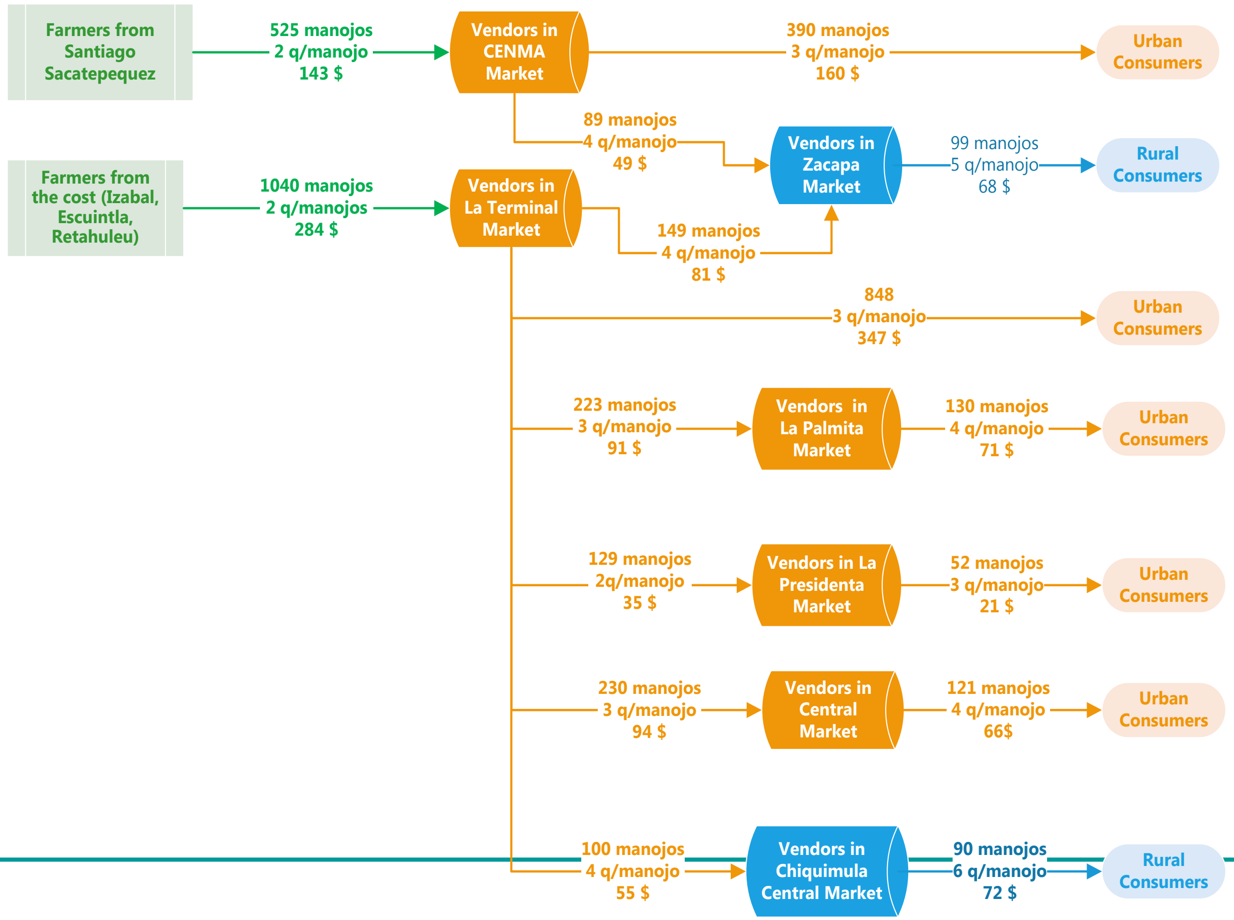
Type of vendor	Average sales (US$/day)			Average sales (US$/month)		
	Rural	Urbano	Average	Rural	Urbano	Average
Farmer	24	32	28	188	252	220
Vendor	39	24	32	313	195	254



