



# FEED THE FUTURE

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



## Pathways to Sustainable Growth for Rwanda's Coffee Sector

Feed the Future Africa Great Lakes Region Coffee Support Program  
(AGLC) Policy Roundtable

June 2017 • Kigali, Rwanda



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# Roundtable Introduction



## AGLC background

- **AGLC is a 3-year USAID-funded initiative that addresses 2 major challenges in the coffee sector in Rwanda (and the Africa Great Lakes region)**
  - Reduce antestia bug/potato taste defect (PTD)
  - Raise coffee productivity
- **Partners**
  - Rwanda: Inst. of Policy Analysis and Research (IPAR) and Univ. of Rwanda (UR)
  - USA: Michigan State University (MSU) and Global Knowledge Initiative (GKI)
  - Numerous public and private sector partners
- **Components:**
  - applied research
  - policy engagement
  - capacity building

## Applied research component

- **AGLC draws upon a broad mix of quantitative and qualitative methodologies, including:**
  - Coffee farmer/household surveys (and CWS survey)
  - Experimental field/plot level data collection
  - Key Informant Interviews
  - Focus Group Discussions
- **Comprehensive coffee sector data base**
  - Goal to integrate information from these four data collection activities
  - Provide empirical basis for policy engagement and farmer capacity building



## Guiding questions

- How might we promote the long-term sustainability of Rwanda's coffee sector?
- As a pillar of long-term sustainability, how might we ensure improvements to input delivery and Antestia Bug/Potato Taste Defect control?



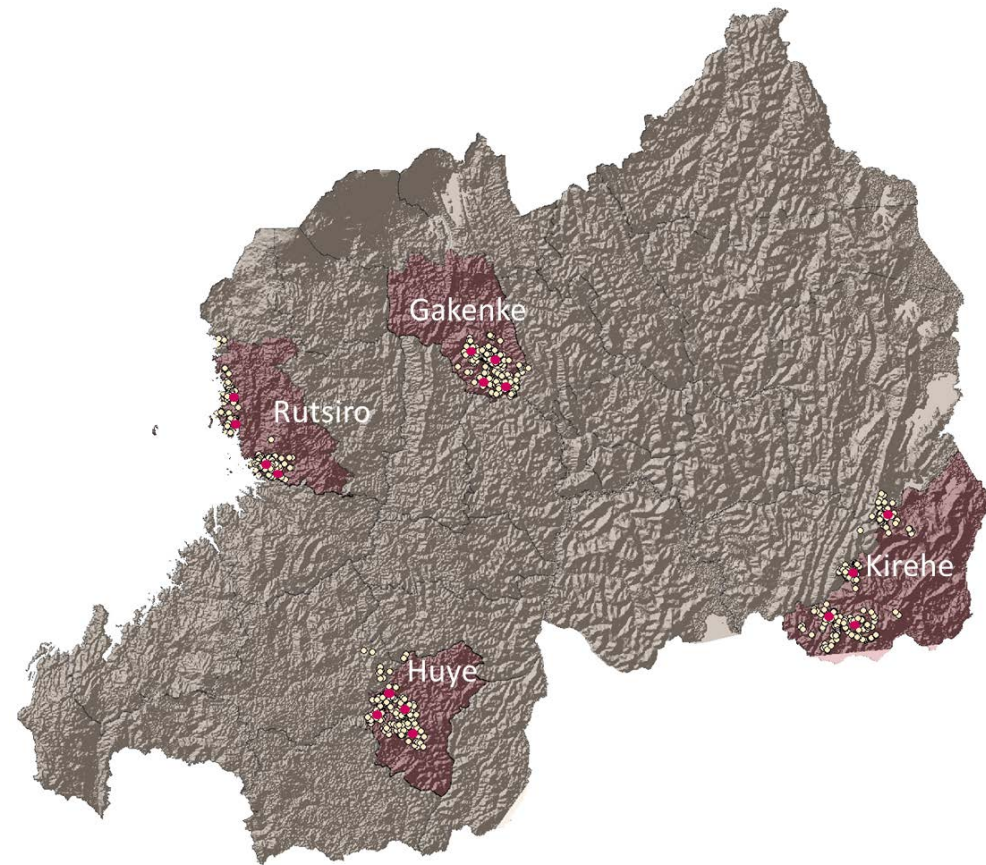


# Methodology



## Baseline/Midline survey of coffee growers

- Geographically dispersed sample across four coffee growing districts: Rutsiro, Huye, Kirehe and Gakanke.
- 4 CWSs in each District (2 cooperatives, 2 private)
- 64/32 HHs randomly selected from listings of each of the 16 CWSs
  - Baseline (64 x 16 = 1,024 HHs)
  - Midline (32 x 16 = 512 HHs)



## Qualitative Data

- **Key informant interviews**
  - Key coffee sector leaders including public sector representatives, farmer organizations, and private sector stakeholders.
  - Focused on challenges identified by stakeholders and provided insights into critical areas of convergence and disagreement among various specialty coffee sector stakeholder groups.
- **Focus group discussions**
  - Held with major coffee stakeholder groups including coffee farmers, washing station managers, coffee exporters, others.
  - Groups of 5-7 members of each stakeholder group.





