



FRESH End-to-End Evaluation: Study overview and baseline findings

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Overview of the study



Background

In Tanzania, intake of fruit and vegetables (F&V) is low: 56% of adults consume the recommended amount of vegetables and 33% consume the recommended amount of fruit; 1/3 to 1/2 of children <2 having adequate F&V intake.

Low F&V intake contributes to the **double burden of malnutrition**, for example coexisting high prevalence of micronutrient deficiencies and overweight and obesity.

F&V sector is **the fastest growing sector** within agriculture, but F&V supply is insufficient, and intensification is hampered due to lack of quality inputs, finance, extension services and limited markets. Women face additional constraints with respect to access to resources and demands on their time. Post harvest losses are also high: 44-60%.

F&V are also **among the least affordable foods**, often not close enough for convenient or regular consumption.

FRESH aims to evaluate the effectiveness of a set of supply, demand, and food environment interventions to address these challenges and increase F&V intake in Tanzania.



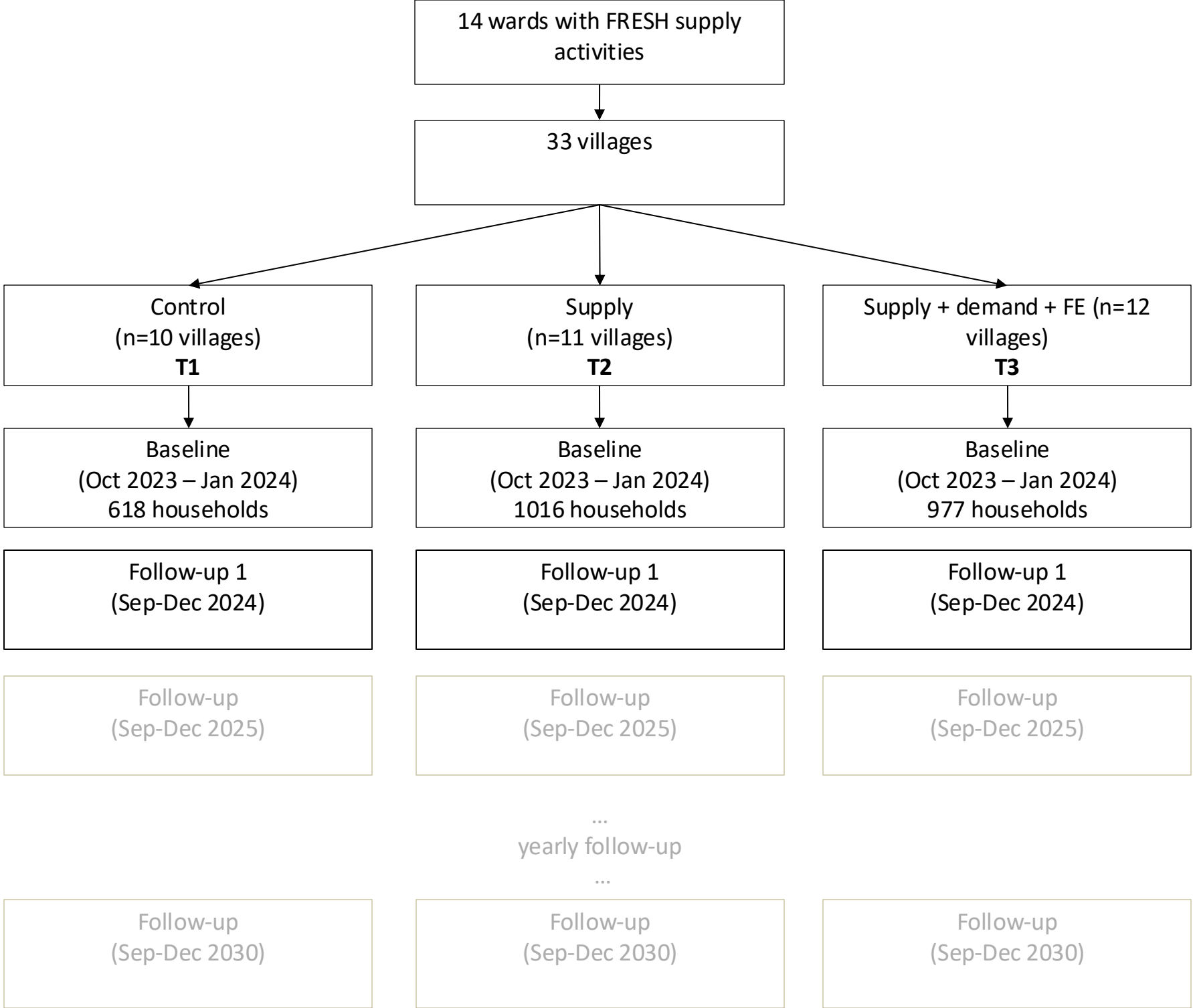
End-to-End Evaluation

- A longitudinal cluster randomised controlled trial in 33 villages in 5 districts in the Arusha and Kilimanjaro regions to assess the changes over time in vegetable production and F&V consumption and the impact of the FRESH end-to-end (E2E) approach on vegetable production and F&V consumption among ~2600 households
- A food environment (FE) census and bi-monthly assessment of ~100 retailers to characterize the F&V FE

Objectives

1. To understand the changes over time in production of vegetables and dietary intake of fruit and vegetables (F&V)
2. To understand the impact of the FRESH E2E approach (and the interventions within it) on production of vegetables and dietary intake of F&V
3. To characterize the market FE, especially with respect to F&V
4. To assess the changes over time in FE
5. To understand the relationship between FE measures and dietary intake of F&V

Study design



Study interventions

1. Supply:

- Targeting farmers - provision of climate-resilient vegetable cultivars, training on agricultural production practices with a focus on safe and sustainable vegetable production, training on integrated pest management, and irrigation water management.
- Targeting mid-stream actors (traders, wholesalers, etc.) - training on post-harvest management to reduce post-harvest loss of F&V, future interventions to improve food safety.

2. Demand – targeting primarily women of reproductive age (15-49 y)

- Focus on creating demand and shifting consumer behavior towards increased F&V intake and overall healthier diets.
- Co-design workshop on Aug 29

