



Assessing and Addressing Profitability  
Constraints for Smallholder Coffee Producers  
in Yepocapa, Guatemala:  
Science Meets Action (Aka, Talk Meets Walk)

***Presenters: Taya Brown, Ryan Chipman***

# Introduction: Ryan Chipman



- Criminology @ U of Illinois Springfield
- Colegio Berea Primary School
- Profitability for Smallholder Farmers



# Introduction: Taya Brown



PhD Candidate in Horticulture

Food security

Smallholder farming communities

Socioeconomics and technology uptake

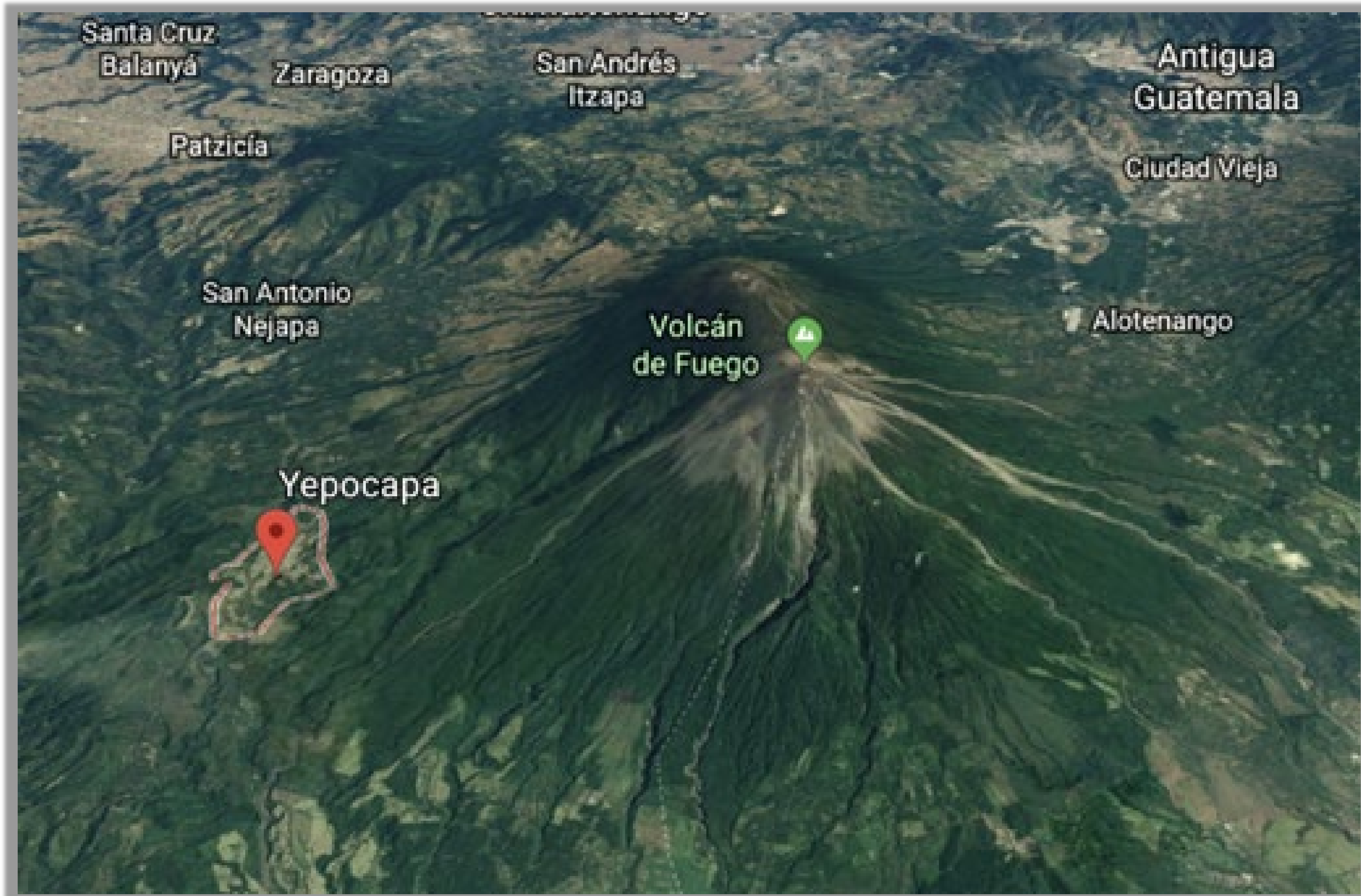