# Research Findings

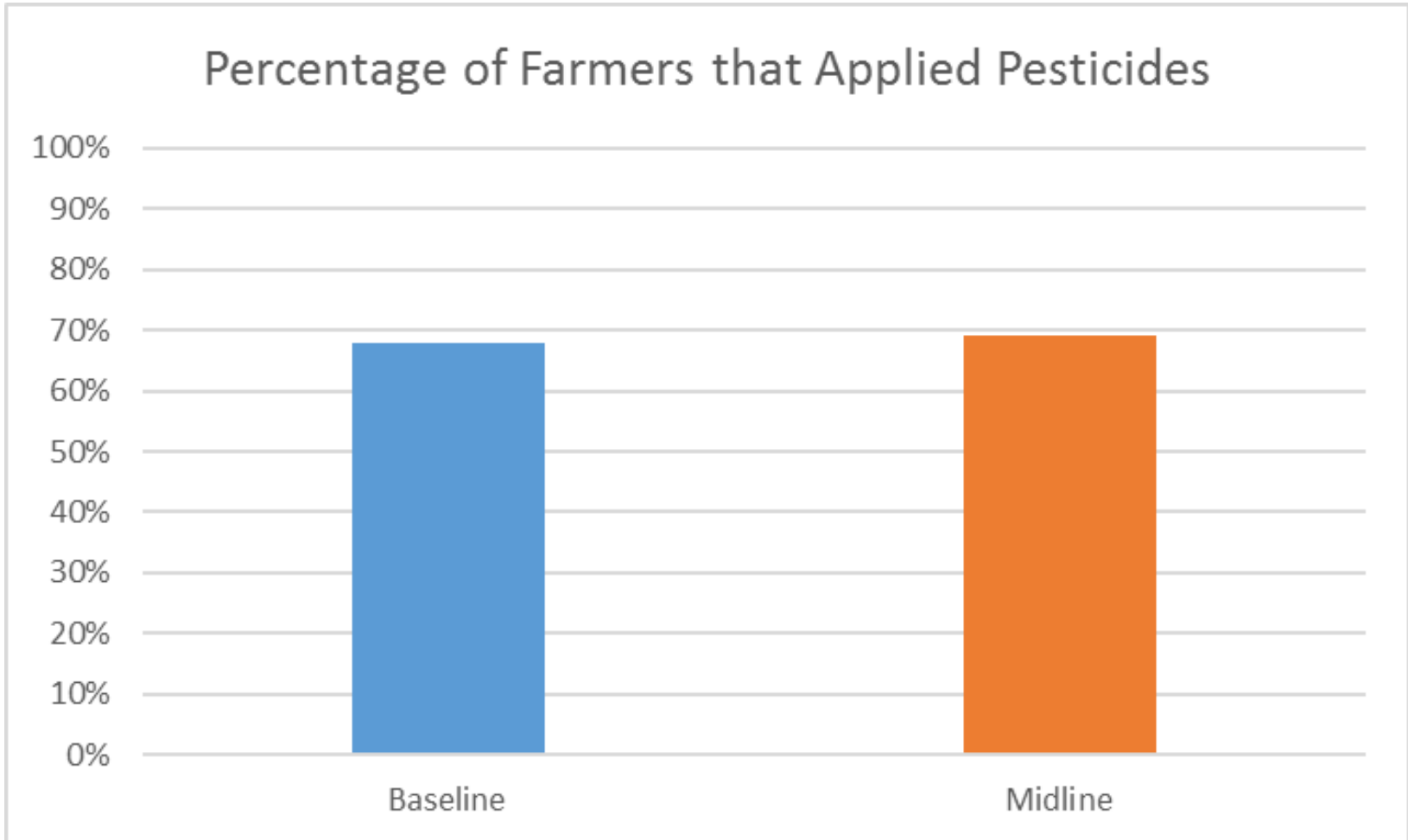


## Recap of what we learn from 2015 findings

1. Long-term success of the coffee sector (including all stakeholders) depends on growth in production and productivity
2. Rwanda's productivity is among the lowest in East Africa (and in the world)
3. Access to inputs is a critical factor in raising productivity
4. Coffee farmers rarely purchase fertilizer or pesticides (4% fert; 2.5% pest) and only in very small amounts
5. CEPAR/NAEB distribution is virtually the sole source of inputs
6. Distribution of inputs is far below the recommended dose per tree (1/6<sup>th</sup> of fertilizer dose; 1/3 of pesticide dose)
7. Despite low dose, distributed inputs do show a modest positive impact on productivity
8. Relatively equitable distribution (within this sample) of inputs, modestly higher (per tree) to coop CWSs (fert) and coop members (pest)