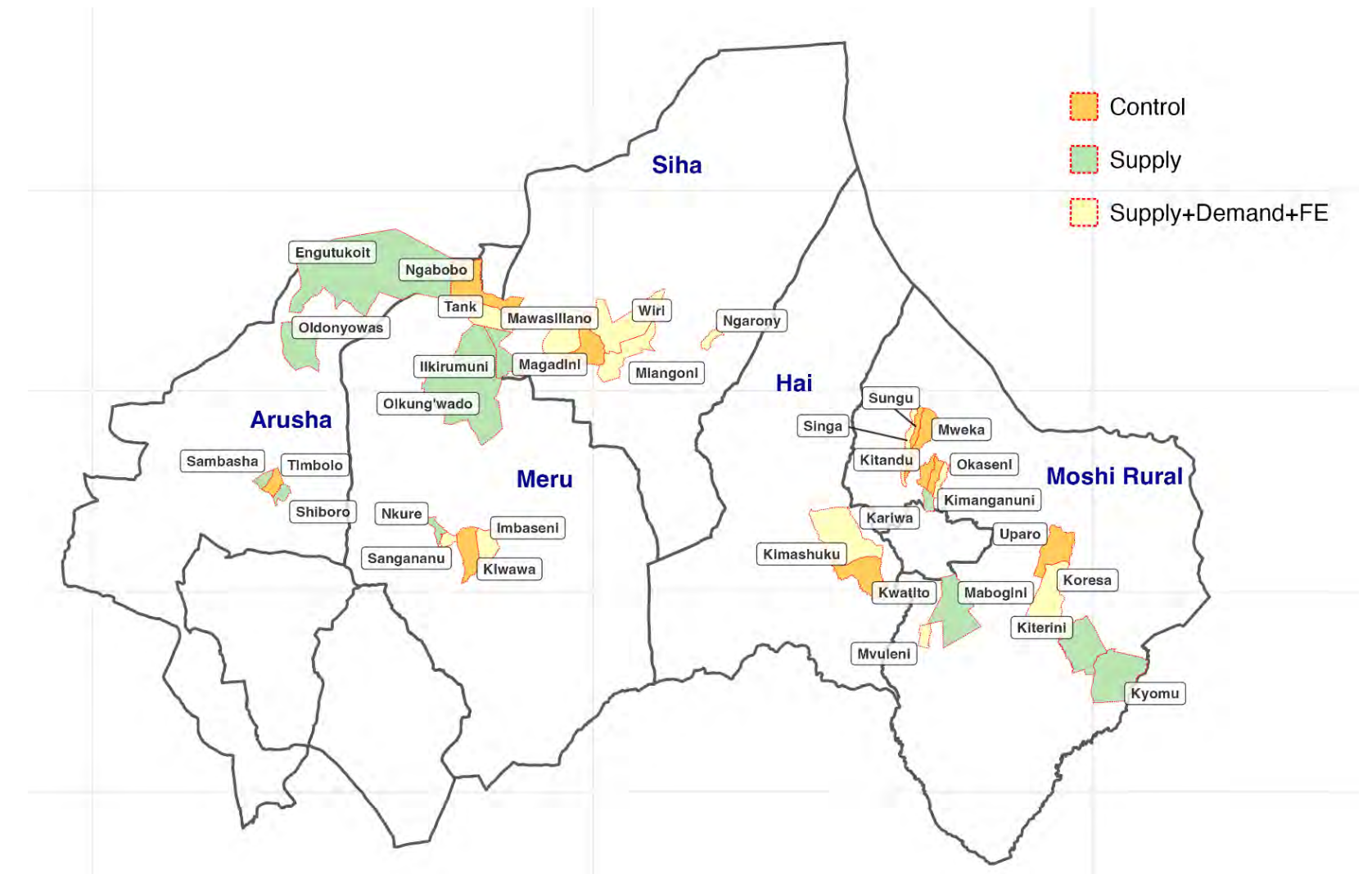
3. Food environment - focus on markets and retailers

- Aim to enhance the accessibility, affordability, and/or promotion of F&V in these key retail settings.



Study site

1. Arusha and Kilimanjaro regions
2. 5 district: 2 in Arusha, 3 in Kilimanjaro
3. Areas with the two agroecologies of interest: high vegetable production and mostly cereal-based cropping systems with limited or no vegetable production.
4. 33 assigned to control, supply, or supply+demand+FE arm
5. Households with a woman of reproductive age (15-49 years of age) and an adolescent (10-14 years of age)



Data collection

1. Baseline survey conducted Oct 11, 2023 to January 15, 2024
2. Pause from December 20, 2023 to January 7, 2024
3. Village and household data collected
4. Data collected using SurveyCTO on Android tablets
5. Surveys conducted in Kiswahili

Outcomes assessed

Household head

- Agricultural production: **Number of months vegetables were produced in the previous year**

Woman of reproductive age

- Diet intake: **Fruit & vegetable intake (g/d)**
- Food insecurity
- Anthropometry

