



# DESERTIFICATION AND MIGRATION

# Outline:

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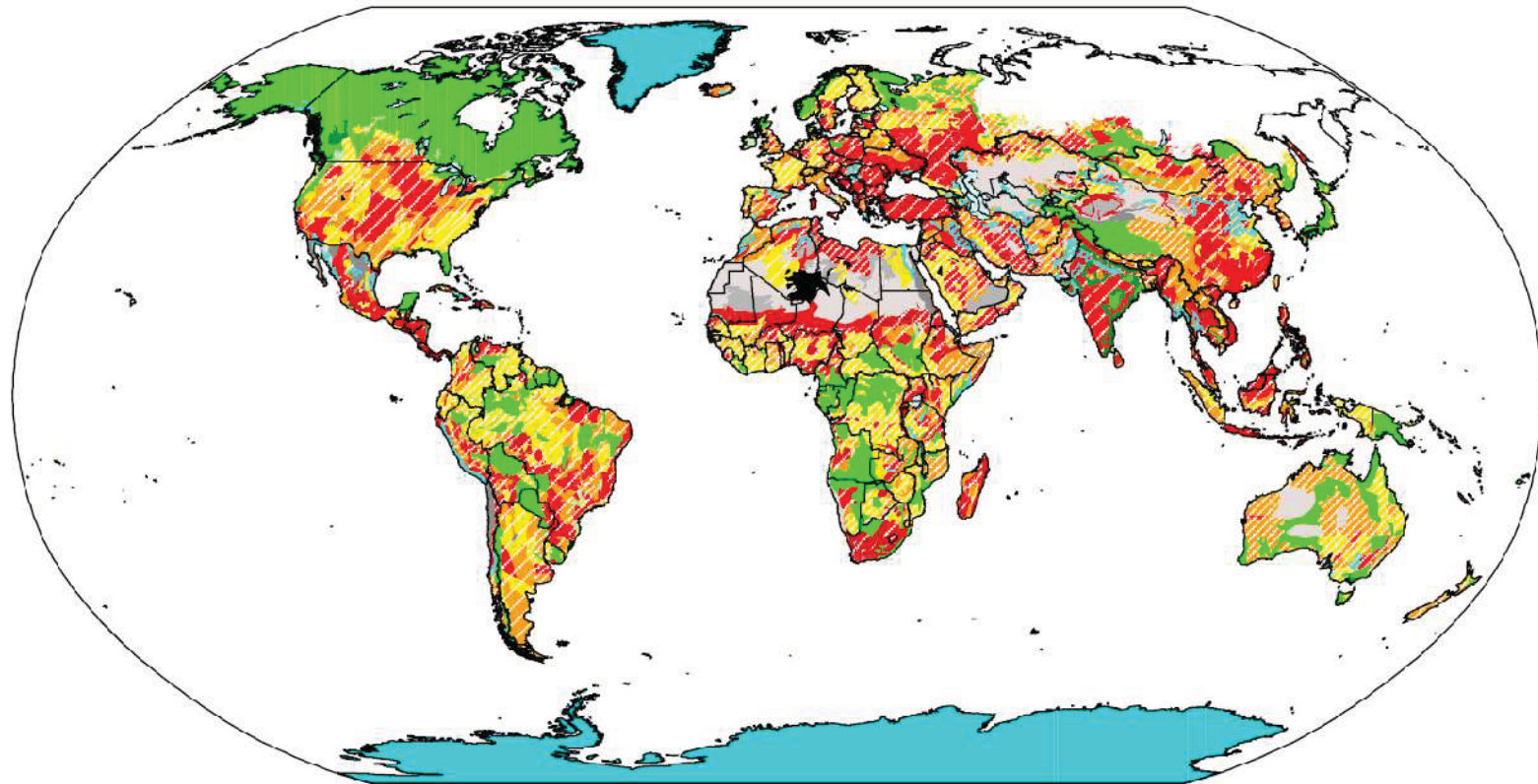
1. Introduction
2. A global view on desertification
3. ICDD project on Desertification and Migration
  1. Problem Statement
  2. Research Question
  3. Objectives
  4. Hypotheses
  5. State of the Art
  6. Methodological Research Framework

## **Desertification**

- is the degradation of land in arid and dry sub-humid areas due to various factors: including climatic variations and human activities.

