



# FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



## Feed the Future Africa Great Lakes Region Coffee Support Program (AGLC) Closing Workshop

June 26, 2018 Kigali, Rwanda



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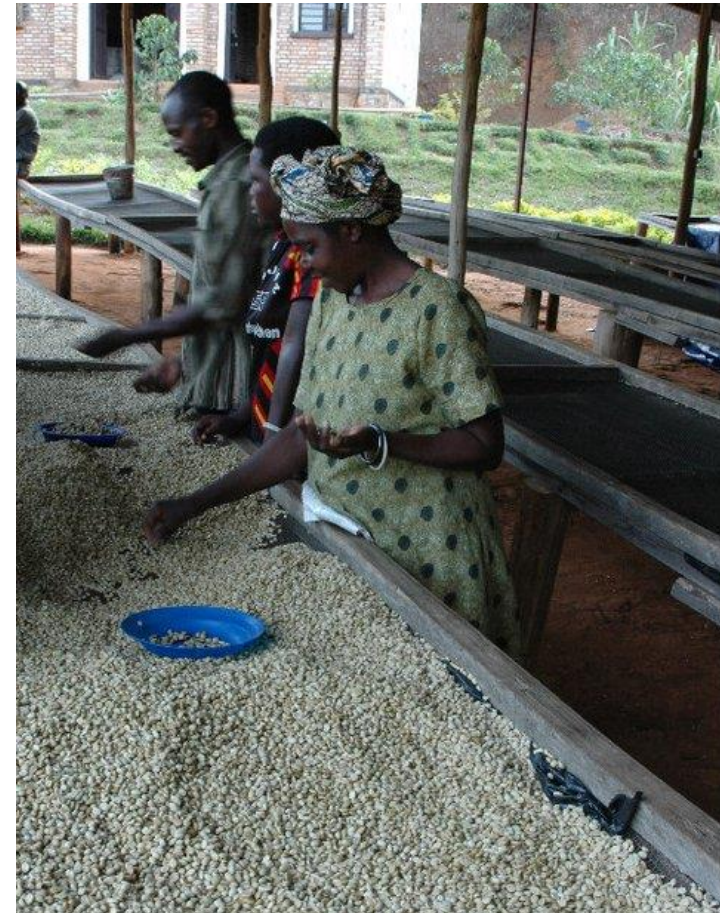


# Overview: Africa Great Lakes Region Coffee Support Program



# What is the goal of AGLC?

- Address two challenges facing coffee production in Rwanda and the Africa Great Lakes region:
- Low productivity
  - Antestia bug / Potato taste defect (PTD)



# Implementing partners



## Rwanda

- **IPAR** – Institute for Policy Analysis and Research - Rwanda
- **UR** -- University of Rwanda.



## Burundi

- **UNg** -- University of Ngozi
- **PUG** – Polytechnic Univ. of Gitega



## USA

- **MSU** – Michigan State University
- **GKI** – Global Knowledge Initiative

# Component 1: Applied Research

- Two-pronged approach focusing on:
  - controlling Antestia/PTD
  - improving coffee yields
- Emphasis on:
  - most effective farmer practices
  - farmer-level incentives to invest in improved practices





## Data & Methods

### ➤ Annual surveys of coffee growers

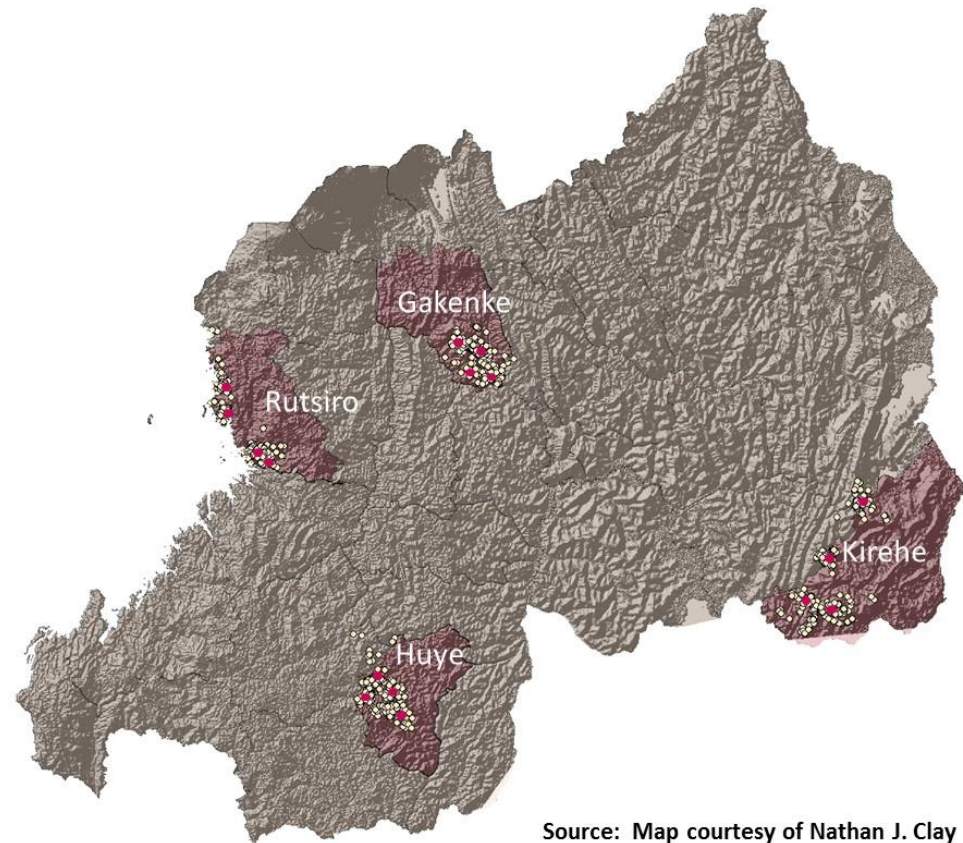
- Baseline: 1,024 coffee farmers across 4 coffee growing districts: Rutsiro, Huye, Kirehe, Gakenke
- Midline / Endline surveys 50% subsample (N=512 hhs)

### ➤ Qualitative Data

- 25 key informant interviews
- 100+ farmers interviewed through focus groups

### ➤ Experimental fields

- Tracked across all four districts



Source: Map courtesy of Nathan J. Clay

# Component 2: Farmer Capacity Building

- Closely tied to 16 CWSs selected in sample
- Organized around research/demonstration plots
  - Farmers trained on antestia control
  - good agricultural practices
- Radio messages sent on best practices



# Component 3: Policy Engagement

- Engaged with public & private coffee sector leaders
- Identified policy questions and constraints & potential solutions
- Informed policy process with research results





# Policy engagement activities

- Held 10 policy roundtables engaging stakeholders across coffee sector
- Shared and debated research results with stakeholders one-on-one and in small groups
- Disseminated research outputs (presentations, reports, policy briefs and data tables & figures)





# Challenges identified by stakeholders



# Key Challenges Identified at Kick Off



## Thematic Area 1: Inputs & Potato Taste Defect (PTD)

- How might we understand the most effective pesticides?
- How might we make enough fertilizer available to all farmers?
- How might we encourage full implementation of IPM?
- How might we improve knowledge on how to eliminate PTD?
- How might we understand the necessary incentives to decrease PTD?

## How Did We Research & Address These Challenges?

1. *Collected data on pesticide and fertilizer use, finding that many farmers do not use inputs and many who use them do not use enough.*
2. *Found that CEPAR input distribution is critical; most farmers do not purchase inputs on their own.*
3. *Through roundtable discussions, highlighted additional factors influencing input use, such as coop membership and gender.*

# Key Challenges Identified at Kick Off



## Thematic Area 2: Improving the Dissemination of Knowledge to Farmers

- How might we make agronomic guidelines available to farmers?
- How might we improve the information dissemination system along the coffee value chain?
- How might we improve extension services to coffee farmers?
- How might we improve knowledge on how to eliminate PTD?

## How Did We Research & Address These Challenges?

1. *Collected data showing how incorrect input application negatively impacts productivity, profits, and safety.*
2. *Found that despite possessing less knowledge than men on antestia & PTD, female HHHs report lower antestia incidence than male HHHs.*
3. *Through roundtable discussions, heard many say the issue is not that farmers do not **know** best practice; rather, they often have little incentive to implement best practice.*

# Key Challenges Identified at Kick Off



## Thematic Area 3: Market Factors

- How might we improve market access for farmers?
- How might we connect coffee quality to coffee prices?
- How might we address risks associated with coffee production?

Figure 1: ICO composite indicator daily prices



© 2018 International Coffee Organization ([www.ico.org](http://www.ico.org))

## How Did We Research & Address These Challenges?

1. *Data showed 2015 cherry floor price was 40% of average export price, with the rest going to processors, exporters, and export fees.*
2. *Found that CWSs play critical role in determining coffee quality through training and quality assurance.*
3. *Through roundtable discussions, discussed opportunity of developing multi-tiered cherry pricing system in which low-quality cherry is not accepted or accepted for lower price.*



# Top 5 outcomes of AGLC research and engagement





## AGLC outcomes: Investment and Productivity

1. Derived accurate **farmer cost of coffee production** figures to inform debate on what prices farmers need to be paid to profitably cultivate coffee, and what prices incentivize farmer investment.

Photo: Ruth Ann Church



## AGLC outcomes: Investment and Productivity

2. Proposed methods for **coffee quality differentiation** that could align incentives between farmers and coffee buyers such that farmers are better rewarded for investment in quality, and buyers have access to higher quality fully washed coffee.

Photo: Global Knowledge Initiative





## AGLC outcomes: Investment and Productivity

**3. Identified farmers that would most benefit from additional support— financial, in-kind (e.g. fertilizer and pesticide), and extension—for example, women-headed households and very small-scale farmers.**

Photo: Ruth Ann Church





## AGLC outcomes: antestia & potato taste

4. In partnership with RAB, **determined the likely causes of the potato taste defect**, which is the “antestia bug” and proposed antestia bug control approaches.

Photo: Joseph Bigirimana





## AGLC outcomes: cross-cutting

### 5. Identified rationales and opportunities for investment in the long-term sustainability of Rwanda's coffee sector

Photo: Trade for Development - Used under Creative Commons



# Research findings part 1: Farmer Investment & Productivity



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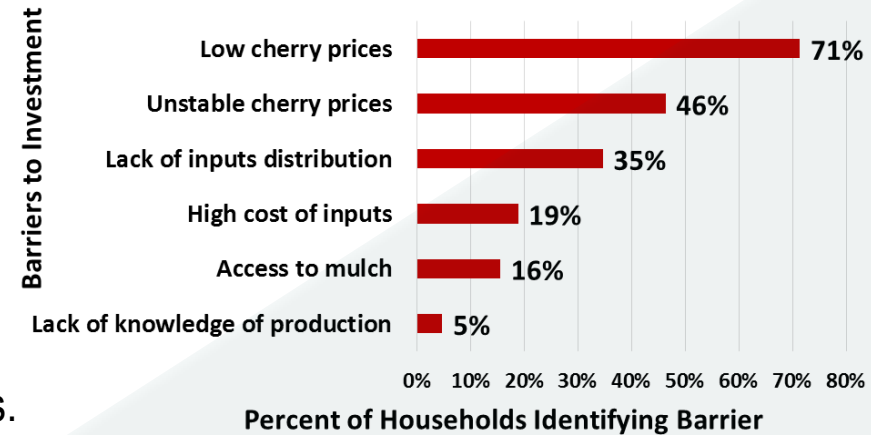


# Farmer investments: The Challenge

**The Challenge:** Rwanda's strategic objectives express need to raise productivity and quality of coffee, increasing share of coffee produced through fully-washed channel to 80%.