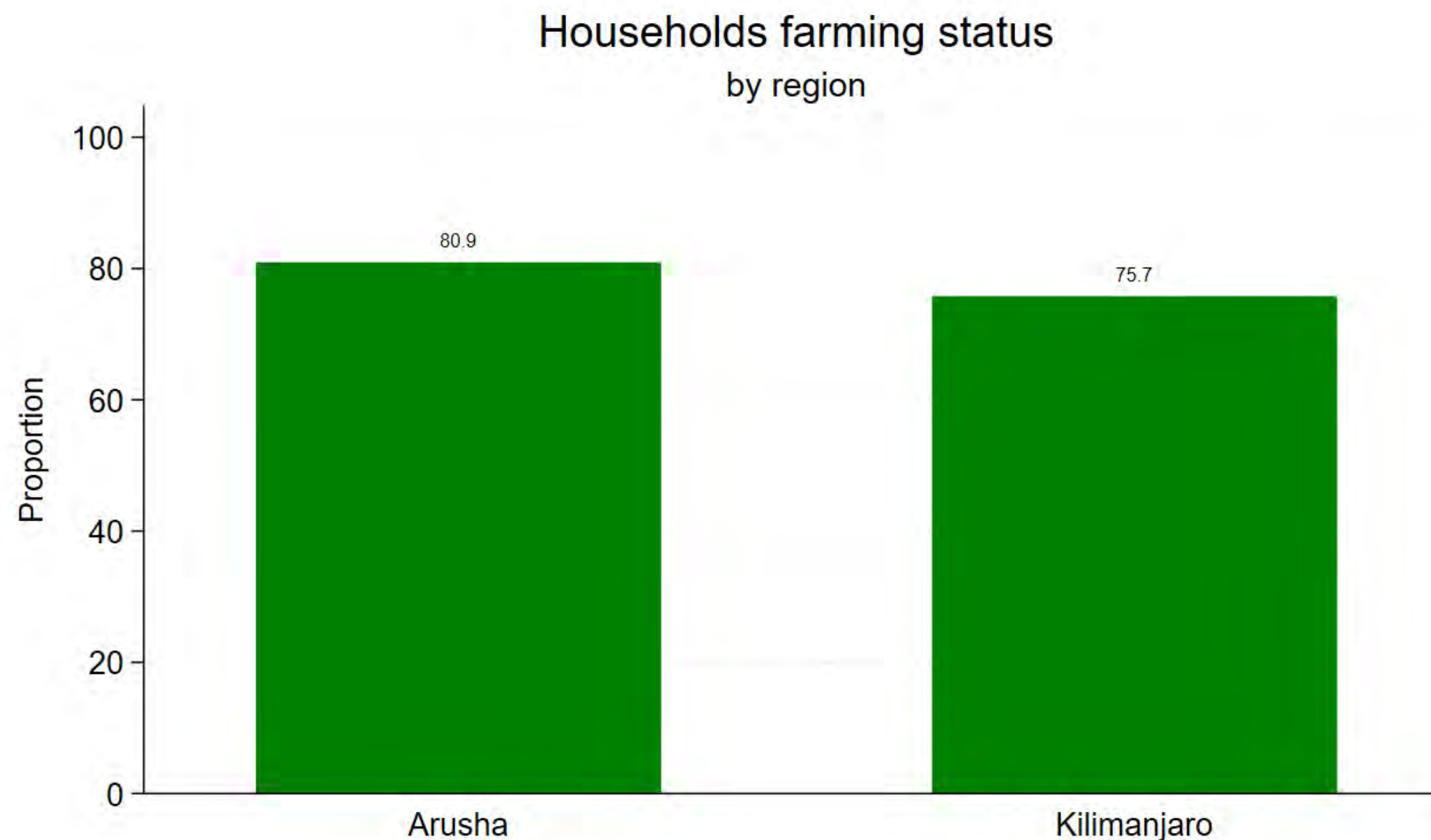
Results



Household characteristics

	Mean \pm SD or %
N	2611
<i>Household</i>	
Size	5.8 \pm 1.7
Number of household members <18	3.2 \pm 1.4
Head is male	85%
<i>Women</i>	
Age (in years)	38.2 \pm 6.2
Pregnant	4.7%
Breastfeeding	19.4%
<i>Adolescents</i>	
Age (in years)	11.9 \pm 1.4
Male	48%