# Soil degradation & desertification

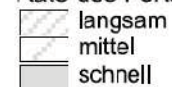
(intensity and dynamic)



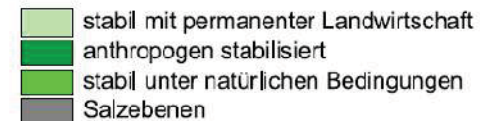
## Stärke



## Rate des Fortschreitens



## Stabile Regionen



# Hundreds of millions face consequences of desertification:

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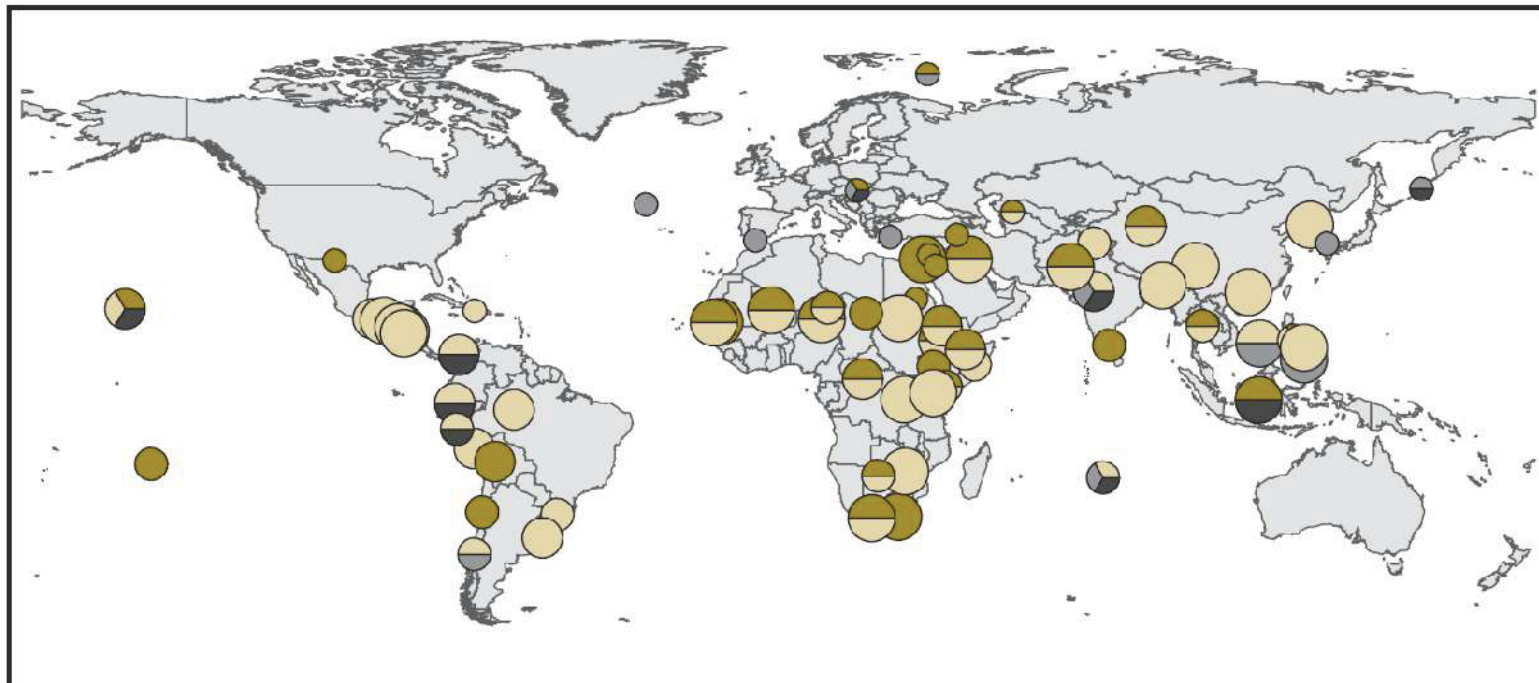
- Threat to livelihood security
- Coping strategies
- Migration
- Migration & remittances strategies
- Resource conflicts
- Threat to global security

# Relevance for the global situation

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- Human security
- Destabilization of countries and regions
- New lines of conflicts and tensions globally
- Geopolitics

