



# Adoption Pathways 4<sup>th</sup> Annual Meeting and Project Closing Workshop

## 17-19 May 2016

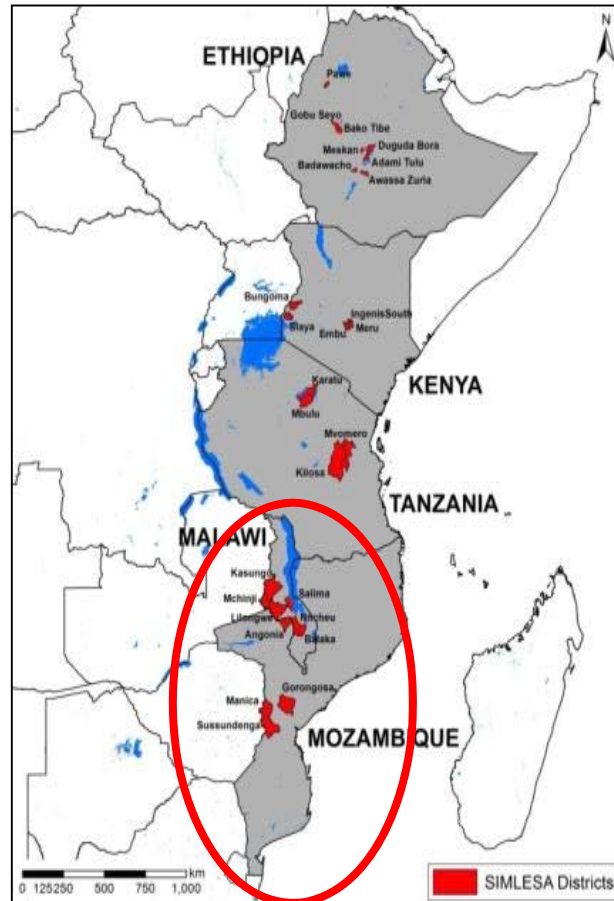
**Addis Ababa, Ethiopia;  
The Capital Hotel**

**Project Achievements (2013 - 2015)**

**Emílio Tostão  
Lourenço Manuel**



# Mozambique Adoption Pathways Team



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3. Gaby Mandlate (UEM)
4. Zhephania Ndaro (Former MSc Student)
5. Niyomwungere Zénon (Former MSc Student)

## Outline

- Key Objectives
- 3 year Key Achievements (2013-16)
- The way forward
- Take home message



## 4 Key Objectives



**Objective 1:** Enhance the technology adoption process by generating knowledge and panel data

**Objective 2:** Advance the understanding of how farmers' livelihood strategies and SAI investments interact and influence adaptation to climate variability

**Objective 3:** Generate evidence on the socioeconomic impacts of adoption of multiple and complementary SAIP Technologies

**Objective 4:** Enhance for gender-sensitive agricultural research and communication of policy



## Key Activities/Achievements

1. Establish a gender and plot disaggregated PANEL DATA on Agricultural Technology Adoption:
  - The AP project in Mozambique has conducted two rounds of a gender and plot disaggregated surveys from farmers in the project areas (objective 1)
    - **2013 data:**
      - 400 households surveyed, and data entered, cleaned, and shared.
      - Country report with key descriptive statistics submitted.
    - **2016 data:**
      - Data yet to be shared to Moz AP team by CYMMIT

## Key Activities/Achievements

### 2. Initiated the analysis of technology adoption over time using the established panel data (Objective 1)

- **There are already some key results from 2013 data:**
  - Households, especially women, spend relatively too much time in agriculture
  - Efforts to increase access to inputs by women may need to be targeted at plots already managed by women themselves
  - Food insecurity varies across space and gender. Food security affects adoption and vice versa
  - Given current yields, there a lot of potential for yield increase



## Key Activities/Achievements

3. Contributed to understanding the causes of gender technology and food security gaps (Objective 1) through:
  - Gender disaggregated survey implemented in 2013 & 2016
  - 2 MS dissertations completed using 2013 data
    - Impact of social networks on agricultural technology adoption (Niyomwungere, 2016)
    - Gender Differences in Technology Adoption (Ndaro, 2016)
  - One peer reviewed publication (2013 data)
    - Fertilizer use on individually and jointly managed crop plots in Mozambique (Paswell et al., 2015)

1. **Establish panel data:** the project will conduct two rounds of surveys from farmers in the project areas (objective 1).
2. **Dynamic adoption analysis:** package of technology adoption analysis over time will be carried out (Objective 1)
3. **Gender and technology and food security analysis:** causes of gender technology and food security gaps analysis over time (Objective 1)
4. **Livelihood strategies, SAI investment and risk assessment** (Objective 2)
5. **Impacts analysis:** package of improved farm practices, and policies impacts on welfare (direct and indirect) of different group of farm households' (objective 3)
6. **Capacity building, communication, policy advocacy:** training of researchers and extension workers on how to make project research outputs more usable to farmers, policy makers, development practitioners, researcher managers and others (objective 4).



## Key Activities/Achievements

4. Livelihood strategies, SAI investment and risk assessment (Objective 2)
  - Initial results on adaptation options that reduce vulnerability to climate shocks available – included in the 2013 Country Report
  - Contribution submitted to the lead partner:
    - Livelihood strategies and ex-ante and ex-post coping strategies to climate risk in Mozambique



## Key Activities/Achievements

5. Generate evidence on the socioeconomic impacts of adoption of multiple and complementary SAIP technologies (Objective 3)
  - Evidence of impact will be generated in near future using panel data is available



## Key Activities/Achievements

5. Livelihood strategies, SAI investment and risk assessment (Objective 2)
  - Initial results on adaptation options that reduce vulnerability to climate shocks available – included in the 2013 Country Report
  - Contribution submitted to the lead partner:
    - Livelihood strategies and ex-ante and ex-post coping strategies to climate risk in Mozambique

## Key Activities/Achievements

6. Capacity building, communication, policy advocacy (objective 4).
  - Researchers AP-Moz received training in gender analysis, and risk analysis
  - Training of 2 students who used AP data in their MS dissertation
  - Training supervisors and enumerators on field data collection (2013 & 2016)
  - Infrastructure capacity building: AP-Moz received vehicle for field work
  - We need something to extend.
  - With 2nd round data we will have solid evidence to extend before we engage extension
  - Mozambique Economic FORUM – have used insights from AP in Ag debate
  - AP coordinator in charge of a new Policy Center which works with 5 key Ministries – facilitates communication and uptake of results

## Key Activities/Achievements

### 7. Sustainability (objective 4).

- AP project being used as a baseline for other projects
  - AP project has facilitated submitting research proposal for related research on Bill & Melinda Gates funded PEARL Call



## Challenges & Opportunities

### 7. Challenges

- Working with gender and plot disaggregated data is very demanding
- Thin team (lots of work for the same few people)
  - Collect data
  - Enter data & clean
  - Write reports
  - Communicate results

## Challenges & Opportunities

### 8. Opportunities

- Capacity building
- Scale up local team
- Get colleagues involved (but hard to competition for time)
- Recruit more students
  - Two already graduated writing dissertations using AP data





# Thank You



A interview being conducted in Sussundega



# Technology adoption in the 2012/13 Agricultural Season

This unfolding story will be updated with the 2015/2016 data when it is available