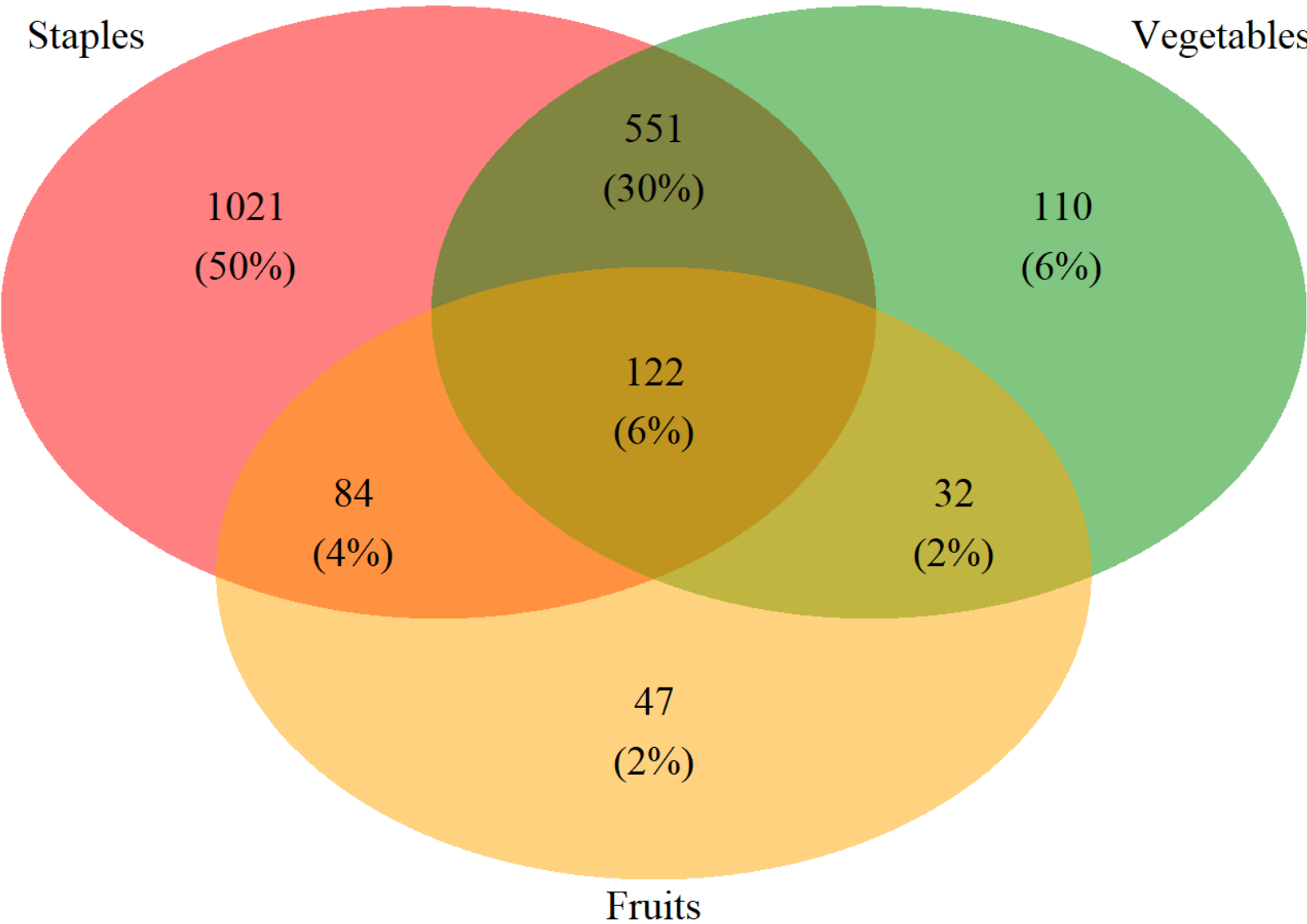
Household farmed in last 12 months



Most farming households are smallholders with 65% farming <0.5 ha of land.