Needs and impact assessment

Project evaluation



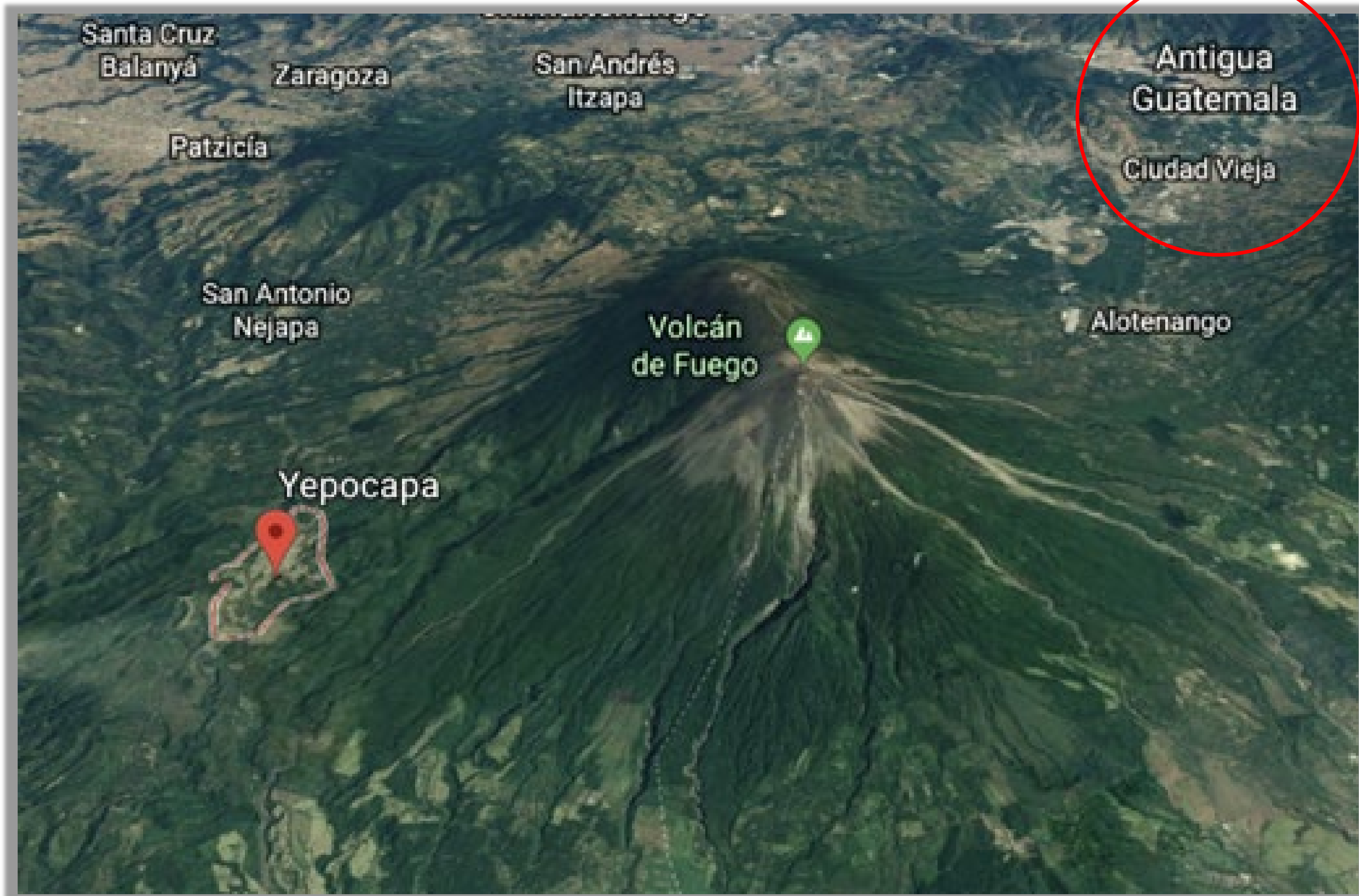


# Project Location



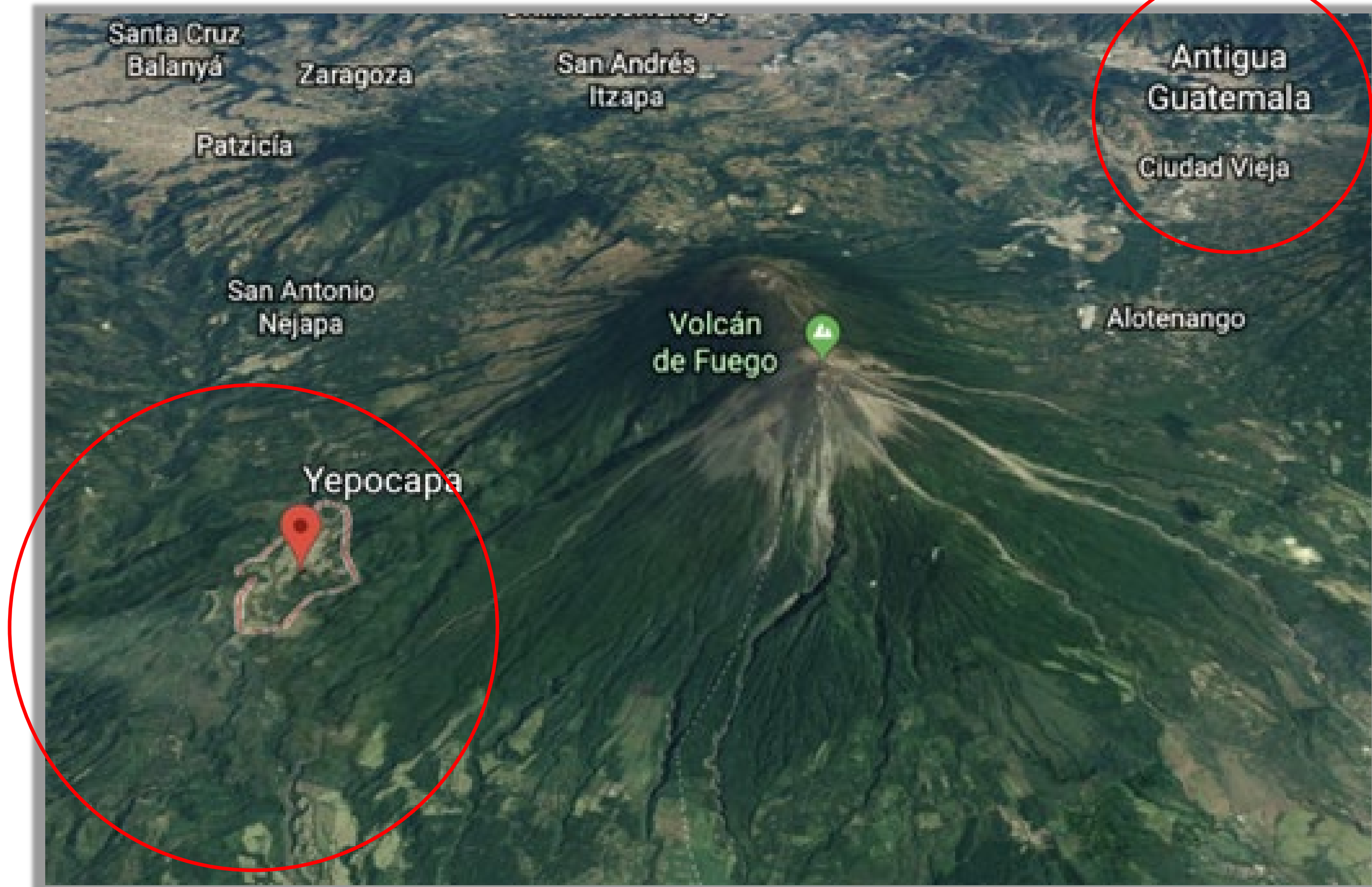
Yepocapa Region,  
Chimaltenango, Guatemala  
800-1800 masl

# Project Location



Yepocapa Region,  
Chimaltenango, Guatemala  
800-1800 masl

# Project Location



Yepocapa Region,  
Chimaltenango, Guatemala  
800-1800 masl

# Project Location



Volcanoes Acatenango (dormant) and Fuego (active) taken from the town of Hermogenes Montellano .