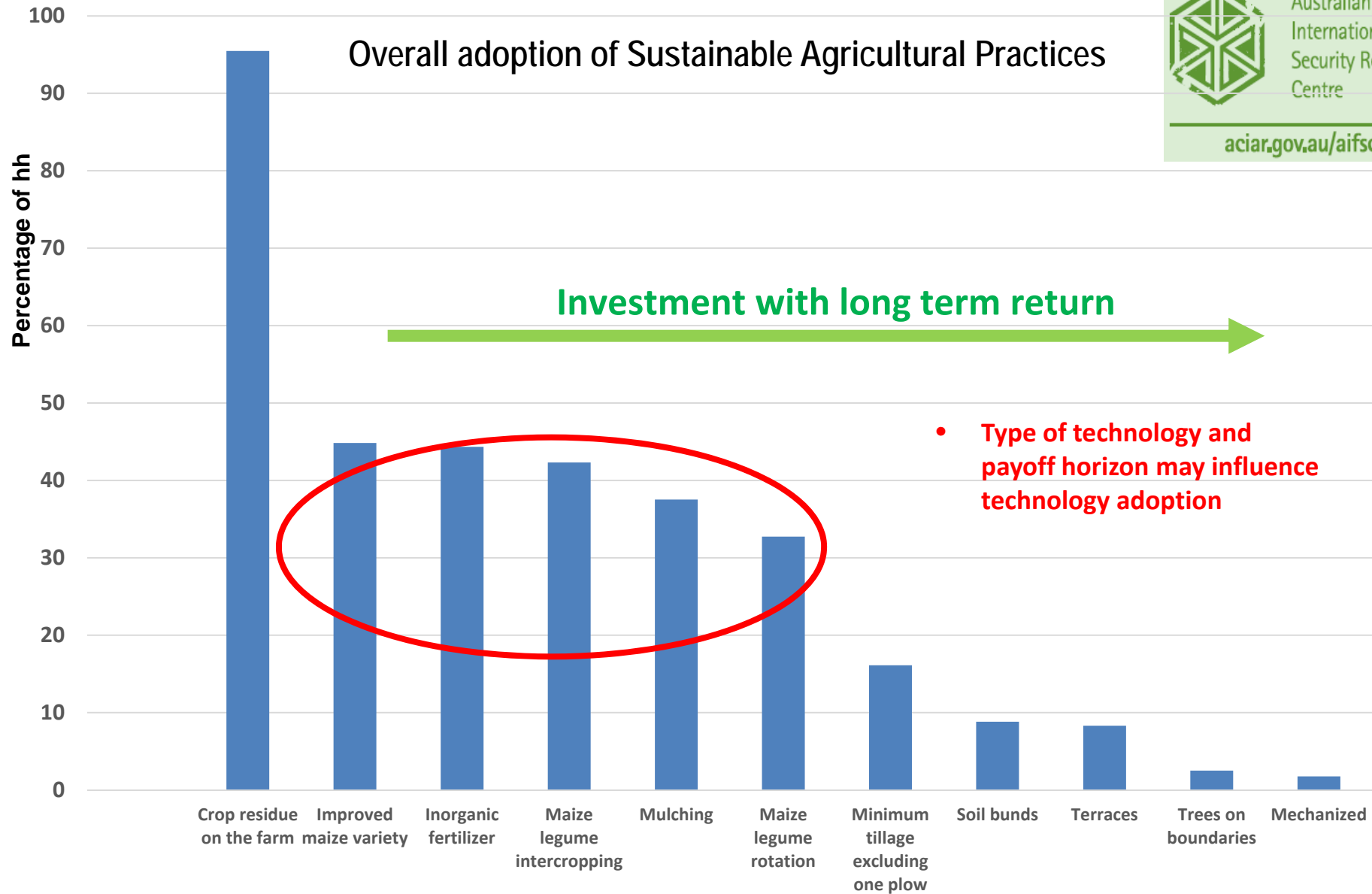
## Selected demographic characteristics

Variable	Female (N=57)	Male (N=328)	Total (N= 385)	t-value
Age of household head (years)	51.6	48.2	48.7	1.58
Household size (absolute numbers)	5.1	7.1	6.8	4.09***
Household size (adult equivalent)	2.6	3.3	3.2	4.10***
Number of oxen owned	2.0	3.7	3.6	3.92***
Number of small ruminants owned	7.8	5.2	5.5	0.78
	Male	Female	Total	X <sup>2</sup> p-value
Education level of household head (% that attended school)	58.88	84.07	79.18	0.000
Marital status of the household head (% households)				
Married living with spouse	15.79	93.98	82.52	
Married but spouse away	1.75	1.20	1.29	
Never married	5.26	0.30	1.03	
Divorced/separated	17.54	0.90	3.34	
Widow/widower	59.65	3.61	11.83	

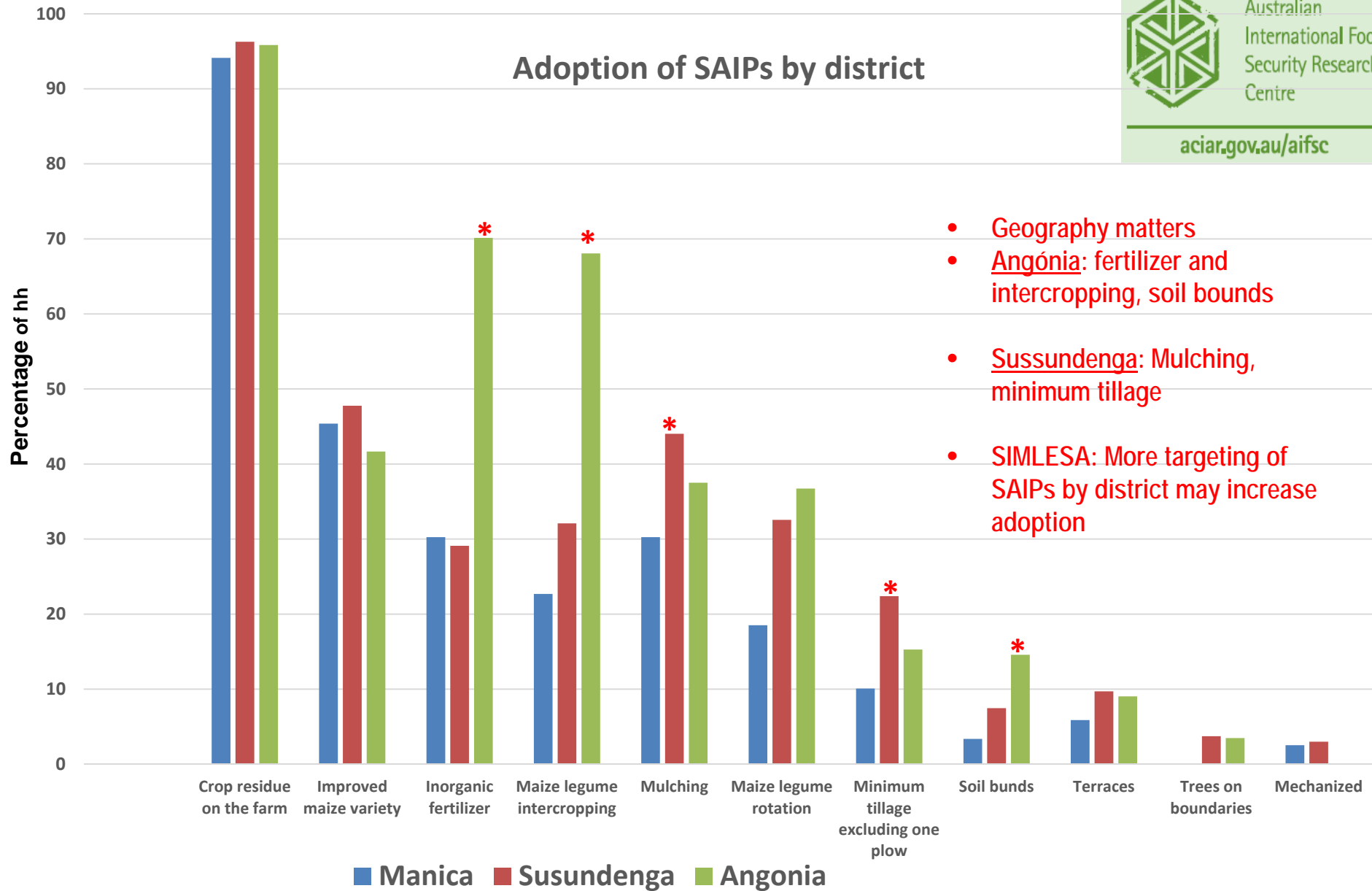
### Male headed HH:

- Younger
- More literate
- Bigger family
- Living with spouse
- Own more oxen

## Overall adoption of Sustainable Agricultural Practices

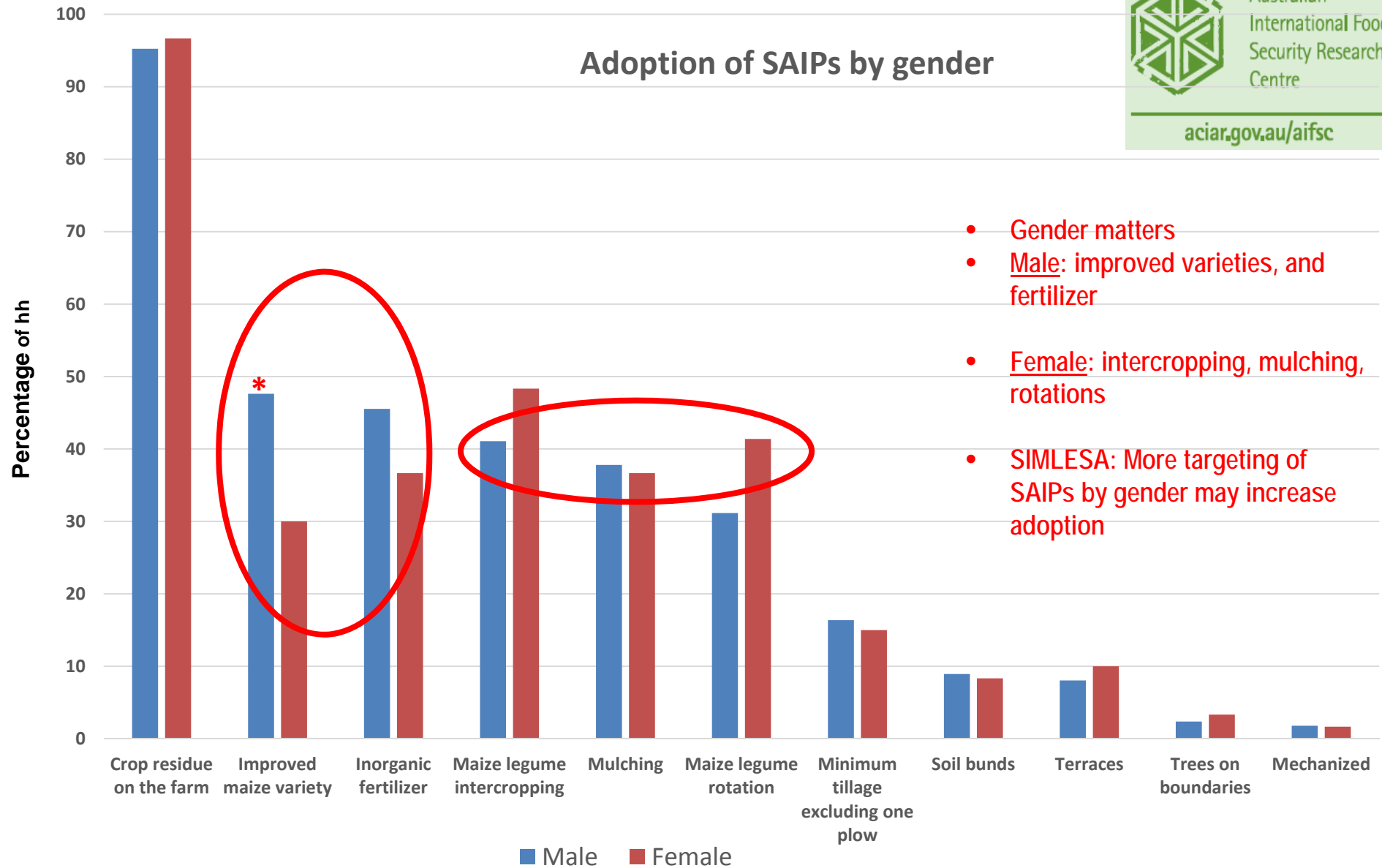


## Adoption of SAIPs by district



- Geography matters
- Angonia: fertilizer and intercropping, soil bunds
- Sussundenga: Mulching, minimum tillage
- SIMLESA: More targeting of SAIPs by district may increase adoption

