Sustainable incomes through coffee farming improvement project

AKA

"The Starbucks Project"

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CENTER FOR
COFFEE
RESEARCH & EDUCATION

CENTER ON CONFLICT
AND DEVELOPMENT
TEXAS A&M UNIVERSITY

WORLD COFFEE
RESEARCH

TAYA BROWN, PhD Student, Hort 202 TA

- **Education**
  - **B.S. in Agricultural Food Systems, Organic Major, at Washington State University**
    - **Minors in Horticulture and Soil Sciences**
  - **B.S. in Plant Biology from Washington State University**

- **Work experience**
  - **6 years Alm Hill Gardens Organic Farm**
  - **4 years Apple, Pear, Cherry Orchard, WSU**
  - **TA in Hort 202 at TAMU since Aug. 2015**

What I Do

- **Motivations: Global Food Security, international travel, cross-cultural interaction**

- **Career Goals: M&E of International Agricultural Development Projects**

- **General Research Focus: Adoption and diffusion of innovation**

- **Specific Research Focus: Farmer Perceptions**

Economic Importance

- **400 billion cups consumed per year**

- **United States: $20 billion annually**

- **Worldwide: $170 Billion annually**

- **Contributes up to 59% of export earnings of coffee producing countries (Ovalle et al., 2015)**

Need for Research

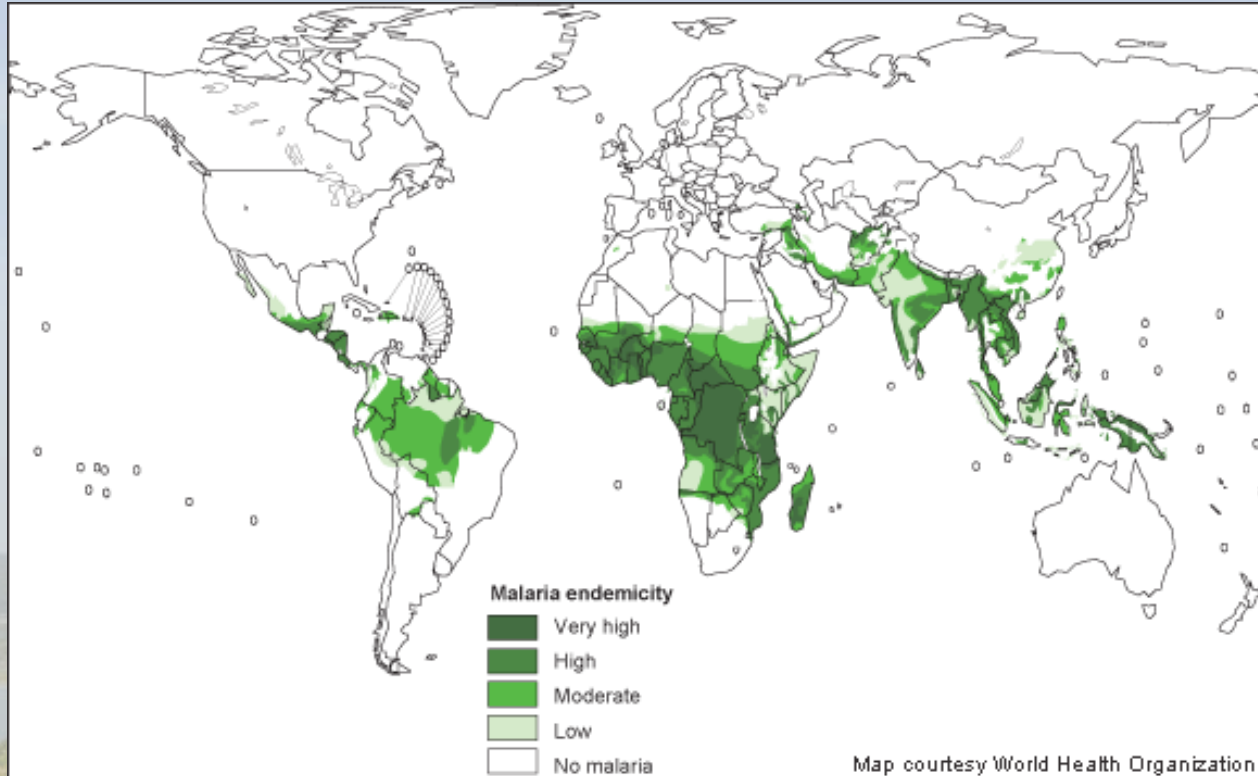- 8.5 million people in coffee industry in Latin America alone