# Project Background



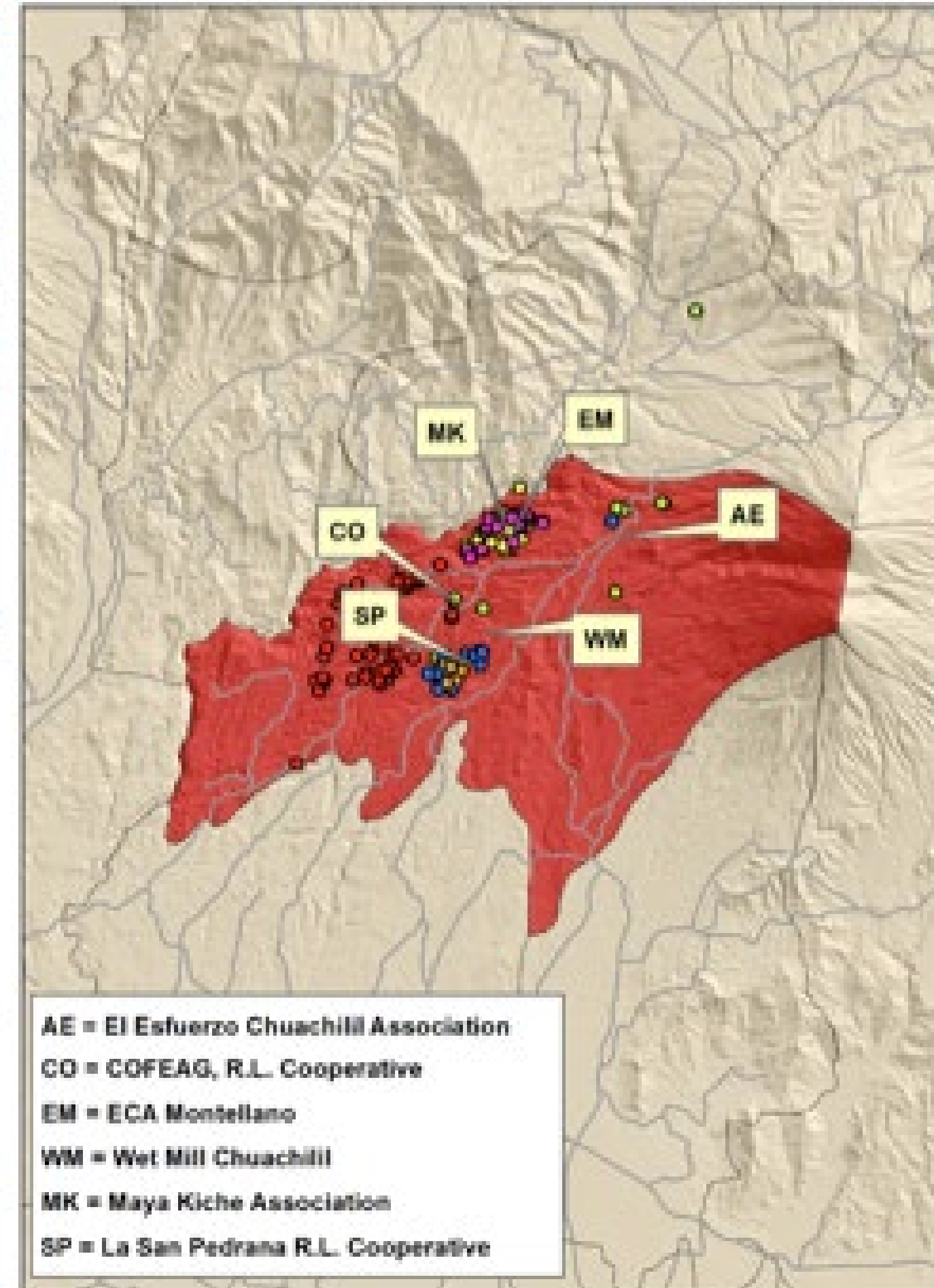
Sustainable Incomes through  
Coffee Farming Improvement  
Project

Help six cooperatives of smallholder coffee  
farmers overcome coffee leaf rust epidemic

Introduce Centroamericano coffee hybrid



# Yepocapa Communities



■ Yepocapa   ■ Guatemala   — Road   ● Cofeag   ● San Pedrana   ● ECA Chuachil   ● ECA Mmontellano   ● Maya Kiche   ● Chuachil



# Yepocapa Communities



<b>Membership, age and location of the six organizations</b>			
<b>Cooperative</b>	<b># of Members</b>	<b>Age</b>	<b>Location</b>
<b>ECA Montellano</b>	187	29	Hermogenes Montellano
<b>Maya Kiché</b>	30	9	Hermogenes Montellano
<b>San Pedrana</b>	44	52	San Pedro Yepocapa
<b>Assoc. Chuachilil</b>	79	32	San Pedro Yepocapa
<b>COFEAG</b>	50	6	San Lucas Miramar
<b>ECA Chuachilil</b>	23	33	San Pedro Yepocapa



# Studies in Yepocapa



## **A) Phase 1 (2017) Background and Hybrid Acceptance:**

- Understand the history and current conditions of each cooperative
- Identify constraints to hybrid acceptance
- Generate plan for future study

## **B) Phase 2 (2018) Profitability Study:**

- Cost of living
- Off-farm activities
- Costs of coffee production
- Income from coffee production
- Constraints to profitability





# Focus Groups



Photo credit: Devon Barker

Obstacles to coffee production  
Obstacles to selling coffee  
Barriers to hybrid acceptance