➤ How to increase farmer investments in coffee?

## Farmers Say: #1 Barrier is Low Cherry Price



☪ Gradual decline in coffee production over 25 years. Other countries in region experienced growth in production over same period.

☪ Fully-washed not yet surpassed 60% of exports.

☪ Coffee productivity in Rwanda among lowest in the world (1.75 Kg/tree), yet buyers consistently rate its coffees among best globally.

☪ Increasing incentives for farmers to invest in coffee plantations is the key.



Photo: R.A. Church

# Productivity From Incentives

**Findings:** Average cost of production of 177 RWF/Kg cherry provides basis for understanding farmers' incentives. Farmers indicate 300 RWF/Kg cherry needed to invest.

➤ Largeholders alone farm 57% of all coffee trees in Rwanda.

“ The farmers invest if the price was good the year before or they received a premium. ...If the price goes up, he/she will plant seedlings. ”

~ Rwandan coffee agronomist



Smallholders “pushed” into more investment out of necessity (to avoid sliding into poverty & food insecurity).

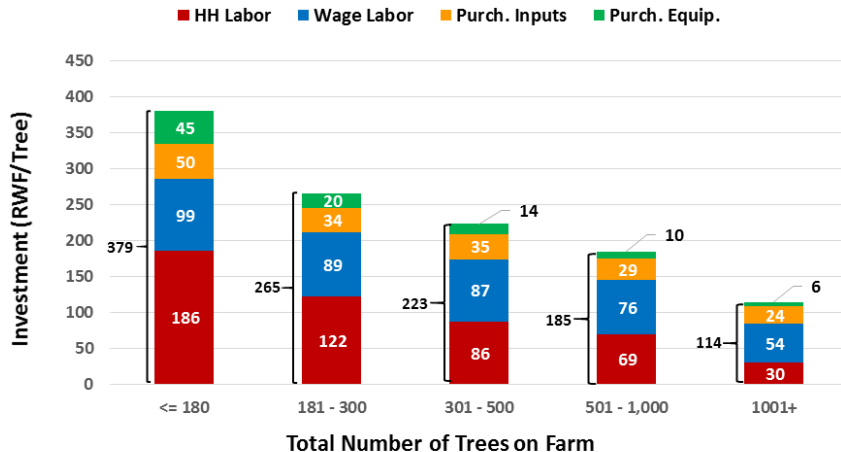


Largeholders “pulled” into more investment by higher cherry prices. They have other options on farm when cherry prices are low.



**How can we ensure sustained incentives for both smallholders and largeholders to invest in their coffee plantations?**

Value (RWF) of Household Investments in Coffee Production per Tree (HH Labor, Wage Labor & Purchased Inputs) by Number of Trees on Farm



Source: AGLC Rwanda 2015 Baseline Coffee Producer Survey

# The Price-Quality Relationship

**The Challenge:** To reach the goal of 80% fully-washed coffee, policies may need to allow and promote separate prices for low- and high-grade cherry.

“ Telling farmers to take home any portion of delivered cherry [rejection based on low quality] is counter-intuitive to the challenge of building farmer loyalty and reaching volume goals. ”

- Owner, private coffee processing company



Setting universal cherry price to make low quality coffee profitable to processors is a disincentive for farmers to invest, especially coffee for specialty market.



Setting higher cherry price and paying it only for high quality cherry incentivizes farmers to improve quality.



Low quality cherry can be turned away at CWSs or otherwise receive a lower negotiated price. Farmers learn quickly to improve quality.



# Options To Incentivize Quality

**Findings:** Farmers invest more in coffee when cherry prices make production profitable. This improves quality & leads to higher volumes, trends that benefit all levels of value chain. Insufficient cherry supply is one of the greatest challenges to CWSs.



**Should these two farmers be paid the same for their cherry?**

Results show that building farmer capacity alone is not enough to improve investment. Incentives to invest are equally important.



Clear measurement of cherry quality (like floating cherry in water) provides objective basis to pay one farmer more than another.



Tie second-payments more directly to quality criteria.



Consider point of cherry purchase part of farmer education program. Price paid is like a grade on a test.



**What standards & procedures can be adopted by CWSs in implementing a 2-tiered cherry pricing system?**



# Geographic zoning

**The Challenge:** In 2016, NAEB introduced zoning to allow for traceability and predictable coffee flows. However, reducing competition can have unintended effects. How has zoning affected farmers and other sector actors in its first two years?



**2015 & before:** Farmers can sell to any CWS

**2016-2018:** Farmers can only sell in one zone



Zoning requires farmers to sell within one zone. Requires each CWS to buy from specific farmers. Traders cannot cross zones.



While predictable flows of coffee cherry can protect CWSs and exporters & reduce “side-selling,” previously competition could raise farmer prices.



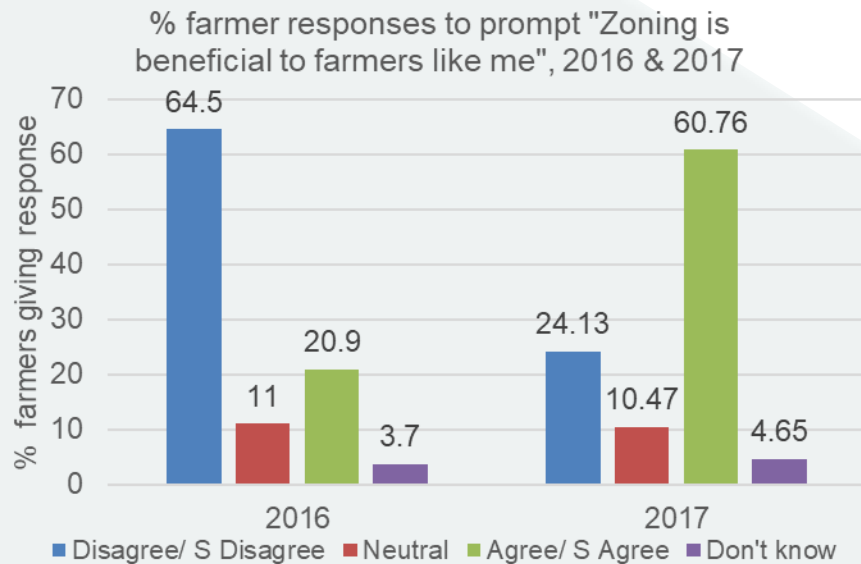
Zoning may stabilize sector or harm it by reducing wages/farmer well-being or reducing volumes available for some CWSs/coops.



Woman bringing coffee to CWS. Photo: Global Knowledge Initiative.

# Zoning: Our Findings

**Findings:** In 2016, many farmers did not know what zoning was. Those who did were unhappy, believing it reduced wages. In 2017, more farmers knew of zoning, and views had largely changed.



Perceptions on zoning shifted drastically. May be due to high cherry prices in 2017 compared to 2016.



In 1st year of zoning some cooperatives had members moved to different zones – including certified members.



Zoning difficult to enforce at local level. Exporters suggest farmers cross zones to sell; however, traders rarely travel between zones.



**Given reduced competition between CWSs for cherry, how can we ensure farmers receive fair prices?**

# The Role of Cooperatives in the Coffee Sector

**The Challenge:** How to harness the power of collective action to improve coffee quality and productivity through cooperatives.

14% ↑ more **productive** per tree

22% ↓ lower **cost of production** per kg cherry



Only 7 of 50 farmers belong to a cooperative or small farmer organization.



Cooperatives play important role in disseminating information and providing access to inputs.



Important because adoption of best practices and application of fertilizer and pesticides increases quality and productivity.

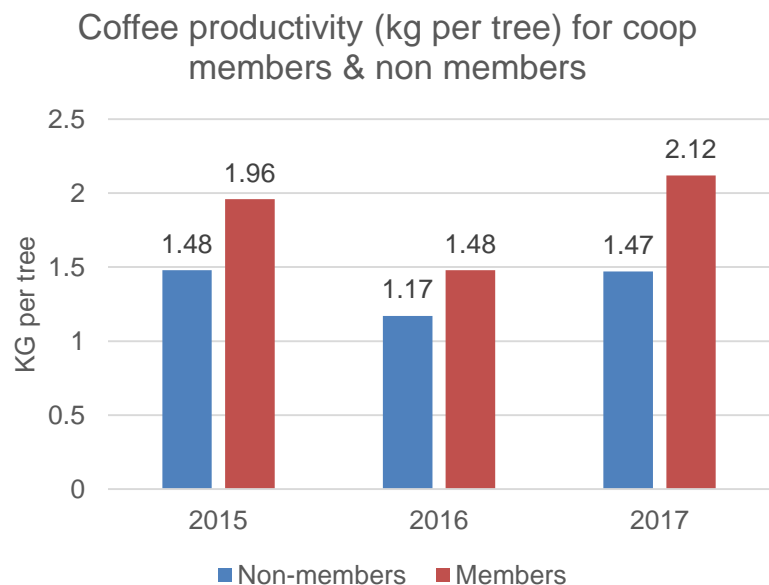


# Cooperatives: Our Findings

**Findings:** Cooperative members adopt more best practices, have lower costs of production, see increased productivity and have higher margins than non-members. However, stakeholders note management problems that constrain coop success.

“ When I need money for school fees or other business I go to the president of our cooperative. He gives me the money, then I pay him back after harvest. ”

- Cooperative member



Across 3 years of data collection, cooperative members were more productive than non-members



Members adopted best practices more readily than non-members, increasing quality.



Increased incomes for farmers leads to food security and improved welfare



**How can we improve access to the benefits of cooperatives & enhance their effectiveness in coffee marketing?**

# The role of women in the coffee sector

**The Challenge:** Traditionally, many coffee practices are male-dominated. But it is clear that women are important actors in the sector. Identifying the role that women play in coffee is crucial.



Women have on average fewer productive trees than men (596 trees vs. 767)



18% of households headed by females, mostly widows.



Women in male headed-households do most weeding, mulching, harvesting.



Food scarcity is higher in women headed headed-households.

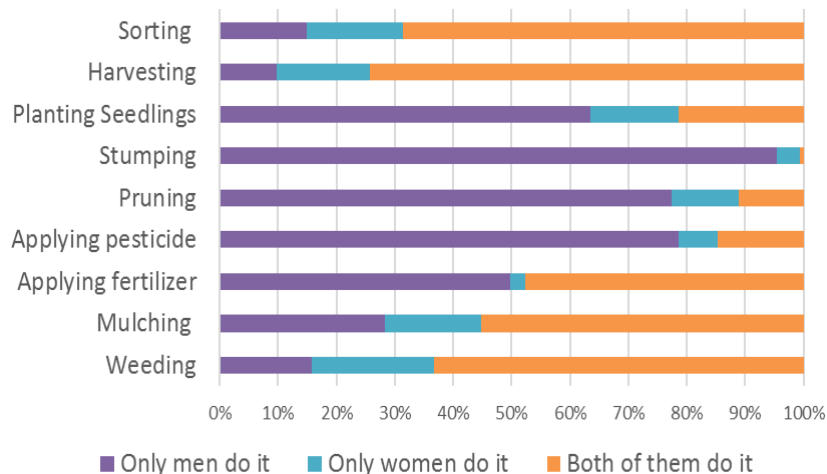


# Gender roles: Our Findings

**Findings:** Productivity lower in female-headed HHs than male-headed. Female-headed HHs different from male-headed in aspects such as household characteristics, farm size, coffee production, etc.