Types of crops cultivated

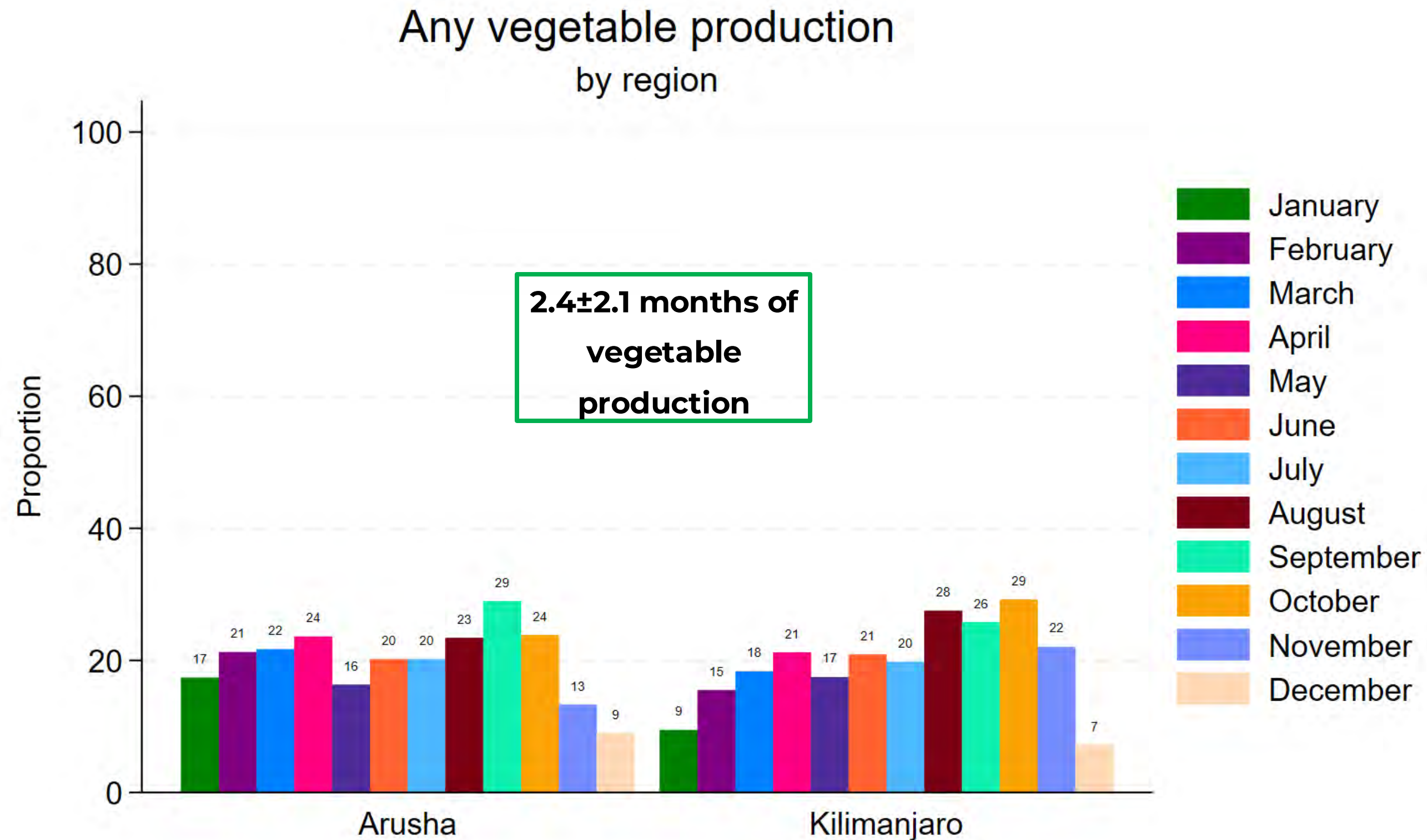
Proportion of households cultivating different types of crops