# Environmental Conflicts (1980–2005): Causes and intensities



## Konfliktintensität

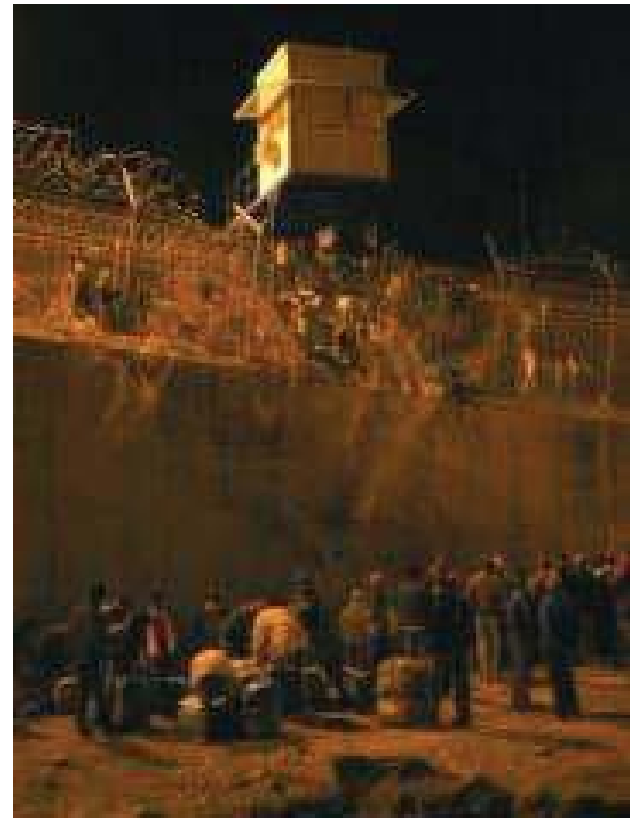
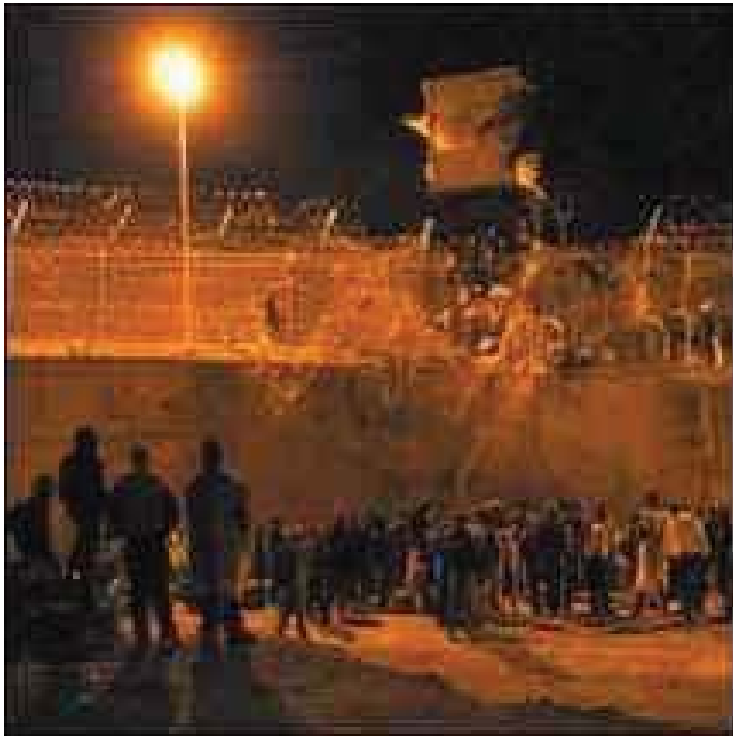
- Diplomatische Krise
- Proteste (teilweise gewaltförmig)
- Gewalteininsatz (nationale Tragweite)
- Systematische / kollektive Gewalt


## Konfliktursache

- Wasser
- Land / Boden
- Fisch
- Biodiversität

Conflict constellation of the research  
project:  
environmentally-induced migration





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- Desertification translates into international tensions and conflicts
  - Therefore, there is a global interest in reducing desertification and in mitigating the effects.