“Before, women could not know how to do all the farming practices..... Now they are doing the weeding, mulching. [This] means they understand they have to do the practices to get the good quality of coffee.”  
- Female farmer

Labor done at the household



Many coffee practices shared by men and women, but stumping and fertilizer application mostly done by men.



Female-headed HHs use fewer inputs than male-headed HHs



Female-headed HHs apply less manure than male-headed HHs



**How might we attract more women into coffee production, especially at a younger age?**

## Questions for discussion:

- (1) How can we ensure sustained incentives for both smallholders and largeholders to invest in their coffee plantations?
- (2) What standards & procedures can be adopted by CWSs in implementing a 2-tiered cherry pricing system?
- (3) Given reduced competition between CWSs for cherry (because of zoning), how can we ensure farmers receive fair prices?
- (4) How can we improve access to the benefits of cooperatives & enhance their effectiveness in coffee marketing?
- (5) How might we attract more women into coffee production, especially at a younger age?

# Research findings part 2: Antestia & Potato Taste Defect





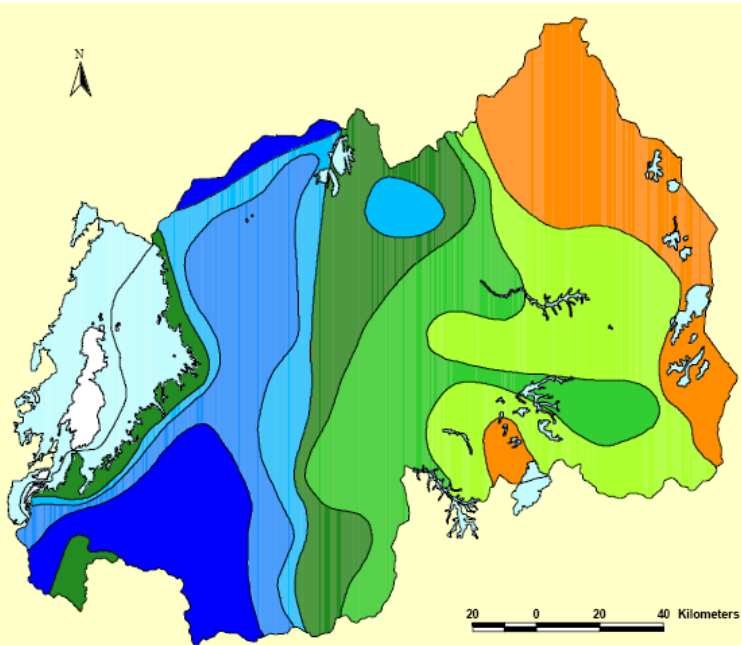
# Factors Responsible for Occurrence of Potato Taste Defect in Coffee

Joseph Bigirimana

PhD Candidate – Michigan State University  
Research Fellow - Rwanda Agriculture Board



# Background



Rwanda's ecology suitable for producing the highest coffee quality.

Potato taste defect (PTD) diminishes coffee flavor and causes it to be rejected.

In the 2012 Cup of Excellence, 18% of Rwanda samples rejected. Increased to 51% in 2013.

**Overall, PTD reduces coffee value and has a negative economic impact on producers. Buyers reduce price and their trust in quality of coffee from AGL countries.**



## Problem/Research Question

Scientists have hypothesized a relationship between the Antestia bug and PTD.

- What is the effectiveness of IPM tactics on control of Antestia bug?
- What is the relationships between IPM tactics and occurrence of PTD?

Bigirimana et al. (2018). Options for Managing Antestia bug and the relationships of bug density to the occurrence of PTD in coffee. Florida Entomologist. In press

# Research approach



**Bigirimana et al. (2018). Options for Managing Antestia bug and the relationships of bug density to the occurrence of PTD in coffee. Florida Entomologist. In press**



## Key findings (1)

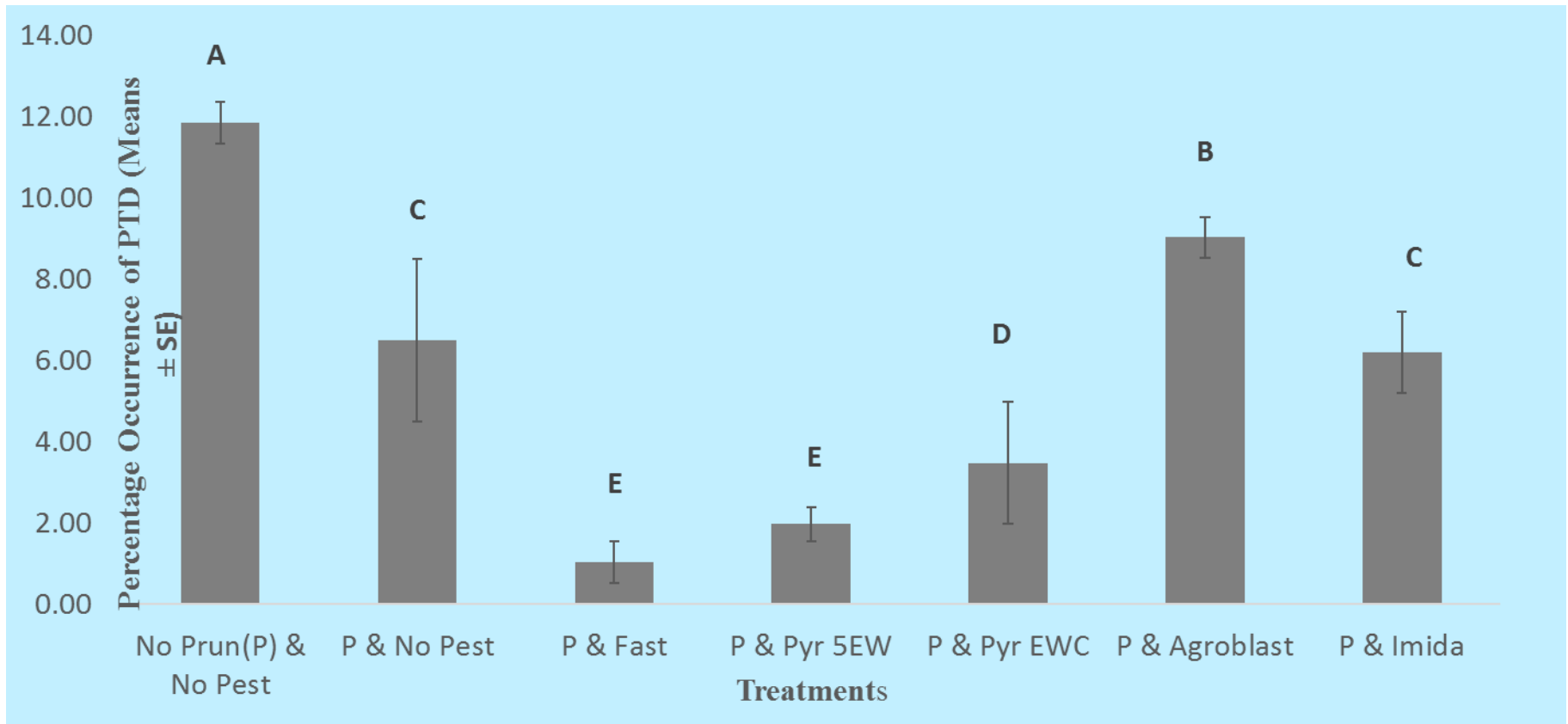


- Pruning plus Fastac, Pyrethrum 5EW, Pyrethrum EWC better control antestia than any other treatment.
- Antestia mortality due to Imidacloprid gradually increases over time.

**Bigirimana et al. (2018). Options for Managing Antestia bug and the relationships of bug density to the occurrence of PTD in coffee. Florida Entomologist. In press**




## Key findings (2)



**Bigirimana et al. (2018). Options for Managing Antestia bug and the relationships of bug density to the occurrence of PTD in coffee. Florida Entomologist. In press**

# Research question

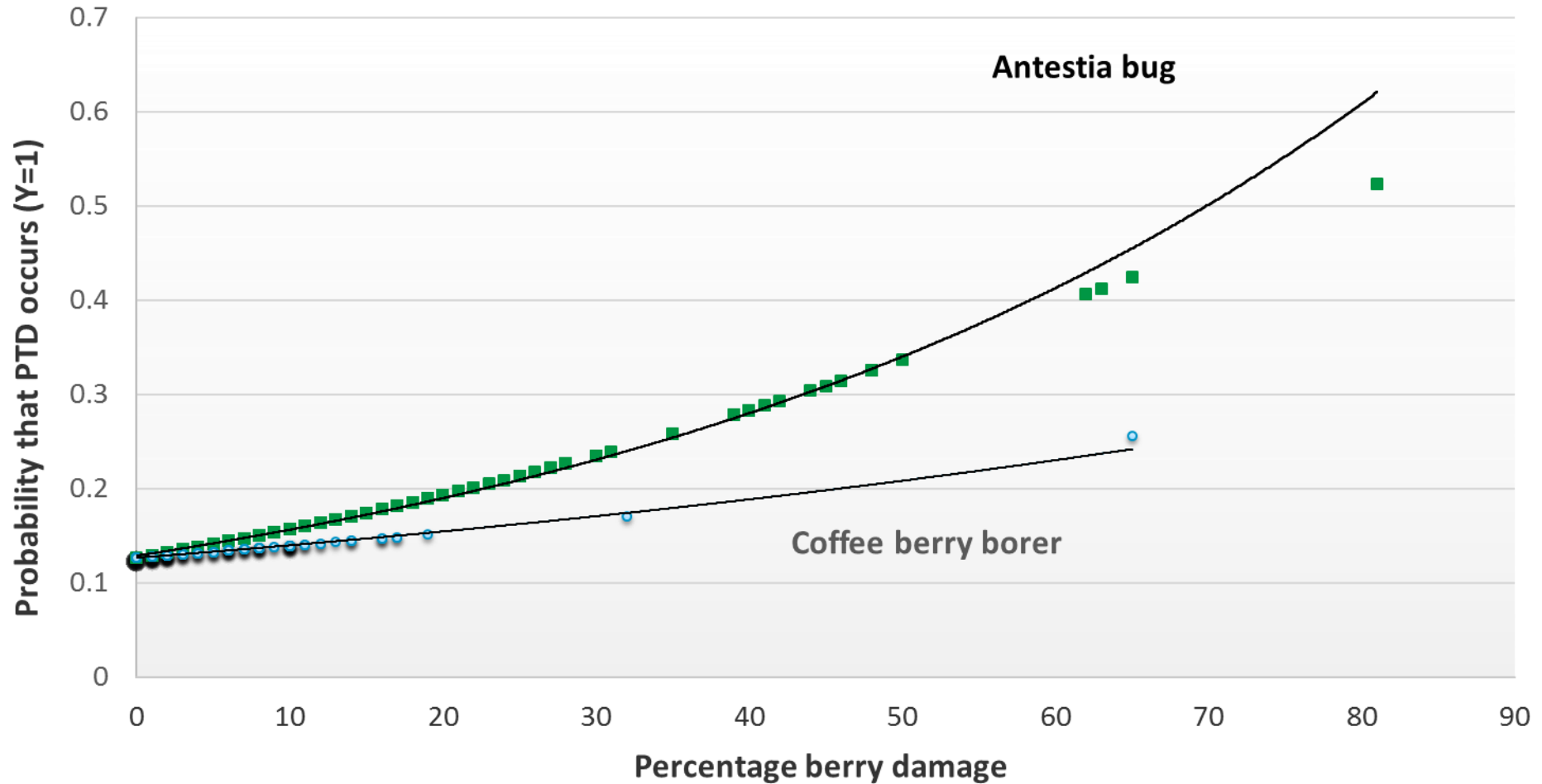
- 
- Coffee berry borer (CBB) bores holes in cherries that serve as entry point for secondary infections.
  - Is there a relationship between CBB infestations and occurrence of PTD?