- 25 million farmers produce (Ovalle et al., 2015)

- Of particular significance within indigenous populations (Baca et al., 2014)
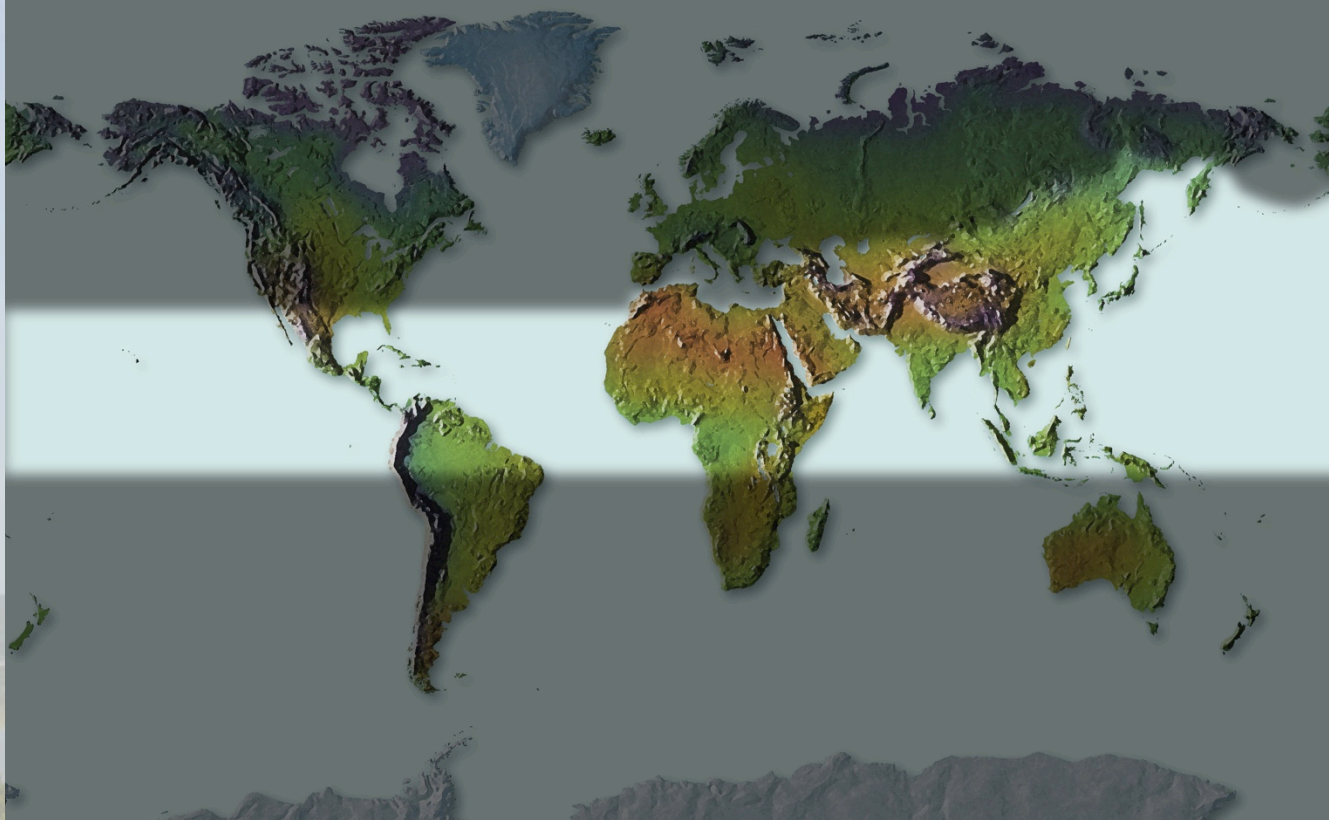
Vulnerability

- **Mainly grown in developing countries**

- **80% supplied by farmers < 9 hectares**

- **25 million smallholder farmers globally**

- **8.2 metric tons of coffee on 1 million hectares of land**

- **Latin America: 8.5 million people in coffee alone**

- **Highly vulnerable to climate change and other stressors**

"Malaria Belt"