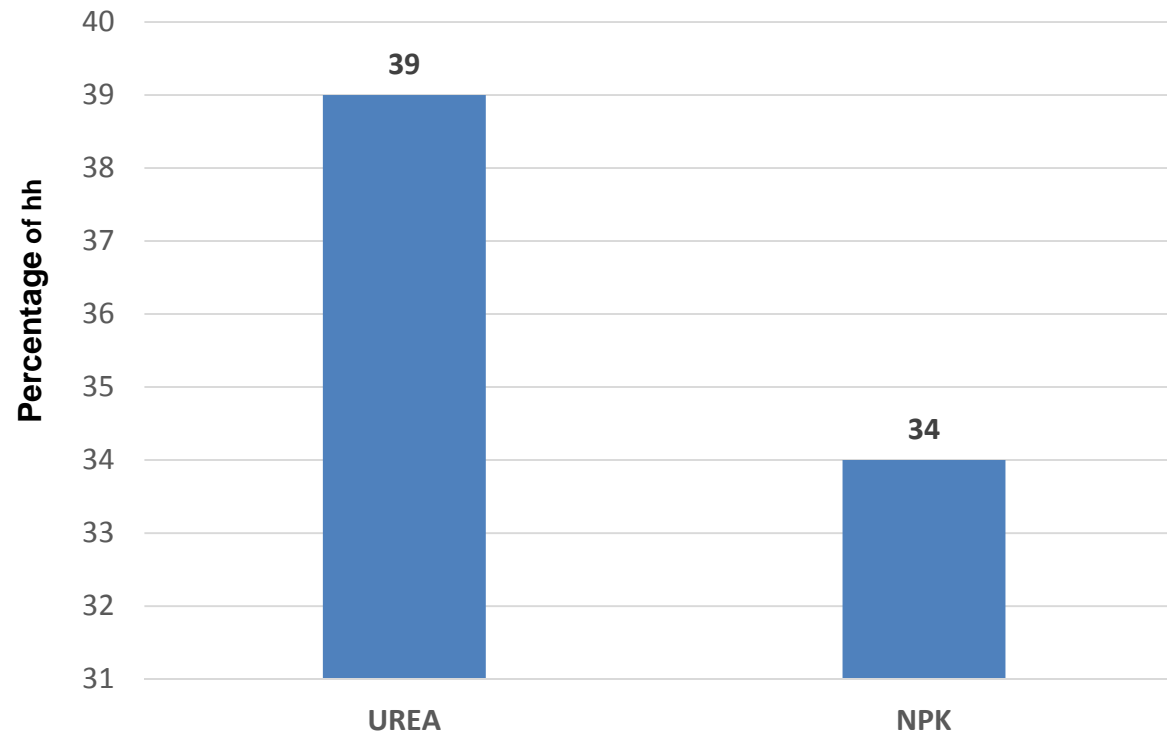
## Adoption of SAIPs by gender



- Gender matters
- Male: improved varieties, and fertilizer
- Female: intercropping, mulching, rotations
- SIMLESA: More targeting of SAIPs by gender may increase adoption



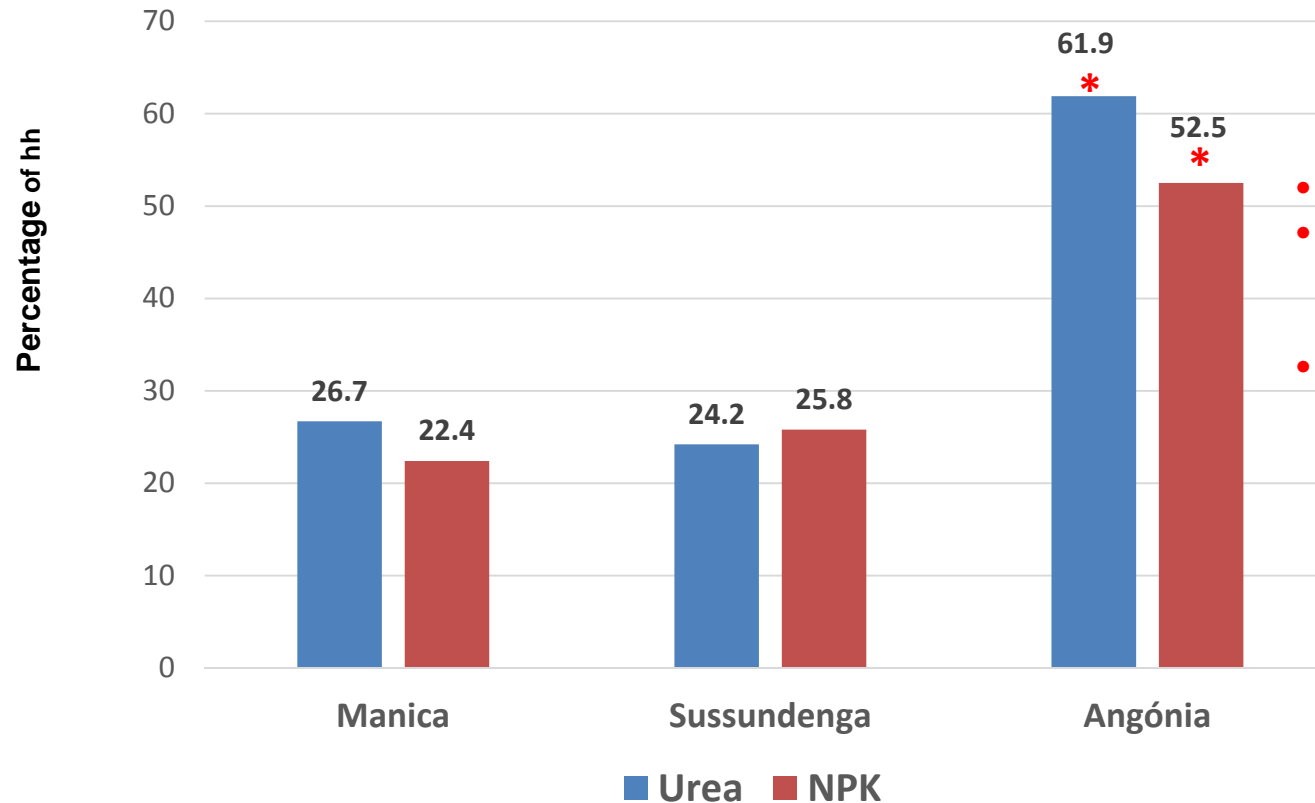
## Overall fertilizer adoption (% hh)



About 34 to 39 % of households adopt fertilizers  
SIMLESA: still room to increase adoption