Vegetable production



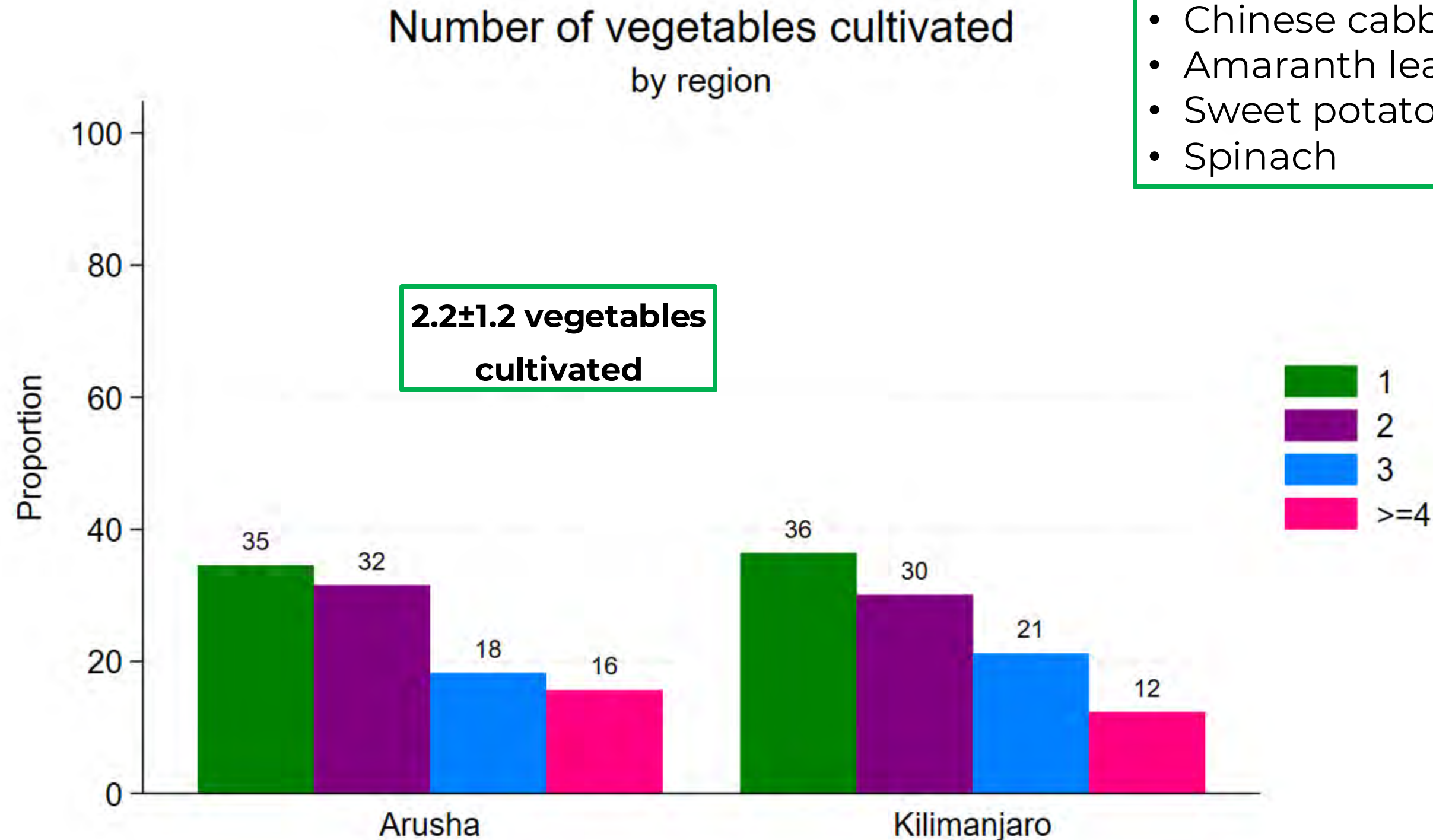
Months of vegetable production