Malaria endemicity

- Very high
- High
- Moderate
- Low
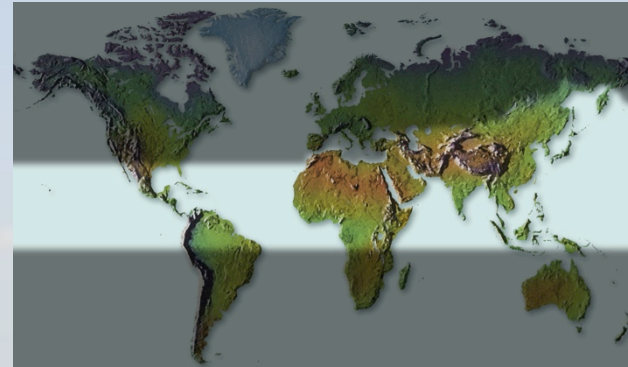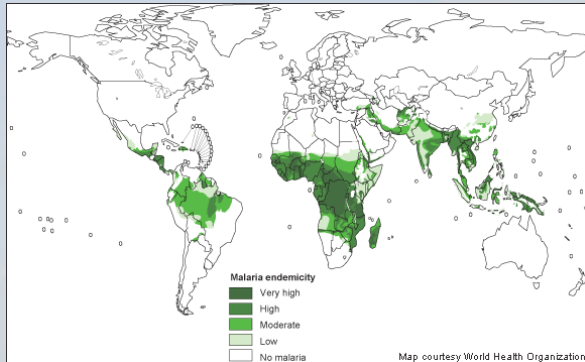- No malaria

Map courtesy World Health Organization

"Conflict Belt"

Courtesy of The Mandala Project, American University

"Coffee Belt"

THE BEST COFFEE COMES FROM THE BEST GROWING CLIMATES, KNOWN AS

THE BEAN BELT

1 PAPUA NEW GUINEA
Semi-sweet chocolate aroma, cocoa flavor with hints of cherry. Medium body, quick finish.

8 ETHIOPIA
Rich blueberry aroma, cocoa and spice flavor, medium body and clean finish.

PRIME COFFEE-GROWING REGIONS FORM A BELT ROUGHLY BOUNDED BY THE TROPICS OF CANCER AND CAPRICORN. THESE AREAS OFFER PERFECT CONDITIONS FOR GROWING COFFEE BEANS.

2 BRAZIL
Slightly spicy, nutty aroma, nutty base, carmel notes. Full body, clean finish.

3 SUMATRA
Aroma of dried fruit and nuts, full syrupy body, deeply sweet finish.

4 HONDURAS
Sweet molasses aroma and flavor, full body and lingering sweet finish.

5 PERU
Bright, fruity aroma, lightly fruity flavor with a clean finish.

6 GUATEMALA
Sweet, tart aroma, lightly fruity flavor. Light body and clean finish.

7 COLUMBIA
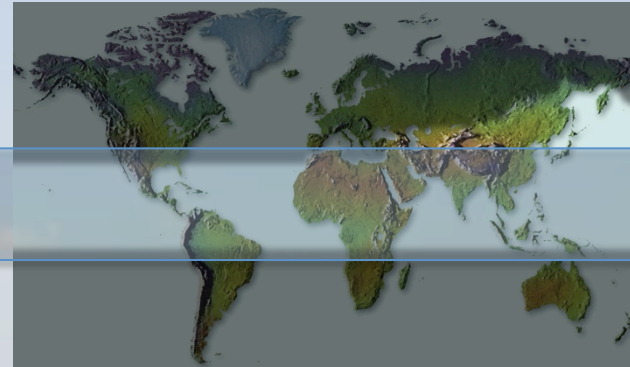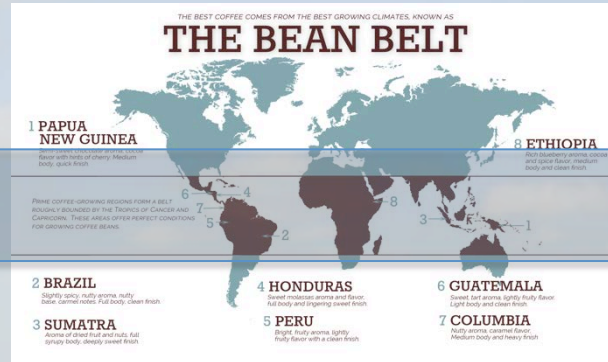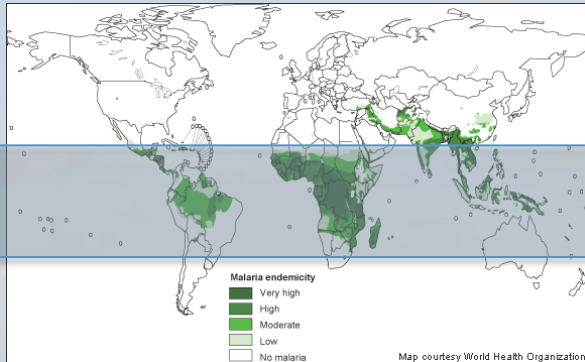Nutty aroma, caramel flavor, Medium body and heavy finish