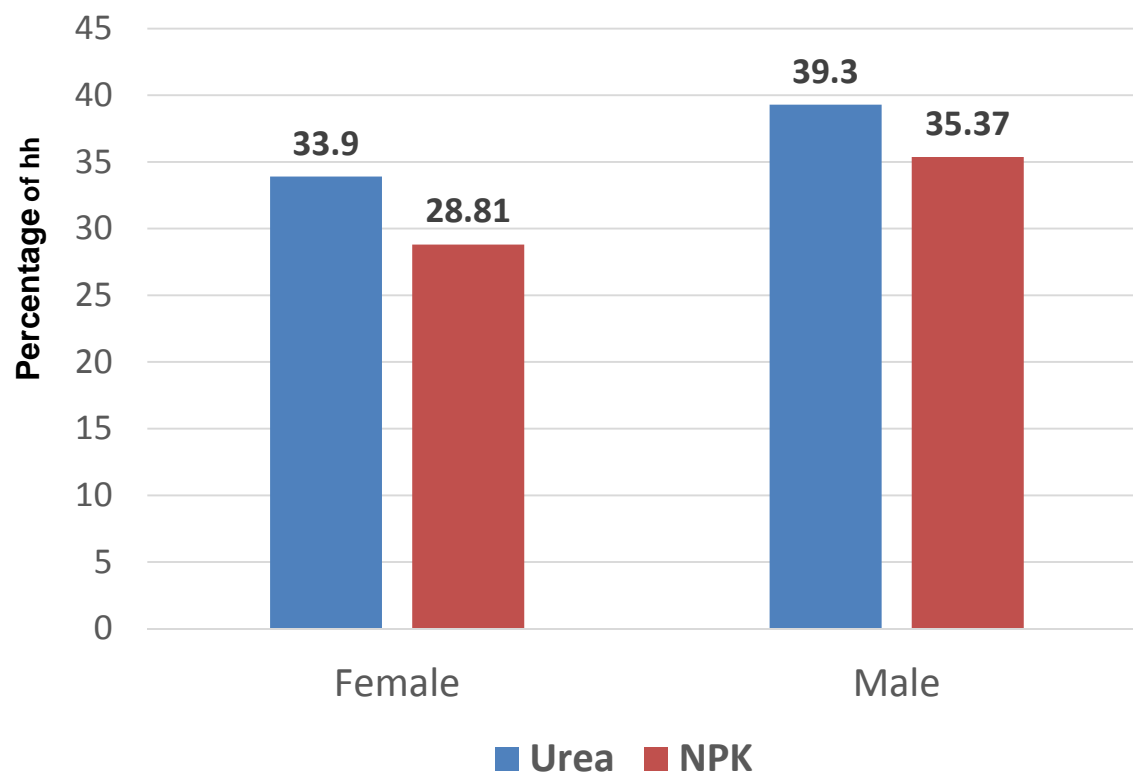


## Fertilizer adoption by district (% hh)



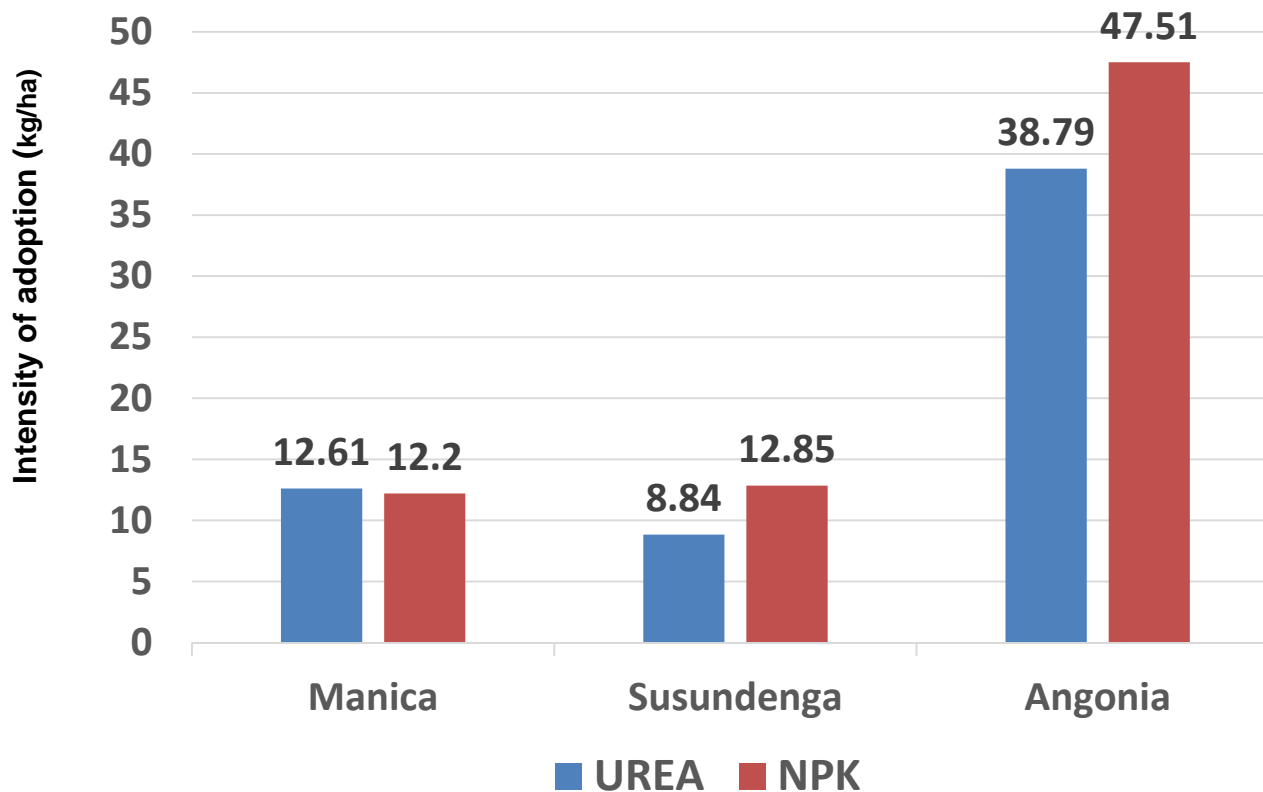
- Geography matters
- Angónia: fertilizer than other districts
- SIMLESA: More targeting of SAIPs by district may increase adoption

## fertilizer adoption by gender (% hh)



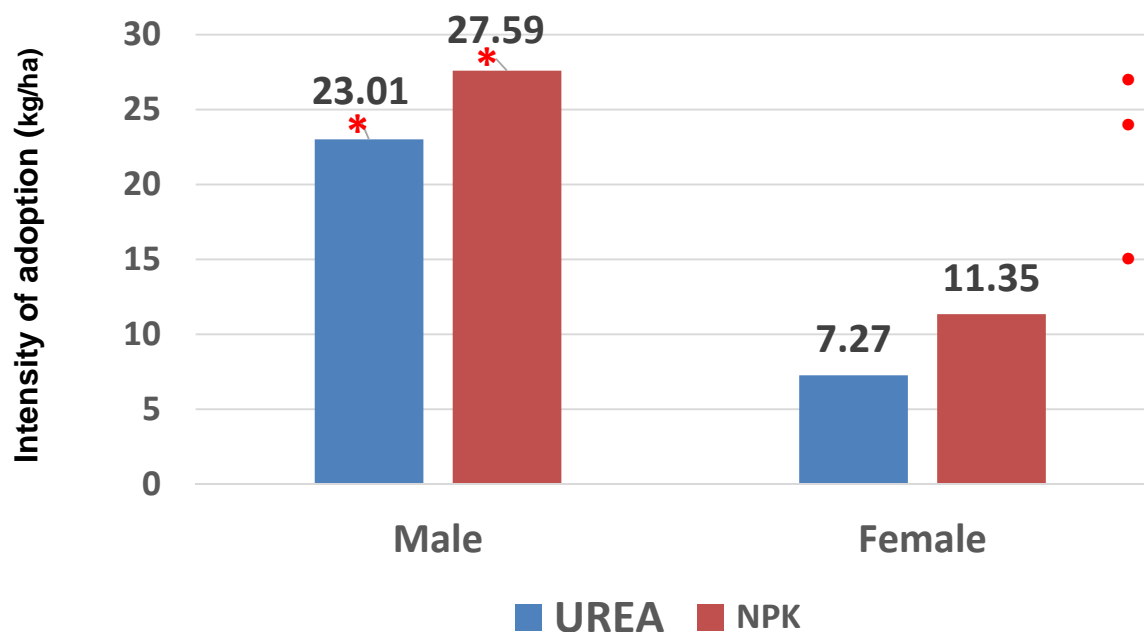
- Gender matter
- Male: more fertilizer than female
- SIMLESA: More targeting of SAIPs by gender may increase adoption

## fertilizer adoption intensity by district (kg/ha)



- Geography matters
- Angónia: fertilizer than other districts
- SIMLESA: More targeting of SAIPs by district may increase adoption
- Look at other market constraints

## fertilizer adoption intensity by gender (kg/ha)

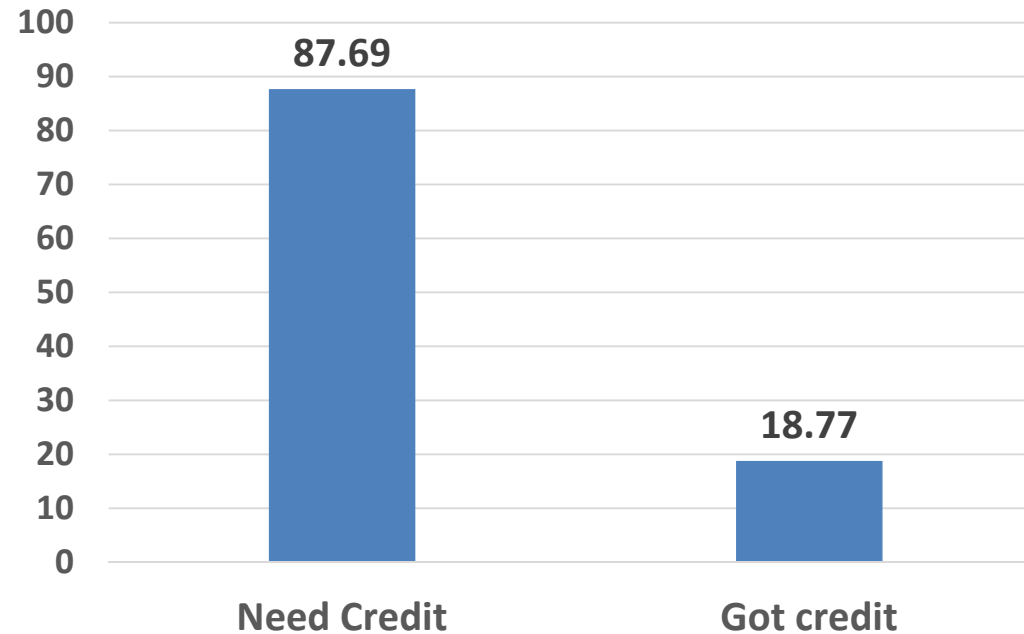


- Gender matters
- Male: more fertilizer than female
- SIMLESA: More targeting of SAIPs by gender may increase adoption

# Access to Credit, Labor, and Land

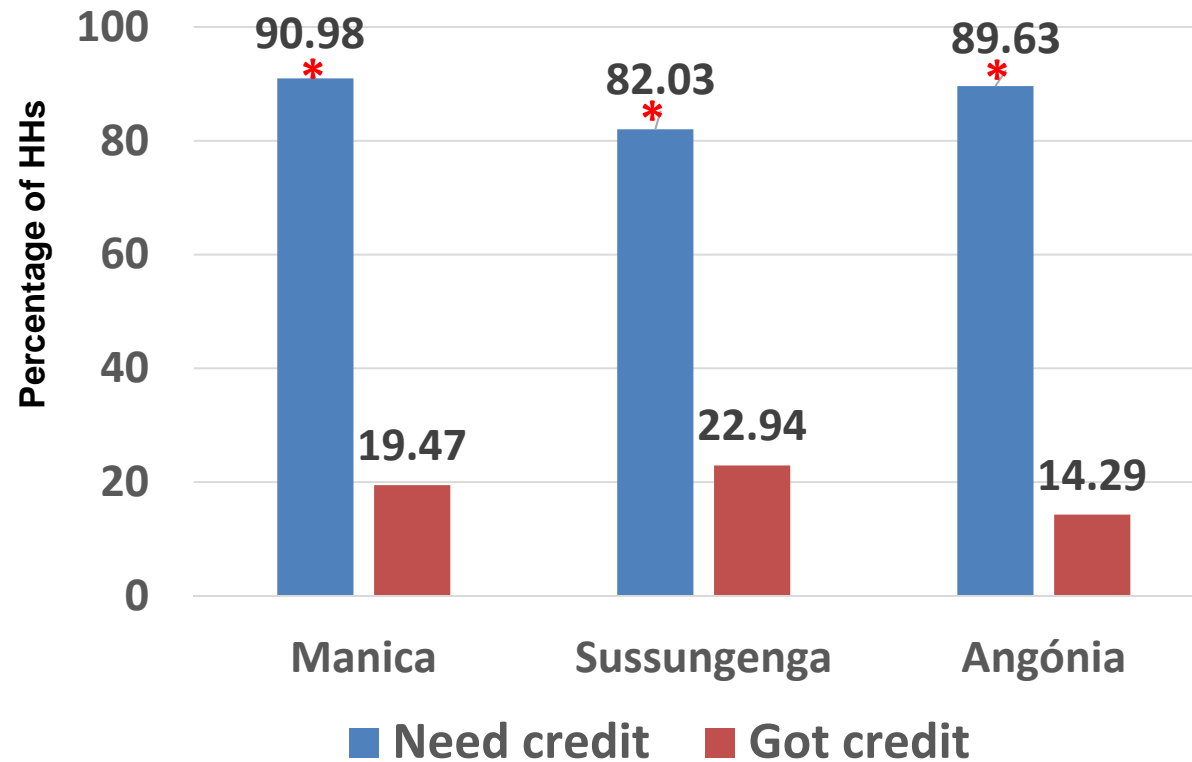


## Overall access to credit by (% of HHs)



Lack of credit limits technology adoption, especially of marketed inputs  
SIMLESA: may need to go beyond SAIPs and look at credit and other market constraints