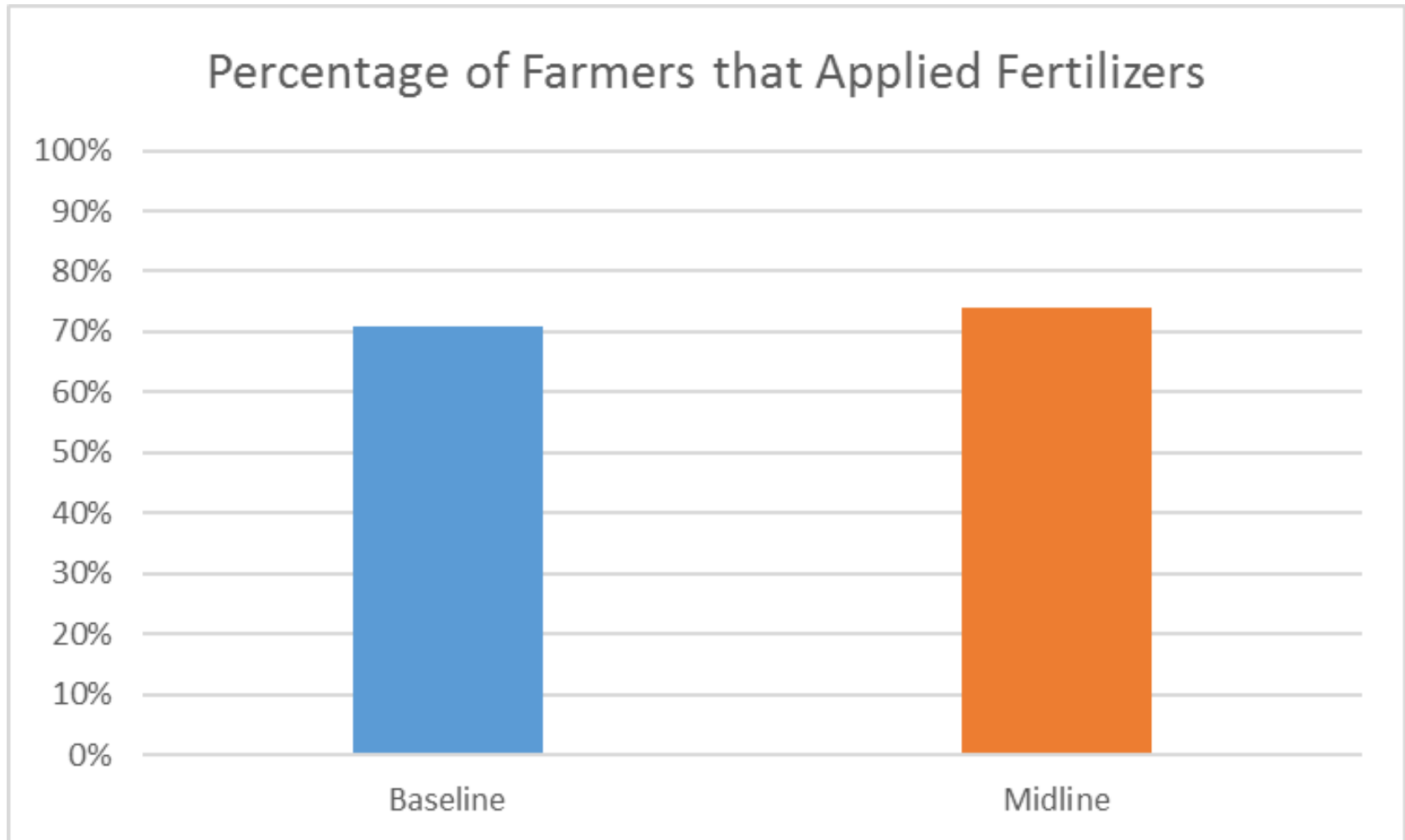


## What proportion of farmers apply pesticides?

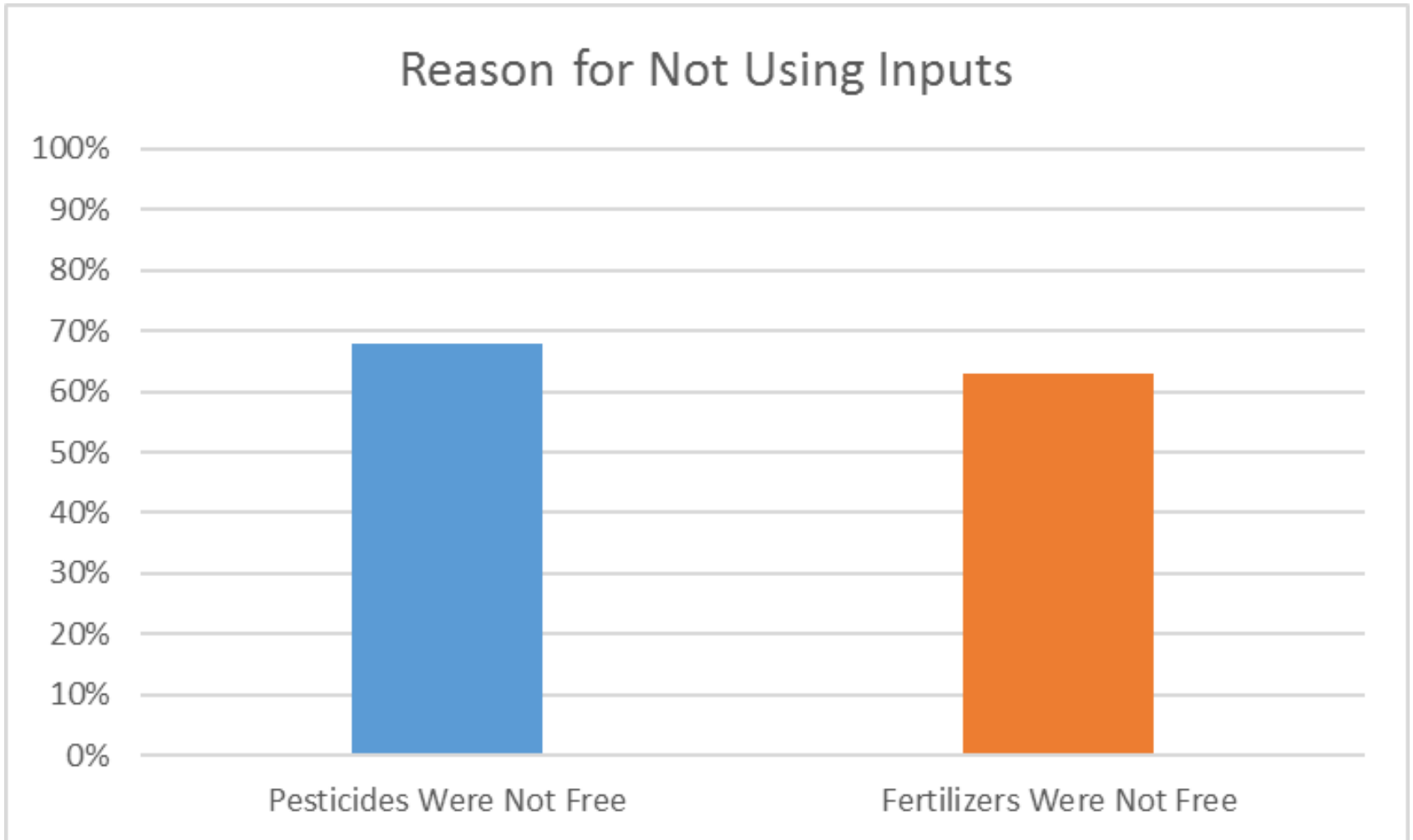




## What proportion of farmers apply fertilizers?

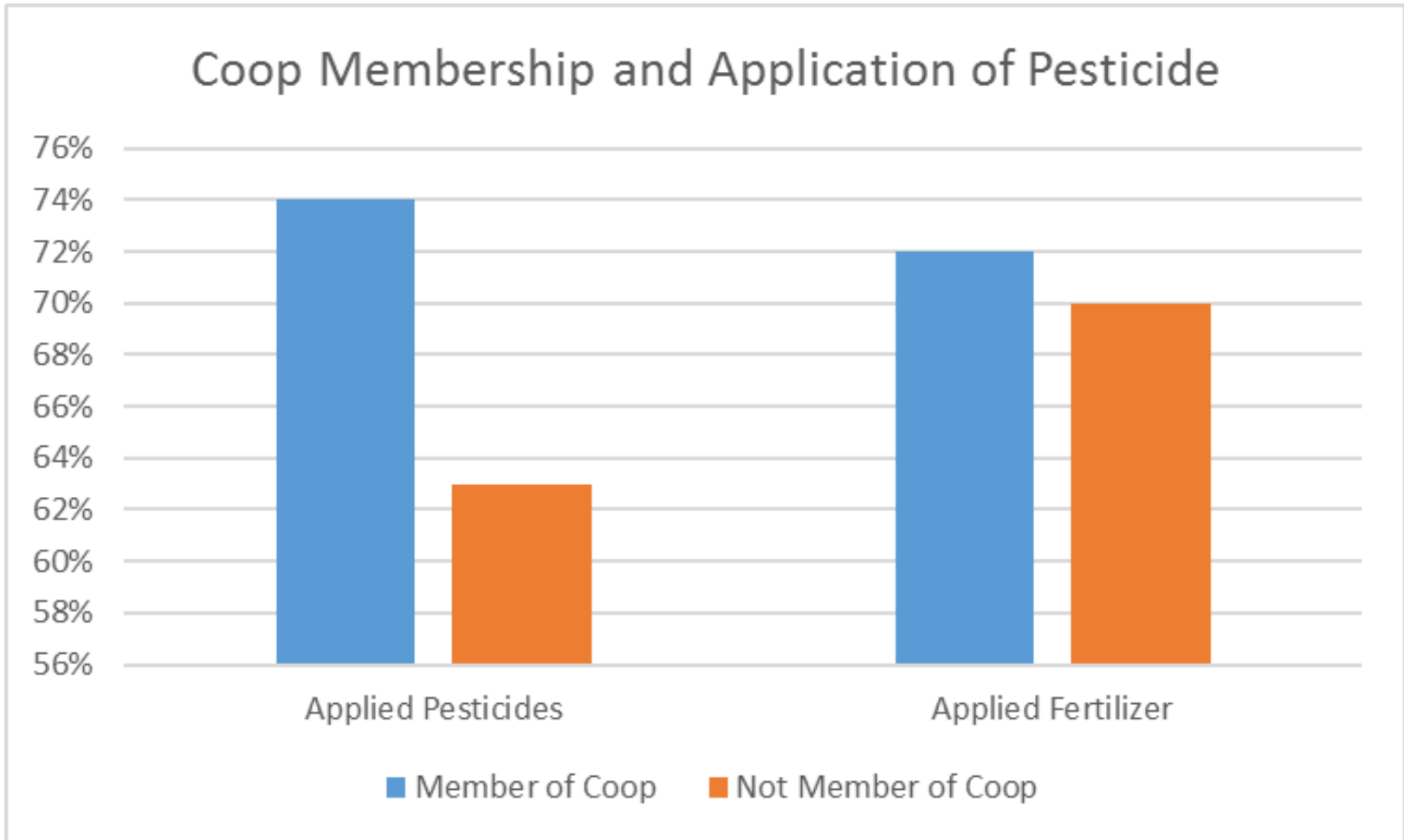