Courtesy of Ohio State

Global Belts

Global Belts

Coffee Leaf Rust

- **Obligate parasite fungus**
- **Attacks through stomatal openings on leaves**
- **Spores travel via wind and water**

CLR epidemic, Guatemala 2012 – 2013

- **Warmer, wetter weather (climate change)**

- **276,000 Hectares (682,000 acres) affected**

- **Half owned by small farmers**

- **70% of all plantations affected**

CLR epidemic, Guatemala 2012 – 2013

- $1 billion in damages

- 35,000 households

- Loss of 60 Million workdays per year

- 2013: UN $4.6mil in disaster relief funds

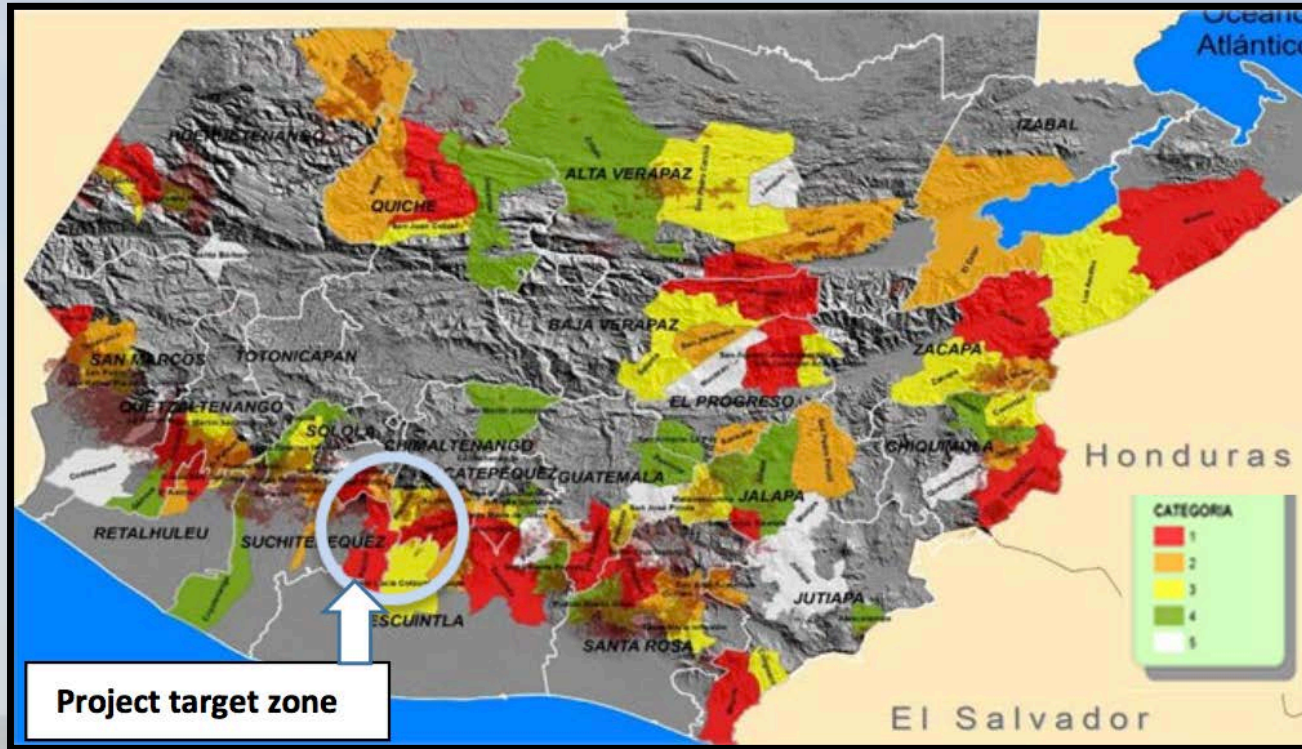# The "Starbucks Project"