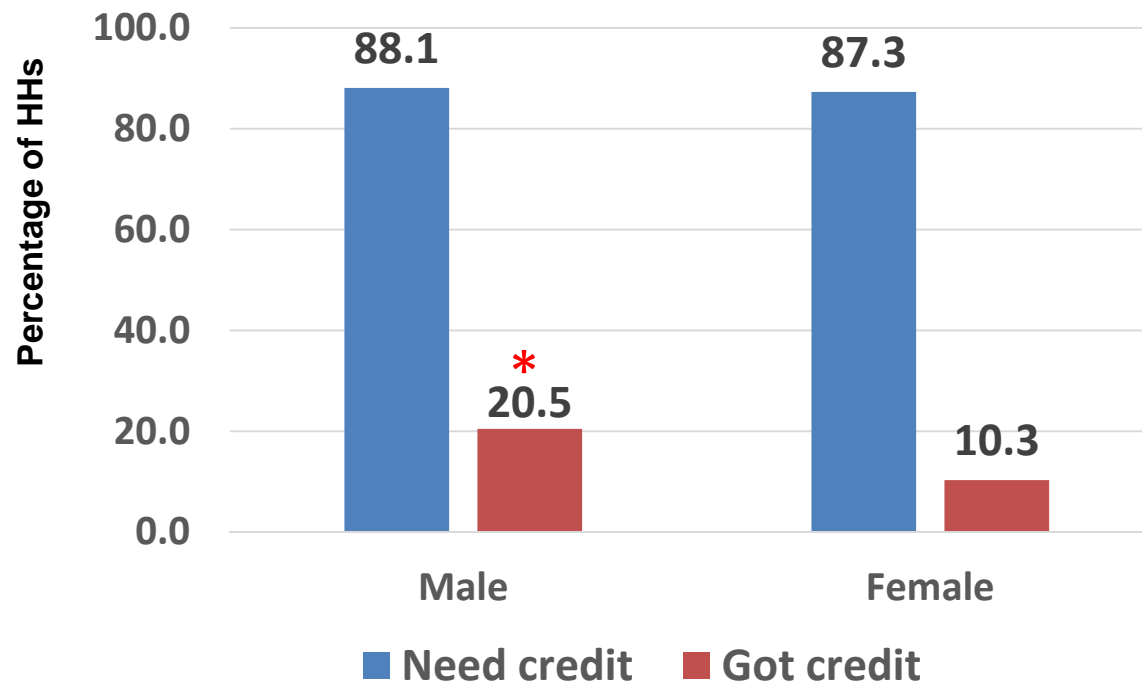
## Access to credit by district (% of HHs)



**Credit needs are sensitive to geography.  
SIMLESA: targeting and look beyond SAIPs**

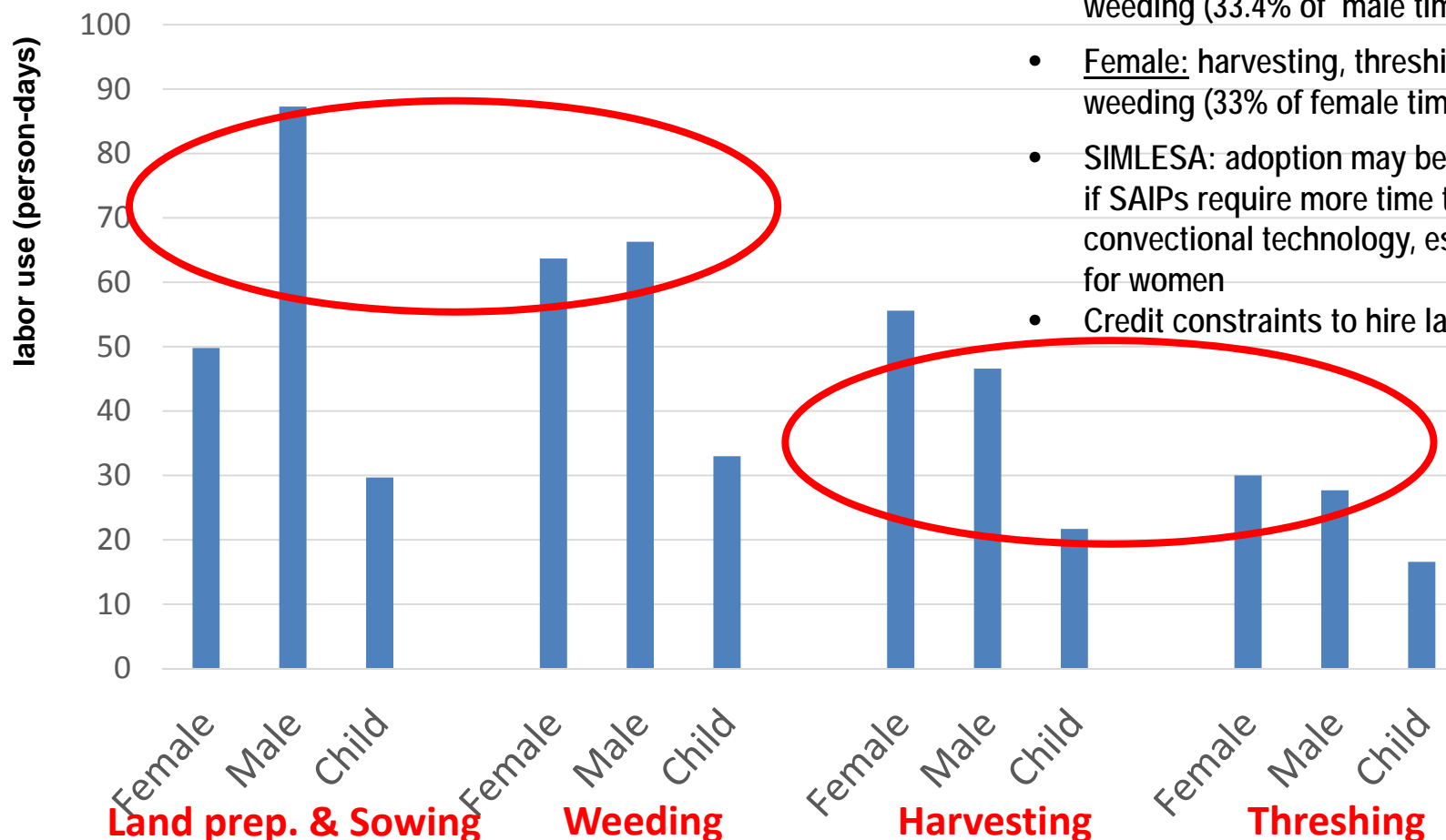


## Access to credit by gender (% of HHs)



Credit access sensitive to gender.  
SIMLESA: targeting and look beyond SAIPs

# Family labor use (man-day)



- Gender matters
- Male: land prep. & sowing, and weeding (33.4% of male time)
- Female: harvesting, threshing & weeding (33% of female time)
- SIMLESA: adoption may be limited if SAIPs require more time than convectional technology, especially for women
- Credit constraints to hire labor!

# Land and other asset ownership by type and gender of hh MEMBER

Asset	Male		Female		Difference		Aggregate	
	n	mean	n	mean	t statistic	p-value	N	mean
Land	277	3.87	53	3.18	2.52	0.051	330	3.8
Bicycle	325	1.20	60	0.47	6.71	0.000	385	1.07
Cellphone	325	1.44	60	0.69	5.08	0.000	385	1.32
Hoe	325	7.45	60	3.80	7.06	0.000	385	6.84
Sickle	324	2.05	60	0.92	5.70	0.000	384	1.86
Machete	325	1.84	60	0.89	6.61	0.000	385	1.69
Radio	325	2.03	60	0.72	2.73	0.007	385	1.81

Men members own more assets than women

SIMLESA: initial endowment may bring differences in adoption if they are resource intensive like fertilizer



# Who gets to decide?

## Intra-household decision making



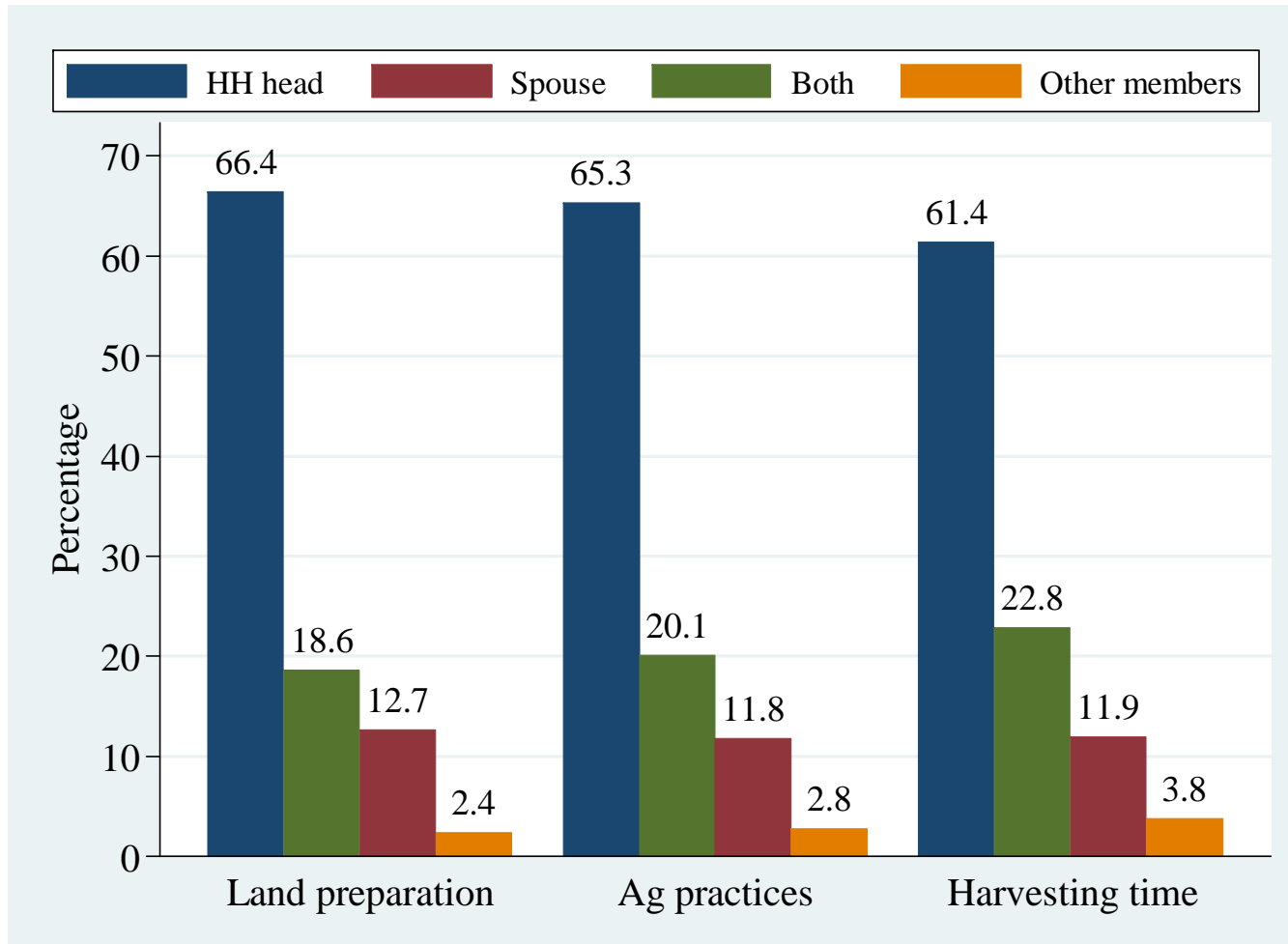
# Intra-HH decision making: sale of assets and livestock (% transactions)