# Profitability



**All reported receiving very low prices**

Difficult to reinvest in parcels or mills

Not sufficient to overcome shocks

Not enough to sustain families

**\*\*All work other jobs to make ends meet**



Photo credit: Devon Barker



# Profitability Study



## Focus groups

Representative farming family

Representative coffee parcel

Timeline of coffee management





# Profitability Study



## Data Collected:

Cost of Living  
Cost of coffee production  
Income from coffee

\*\*Poor, expected, and high price and production

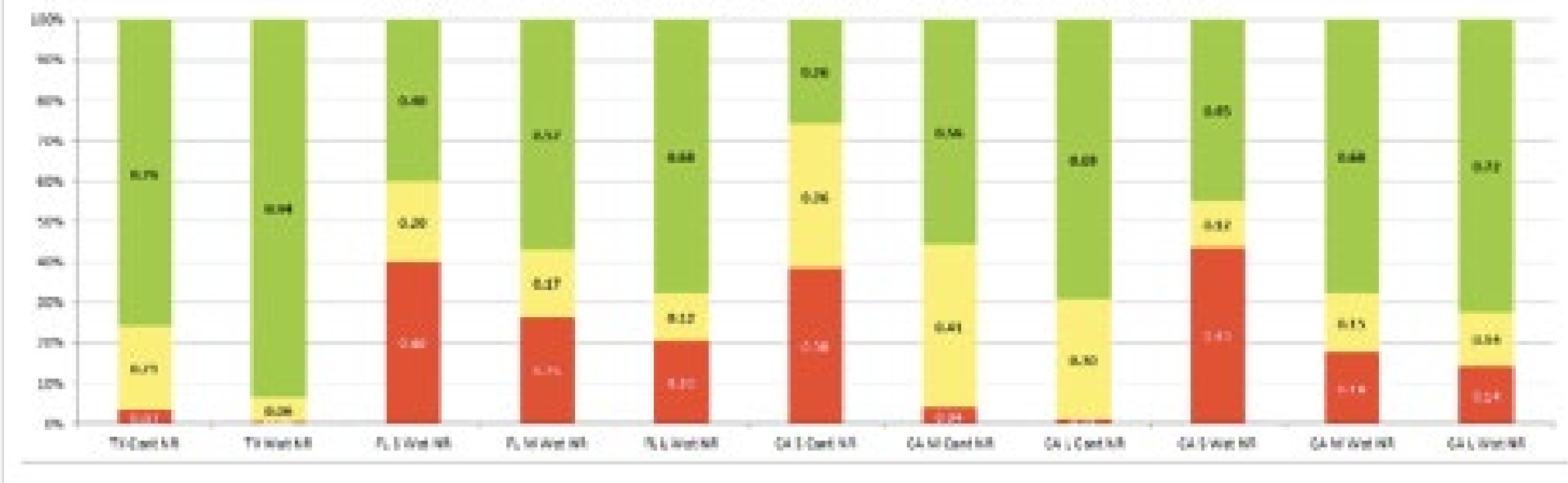
# Profitability Study



## Stop light charts summarize results

	Lower Cut-Off Value: 0.00		Upper Cut-Off Value: 1000.00								
	TR Card NR	TR Wat NR	F1 S Wat NR	F1 M Wat NR	F1 L Wat NR	CA S Card NR	CA M Card NR	CA L Card NR	CA S Wat NR	CA M Wat NR	CA L Wat NR
Prob(Loss)	0.00	0.00	0.40	0.25	0.20	0.18	0.04	0.01	0.43	0.18	0.14
Prob(Zero)	0.11	0.06	0.20	0.17	0.12	0.16	0.41	0.30	0.12	0.15	0.14
Prob(Profit)	0.76	0.94	0.40	0.57	0.68	0.26	0.34	0.69	0.45	0.68	0.72

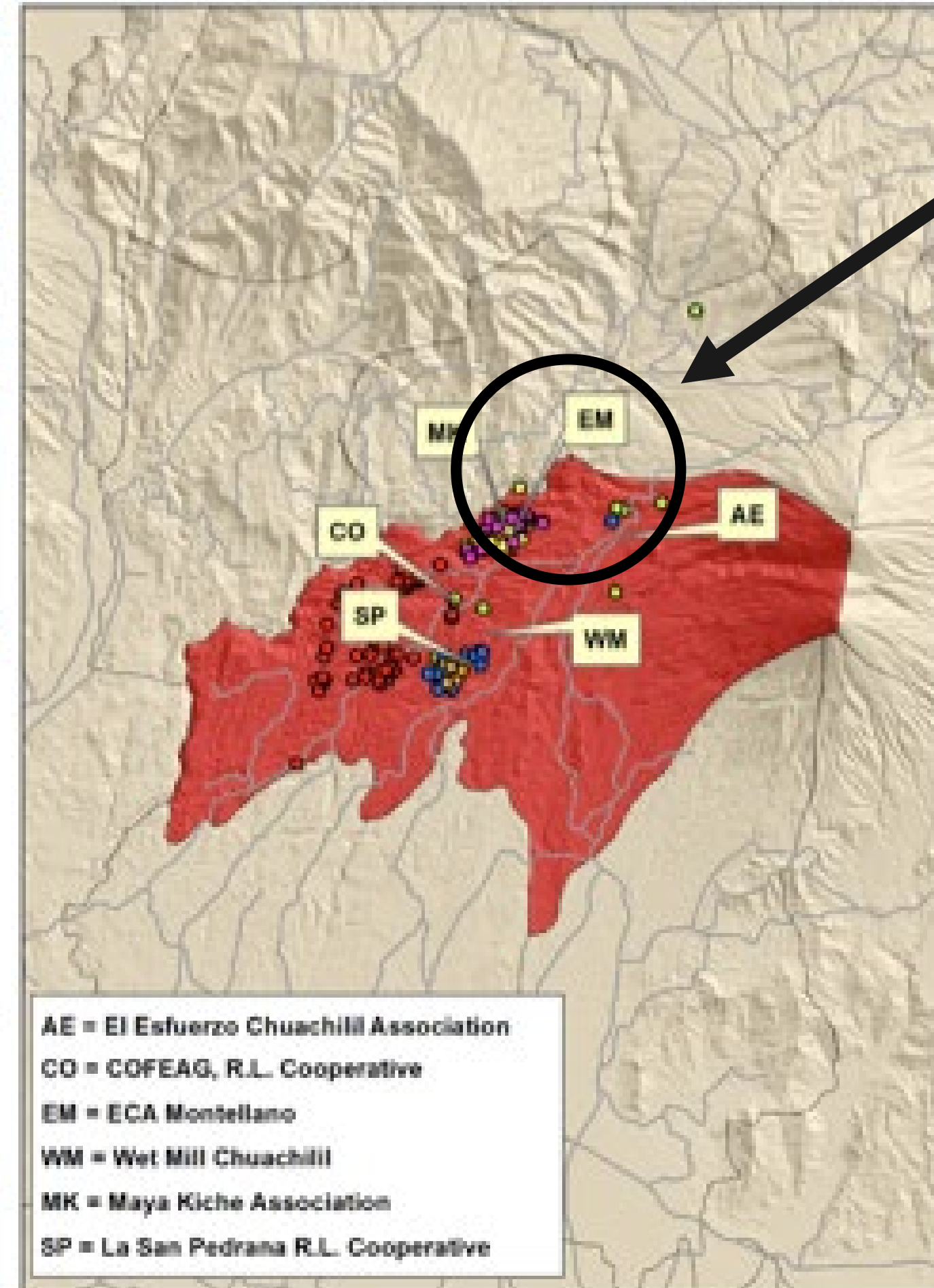
StopLight Chart for Probabilities Less Than 0.000 and Greater Than 1,000,000