- **Goal: Economic recovery of affected farms**
- **Technology: Rust resistant F1 Hybrid, "Centroamerica"**
- **Quantity: Sufficient to plant 1/6th hectare**
- **Timeline: 2015 – June 2018**

Target Farmers

- **Selected by Anacafé**

  - **Regional CLR Damage**
  - **Income highly coffee dependent**

- **6 Cooperatives**

- **339 Farmers**

- **1,700 Beneficiaries**

Map of the level of incidence of CLR in Guatemala, with 1 (red color) indicating the most affected area and 5 (white) the least. The circle indicates the municipality of Yepocapa, in the Department of Chimaltenango, which is the location chosen for the Starbucks Project activities.

Languages and Land Area

Organization	Languages spoken	Members			Productive Area		
		Men	Women	Total	Total Area (Mz^z)	Coffee Area (Mz)	Production (qq^y)
ECA El Esfuerzo Chuachilil	Kaqchikel and Spanish	20	3	23	**237**	79	395
ECA Montellano	Kaqchikel, Mam, K'iche and Spanish	77	44	121	**685**	280	750
Maya Kiche Association	Kaqchikel, Mam, K'iche and Spanish	15	7	22	**n/a**	n/a	n/a
El Esfuerzo Chuachilil Association	Kaqchikel and Spanish	25	3	28	**237**	79	395
San Pedrana, R.L. Cooperative	Kaqchikel and Spanish	45	7	52	**115**	90	1200
COFEAG, R.L. Cooperative	Kaqchikel and Spanish	46	9	55	**40**	30	290
Total		226	73	299	1314	558	3030

[z]Mz = *manzanas*. Each *manzana* equals 1.7 acres or 6,987 m^2, or 0.6987 ha.
[y]qq = *quintales*. Each *quintal* equals 100 lbs or 46 kg of parchment coffee

Farmer Training

Training session topic	2016						
	Jan	Feb	Mar	Apr	May	June	July
Biology and culture of the coffee hybrids (for agents and technicians by Mr. Courtel)		■■■					
Management of seed beds and nurseries (for farmers)		■					
Renovating a coffee farm (for farmers)	■■■						
Integrated managements of pests and diseases (for farmers)			■■				■
Effective farm management (for farmers)	■		■		■		
Coffee species and varieties (for farmers)			■				
Day of the coffee farmers					■		

Farmer Training

My Study

Methods

- Initial Focus Groups
- Local interviewers
- Baseline data/ comparison group
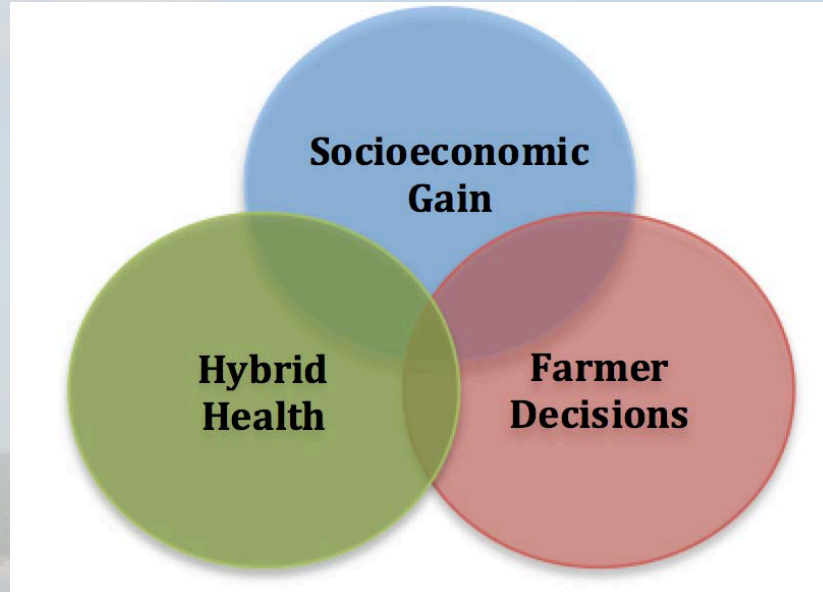- Two interview sets
- Hybrid integration assessment