NO  
difference across  
gender and  
geography for  
all plotted activities

HH head make decision alone less than 50% of the time;  
25% of the time a decision is made by spouse

# Intra-HH decision making: land preparation, practices and harvesting time



female head decide more than male heads

Difference across gender and geography for all plotted activities

SIMLESA: How could free more time of women who are multitasked (food security)

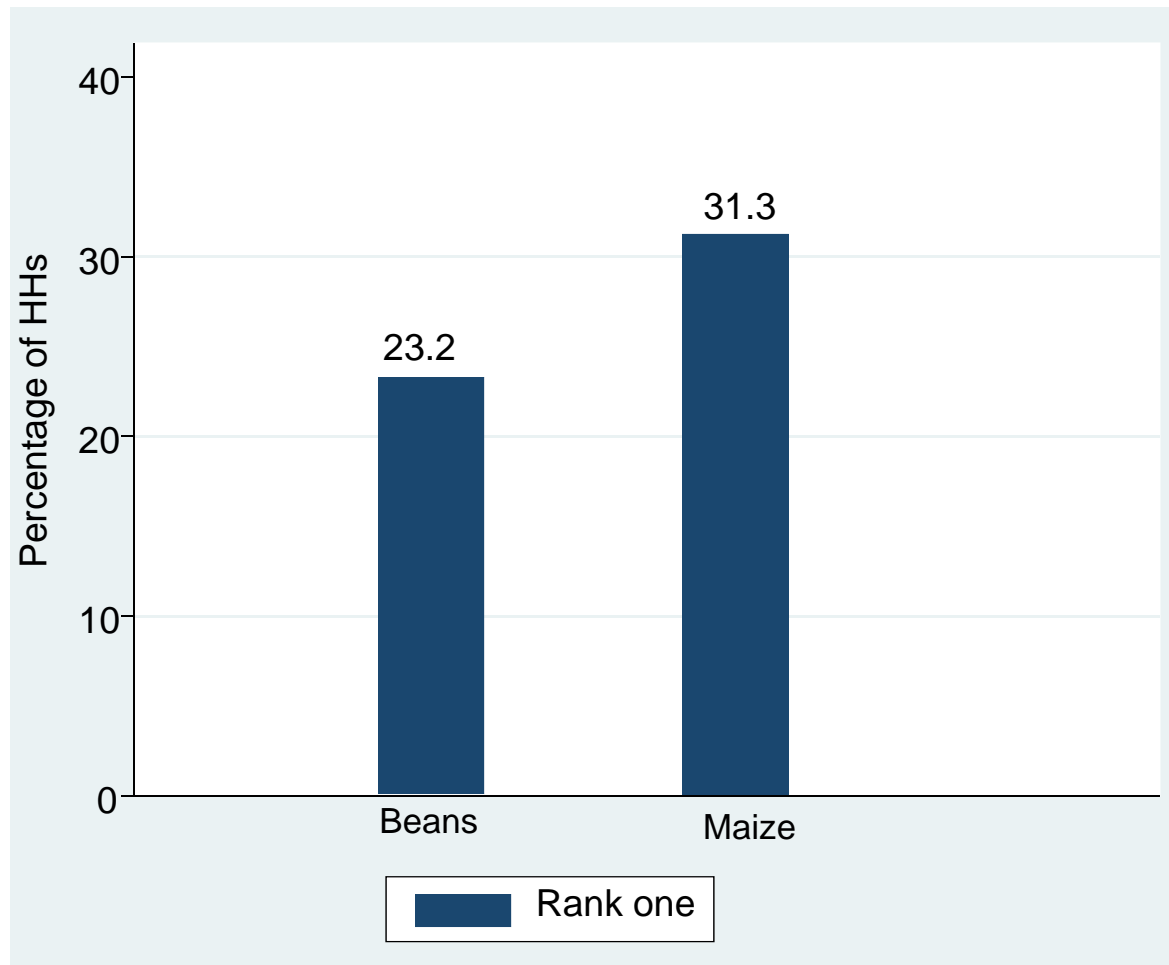
HH head make decision more than 60% of the time;  
 20% of the time a decision is made by spouse

# Household Production Constraints





## Main constraints in accessing input: Availability of seed (% hhs)

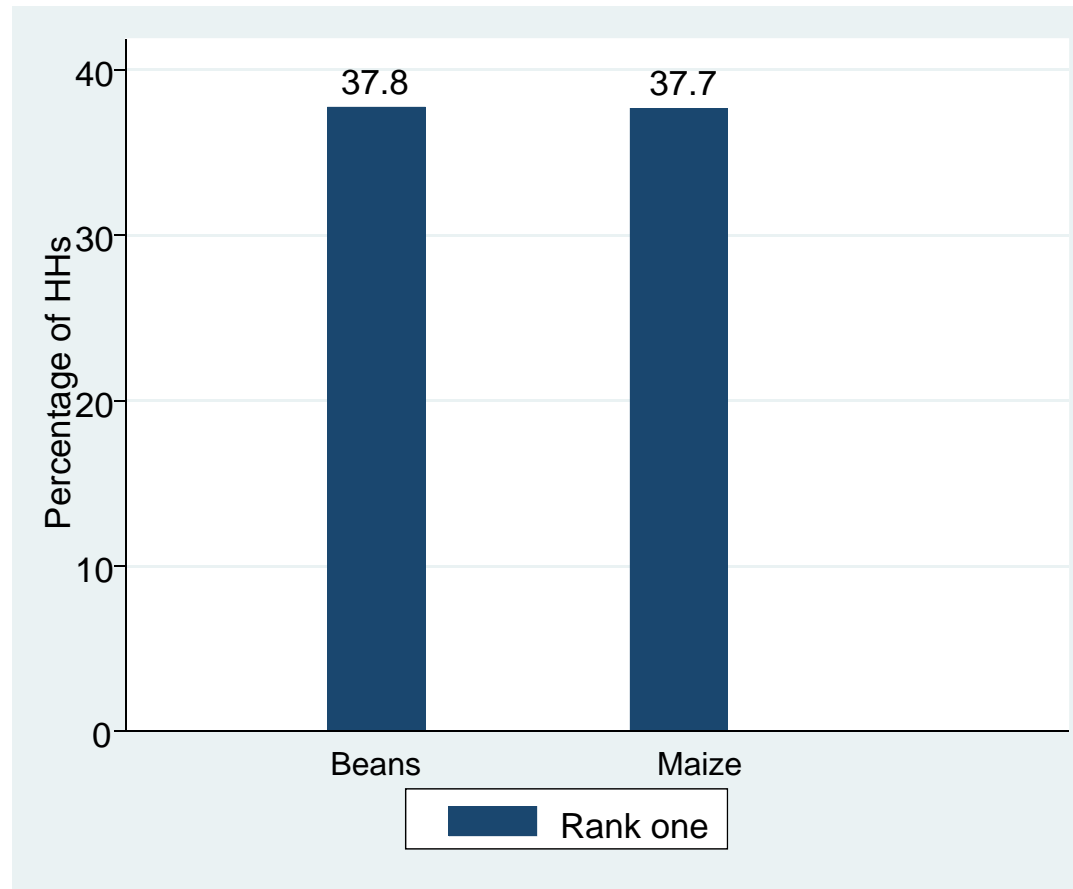


SIMLESA: may need to go beyond SAIPs and look at other market constraints

Seed availability is an issue...