3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

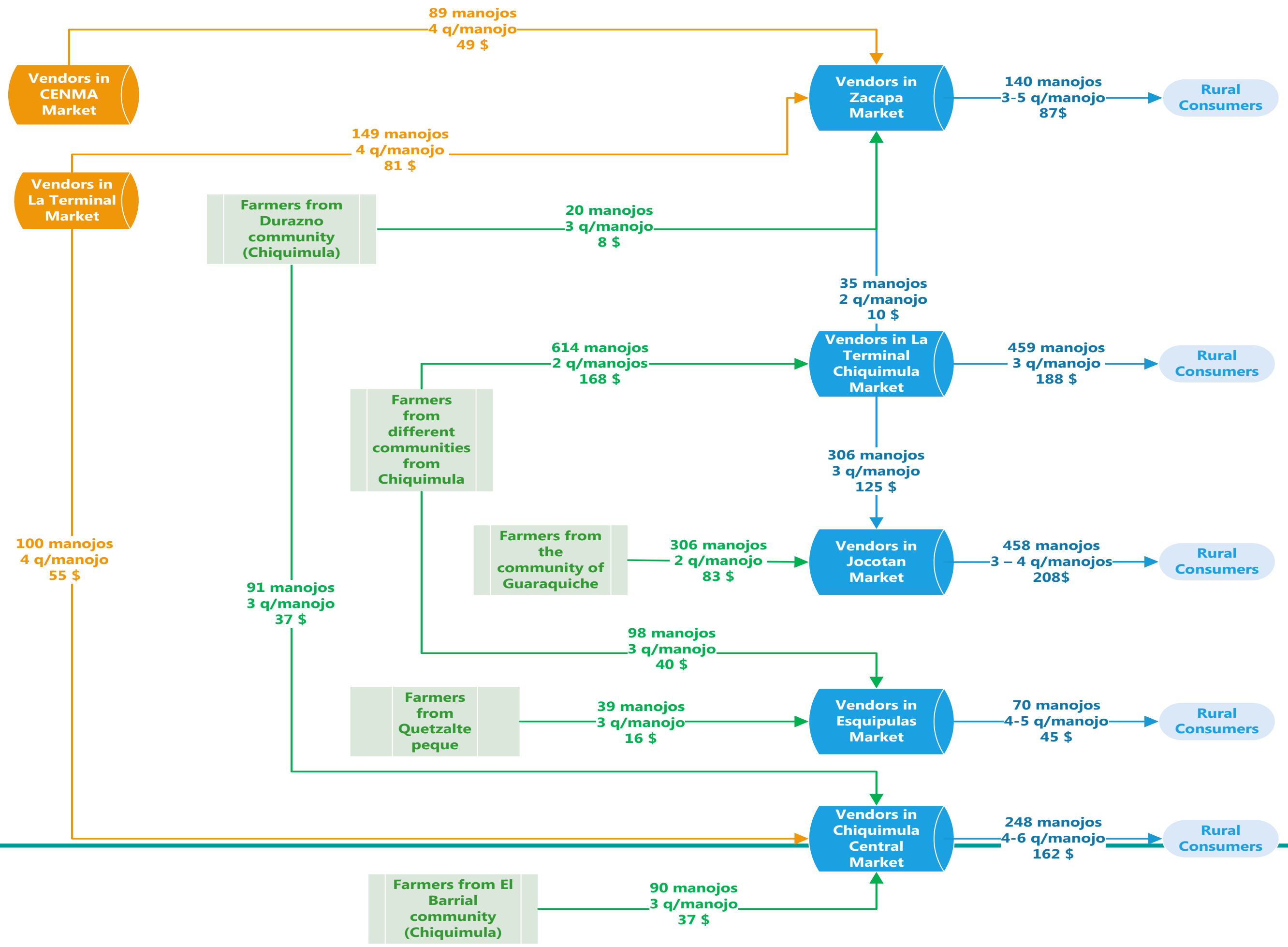
- Leaf vegetables market chain in urban markets – a day of sale (4-5 vendors per market)