Metrics

- Economic changes
- Food security
- Hybrid integration within existing system
- Hybrid health

Socioeconomic Instrument

World Coffee Research - Socio Economic Study

A. SURVEY QUALITY CONTROL

Ennumerator Code

Interview number

Date

Start time   :   End time: :

GPS coordinates   N   E

Completed (code)   Anonimity

B. RESPONDENTS PERSONAL DETAIL

C. FAMILY COMPOSITION

DATA ON HOUSEHOLD MEMBERS - SOCIAL DATA

Family member #	Name [Last name?]	Relation to household head	Sex	Age	Marital status	Highest grade of schooling	Current Education Status	If [...] is between 6 and 15 years give main reason for not being in school	Liter ate

Framework

Hypotheses

- The Centroamerica hybrid plantlets will grow faster, produce more, show resistance to CLR and show more overall health and vigor than current varieties.

Hypotheses

- Farmers that perceive themselves as more marginalized will make more 'short-term' decisions, as ways of coping, and less 'long-term,' more strategic decisions regarding the management of their farms and businesses.

Hypotheses

- These findings will correlate with data on farm size and history (e.g. farmers with more land and resources, and/or sustained less damage from CLR will perceive themselves as less marginalized), and other farm and farmer characteristics.

Timeline

Activity	2016				2017				2018	
	1 (Jan-Mar)	2 (Apr-Jun)	3 (Jul-Sep)	4 (Oct-Dec)	5 (Jan-Mar)	6 (Apr-Jun)	7 *(Jul-Sep)	8 *(Oct-Dec)	9 (Jan-Mar)	10 (Apr-Jun)
Project orientation	X									
IRB Document Preparation		X								
Preliminary Literature Review					X					
Socioeconomic baseline					X					
Instrument developed					X					
Obtain IRB approval					X					
First farmer interview (midline)						X				
Full Literature Review							X			
Hybrid Integration Research Design							X			
Hybrid integration data collected								X		
Second farmer interview (end line)										X
Hybrid integration data analysis										X
Farmer perceptions analysis										X
Socioeconomic gains assessment										X

Conflict Questions

Coffee as a Conflict Resistant Crop

- Were you or your parents displaced after the civil war?

  ☐ Yes   ☐ No

- If so, were your previous crops burned or destroyed during the war?

  ☐ Yes   ☐ No   Which crops _____

- In your community, is coffee is a conflict-resistant crop because it cannot be eaten directly or traded easily?

  ☐ Yes   ☐ No

To what degree have the following conflicts affected your agricultural activities in the past two years?

	Never	Occasionally	Very Often	Always	No Opinion
Theft (of coffee cherries, transplants)	○	○	○	○	○
Vandalism (chopping coffee trees for fire wood, destroying trees)	○	○	○	○	○
Issues with sales contracts (farmers selling coffee for cash and ignoring signed contracts)	○	○	○	○	○