## Main constraints in accessing input: Price of seed

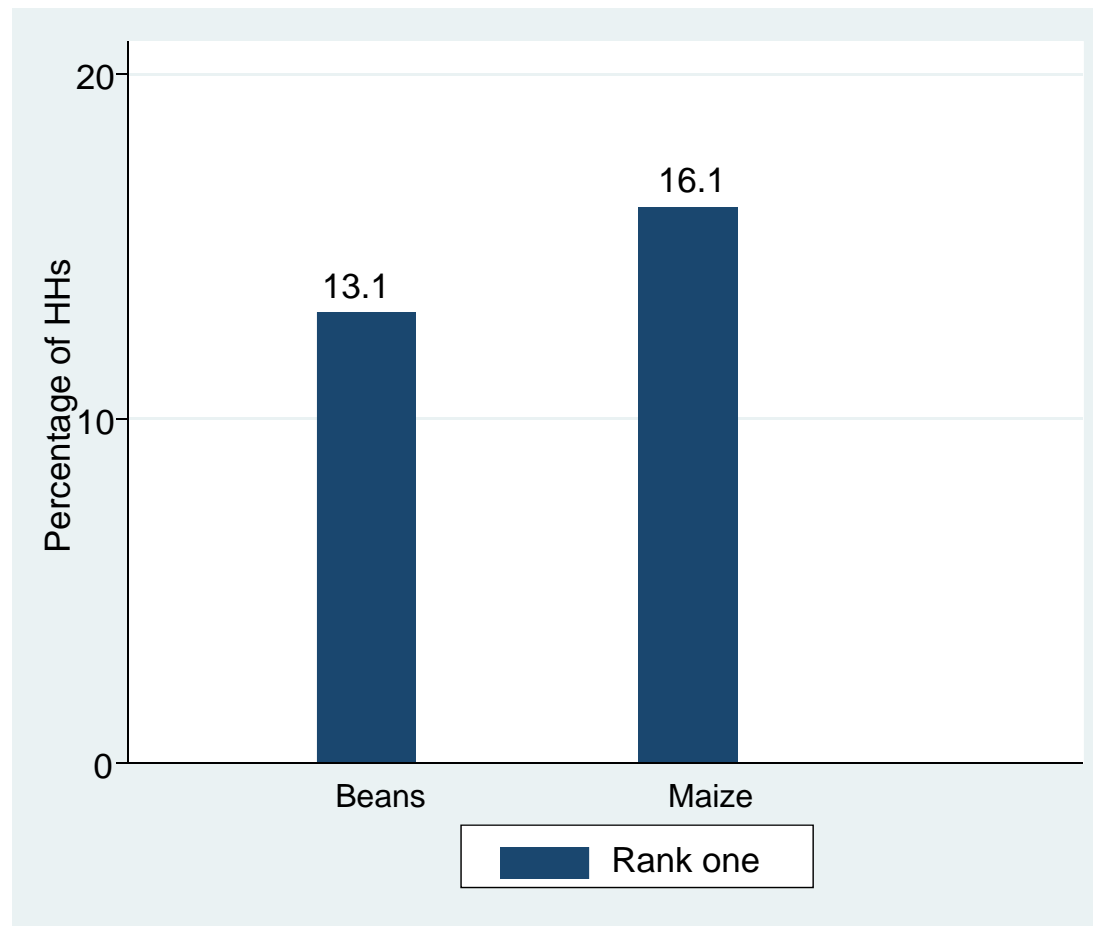


SIMLESA: may need to focus much on other market constraints

With no credit adoption may be limited

But price of seed seems even more important

# Main constraints in accessing input: Access hired to labor



SIMLESA: may need to focus much on other market constraints

Access to labor seems to be relatively less of a problem than purchased inputs

# Maize yields



**Table 3.6.** Maize productivity by district (kg/ha)

Maize variety	Manica (N=202)	Susundenga (N=212)	Angonia (N=256)	F-value	p-value
R201	726.59	1227.78	658.79	3.45	0.051
PAN 67	867.60	487.59	571.21	3.12	0.054
PAN 6777	735.85	534.28	634.29	0.55	0.584
Matuba (OPV)	688.94	522.45	887.50	1.33	0.282
Local	1542.75 a	1253.27 b	1003.33 c	6.80	0.001
All varieties	1266.93 a	1040.16 ab	896.00 b	3.22	0.041

Yield tend to be slightly bigger than national average, but still a yield gap with yields in Etiopia, Kenya, and Malawi

SIMLESA: As a big role by promoting SAPIs as a package (seed, ferliliser, extension, ect)

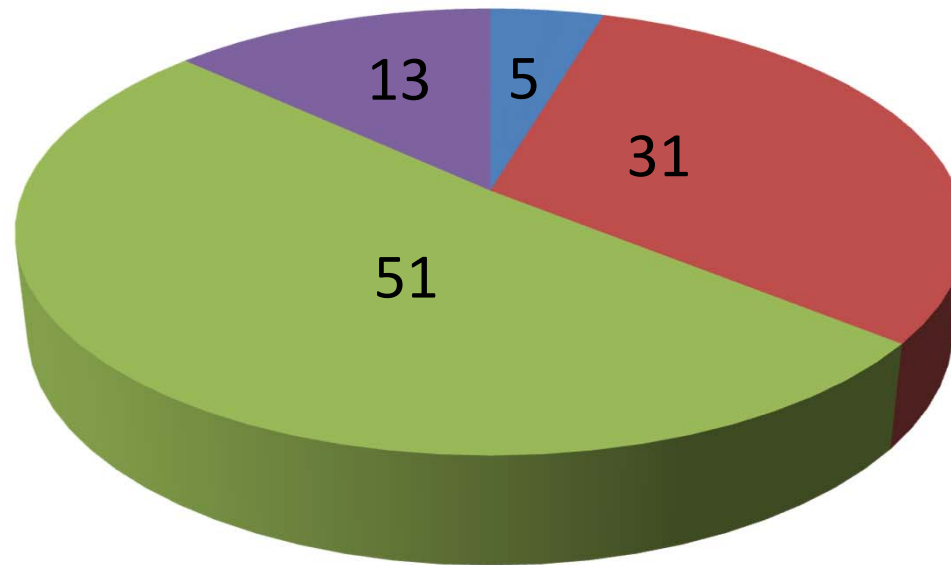
Yield differences by variety and geography. Local variety performs better than hybrids



# Food security



## Household own assessment of food security status (% hhs)



36% of households are food insecure

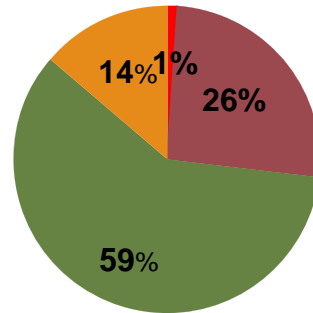
Food security affects adoption and vice versa

- Chronic food insecurity
- Transitory food insecurity
- Break-even food security
- Food surplus throught

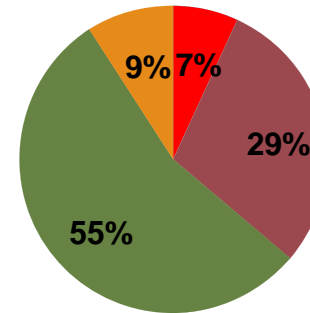




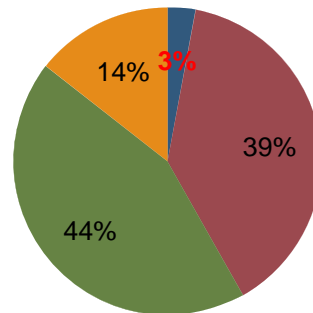
### Manica



### Sussundenga



### Angónia



Manica: 27% of hhs are food insecure

Sussundenga: 36% of hhs are food insecure

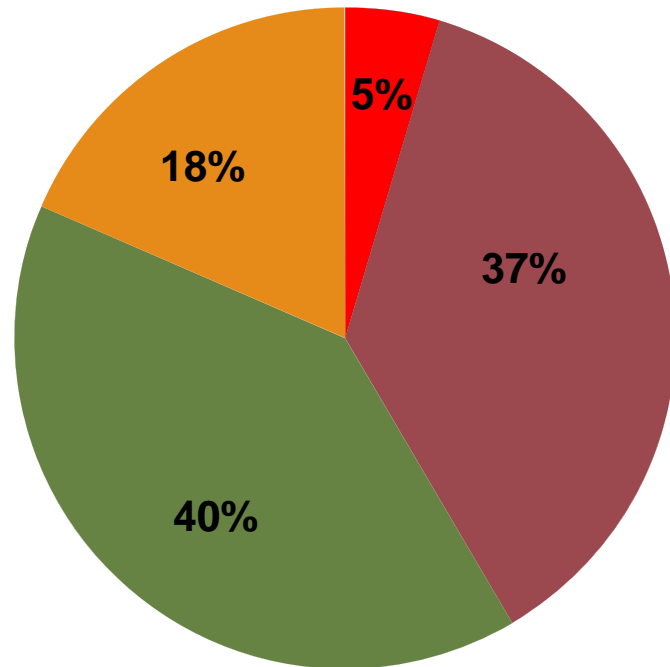
Angónia: 42% of households are food insecure

SIMLESA: More resources (time, extension messages) to Angónia?