# Planned tri-angle ICDD project

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**Desertification, migration, and  
agricultural development**

# **Desertification, Small-Scale Farms Development, and Migratory Flows in the Agricultural Sector of Chiapas: A Case Study in the region of Tapachula, Mexico**

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2<sup>nd</sup> Advisor: Prof. Juan-Jose Jimenez (UADY, Mexico, Protropico)

PhD student: David M. Eche

# 1. Introduction

- In Mexico, desertification represents a problem for the rural economy.
- It worsens the already precarious situation of rural communities
- Between 700,000 to 900,000 Mexicans leave their lands each year.
- 90,000 Chiapanecos left for the United States over the last five years.

## 2. Problem Statement

- Since 2000 the number of out-migrants from Chiapas has significantly increased, and the distances have become longer, also due to:
  - ▣ Globalization
  - ▣ Commercial agreements: NAFTA, Mesoamerican Integration and Development Project.
  - ▣ The product of the liberalization of international trade, agricultural crisis initiated from the latest 1980s, the falling coffee prices, natural disasters.
  - ▣ The existing migration networks in the United States have facilitated the migratory movements of people from Chiapas.

## Chiapas is a “laboratory” for the study of human migration:

- ▣ It sends migrants to the other Mexican states and to the U.S. (regional and international respectively).
- ▣ It has become a migration corridor to the U.S. for Central Americans (mainly Guatemalans) and other nationalities
- ▣ It attracts regional and international temporary and seasonal in-migrants to fill labour gaps.
- ▣ It presents complex human mobility associated to economic, cultural and historical interactions.

# 3. Research Questions

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- How do desertification and international trade liberalization influence the socio-economic development of small –scale farms in the region of Tapachula?
- How do desertification and international trade liberalization influence out-migration from rural areas in Tapachula?



# 3. Research Questions (II)

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- Are immigrants from Central America filling labour gaps in the farm sector of Tapachula caused by rural out-migration?
- How are the labour and social conditions of the Central American immigrant labour force employed in the rural agricultural sector of Tapachula ?

# 4. Specific Objectives

- Determine the links between out-migration, development, the trade liberalization, and decreasing land productivity due to desertification in the rural areas of Tapachula.
- Determine the potential of desertification and trade liberalization as determinants for out-migration and development of small-scale farms in Tapachula.
- Determine the consequences for working conditions on the farms.

# 5. Hypotheses (I)

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**H1: The socio-economic situation of small-scale farmers in Tapachula is worsening as a result of desertification processes and trade liberalization**

*Theoretical background:*

New Economic Geography: Paul Krugmann

**H2: Out-migration of small-scale farmers in Tapachula is triggered by the liberalization policies and desertification.**

*Theoretical background:*

New Economic of Labour Migration (NELM): Oded Stark and Edward Taylor

# 5. Hypotheses (II)

**H3: International migration of labour force from Central American substitutes the labour gap left by out-migrants in the rural agricultural sector of Tapachula.**

*Theoretical background: Ravenstein's Law*

- No.1: As migrants move toward absorption centers, they leave "gaps" that are filled up by migrants from more remote districts, creating migration flows reaching to most remote corners.
- No. 2: "Each main current of migration produces a compensating counter-current.."