## Monte Carlo Simulation

- Assesses likelihood of profitability under specific business practices
- Works well in absence of records

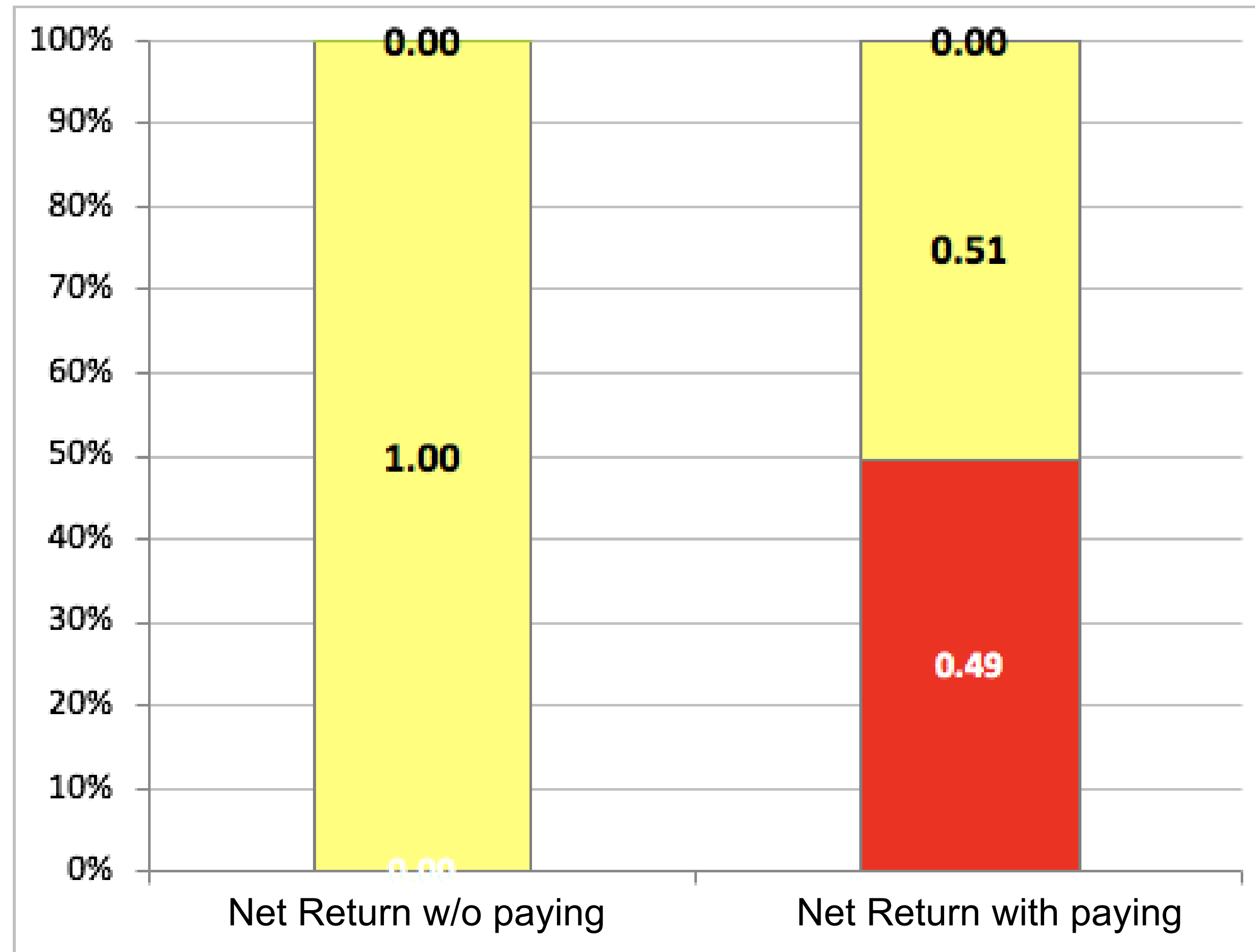
# ECA Montellano






- Yepocapa
- Guatemala
- Road
- Cofeag
- San Pedrana
- ECA Chuachil
- ECA Mmontellano
- Maya Kiche
- Chuachil