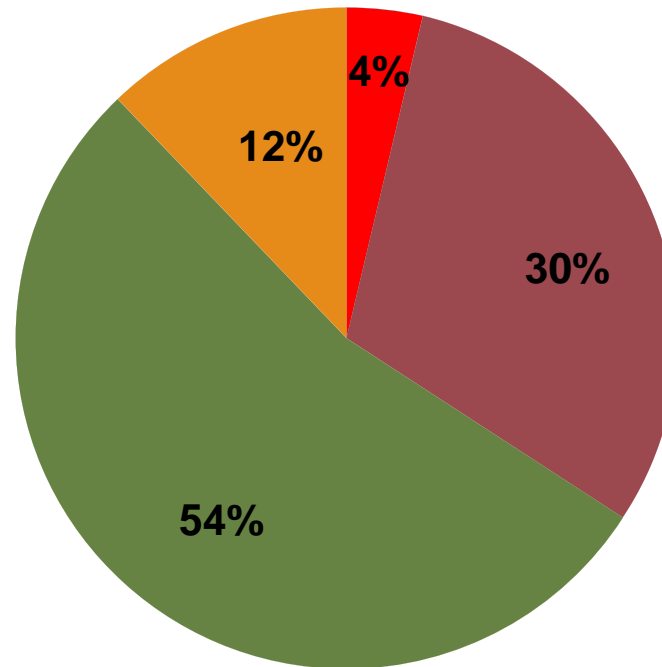




### Female

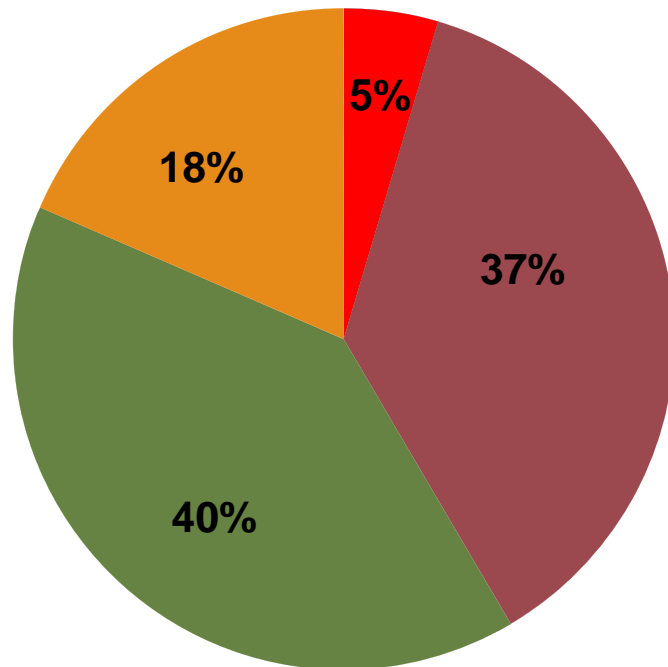


### Male

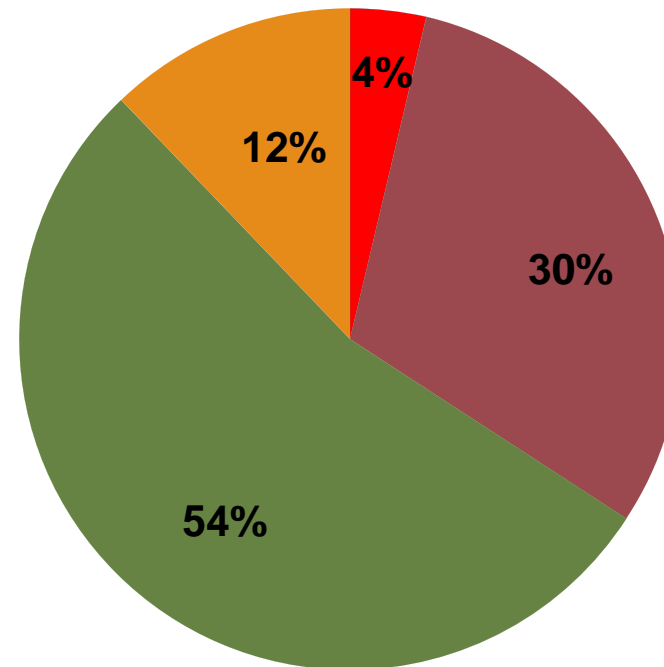




### Female



### Male



Male: 34% of hhs are food insecure

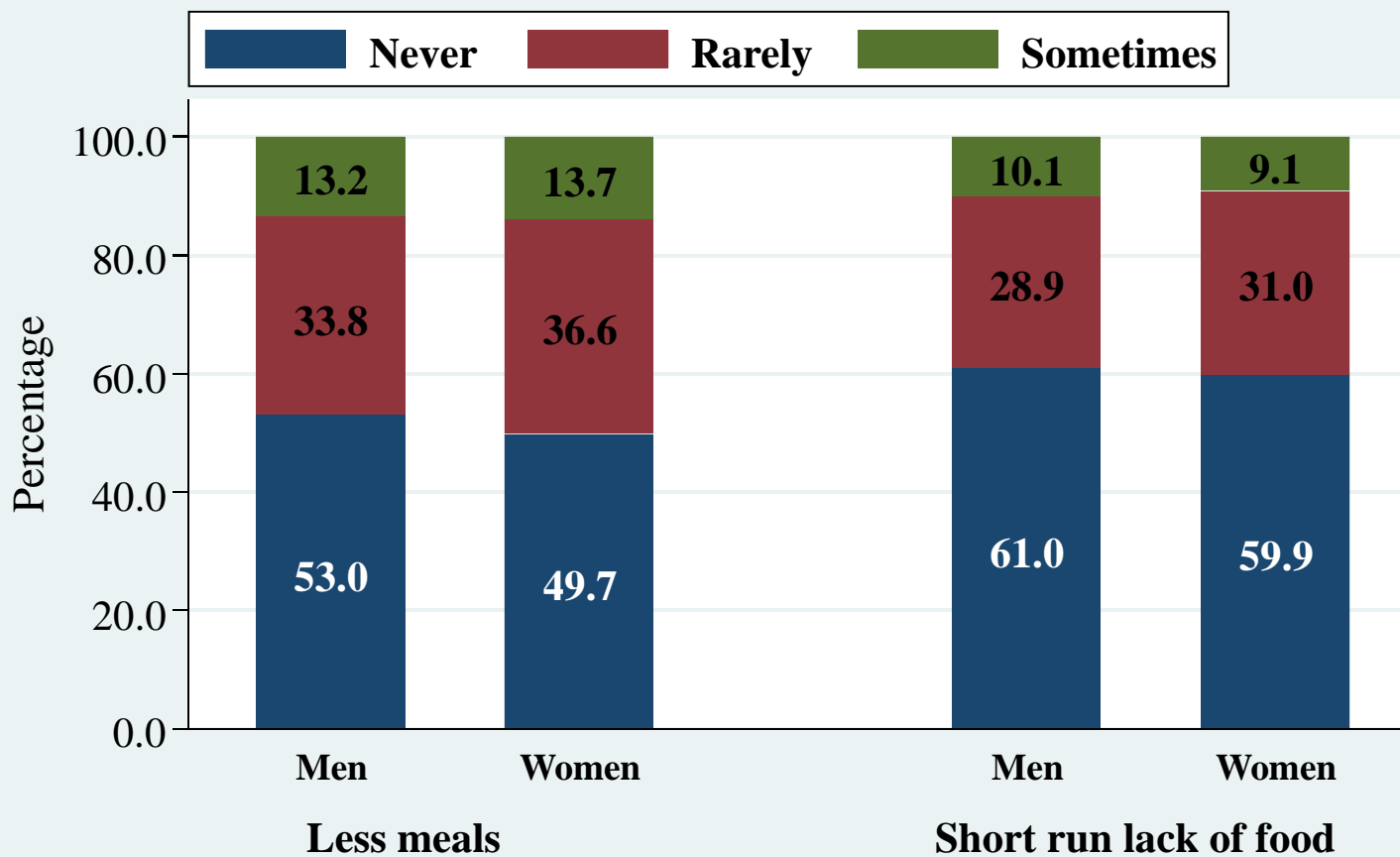
Female: 42% of hhs are food insecure

SIMLESA: More resources (time, extension messages) to women?

# Strategies to deal with Food shortages



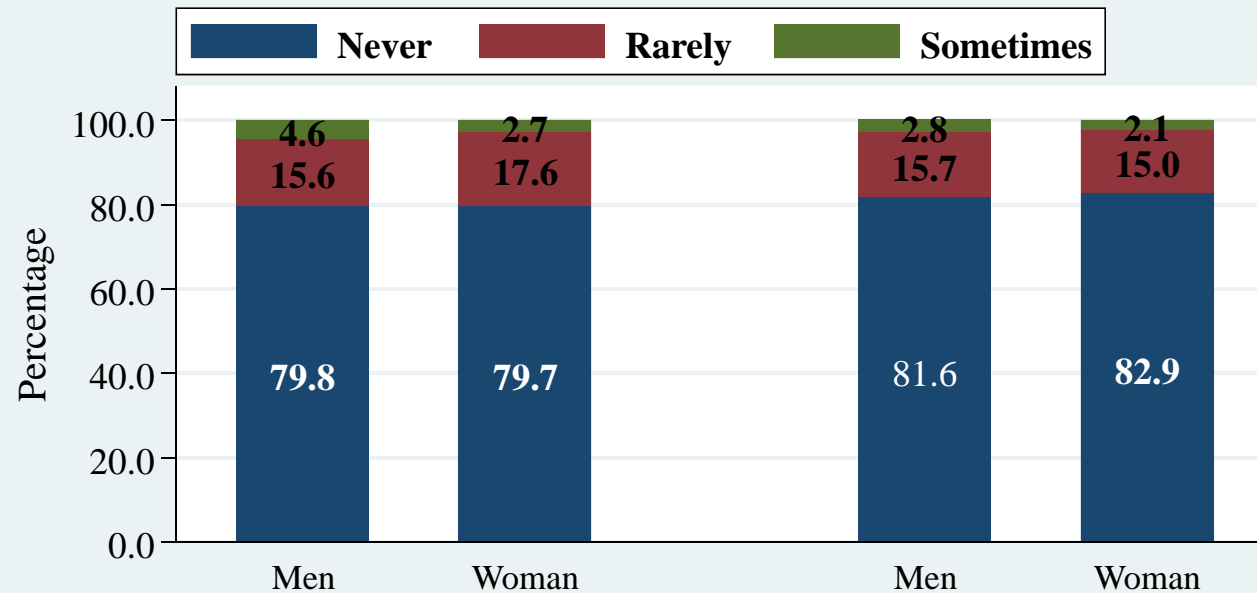
# Dealing With Food Shortages (% individuals)



consistent responses from men and women

10 to 13% of individuals report reducing meals or facing short run food shortages.  
50 to 60% never reduced meals and/or experiencing food shortages

## Food security (% individuals)



consistent  
responses from men and  
women

**Sleep hungry**

**All day without eating**

Less than 5% of individuals sleep hungry or go a day without eating  
About 80% report never sleep hungry or go a day without eating

## Take home message

- Adoption of SAIPs is gender and space sensitive.
  - ⇒ more targeting could help adoption
- There is limited access to credit, and credit need and access are sensitive to geography and gender.
  - ⇒ May need to go focus even more is market development
  - ⇒ May need to look at other market constraints that may hinder adoption
- Men members own more assets than women
  - ⇒ initial endowment may bring differences in adoption if they are resource intensive like fertilizer



## Take home message

- **Households, especially women, spend relatively too much time in agriculture**
  - ⇒ **adoption may be limited if SAIPs require more time and assets than convectional technologies, especially for women**
- **Given current yields, there a lot of potential for yield increase**
  - ⇒ **SIMLESA could play important role in coming years**
- **Food insecurity varies across space and gender. Food security affects adoption and vice versa.**
  - ⇒ **may need to prioritize and/or devote more resources to households that are more vulnerable to food insecurity**

# The way forward

- Engage on data processing
  - Consider both 2010 baseline and 2013 data
  - Consider plot and gender disaggregation
  - Engage more students to use data for their theses
  - Produce papers and briefs that might feed into policy
- Return the information to the farmers and extension works
- Convene policy dialogues (CEPPAG, ReNAPRI)
- Run the second round of AP survey in 2015

Thank you for your attention!

Obrigado pela sua atenção!