- 
- 338 coffee farms sampled throughout Rwanda.
  - Density of berry infestations by Antestia bug and CBB recorded.
  - Samples cupped.

**Bigirimana et al. (2018). Occurrence of Potato Taste Defect in Coffee and its Relations with Management Practices. Agriculture, Ecosystems and Environment. Under review**

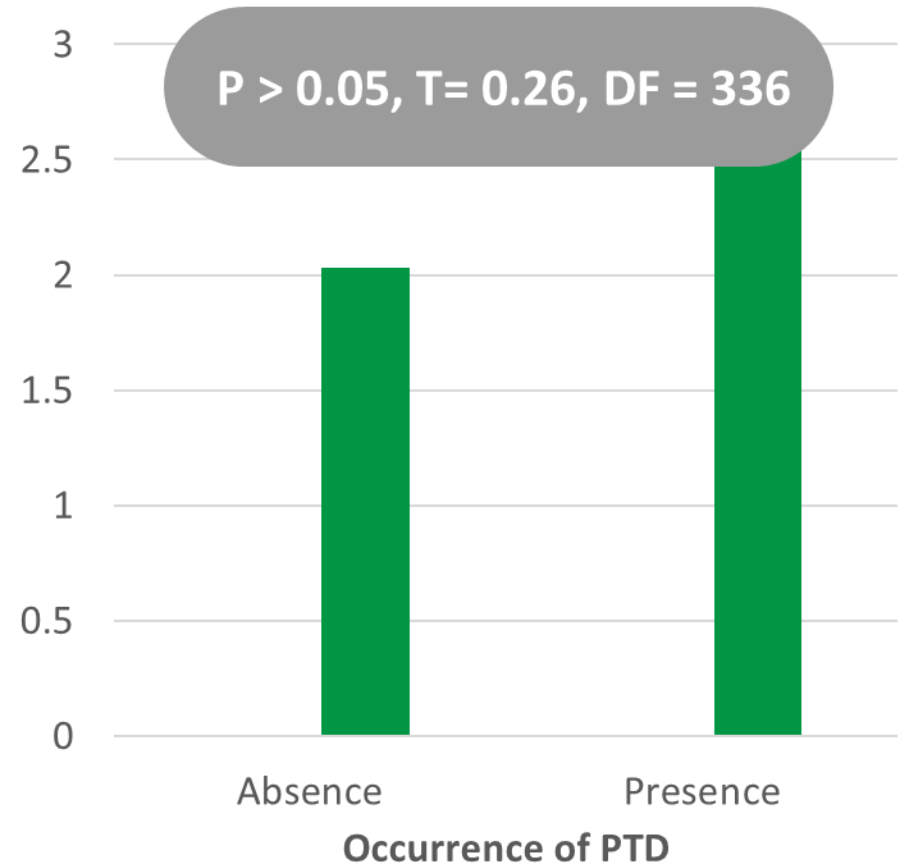
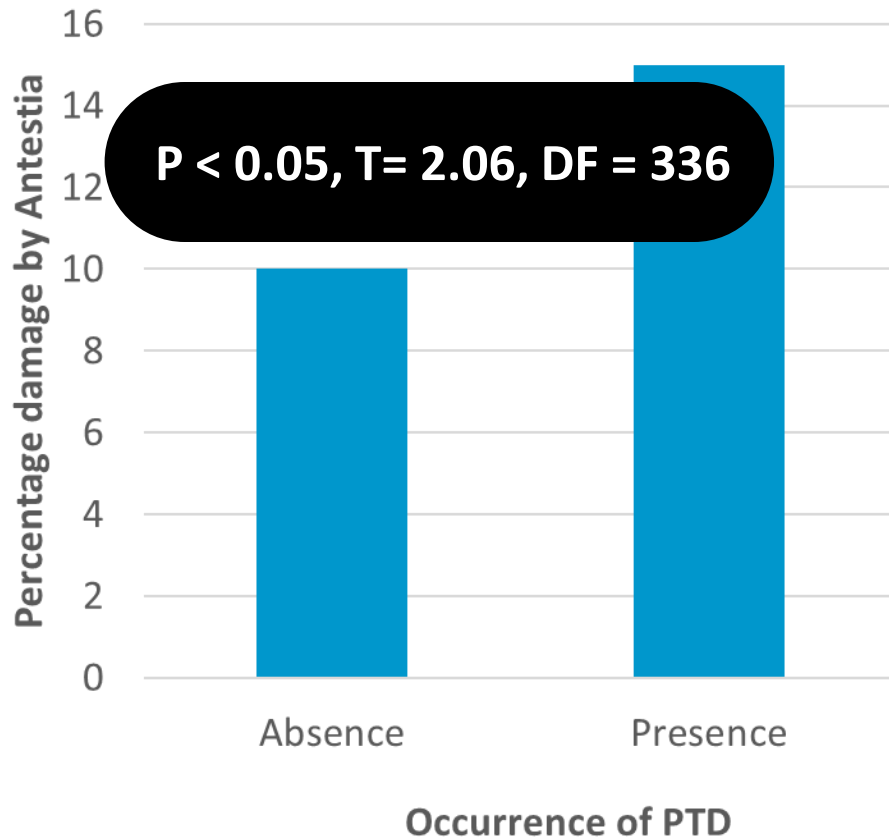


## Key findings (1)

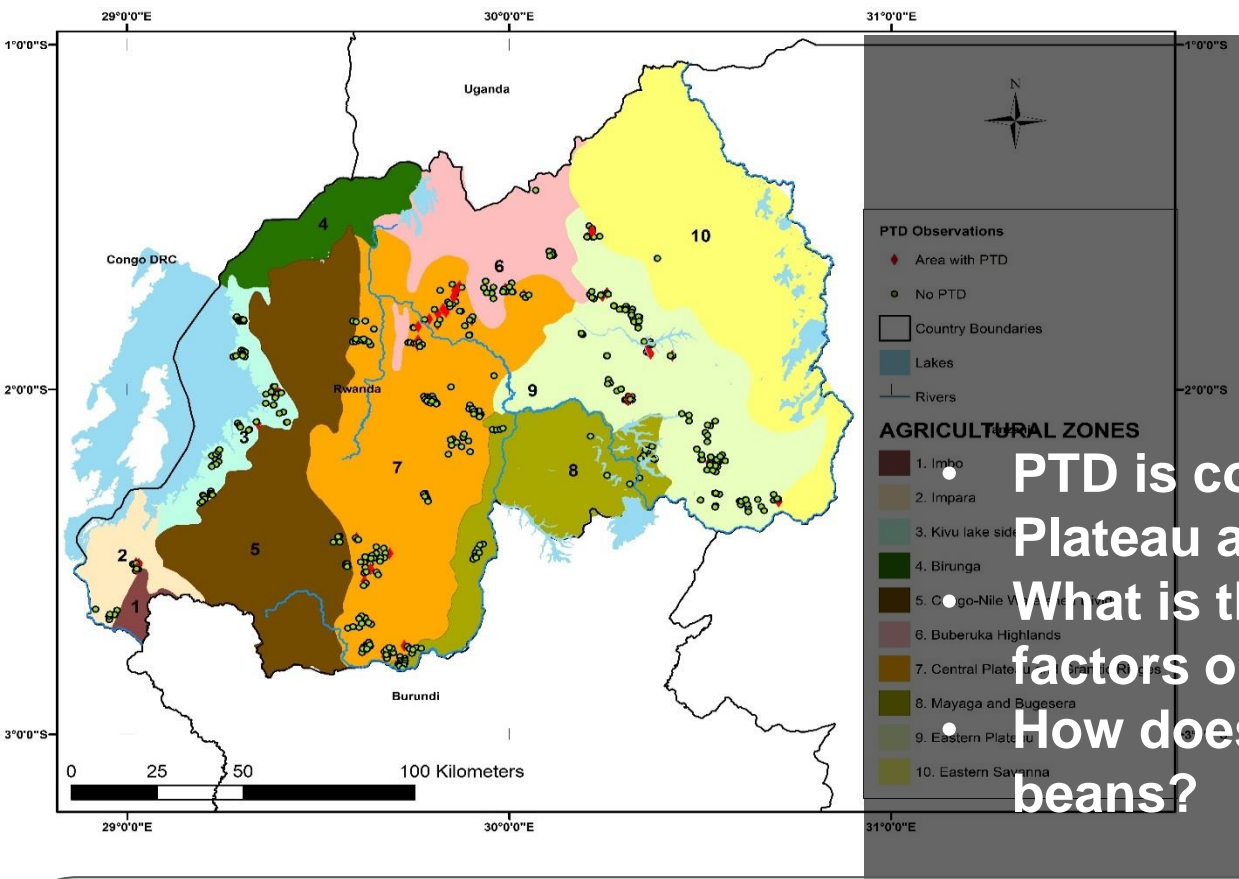




## Key findings (2)



# Implications



PTD is concentrated in Central Plateau and Granitic ridges.

What is the influence of climatic factors on Antestia and PTD?

How does PTD get inside coffee beans?

There is need to understand the factors responsible for occurrence of PTD to make better informed management decisions to eliminate PTD in coffee.



# Control of Antestia/PTD and Improving Coffee Productivity in Rwanda

Rukazambuga N.T. Daniel

CAVM-University of Rwanda

AGLC-UR-PI



## Background

- ❑ Antestia spread in all coffee growing zones of Rwanda
- ❑ Feeds on berries and green shoots
- ❑ Is thought to be linked with potato taste defect (PTD)
- ❑ Can cause loss up to 30% if not controlled
- ❑ Can also affect the quality of coffee
- ❑ Current control is mainly by use of synthetic pesticides and Natural pyrethrin, (Pyrethrine 5EW of AGROPY)



## Problem/research question

1. What can we learn about antestia and which pest control methods are most effective against the pest?
2. How can we implement experimental plots in ways that improve capacity of the farmers who own them and their neighbors?
3. How can we implement experimental plots in ways that build-up next generation of extension workers with deep coffee knowledge?
4. *Antestia damage  $\neq$  potato taste defect every time. Which treatments result in the lowest incidents of PTD? Requires cupping.*

## Research approach: Conduct on farm experiment

- ❑ Field/Farmer selection and set-up
- ❑ Soil samples (for lime and NPK)
- ❑ 4 farmers/CWS = 64 farmers (180 trees/farm)
- ❑ 16 coffee washing stations (CWS) (4 CWS/district: 2 coop vs. 2 private)
- ❑ 4 Districts (Gakenke, Huye, Kirehe and Rutsiro)



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## Participatory Farmer Selection



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Institute of Policy Analysis  
and Research - Rwanda







## Scouting: Antestia knock-down using pyrethrum 5EW and count

### 1. Spray 5EW



Wait 10 minutes.