# Probability of net returns being less than zero and greater than 4294 Q



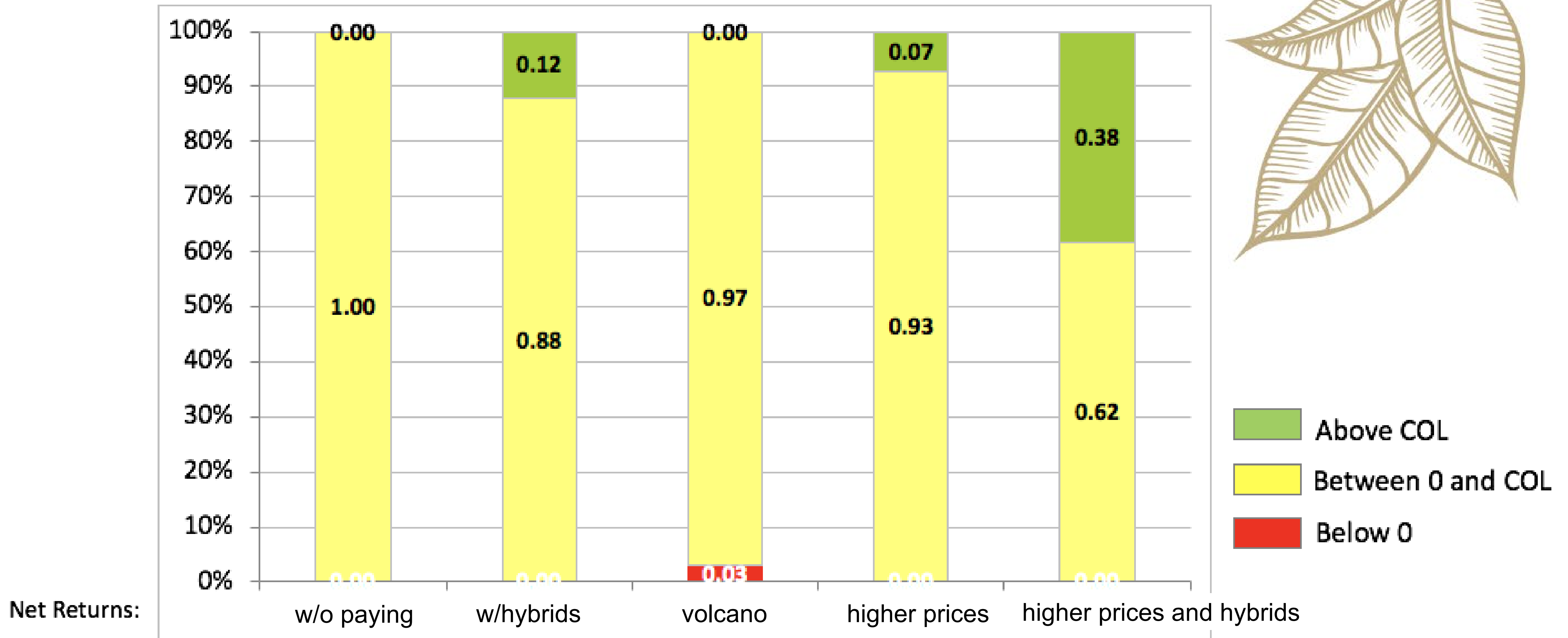
-  Above COL
-  Between 0 and COL
-  Below 0

# Probability of total net returns being less than zero and greater than 4294 Q



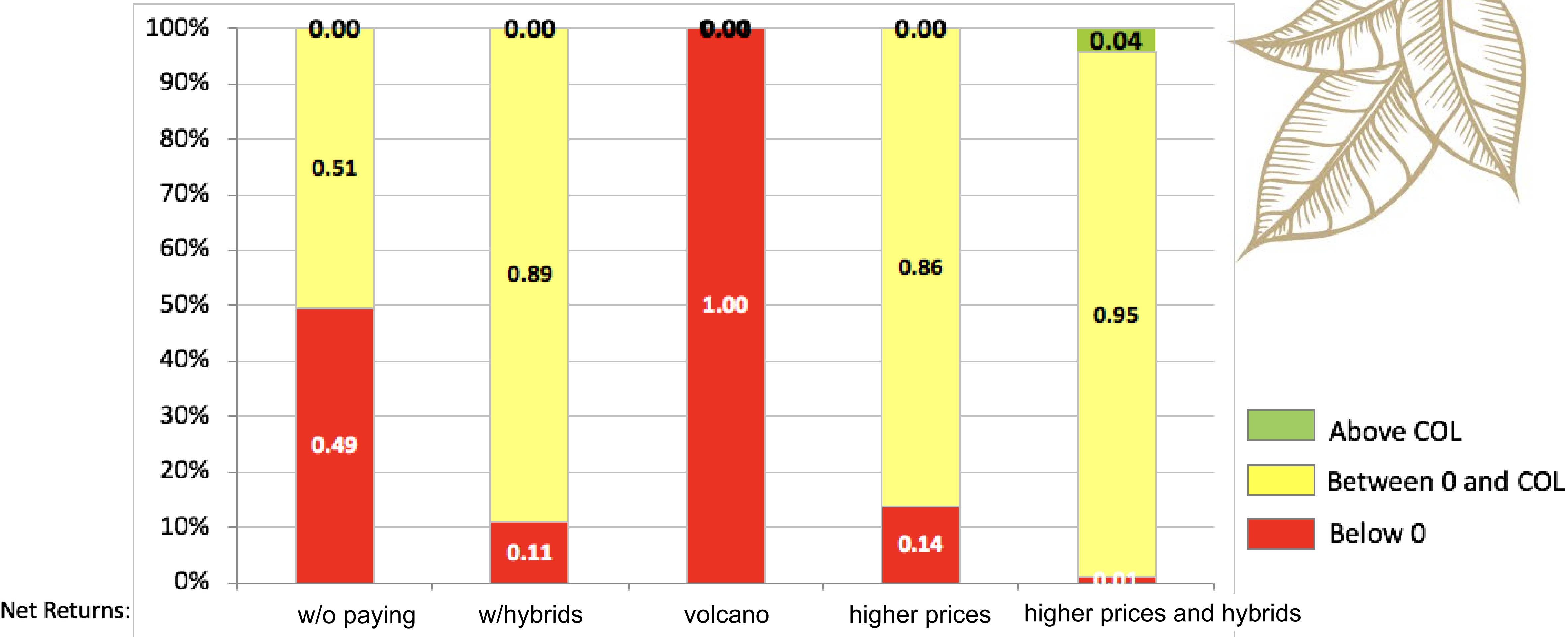
-  Above COL
-  Between 0 and COL
-  Below 0