Guatemala
December, 2016

Internship Report

http://www.condevfoundation.org/notes/2017/1/3/socioeconomic-study-of-smallholder-guatemalan-coffee-farmers
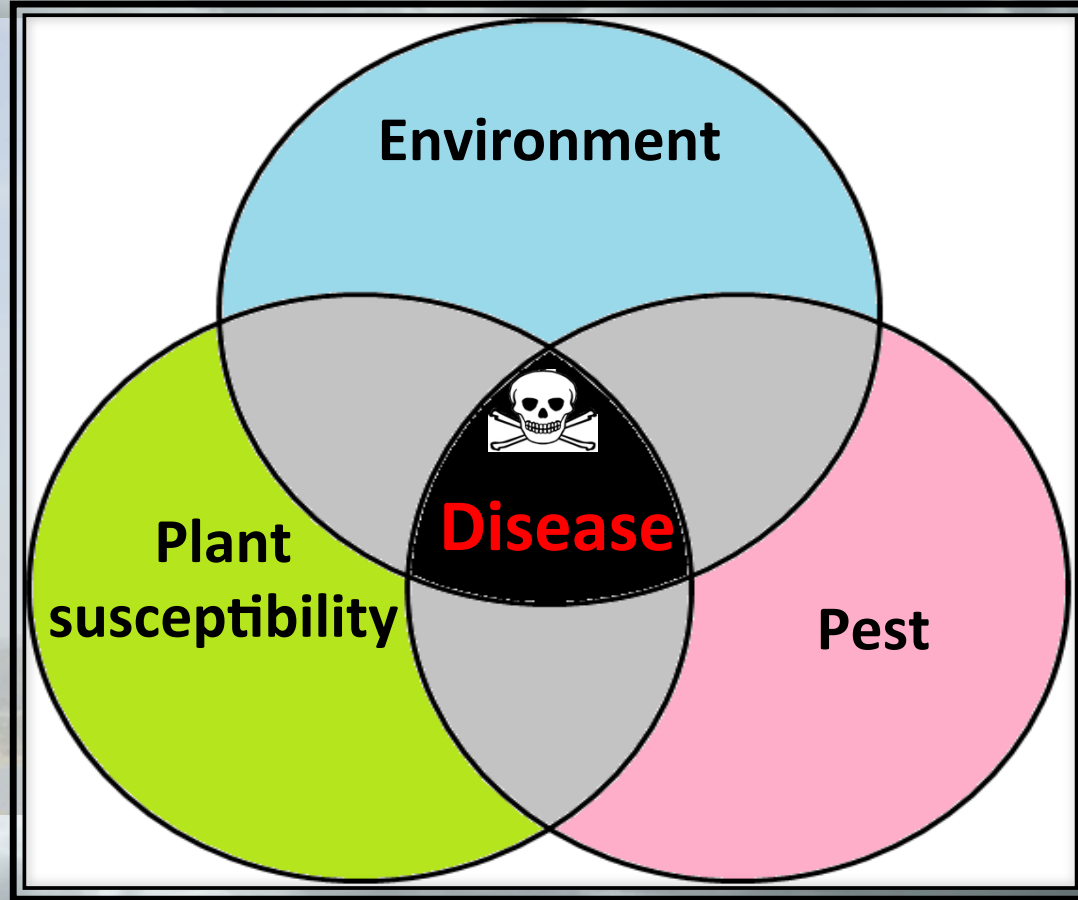