3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- Leaf vegetables market chain in rural markets – a day of sale (4-5 vendors per market)



3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- **Marketing of chaya**
- 49% of the vendors interviewed know Chaya, and 77% are in rural markets
- 84% of the vendors interviewed do not sell chaya
  - 95%: they have never heard about this plant
  - 5%: they do not have enough production
- Only 7 vendors sell Chaya. All of them are women
  - 4 en rural markets:
    - 3 in Jocotan market (farmers from Guaraquiche)
    - 1 in Central market of Chiquimula (farmer from El Barrial)
  - 3 in urban markets
    - 2 in La Palmita market (medicinal plants vendor)
    - 1 in the Central Market (vegetables vendor)

3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- **Marketing of chaya**

- Value of the monthly sale in US$

Type of market	Average sale of chaya (US$/month)		
	Max	Min	Average
Urban	15	15	15
Rural	16	10	13

- Importance of Chaya sales relative to other leaf vegetables:

Market	Name	US$/month Leaf vegetables	US$/month Chaya	%
Chiquimula central market				
	Sara Lopez	428	2	0.5%
Jocotan				
	Blanca Ramirez	115	33	**28%**
	Maria Etelvina Gutierrez	136	11	8%
	Rosaura Cente	350	17	5%
La Palmita				
	Maricruz	33	3	8%
	Noelia Suret	70	1	2%
Central Market				
	Ingrid Coroxon	236	41	**17%**

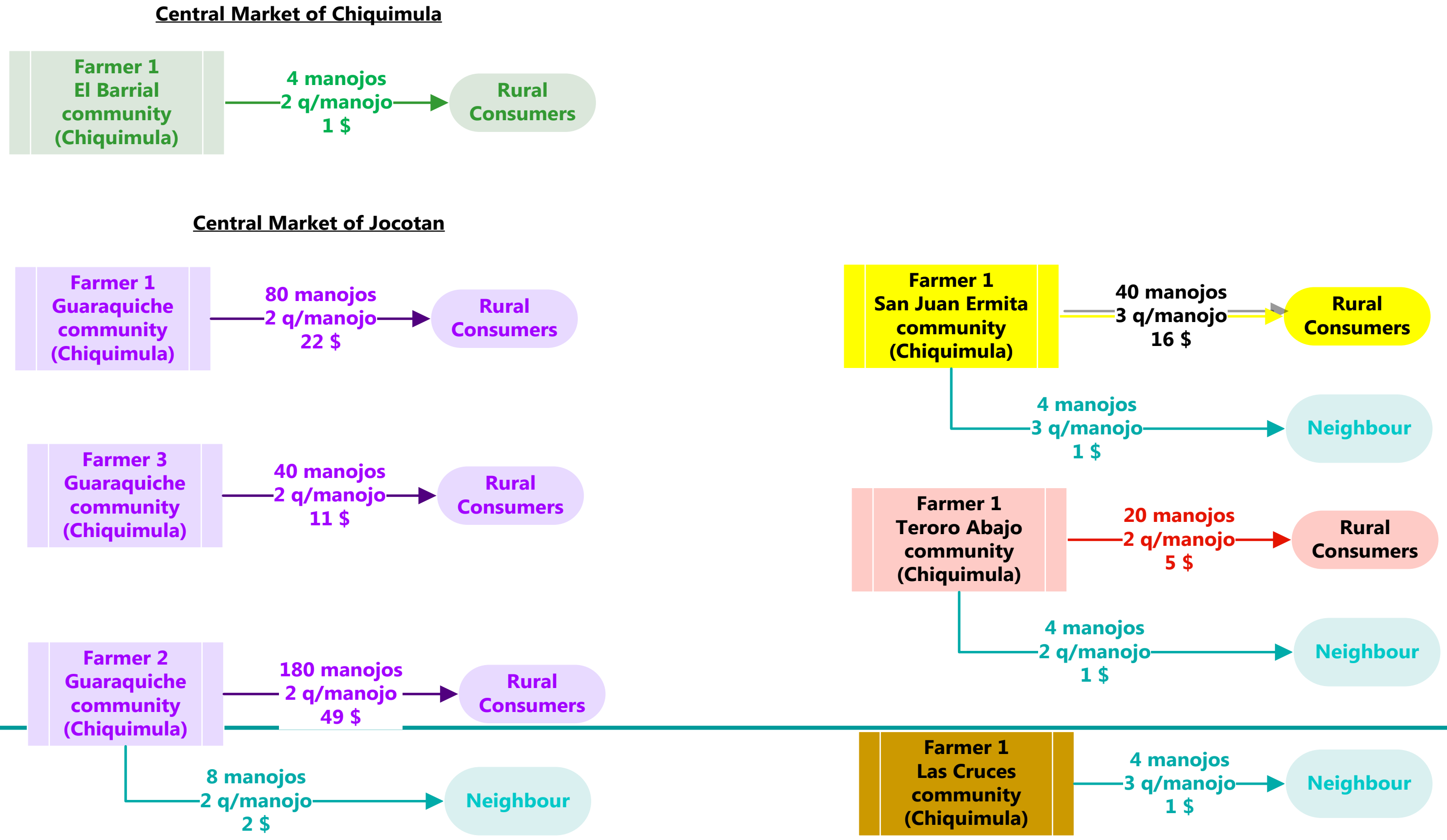
Chaya market chain in urban markets – a month of sale