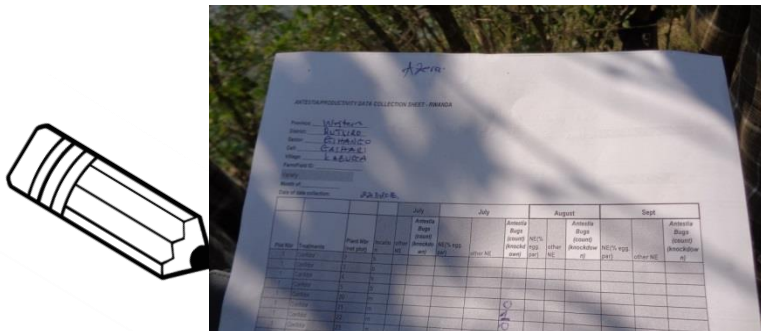
### 2. shake



### 3. Count bugs



### 4. Record





## Soil Sampling and analysis





## Key findings: Scouting results overview

- **Trees structure:** Antestia incidence high in dark, bushy canopy.
- **Field location matters:** Site with low air circulation bottom of hill or flat area (Nasho and Boneza)
- **Slope on hill:** Fewer bugs (Gakenke/ Huye)
- **Age:** Old with closed canopy has more bugs ( Boneza)
- **Border and middle:** Subject to tree canopy
- Relationship of scouting, damage and PTD to follow





## Harvesting and flotation





## Harvesting and flotation



## Implications

- Study antestia distribution and potential areas for population increase for long period, establish critical areas
- Review current pesticide application regimes and motivation for farmers to apply correct dose
- Focus on critical area for control: one application per season of under-dose not enough
- Train and motivate farmers in safe pesticide use
- Promote safe pesticide and spot application of pyrethrum 5EW
- *More will follow after cupping related to PTD*

# Pesticide distribution: The Challenge

**The Challenge:** Since Coffee Exporters & Processors Association of Rwanda took over purchase/distribution of pesticide, more farmers are receiving pesticide than in the past. But stakeholders suggest improving distribution further. How can we fill remaining gaps in distribution?



31%: percent of farmers in 2015 who did not use pesticide of any kind



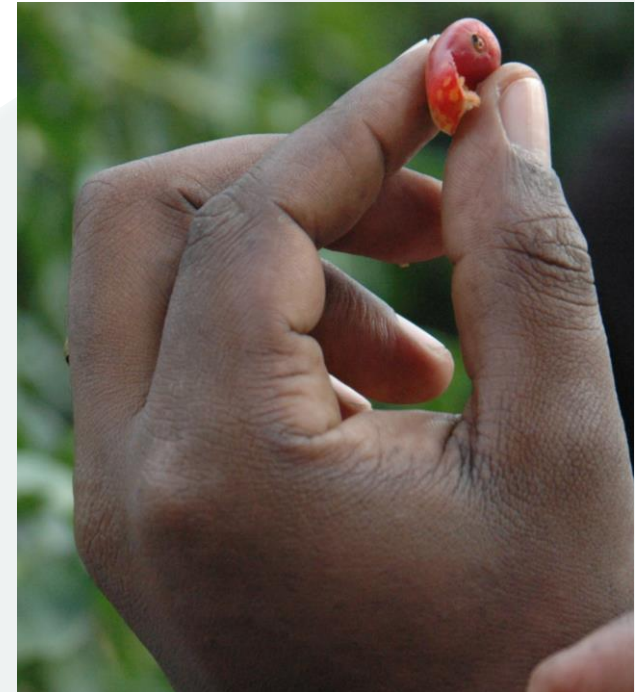
Pesticides such as Fastac & pyrethrum-based varieties are necessary to control antestia bug and reduce PTD.



Most farmers only use pesticide distributed by CEPAR. In 2015, only 3% of farmers purchased pesticide.



To what extent is pesticide making it to farmers? What barriers exist to pesticide use?

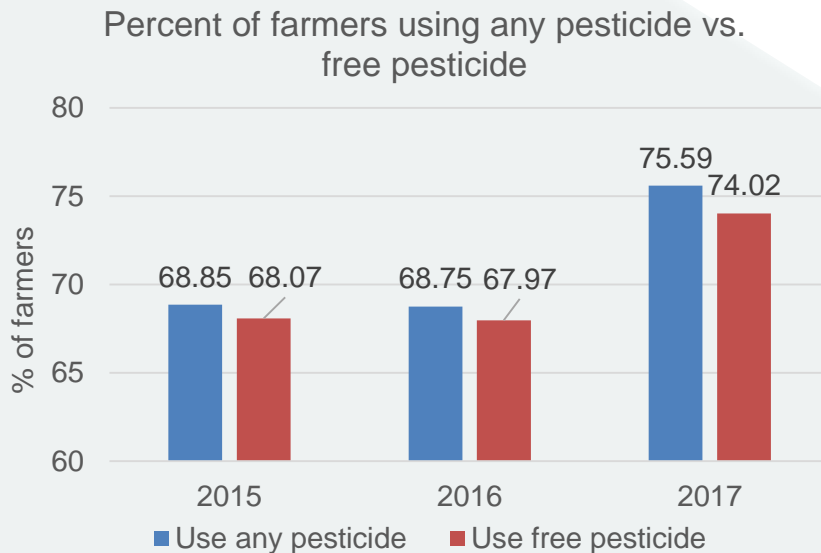


Looking for insect damage. Photo: Global Knowledge Initiative.

# Strong increases, but with gender gap

**Findings:** Percent of farmers using pesticide increased from 68.85% (2015) to 75.59% (2017). Gaps in usage by coop membership and farm size shrunk. However, women heads of household remain less likely than others to receive pesticides.

“  
Spraying of pesticides are normally done two times a year, [but] for us we do it once a year. This means pesticides are not sufficient.  
”  
- Farmer, women’s cooperative



CEPAR distribution makes up bulk of pesticide used, with volume of “free” pesticide tracking closely with overall use.



In 2015, median pesticide use per tree (for farmers using pesticide) was 0.03 ml. 2017 it was 0.11 ml. Recommended: 0.056 ml.



In 2017, 77.09% of male headed households used pesticide vs. 68.82% of female headed. Gap similar to 2015, though both groups increased.



**Despite increases in pesticide use, women are less likely than men to use it. How can we ensure trees belonging to women receive pesticide treatment?**





## Questions for discussion:

- (1) For antestia, research recommends pruning plus spraying with fastac or pyrethrins. Is this recommendation practical? How likely is it to be adopted by farmers?
- (2) Based on what has been found through research thus far, what else needs to be understood in order to control PTD?
- (3) What is stopping farmers from effectively controlling antestia?
- (4) What barriers keep farmers and CWSs from effectively sorting cherry?
- (5) Despite increases in pesticide use, women are less likely than men to use it. How can we ensure trees belonging to women receive pesticide treatment?



## Making the Case for Coffee as a Pillar for Sustainable Growth in Rwanda

**Daniel C. Clay**  
**Michigan State University**

**Feed the Future**  
**Africa Great Lakes Region Coffee Support Program (AGLC)**  
**End-of-Project Workshop**

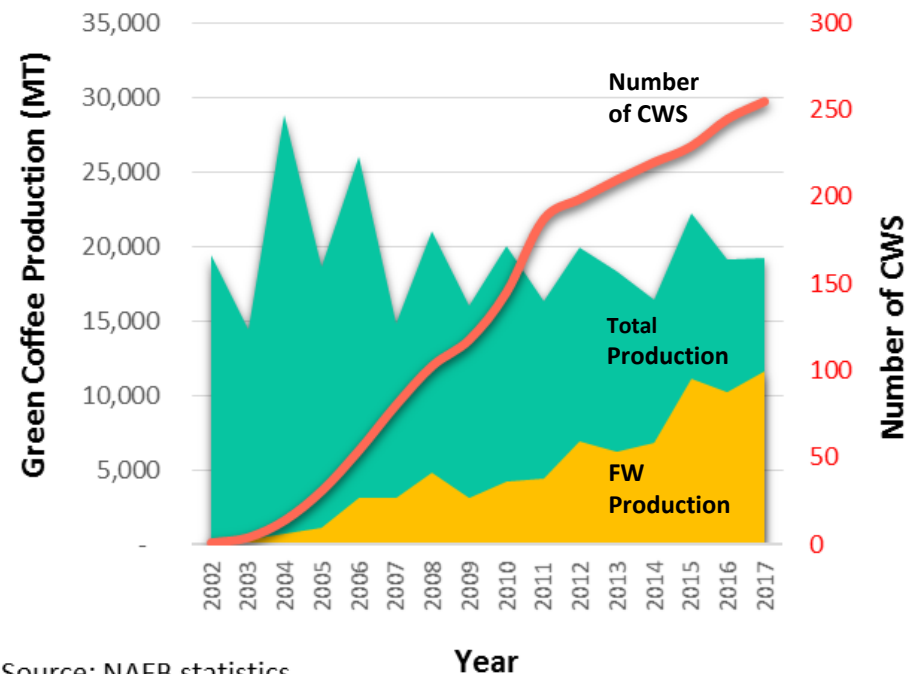
June 2018 • Kigali, Rwanda



# Trends do not support long-term sustainability of Rwanda's coffee sector

- Good news: Coffee processing capacity has accelerated.
- Bad news: Coffee production has stagnated with low farm gate prices and low productivity.
- Where will increased volumes of coffee come from?
- Where are the incentives for farmers to invest in their coffee?
- Where is the attraction for a younger generation of coffee growers?
- Big picture: What are the conditions and rational for a turnaround in coffee production?

Rwanda Green Coffee Production and Number of CWS by Year



Source: NAEB statistics

## Where is coffee in Rwanda's overall agricultural strategy?

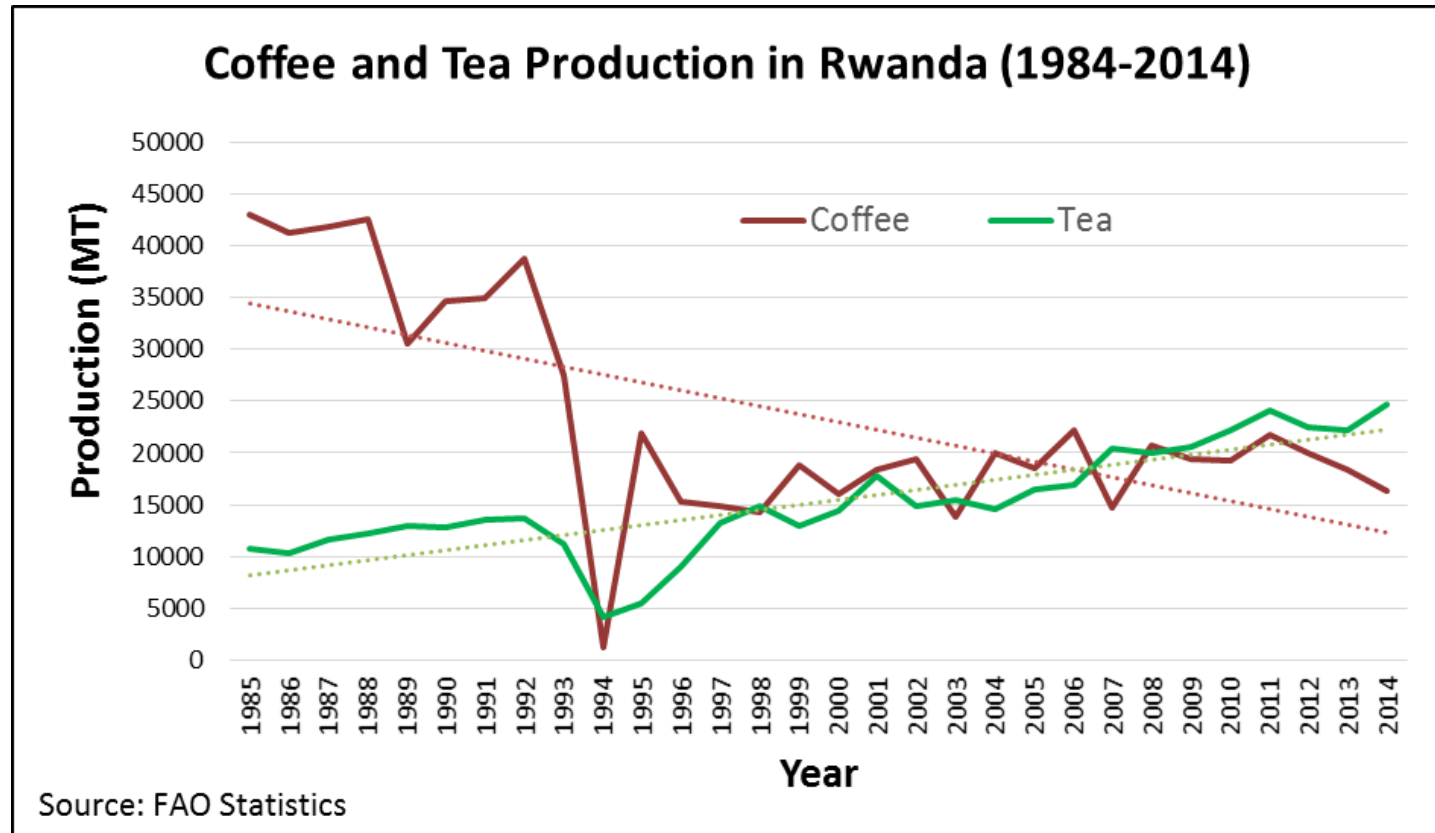
- There are many priorities in Rwanda agriculture but coffee is not high on the list
  - Coffee is given secondary status in the *Rwanda National Agriculture Policy 2030*,
  - *MINAGRI Strategic Plan (PSTA III & IV)*
- Focus on building capacity with no mention of incentives (supply side rather than demand side)
- Coffee not a CIP crop so does not receive that level of investment from public and private resources.
- In short, coffee is not given the same level of policy attention as other crops
- But it should be...