# 5. Hypotheses (III)

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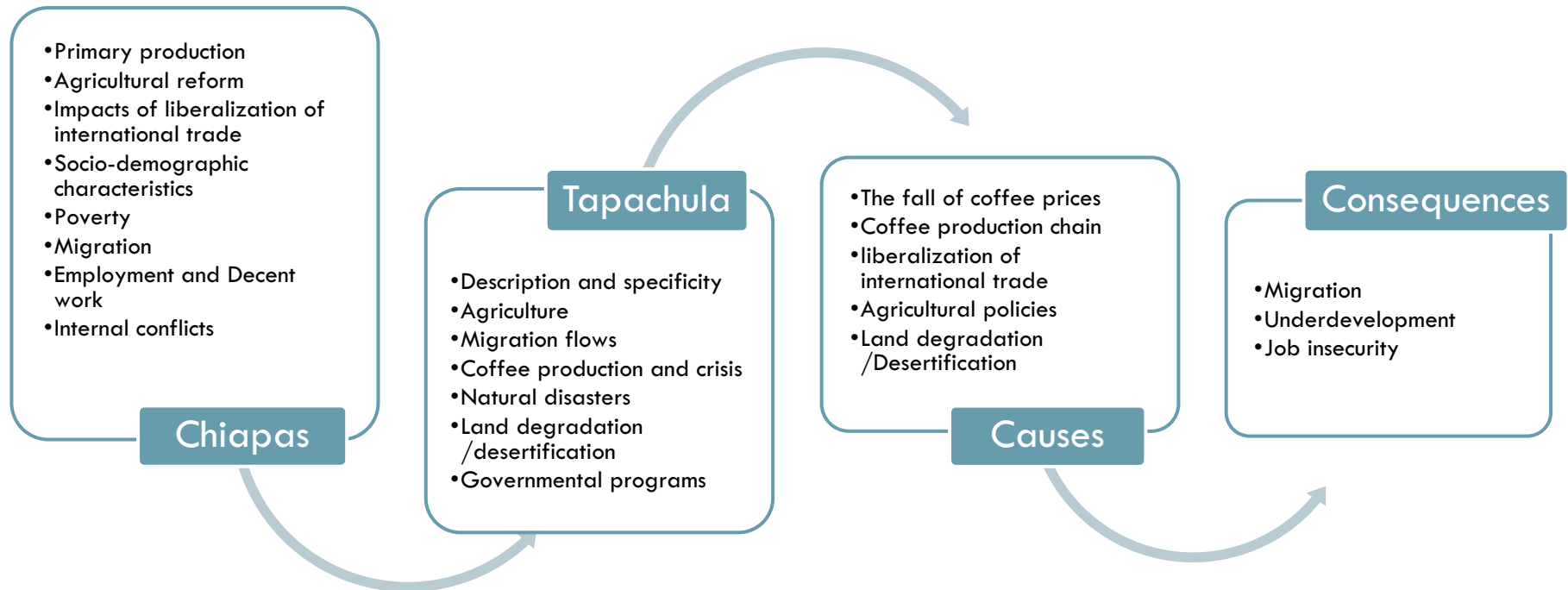
**H4: Central American in-migrants employed in the farm sector of Tapachula work under undecent conditions.**

*Theoretical background:*

Relative income theory: Oded Stark

# 6. State of the Art

## Theoretical framework contents:



## 6. State of the Art (II)

A number of studies have examined the migration phenomenon caused by the intensification of climatic changes and development.

- ▣ Environmental Change and Forced Migration Scenarios (EACH-FOR) (2008). *Environmentally Induced Migration*.
- ▣ Leighton and Notini, (1994). *Desertification and migration: Mexico and the United States*.
- ▣ Bilsborrow R. (2002). *Migration, Population Change and the Rural Environment*.
- ▣ Castles & Rajah, (2010). *Environmental Degradation, Climate Change, Migration and Development. Acción Global de los Pueblos Sobre Migración, Desarrollo y Derechos Humanos*.

# 7. Materials and Methods

Materials	Methods
<p><b>Primary data about:</b></p> <ul style="list-style-type: none"> <li>• the socio-economic development of small-scale farms in Tapachula in relation to desertification processes and liberalization of international trade.</li> <li>• the influences of desertification and the liberalization of international trade on out-migration from rural areas in Tapachula.</li> <li>• the relationship between out-migration from Tapachula and in-migration of Central American workers replacing the out-migrated labour force.</li> <li>• the profile and working conditions of Central Americans working in the agricultural sector of Tapachula.</li> </ul>	<p><b>Survey, interviews, data analysis (Excel, STATA)</b></p>
<p><b>Secondary data about:</b></p> <ul style="list-style-type: none"> <li>• the migratory flows caused desertification processes in Tapachula's agricultural sector and the liberalization of international trade</li> <li>• the links between both phenomena.</li> </ul>	<p><b>Literature review, reports, news papers, statistics, reference material, international data bases such as: ACNUR, IOM, UN, INM, CONAPO, INEGI, Central Bank of Mexico, etc.</b></p>