# What prevents farmers from using inputs?



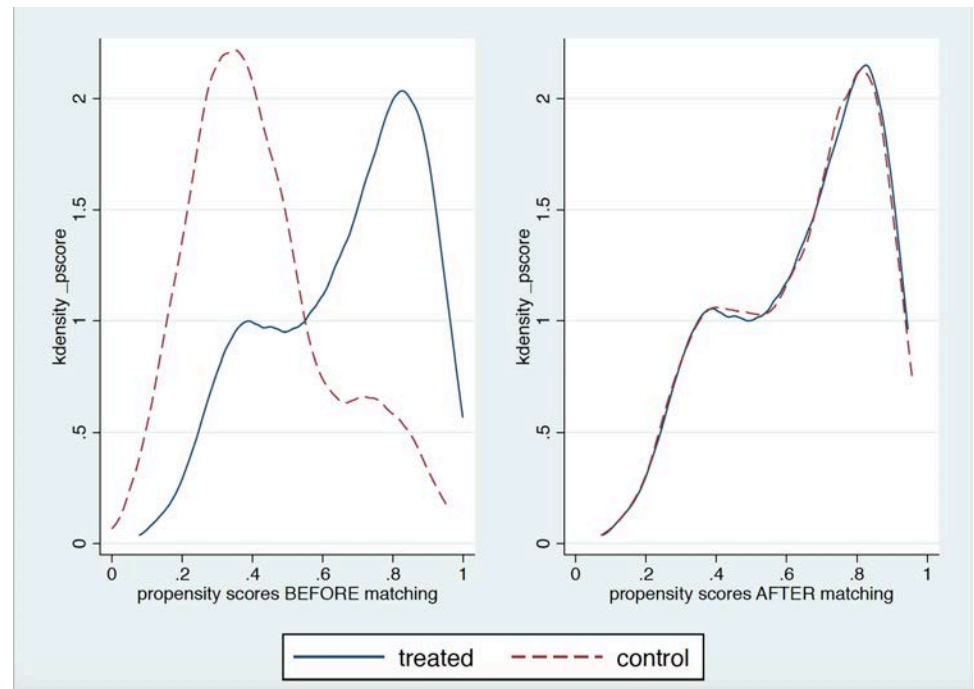


## Which farmers use inputs?



## A look at the effect of cooperatives:

1. Matching cooperative members and non-members on observable characteristics
2. Sensitivity analysis to non-observable characteristics