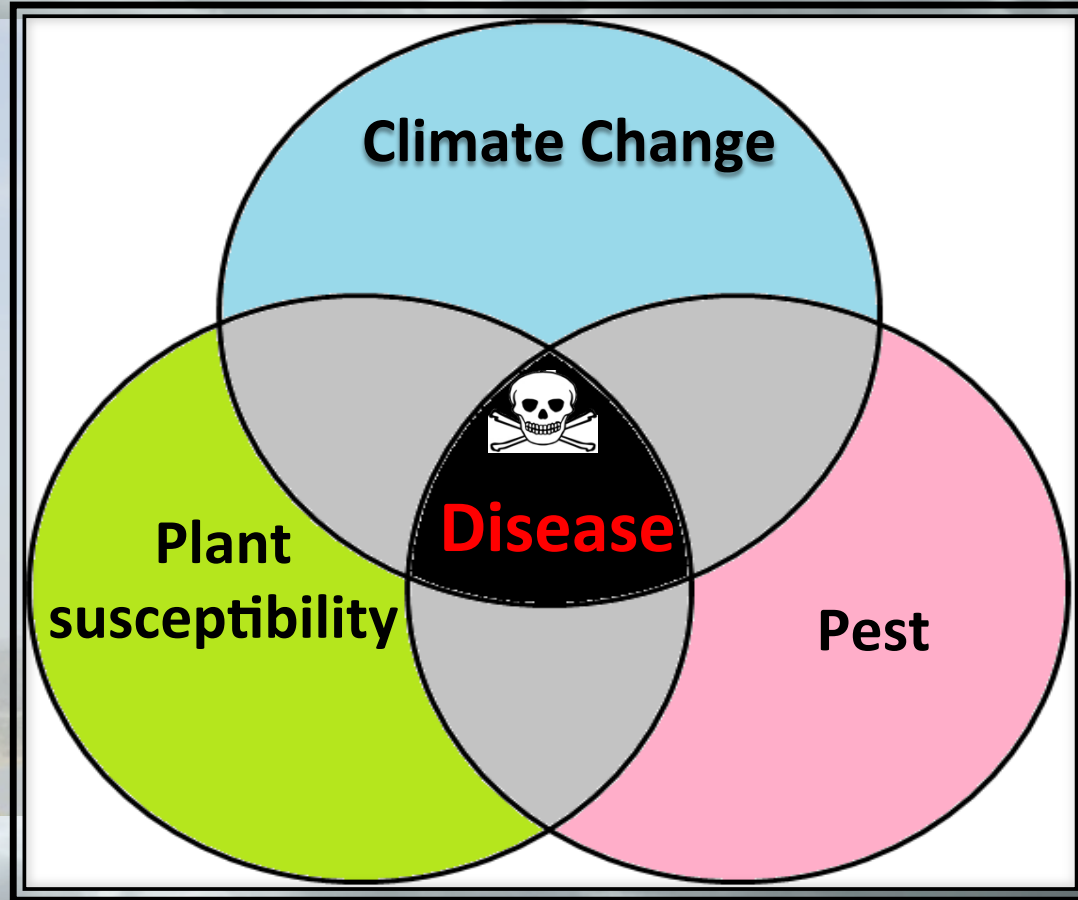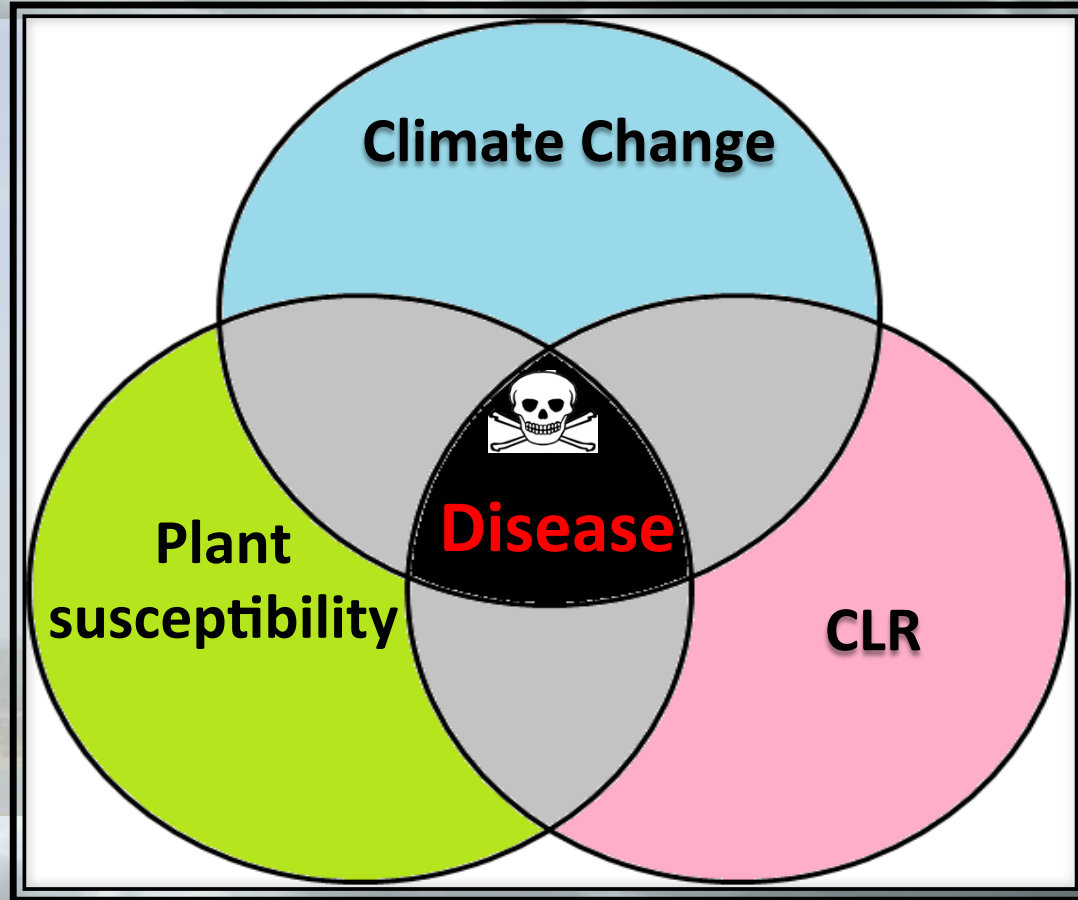
Thank you!

Questions?

Prerequisites of pest damage or infection: (The Disease Triangle)

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