# 7. Variables

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Dependent	Independent Variable	Units
<b>Migration type</b>	<b>Demographic characteristics</b>	
	Sex	1/0
	Age, (Age) <sup>2</sup>	Years
	Household composition	#
	Civil status	1/0
	<b>Human Capital</b>	
	Education years	Years
	Household education average	Years
	Migration experience	#
	<b>Social Capital</b>	
	Internal migration	#
	International migration	#
	Existing Networks	1/0
	<b>Physical Capital</b>	
	Home ownership	1/0
	Distance to Road	Km.
	Floor materials	1/0
	Wall materials	1/0
	Access to land	1/0
	Household land area	ha
	Community land area	ha
	<b>Economic capital</b>	
	Income per household	\$
	Outcome per household	\$
	<b>Land quality</b>	
	flat	1/0
	Slope	Degrees
	Desertification	Degree
	Precipitation	Cm/year

# 7. Methodological Research Framework: Variables

<b>Development of small-scale farms</b>		
<b>Dependent</b>	<b>Independent Variable</b>	<b>Units</b>
	Fertilizer consumption	Kg/ha
	Forest area	Km <sup>2</sup>
	Improved sanitation facilities	% of pop
	International migration	#
	Net migration	#
	Poverty headcount ratio at rural poverty line	% of rural pop.
	unemployment	%
<b>Desertification</b>		
	Affected area	Ha
	Aridity index	>0 <1
	Use of the land	1/0
	Climatic region classification	1/0
<b>Decent work conditions</b>		
	Length of working Hours	Hrs/week
	Job insecurity	1/0
	Child labor	1/0
	Social assistance	1/0
	Living conditions	1/0
	Legal situation	1/0

# 7. Questionnaires

## □ Questionnaires

1. International labour force working in the agricultural sector of Tapachula and its working conditions.
  - Socio-demographic characteristics.
  - Migration trends, aspects, and characteristics.
  - Labour type and conditions.
  - Health and living conditions.

# 7. Methodological Research Framework: Questionnaires

## 2. Small-scale farms socio-economic productivity and migration trends.

- Socio-demographic characteristics.
- Characteristics of the farm-land and uses.
- Changes of agricultural products and prices .
- Livestock.
- Use of wood-land and forestry products.
- Future farm-land use.
- Labour force.
- Attitudes, satisfaction, vulnerability and use of remittances
- Technical and governmental assistance.
- Health and living conditions.

### 1) Questionnaire

Farms: Coffee and Mango

Area: 50-300 ha.