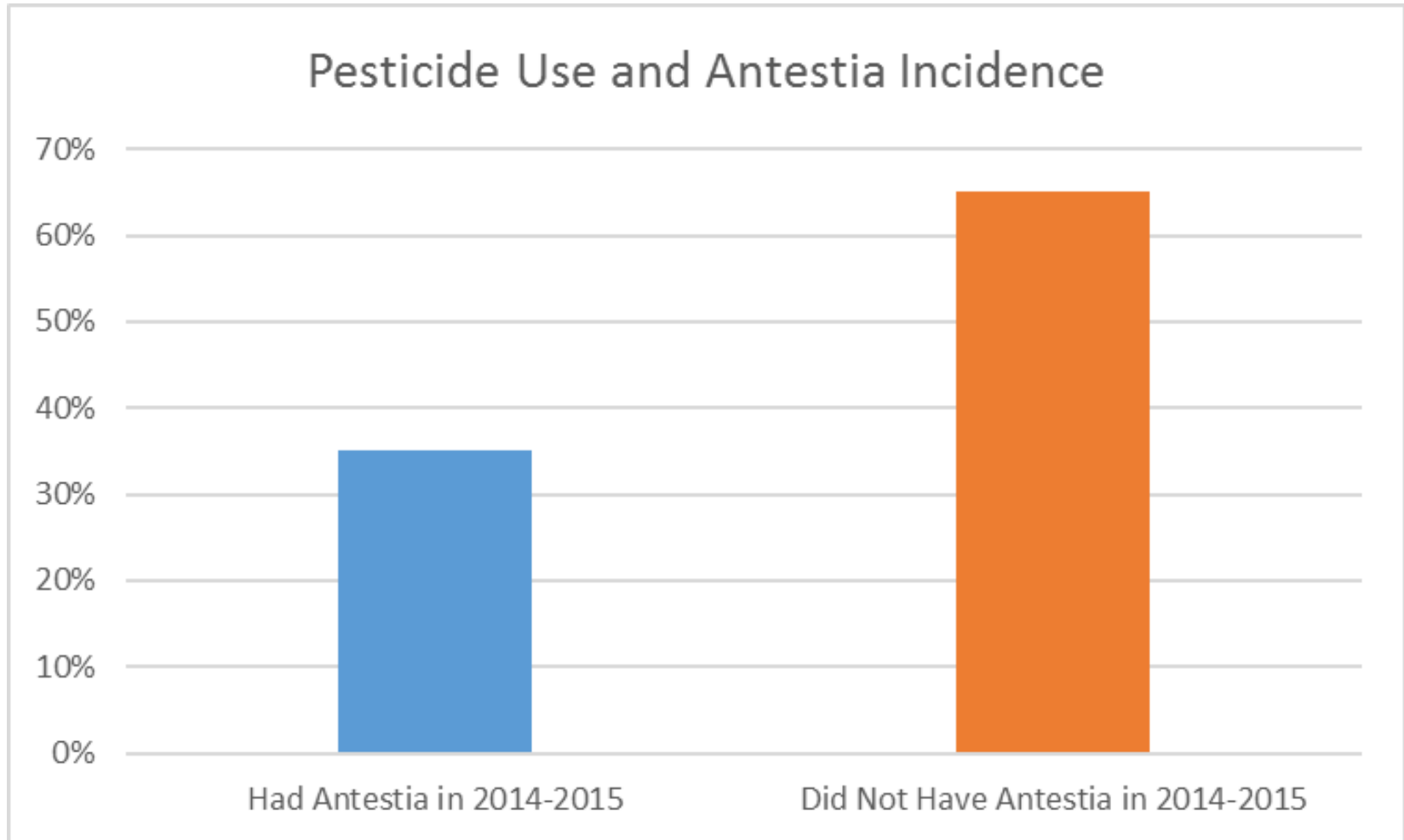


## Cooperative members...

- Have higher use of best practices
- Are 14% more productive per tree
- Receive 52% more income from coffee
- Have 22% lower cost of production