# Probability Scenarios w/o Paying Family





# Probability Scenarios with Paying Family



# Study Conclusions

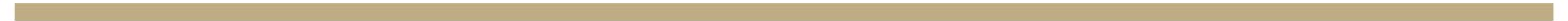
Profitability is a significant constraint

Multi-faceted approach is best

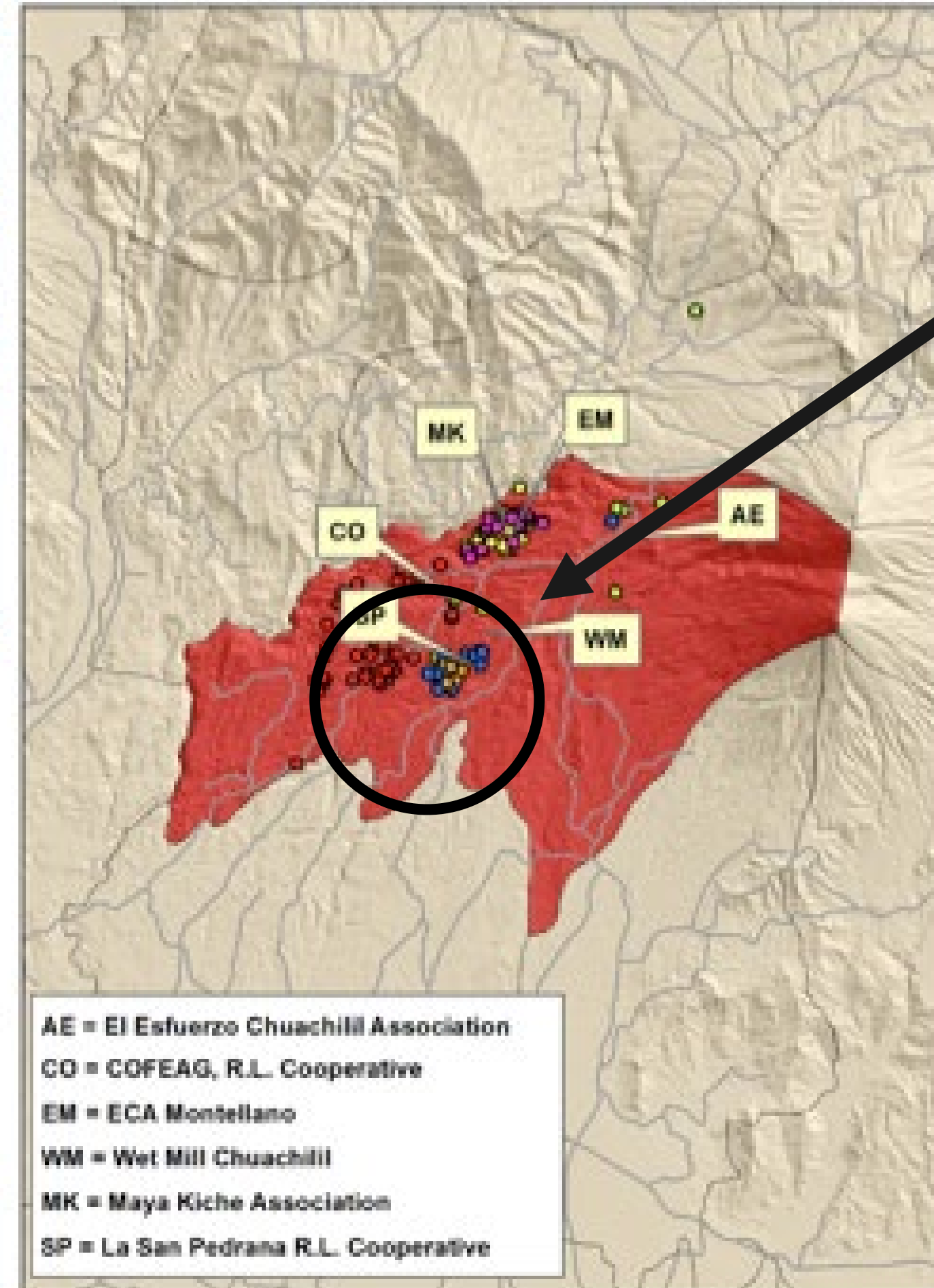
How to meet cost of living?

How to address equivalent daily wage issue?

How to address shocks?



# La Cooperativa San Pedrana



AE = El Esfuerzo Chuachil Association  
CO = COFEAG, R.L. Cooperative  
EM = ECA Montellano  
WM = Wet Mill Chuachil  
MK = Maya Kiche Association  
SP = La San Pedrana R.L. Cooperative

■ Yepocapa   ■ Guatemala   — Road   ● Cofeag   ● San Pedrana   ● ECA Chuachil   ● ECA Mmontellano   ● Maya Kiche   ● Chuachil



# La Cooperativa San Pedrana



- 140 Farmers
- 2015 Export License
- Two-way Relationship
- Better Relationships, Better Coffee
  
- What is profitability?