# Why should coffee be a top national priority for Rwanda?

1. For many reasons:
  - Agronomic
  - Economic
  - Environmental
  - Socio-cultural
2. Bottom line: Taken together, coffee stands out. Few crops in Rwanda hold the level of importance or long-term potential that coffee does
3. A closer look at some of them...

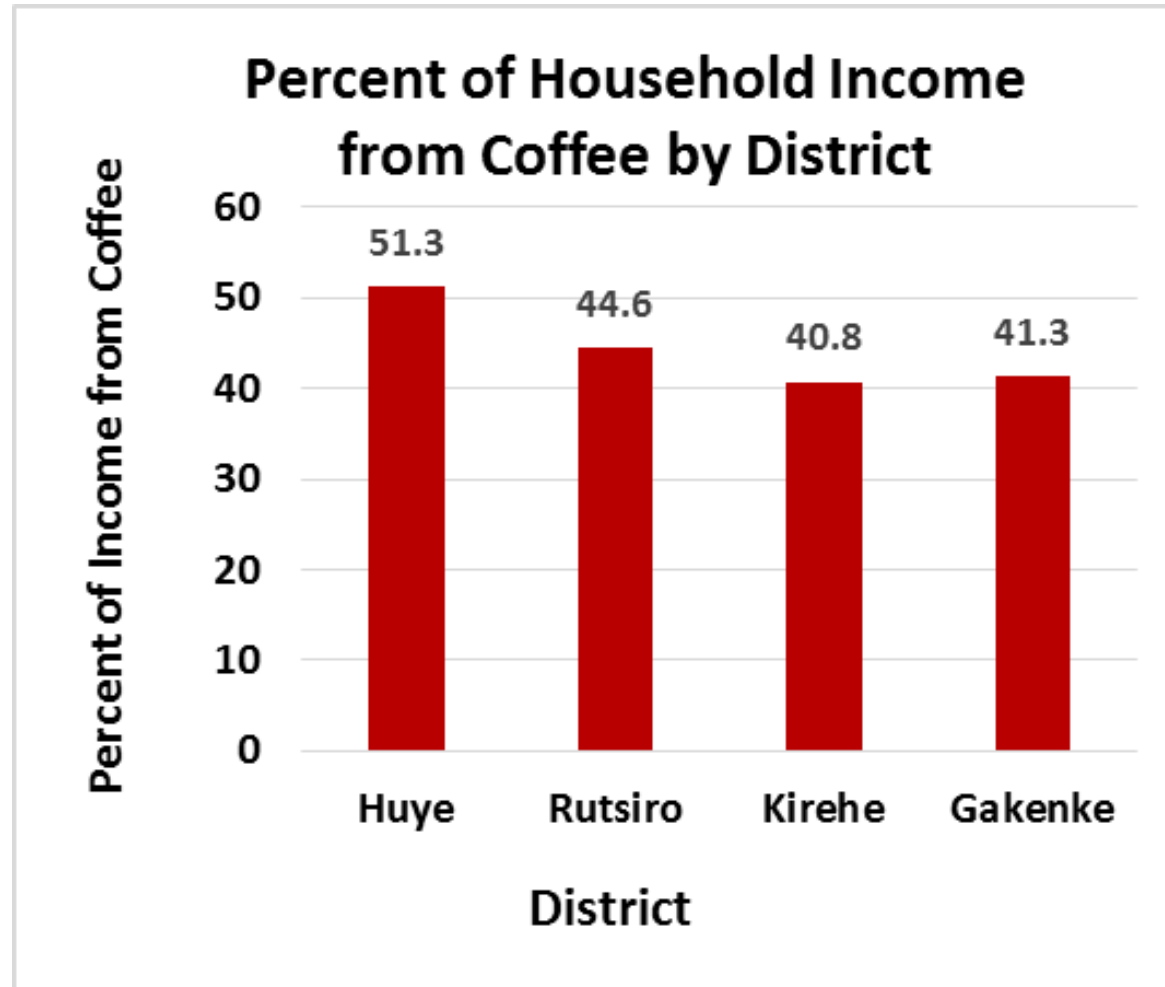
## Reason #1. Coffee is historically Rwanda's top source of export earnings and economic growth

- Production tradition and know-how
- Processing infrastructure
- Institutional capacity
- Fundamentals are still there

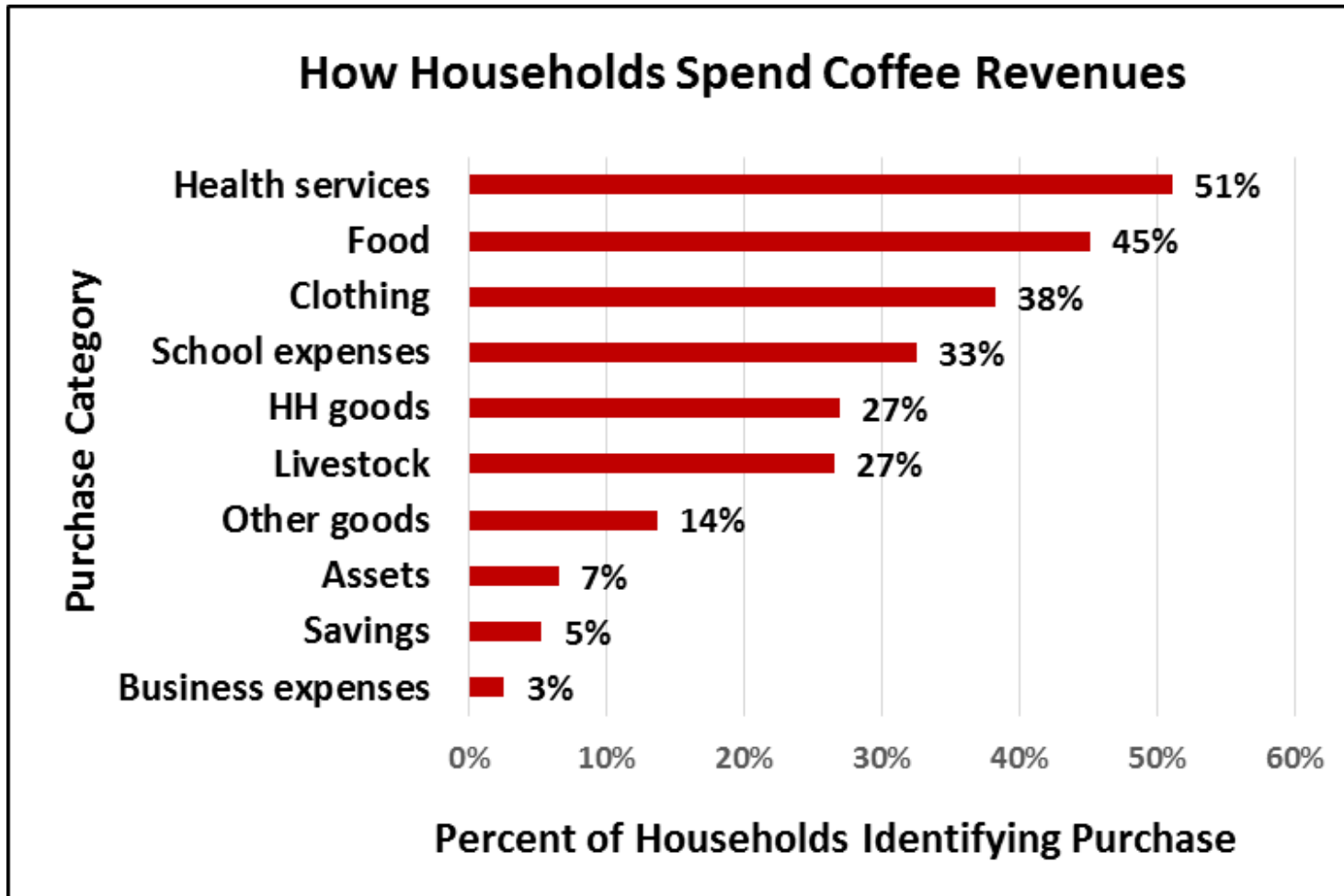


## Reason #2. Coffee affects over 350,000 farmers and their families.

- Major source of income for producers across the country



... and that income is used to improve well-being and livelihoods.