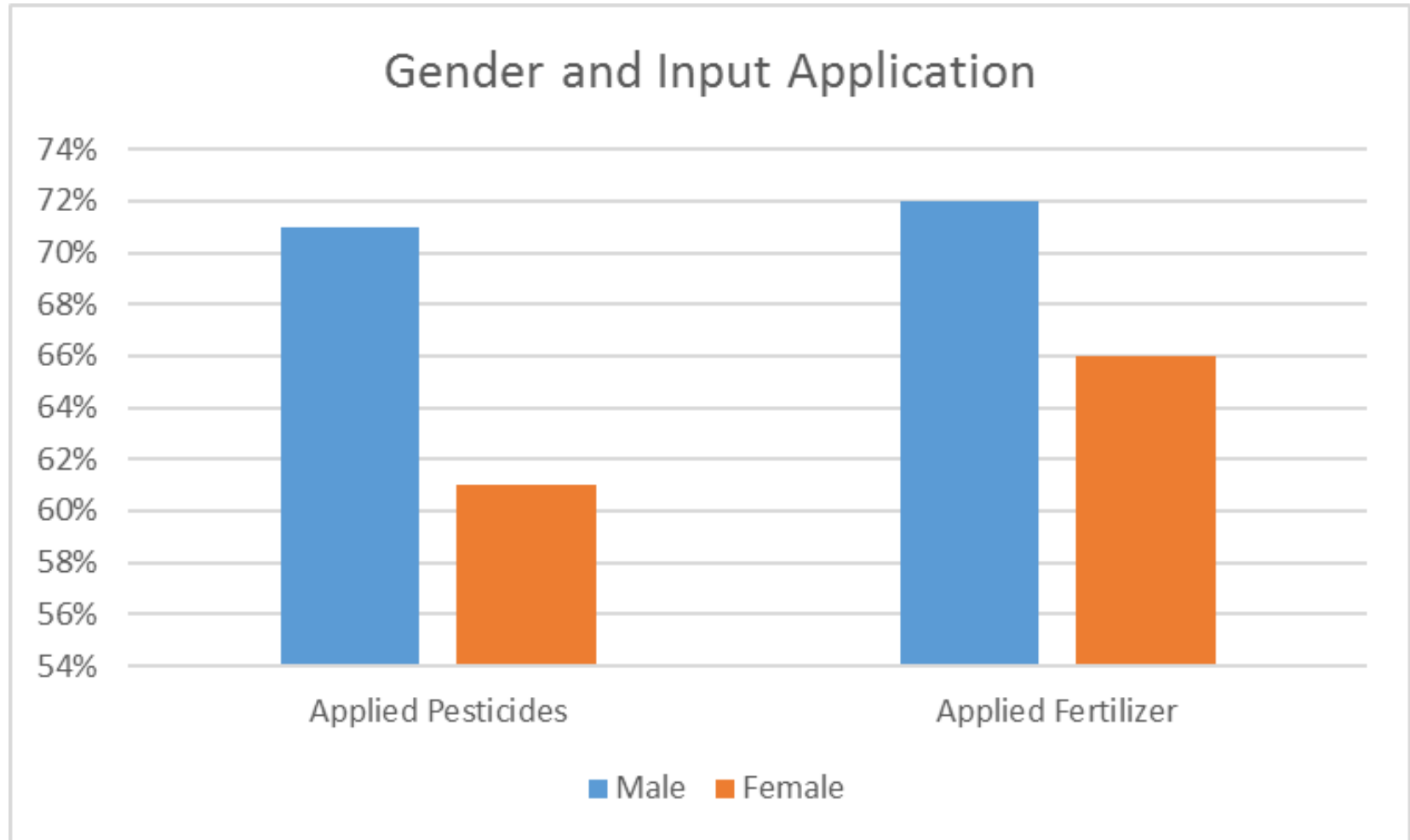


# Which farmers use pesticides?

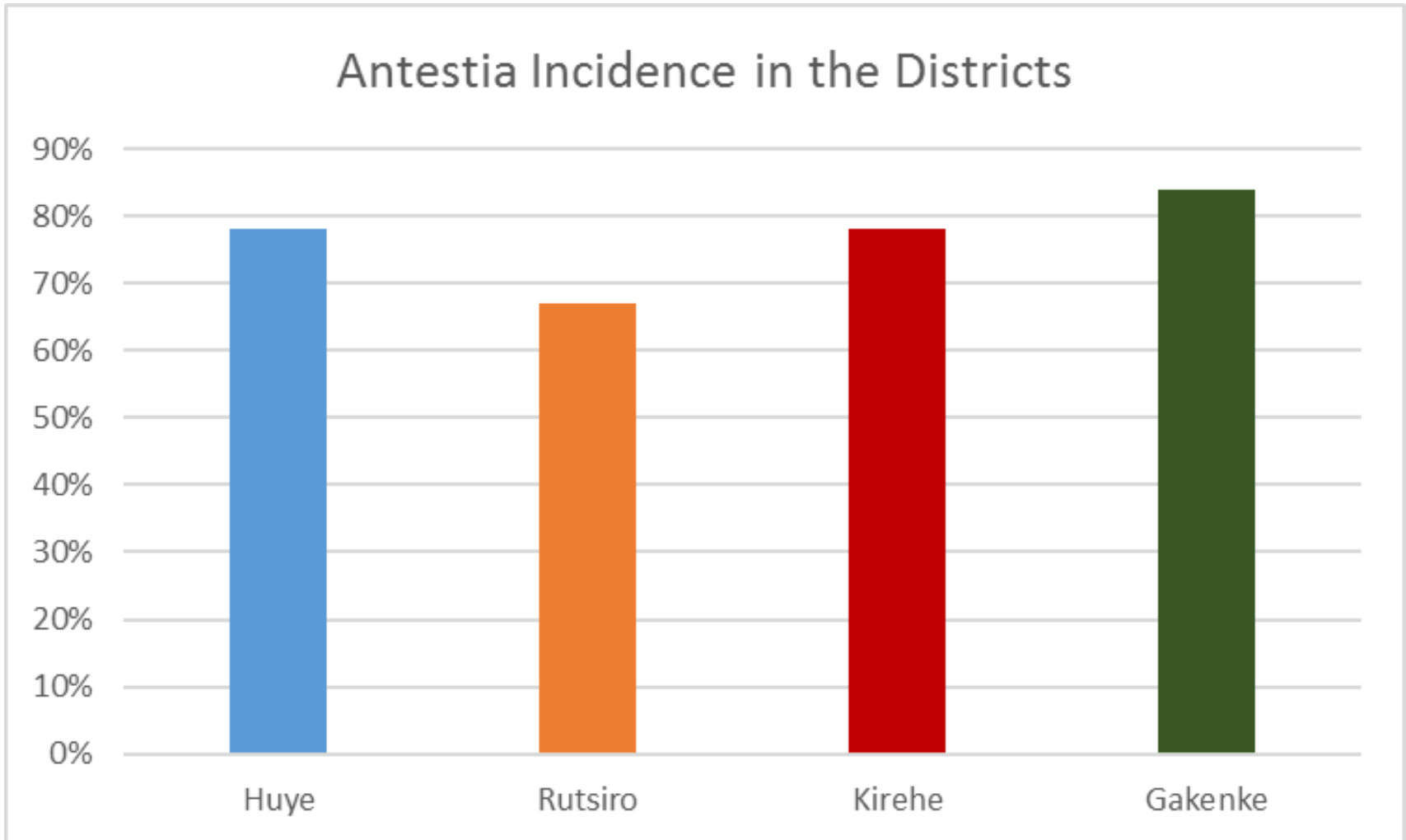




## Which farmers use inputs?

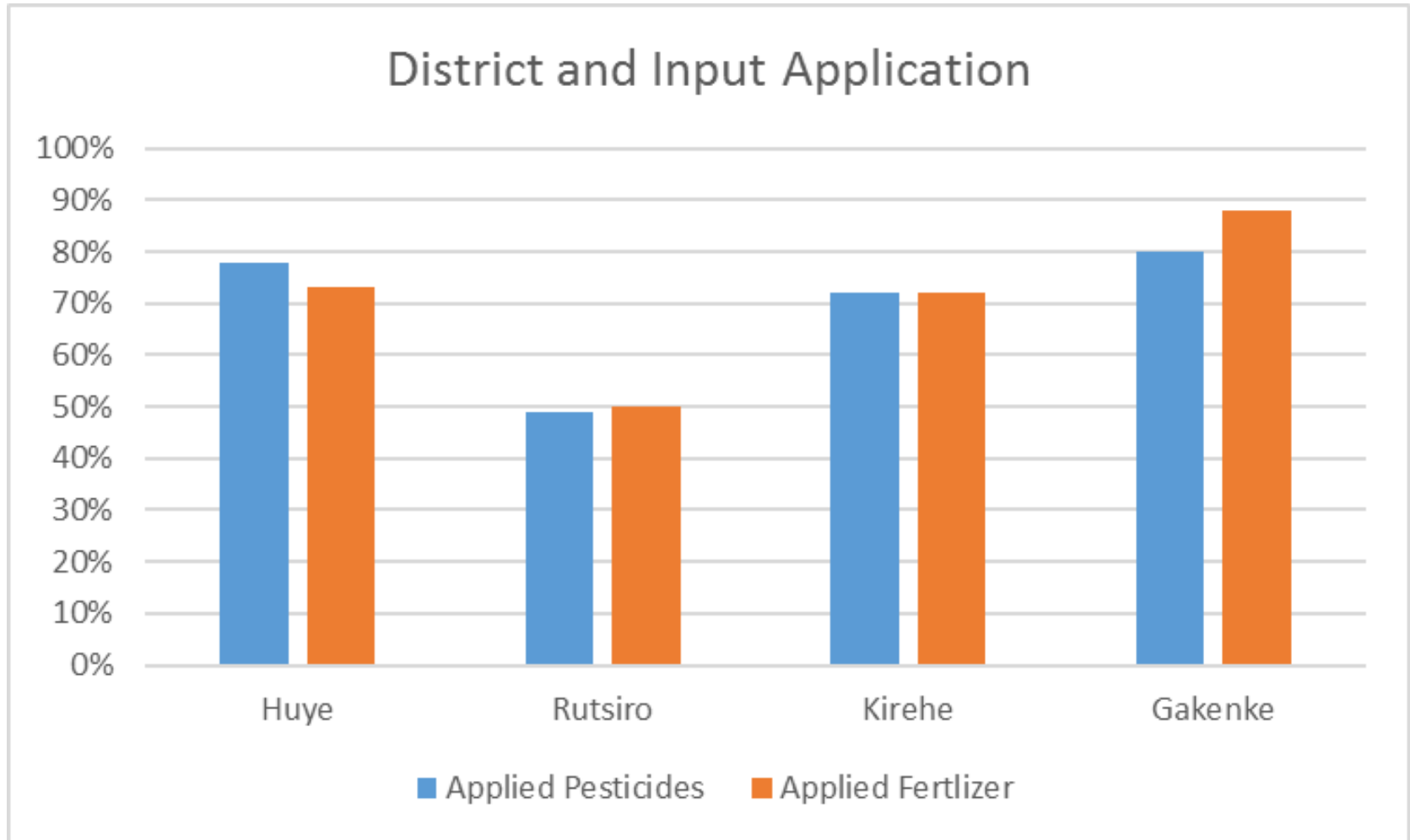


## Which farmers have antestia?





## Which farmers use inputs?



# What do we learn when we control for specific factors?

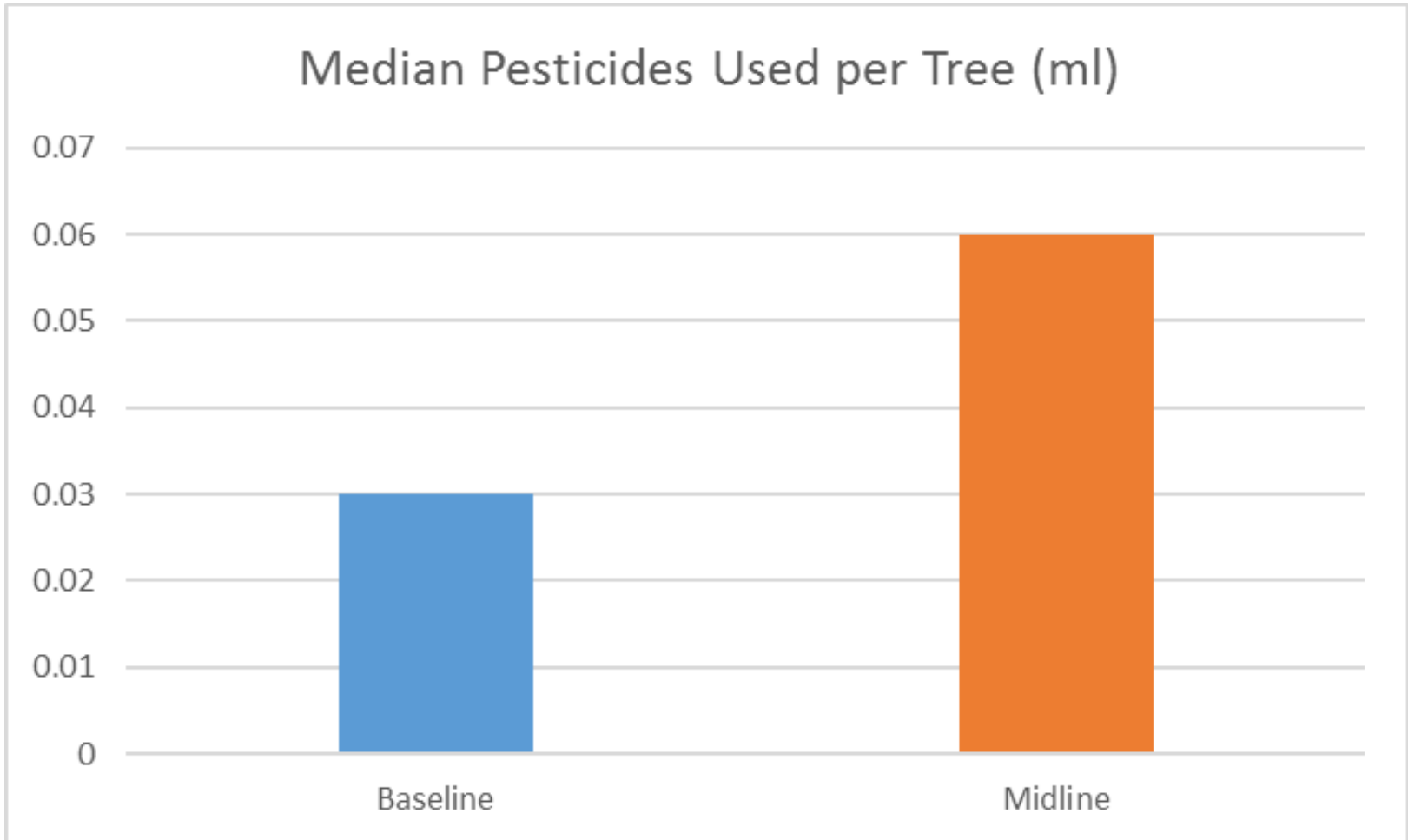
Pesticide Use	Odds Ratio	Standard Error	Z	P> z	95% Confidence Interval	
Price	1.00005	.0000247	2.02	0.044	1.000001	1.000098
Coop Member	2.628693	.474882	5.35	0.000	1.844877	3.745521
Gender	.5861657	.1166775	-2.68	0.007	.396814	.8658723
Age	.9889687	.0056184	-1.95	0.051	.9780179	1.000042
Antestia Incidence	.6028796	.0933857	3.27	0.001	.4450204	.8167351
Elevation	1.001948	.0006274	3.11	0.002	1.000719	1.003179
Rutsiro	.1953991	.0490681	-6.50	0.000	.1194459	.3196494

# What do we learn when we control for specific factors?

Fertilizer Use	Odds Ratio	Standard Error	Z	P> z	95% Confidence Interval	
Received Premium	1.565096	.2978943	2.35	0.019	1.077771	2.27
% Income from Coffee	1.007589	.0036018	2.12	0.034	1.000555	1.014673
Education Level	1.230584	.122352	2.09	0.037	1.012698	1.49535
Elevation	1.002365	.0006744	3.51	0.000	1.001044	1.003687
Number of Trees	1.000273	.0001333	2.05	0.041	1.000011	1.000534
Kirehe	.4812658	.1513512	-2.33	0.020	.259833	.8914063
Huye	.3048014	.0776448	-4.66	0.000	.1850047	.5021705
Rutsiro	.1252492	.0344835	-7.55	0.000	.0730168	.2148457