Workers: 50-250

# of Farms: 6 coffee and 2 mango

### 2) Questionnaire

Lowland: 2 Ejidos

Central land: 2 Ejidos

Highland : 2 Ejidos

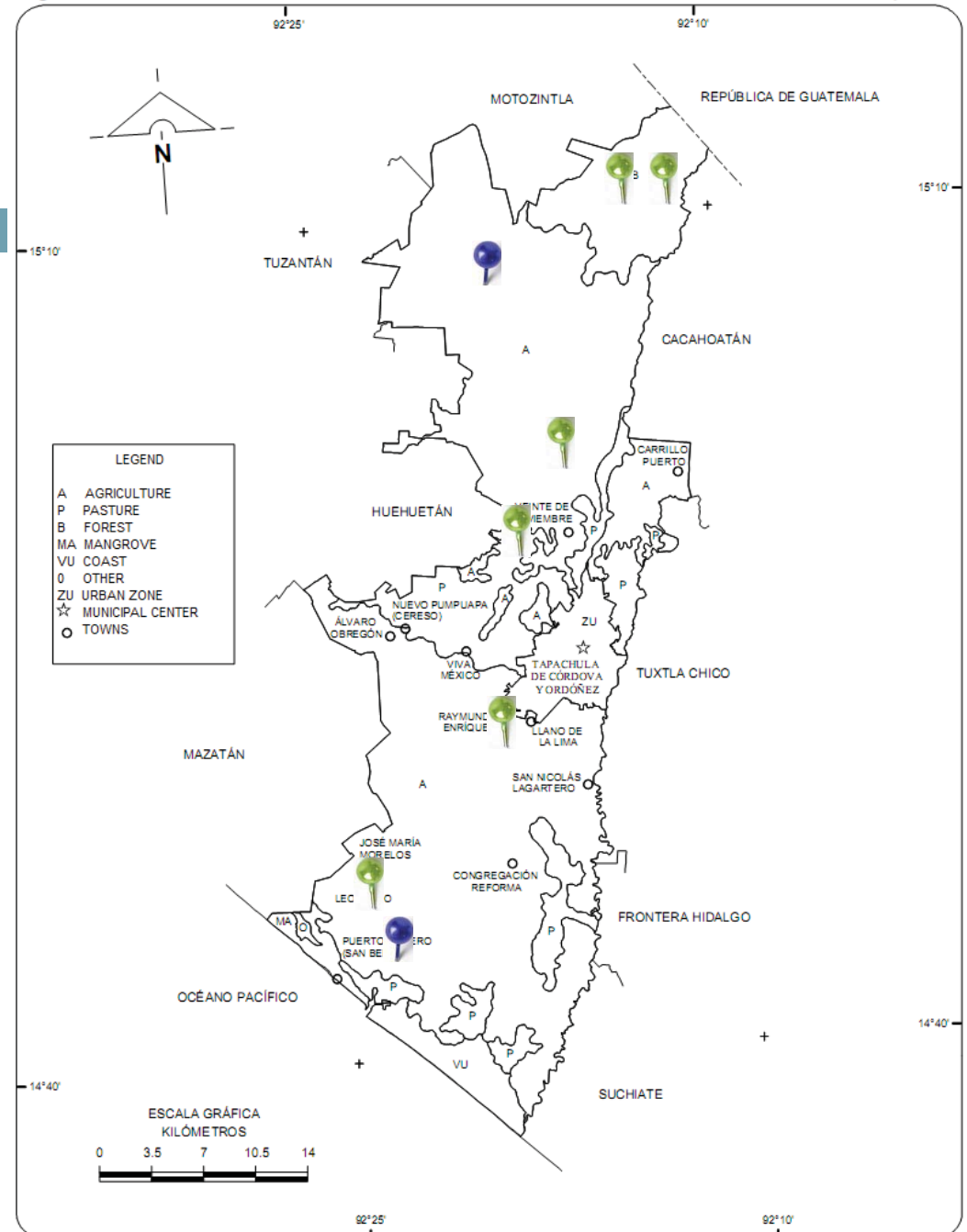
Selection criteria:

0-700 m above sea level

500-1000 inhabitants

## Agriculture and Vegetation

## Map



FUENTE: INEGI. Continuo Nacional del Conjunto de Datos Geográficos de la Carta de Uso del Suelo y Vegetación, 1:250 000, serie II.

# 7. Sampling size

Central American workers in Coffee farms

Coffee farms	Altitude	Area	Seasonal workers	Permanent workers	S+P workers	Sampling size		
						5%	7%	10%
						0.0025	0.0049	0.01
Finca Santa Anita	880	250	120	40	160	114.2	89.6	61.5
Finca Irlanda	1100	250	160	60	220	141.9	105.8	68.7
Finca Hamburgo	1200	300	190	60	250	153.8	112.3	71.4
Finca Genova	880	250	160	40	200	133.3	101	66.6
Finca Santa Elena	670	150	95	25	120	92.3	75.5	54.5
Finca Chiripa	800	100	45	15	60	52.1	46.3	37.5
					1010	286.5	169.7	90.9

Ejido	Altitude	Population	Households	Ejidatarios	Sampling size		
					5%	7%	10%
					0.0025	0.0049	0.01
Rio Florido	50	725	148	56	49.1	43.9	35.8
Independencia	540	543	109	34	31.3	29.1	25.3
Veinteseis de Octubre	800	880	159	48	42.8	38.8	32.4
El Naranjo	1240	705	141	86	70.7	60.5	46.2
Pavencul	1940	848	125	186	126.9	97.3	65.0
Toquian Grande	2020	782	117	200	133.3	101	66.6
Rio Florido + Independencia				90	73.4	62.4	47.3
Veintiséis de Octubre.+ El Naranjo				134	100.3	80.8	57.2
Pavencul+Toquian grande				386	196.4	133.4	79.4

# Migrant worker from Guatemala on the coffee farm

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# Mountain village in Tapachula region

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# Interview with return migrant

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# Migrants from Guatemala gathering on Saturdays in Tapachula





# Illegal border crossing between Guatemala and Mexico



# Illegal border crossing between Guatemala and Mexico

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Thank you for your attention!



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