# Influential Factors behind Profitability



- Costs of Production
- Prices Received
- Production Volume
- Cost of Living





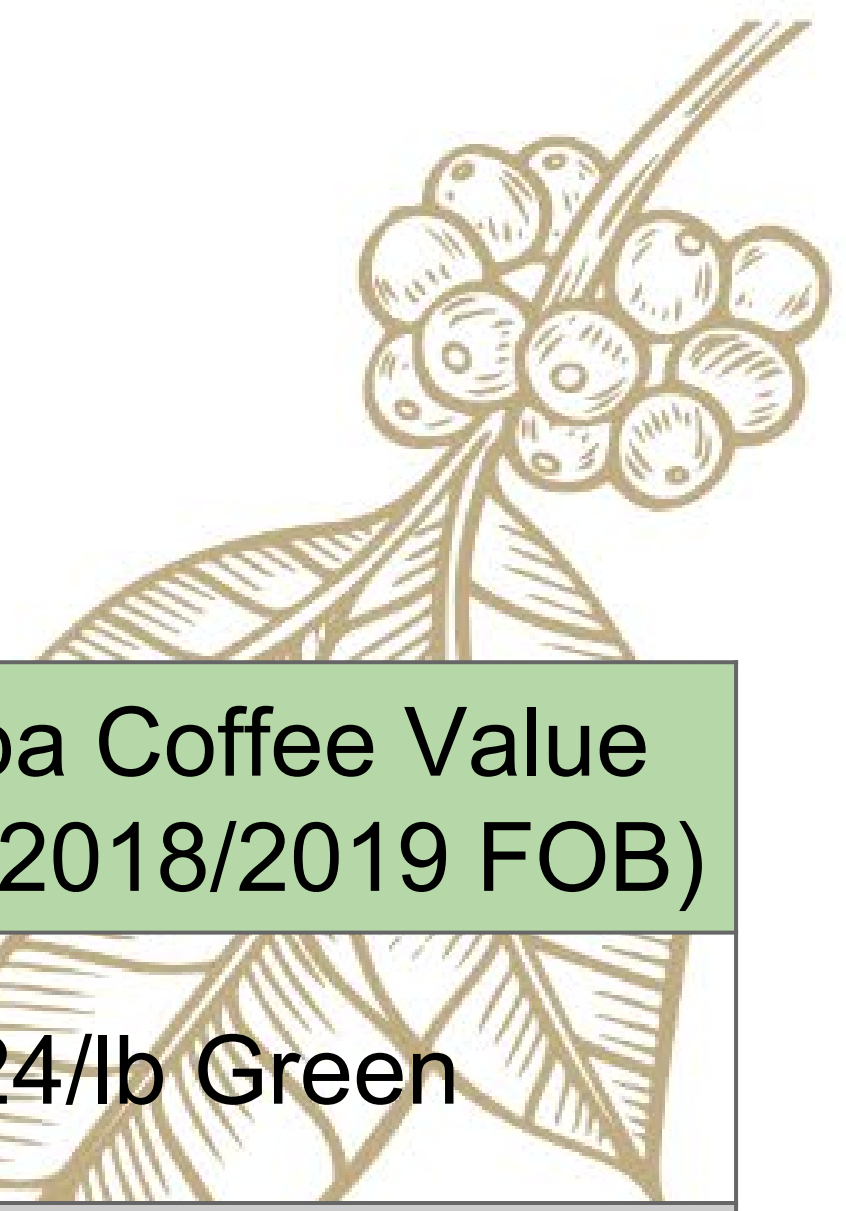
# Costs of Production



- Differs by Country and Region
  - Both Fixed and Variable Costs
  - Unexpected Costs
  - Specialty Coffee Production...?
- 
- Commodity Production  
125Q/Quintal or \$1.05/lb\*



# Pricing



	C-Market Value (January, 2019)	Fair-Trade Value (January, 2019)	Yepocapa Coffee Value (Average 2018/2019 FOB)
FOB Values	\$1.05/lb Green	\$1.40/lb Green	\$2.24/lb Green
Parchment Value	\$0.75/lb or Q563/qq	\$1.02/lb or Q767/qq	\$1.61/lb or Q1,209/qq
Wet Mill Cost	\$0.03/lb or Q22/qq	\$0.03/lb or Q22/qq	<b>\$0.55/lb or Q41/qq*</b>
Cherry Value	\$0.15/lb or Q114/qq	\$0.21/lb or Q156/qq	\$0.33/lb or Q246/qq
Cost of Production	\$0.17/lb or Q125/qq	\$0.17/lb or Q125/qq	<b>\$0.22/lb* or Q165/qq*</b>
Profit Margin	<b>-\$0.02/lb Cherry</b> <b>-Q11/qq Uva</b>	\$0.04/lb Cherry Q31/qq Uva	\$0.13/lb Cherry Q81/qq Uva



# Production Volume



	C-Market (\$1.05/lb FOB)	Fair-Trade (\$1.40/lb FOB)	Yepocapa Coffee Value (2.24/lb FOB)
Farmer A (50qq Cherry)	-\$100 or -Q550	\$200 or Q1,550	\$550 or Q4,050
Farmer B (100qq Cherry)	-\$200 or -Q1,100	\$400 or Q3,100	\$1,100 or Q8,100
Farmer C (400qq Cherry)	-\$800 or -Q4,400	\$1,600 or Q12,400	\$4,400 or Q32,400



# Percentage of Influence



	Total Cooperative Production	Yepocapa Coffee's Purchase	Percentage of Influence
<b>2015/2016 Harvest</b>	3,741.05qq Parchment	7.8qq Parchment (4 Bags)	0.002%
<b>2016/2017 Harvest</b>	2,916.65qq Parchment	500qq Parchment (252 Bags)	17.1%
<b>2017/2018 Harvest</b>	3,688.08qq Parchment	1,011.71qq Parchment (512 Bags)	27.4%
<b>2018/2019 Harvest</b>	2,832.87qq Parchment*	1,495.65qq Parchment (767 Bags)	50%*

# Influences to Volume of Production



- Climate Change
- Leaf Rust or Plant Disease
- Natural Disasters
- High and Low Production Years
- Plant Health/Farming Practices





# Costs of Living

- Differs by Country and Region
- Reinvestment/Renovation
- Living Wage
- Education





# Takeaways

- Holistic Definition of Profitability
- Using Science as an Evaluative Tool helps:
  - Set Benchmarks or Goals
  - Understand Farmer Obstacles to Profitability
  - Measure Impact
  - Be more CostEffective
  - Make Better Decisions



# Future for Science Based Evaluations in Coffee



Using science can do many things... better understand all factors in profitability, soil health, plant health, target higher production, better cupping scores, disease resistance

**...context specific!!**

---

# Future for Science Based Evaluations in Coffee

Using science can do many things... better understand all factors in profitability, soil health, plant health, target higher production, better cupping scores, disease resistance





# Thank You!

## Funding for Yepocapa Studies



## Advising/collaboration for Yepocapa Studies

Daniel Dubón  
Juan Charuc  
Mario Turcios  
Wilson Ordoñez

Dr. Luis Ribera  
Dr. Leonardo Lombardini  
Dr. Christophe Montangon

Photo imagery: Devon Barker

---

**Questions?**



# Hybrid Growth





# Fuego Eruption



# Fuego Eruption