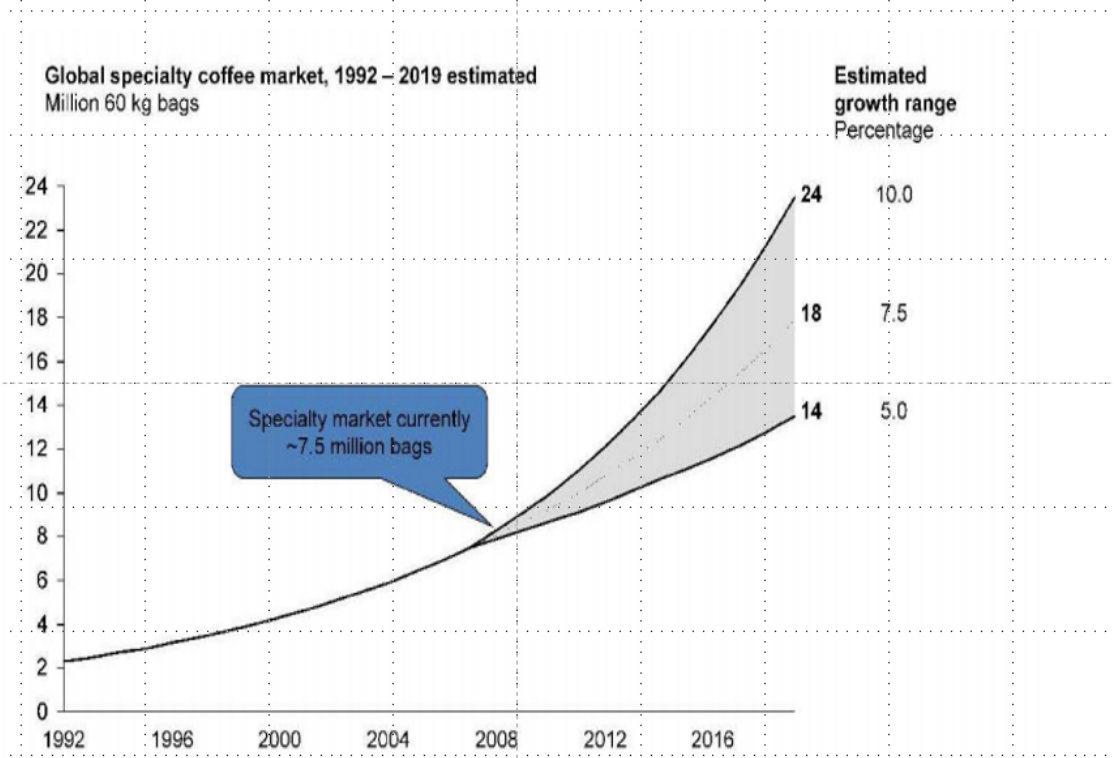
## Reason #3. Coffee has positive effect on food security

### Logistic Regression Model: Household Experienced Long-term Food Shortfall (> 1 month) by Coffee Income Share and Selected Covariates

Regressors	B	S.E.	Wald	df	Sig.	Exp(B)	Inverse Odds Ratio‡
→ Coffee share (%) of total HH Income	-1.077	0.421	6.524	1	0.011**	0.341	2.93 ←
Member of coop	-0.289	0.200	2.085	1	0.149	0.749	1.34
Total land owned (Ha)	-0.297	0.110	7.325	1	0.007***	0.743	1.35
Income 2015 (not including coffee)	0.000	0.000	3.884	1	0.049**	1.000	1.00
Gender of HH head	0.866	0.265	10.680	1	0.001***	2.377	-
Age of HH head	0.000	0.010	0.000	1	0.994	1.000	-
Active adults in HH	0.081	0.066	1.511	1	0.219	1.084	-
Education of HH head	-0.209	0.096	4.776	1	0.029**	0.811	1.23
Years growing coffee	0.011	0.009	1.477	1	0.224	1.012	-
Elevation of HH (m)	0.000	0.001	0.268	1	0.605	1.000	1.00
Constant	0.608	1.182	0.265	1	0.607	1.837	-

# Reason #4. Specialty coffee is in high and growing demand worldwide

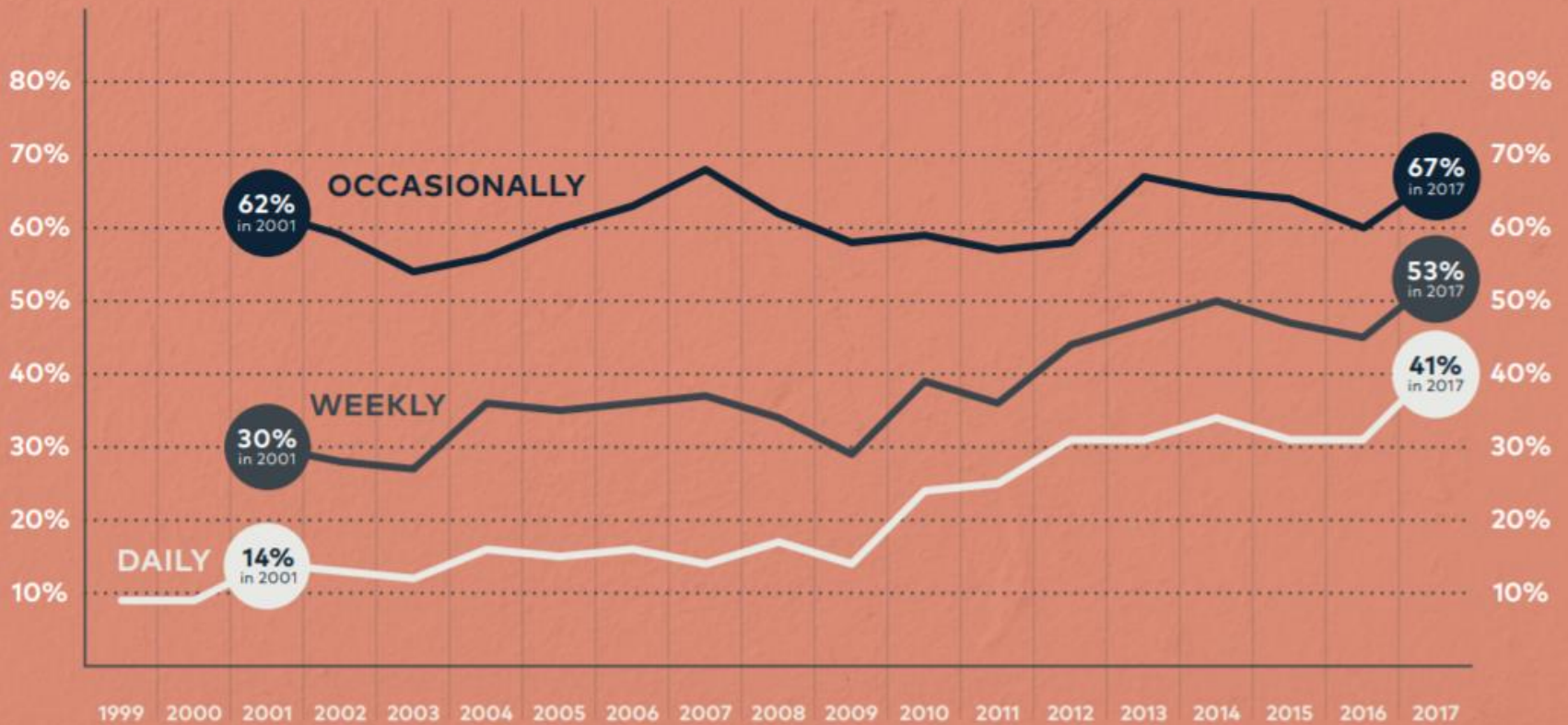
## Projected Global Specialty Market Volume Growth (1992-2019)



Source: TechnoServe, 2009



## Percentage of Adults in U.S. Drinking Specialty Coffee (2001–2017)

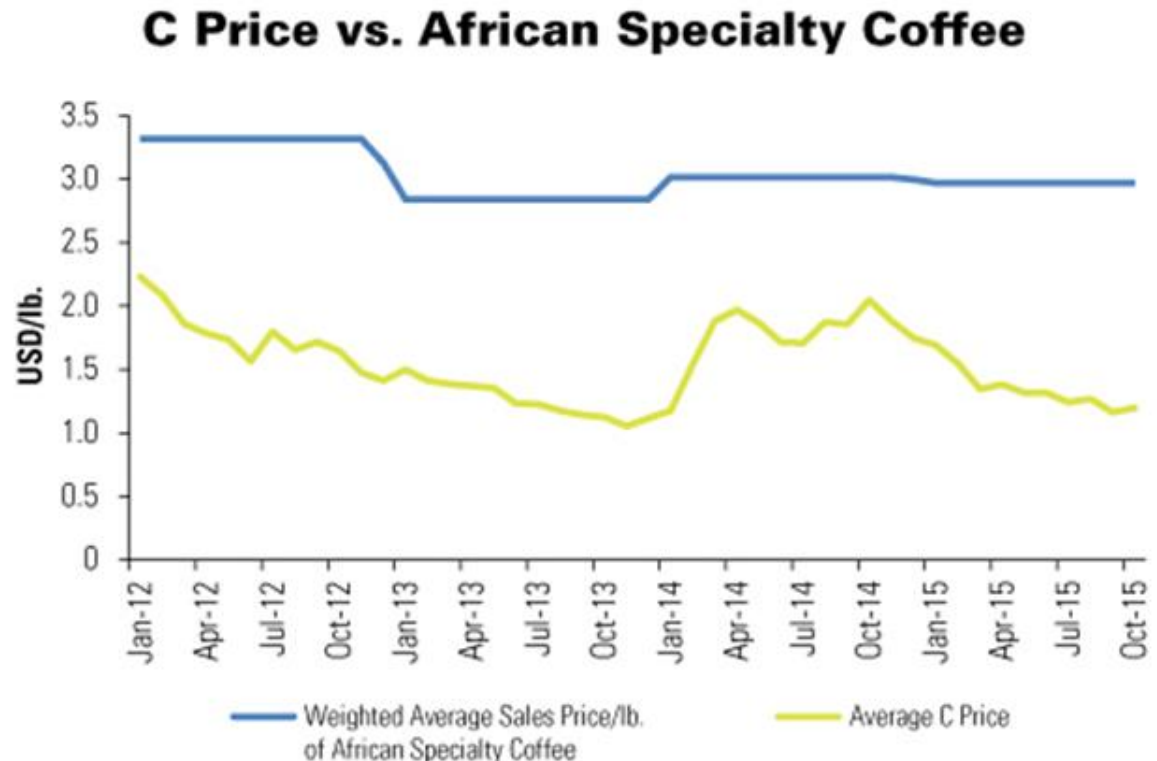


Source: Specialty Coffee Association (SCA)



## Reason #5. Specialty coffee has price stability in international markets (compared to ordinary)

- Given the premium value, specialty growers are becoming increasingly insulated from price fluctuations
- African specialty coffee is becoming “decoupled” from the NY C price