3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- **Marketing of chaya**

- Chaya market chain in rural markets – a month of sale



3. Preliminary results

3.2. Market actors: Vendors of leaf vegetables

- **Marketing of chaya**

- Demand: Only 22% of the vendors stated that consumers have requested chaya
  - Chiquimula Central market: every 3 months
  - Jocotan: between 1 and 5s time per week
  - La Palmita: Once a month
  - Central Market: Everyday
- 96% of respondents say there is no chaya in the market because it is an unknown crop
- 73% of respondents would be willing to sell chaya if there were more consumers willing to pay a good price, so they can produce it or try to find it
- Leaf vegetables that are preferred over chaya: Hierbamora, chipilin, celery, spinach, cilantro, peppermint, chard, parsley, amaranth and lettuce

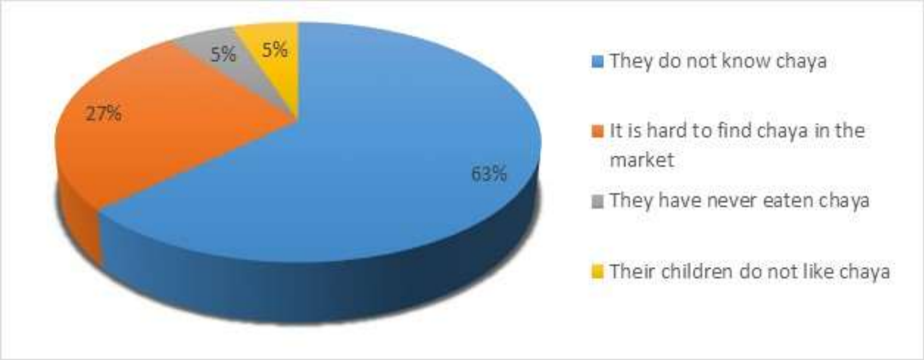
3. Preliminary results

3.2. Market actors: Consumers

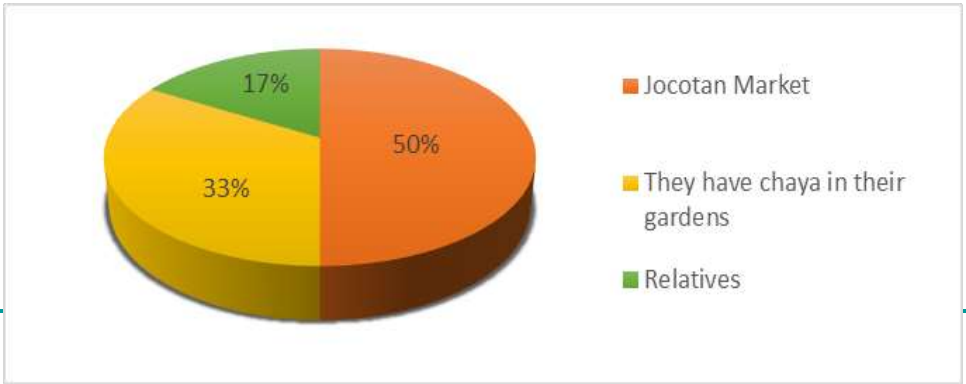
- **Chaya consumption**
- 52% of the respondents know chaya, but only 46% of them consume it.
  - All who consume it were interviewed in rural markets and eat chaya since they were children
  - The main reason for consumption is because it is very nutritious and they like its taste

- Main forms of consumption: Soups, with rice, with beans, fried with eggs and tea
- Amount consumed per week: between 1 to 3 bundles. 1 - 2 quetzales / bundle
- 80% of respondents prefer other leaf vegetables over Chaya, mostly:
  - Cilantro, hierbamora, chipilín, spinach, and chard

Main reasons why people do not consume it are:



The Chaya people consume are sourced from



3. Preliminary results

3.2. Market actors: Small restaurants at markets

- Only one person interviewed uses chaya in their dishes - Zacapa Market
  - She makes a soup, but only as an special order.
  - A bowl of soup costs 5 quetzales (0.7 US$ cents)
  - She cooks twice a month and uses chaya that she has in her house