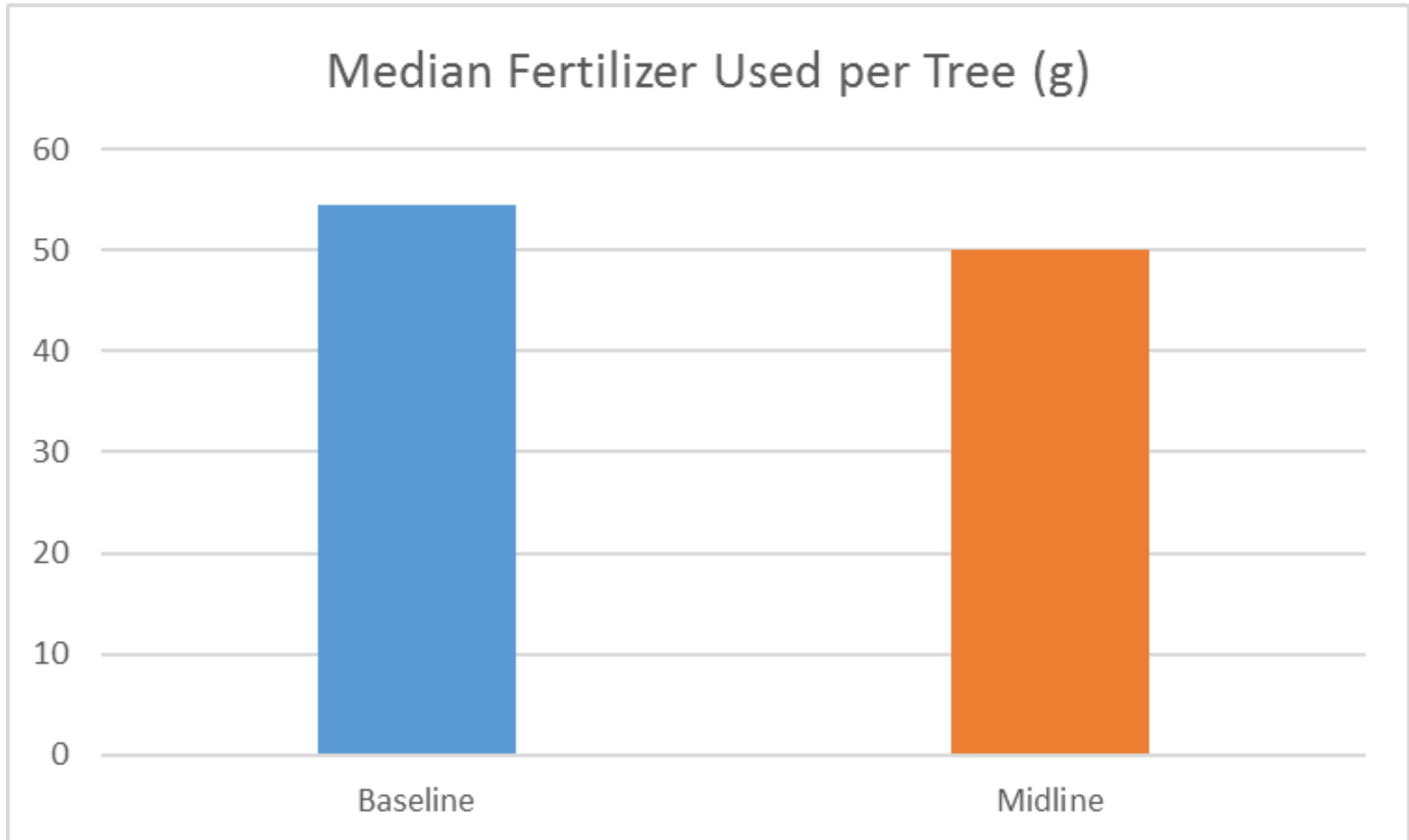


## What amount of pesticides do farmers use?





## What amount of fertilizers do farmers use?





## What barriers exist to accessing sufficient inputs?

1. Variability in the amounts of inputs distributed
2. Side selling by local authorities continues to be an issue
3. NAEB /CEPAR might have inaccurate tree data
4. Farmer perception of inputs as “free” and therefore a lack of incentive to purchase them. Moreover, even if farmers want to purchase inputs, they do not know where to buy them.

## What barriers exist to proper input use?

1. **Insufficient farmer knowledge of proper input use**
2. **Limited communication between farmers and extension programs on the importance of input use and on best practices**
3. **Farmer incentive to use inputs on other crops, rather than on coffee**



# Summary & discussion points



## Recap of challenge and findings

1. The primary reason given by farmers who do not use inputs was that the inputs are not free.
2. Approximately 70% of farmers applied pesticide and fertilizer in both the baseline and the midline. Thus, we have not seen significant change in this time period.
3. The median pesticide used per tree (ml) increased from 0.03 (27% of the recommended 0.113ml dose) to 0.06 (53% of the recommended 0.113ml dose) from the baseline to the midline.
4. The median fertilizer used per tree (g) decreased from 54.52 (18% of the 300g recommended dose) to 50 (17% of the recommended 300g dose) from the baseline to the midline.



## Recap of challenge and findings cont.

5. Coop members were 163% more likely to use inputs than non-coop members.
6. Female heads of household were 41% less likely to use pesticides than male heads of households.
7. Farmers who live in the Rutsiro district are much less likely (up to 80%) to use distributed pesticides than farmers who live in the other districts.
8. The more trees a farmer has, the more likely that farmer is to use fertilizer. Similarly, farmers with a greater percentage of their income coming from coffee are more likely to use fertilizers than farmers with a small percentage of their income coming from coffee.
9. Farmers who receive a premium for their coffee are 57% more likely to use fertilizers than farmers who do not receive a premium.



## Discussion Questions

- What do we conclude from the data?
- How can we better articulate the challenge?  
What else do we need to know?
- What are the major policy levers that can help increase access to and use of inputs?
- How might we encourage stakeholders to work together to ensure greater inputs access and use?

# Top Challenges

- Not all farmers receive fertilizer and pesticide
- When farmers *do* receive fertilizer and pesticide, many do not receive enough (i.e., do not receive the recommended dose)
- Most farmers do not purchase additional inputs beyond what is distributed by NAEB/CEPAR
- Inputs purchased and delivered by CWS vary a lot and are not dependable
- The fertilizer and pesticide that farmers do apply is often not applied appropriately / correctly



How might we address these challenges?





## Possible Solutions

- Might a higher fee for more inputs be a viable solution to meeting the recommended doses of input application?
- Might we subsidize the purchase of inputs to make them more affordable to farmers?
- Might we provide input loans to farmers such that they can cover the cost of inputs, and pay back the loans after they sell the coffee cherry?
- Might we improve traceability/accountability to ensure that inputs are distributed according to accurate tree data, and to ensure all districts receive the appropriate amounts?
- Might we increase government investment in coffee, similar to MINAGRI's investment in Crop Intensification Program (CIP) crops?

## Analyzing Possible Solutions

- **Who are the key actors needed to bring these solutions to life?**
- **What actions do those actors need to take?  
What can be done now? What needs to be done later? What dependences exist?**
- **What are the key resources needed to address the major inputs challenges we've identified?**



# Thank You!



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