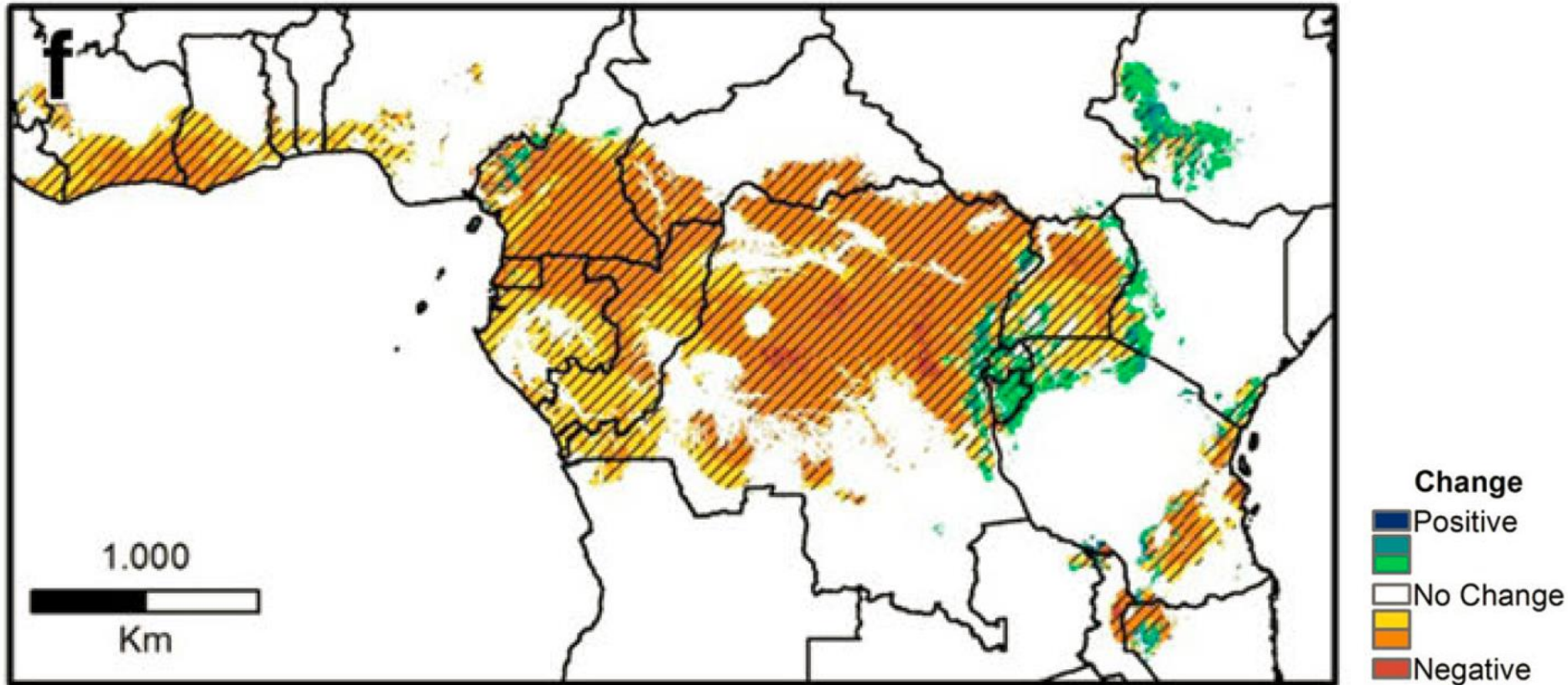


## Reason #6. Comparative advantage: Rwanda stands out in specialty coffee

- Ideal agro-ecology for growing Arabica coffee:
  - High elevation mountain agriculture
  - Tropical climate with good rainfall
  - Suitable soils
  - Source of prized Bourbon varieties
- Labor availability
- Strong market appeal
  - Rich history and compelling story
  - Cooperative tradition
  - Smallholder farmers
- Future climate suitability



## Estimated productive suitability for Arabica coffee production in 2050

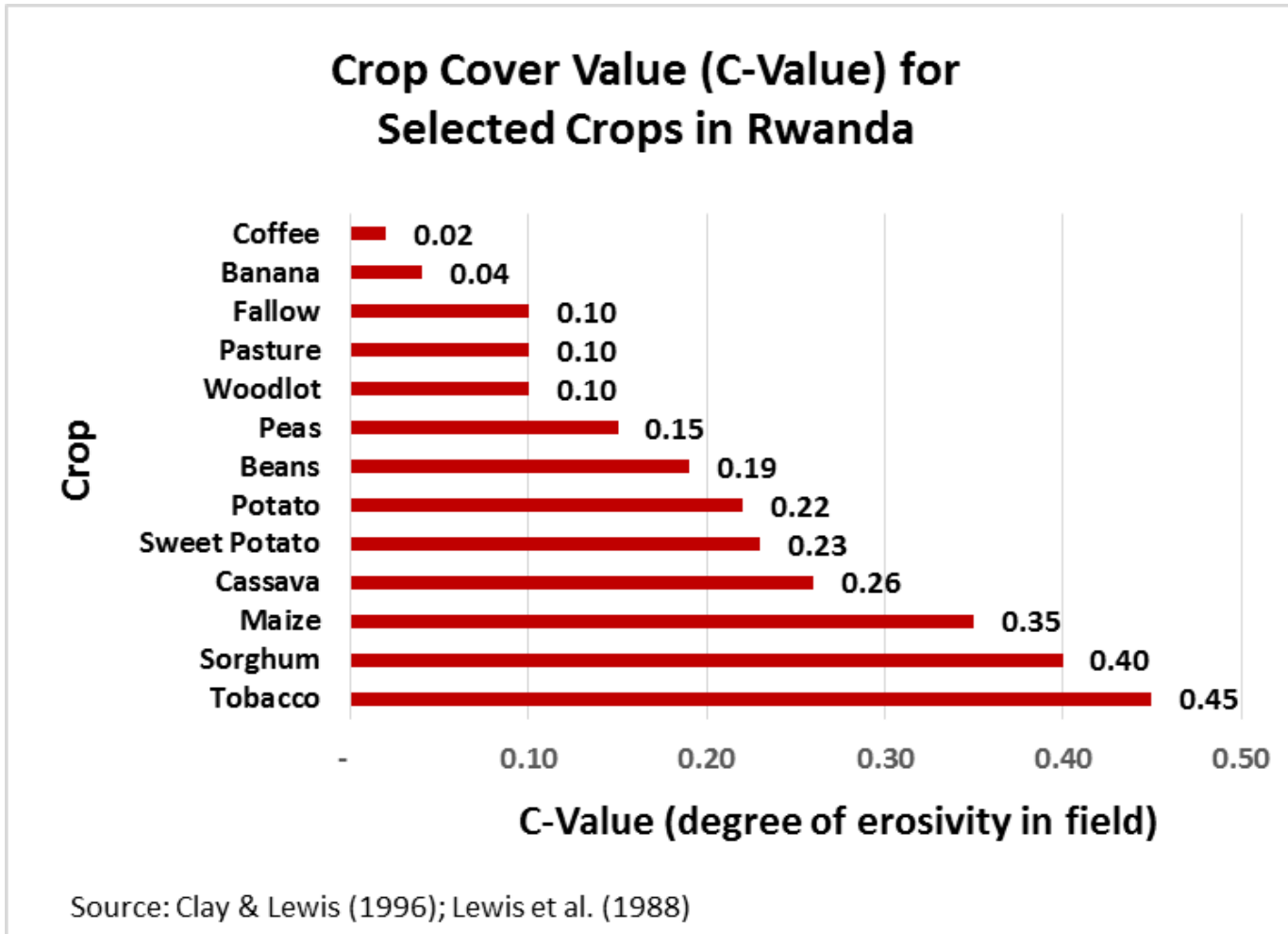


Source: Bunn et al. 2015

## Reason #7. Environmentally superior to most other crops

- Grows well on steep hillsides
- Decomposed mulch adds organic matter to soils
- Manageable climate change effects
- Grown with shade trees, and enhances biodiversity
- Does not need expensive terraces
- Coffee controls soil erosion better than any other crop
  - Root structure
  - Canopy
  - No exposed soils due to tillage
  - Heavily mulched
  - Combined, these factors bring low erosivity...

# Coffee has exceptionally low erosivity





## Coffee's low erosivity eliminates the need for high-cost bench terrace construction and maintenance in steep slopes

- Cost per hectare to construct bench terraces: 2500-3000 US\$\*
- Annual maintenance cost per hectare for bench terraces: ~150 \$US
- 91,000 Ha constructed (2012-2016), 37,5% of land suitable for terraces
- Construction costs largely subsidized through government programs



\*Source: A R Bizoza, J B Nkurikiye, P Byishimo. Farmers' Perspectives of Climate Change Adaption and Resilience in Rwanda, *Administratio Publica*, Vol 24 No 4 December 2016.



Tea plantation in Rwanda on slopes that would otherwise be terraced



Coffee plantation in Brazil on slopes that would otherwise be terraced

- Typical steep hillsides in Rwanda that need either terraces or coffee (or tea or fruit trees) to be sustainable in the long term.
- Can we think differently? Consider options like “conservation plantations” that will simultaneously solve the soil loss problem and improve livelihoods?
- It’s time to be creative.



## Recap: Why should coffee be made a top priority in Rwanda's agricultural strategy?

- Coffee is stagnant and vulnerable but has high potential for long term growth and sustainability due to (the 7 reasons):
  - Builds on a strong foundation of know-how and infrastructure
  - Improves lives and livelihoods
  - Exceptional comparative advantage (agronomic, economic, environmental, socio-cultural)
  - Market trends in specialty coffee markets are promising
  - Partial solution to Rwanda's long term land degradation problem
- Despite vulnerability and high potential, coffee has not received the level of policy attention and support needed to be successful in the long term.
- How do we fix that? Start with farmers. Think big... be bold.

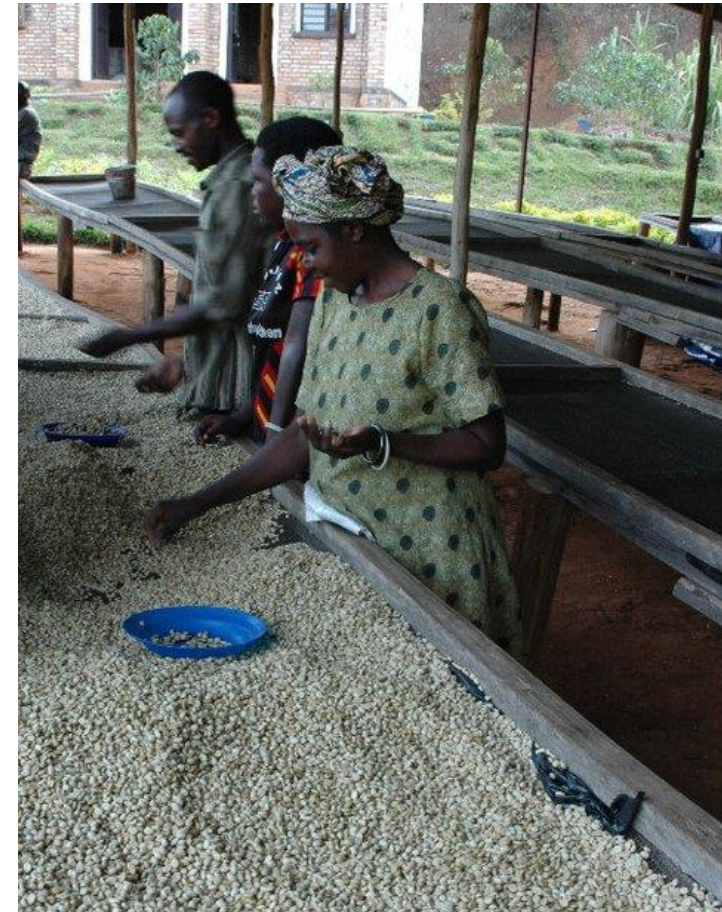


# Discussion: Top opportunities and questions going forward



# Group Discussions

- **Group 1: Productivity**
  - Facilitators: Andrew Gerard & Ruth Ann Church
- **Group 2: Antestia & PTD**
  - Facilitators: Katie Bowman & Alfred Bizoza
- **Group 3: Sustainability**
  - Facilitators: Maria Claudia Lopez & David Ortega



# Split Once More into Sub-Groups!

**Group 1: Productivity**

- Price, quality, investment
- Gender & youth

**Group 2: Antestia & PTD**

- Potato Taste Defect
- Input Availability

**Group 3: Sustainability**

- Investment in Sector
- Environment & Climate Change

# Complete the Following In Sub-Groups

➤ **10 minutes:**

What are the top **opportunities** on this topic moving forward?

Write  
Answers on  
**GREEN**  
Sticky Notes

➤ **10 minutes:**

What key **questions** do you have on this topic that require further exploration?

Write  
Answers on  
**ORANGE**  
Sticky Notes



# Reconvene with Rest of Group

## ➤ 15 minutes:

Discuss the **most important opportunities and questions** from both subgroups.

**Facilitators:  
Write  
Answers on  
PINK  
Sticky Notes**

## ➤ 5 minutes:

**Individually** complete notecards on how you plan to take this work forward.

Your Name:

Your Email:

Action You Plan to Take:



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