- 43% of the people interviewed are not interested in trying chaya, mostly because consumers do not eat that much leaf vegetables.
- All the interviewees use some kind of leaf vegetables in their meals:
  - Rural markets: 7 different leaf vegetables (spending on average 16 $/month)
  - Urban markets: 11 different leaf vegetables (spending on average 19 $ / month)

3. Preliminary results

3.3. Knowledgeable experts

- Ten people who have worked with chaya were interviewed - this information is still been analyzed

- Mayan Tropics - Alfredo Lopez
  - It was founded in 2013
  - This company produces, processes and markets: Chaya, amaranth, moringa, chia and cacao

- Mayan Tropics sells 10 different products

3. Preliminary results

3.3. Knowledgeable experts

- **Chaya - Mayan Tropics**

- Mayan Tropics has 25000 chaya plants in the south cost of Guatemala (Escuintla) and they are planning to plant 20000 more plants this year
- They produce 3 varieties of chaya: star, mansa & picuda
- They harvest chaya every 3 months and produces 100 pounds of dry chaya material
- Once they has the dry material, they take it to a lab to analyze it and package the product
- Principal clients
  - Antigua Guatemala and Quetzaltenango: Health food store
  - Exports to Ottawa (Canada) and Paris (France) - relatives
  - Potential client: A bakery in Guatemala City

4. Next steps

- Chaya
  - Visit Peten (northern part of Guatemala) – high production and consumption
    - Markets and restaurants
  - Visit Merida (Yucatan, Mexico) – High levels of Chaya consumption
    - Markets and restaurants
    - Interview experts on Chaya in Merida (Yucatan, Mexico)
  - Visit rural markets in Guatemala in a different season to see how price and quantity change
  - Keep interviewing knowledgeable experts

- Tepary bean
  - Consumer acceptability testing
  - Interview knowledgeable experts on tepary bean
  - Interview key stakeholders about opportunities for tepary bean to enter the black bean value chain

Thank you!