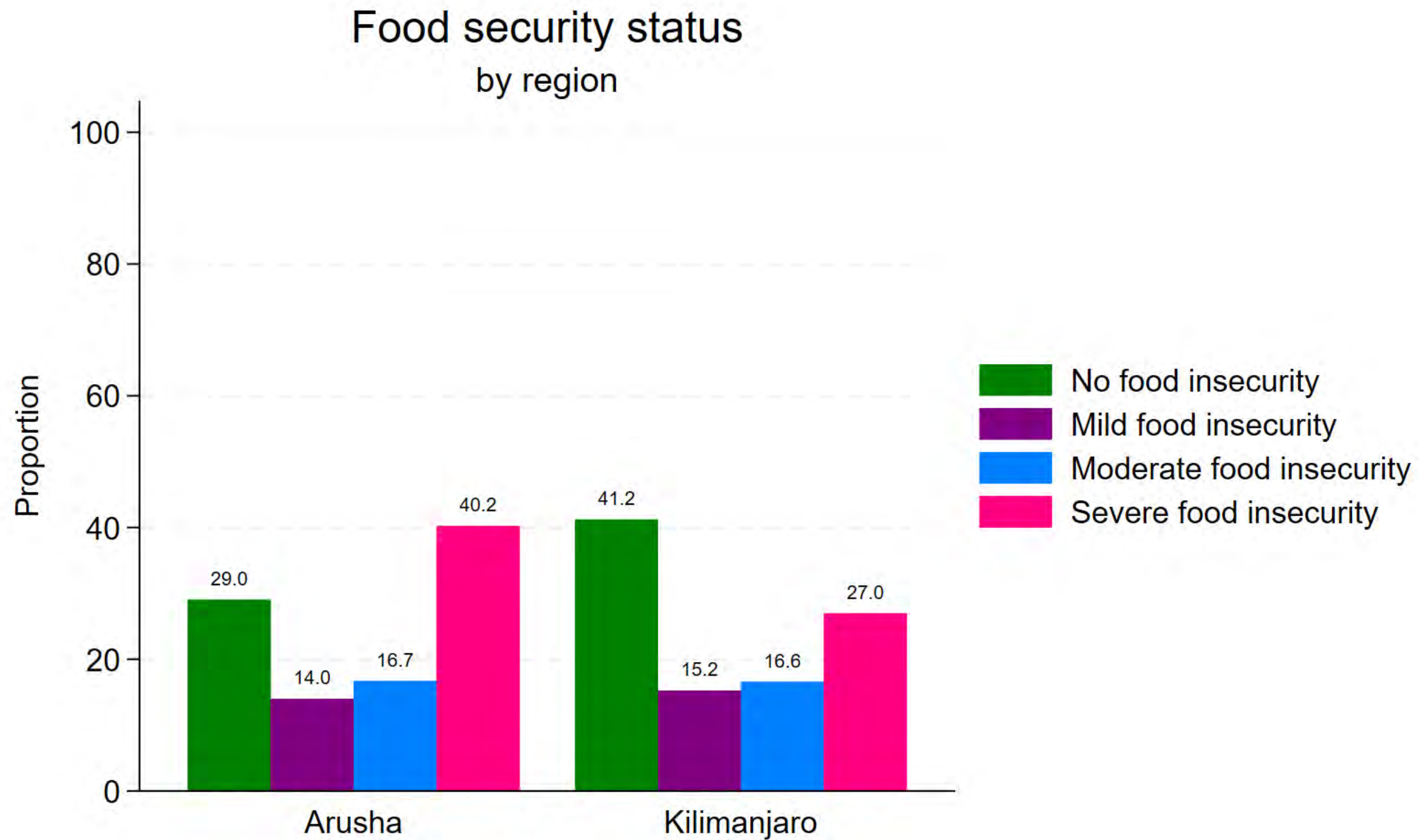
Vegetables cultivated

Most frequently grown vegetables:

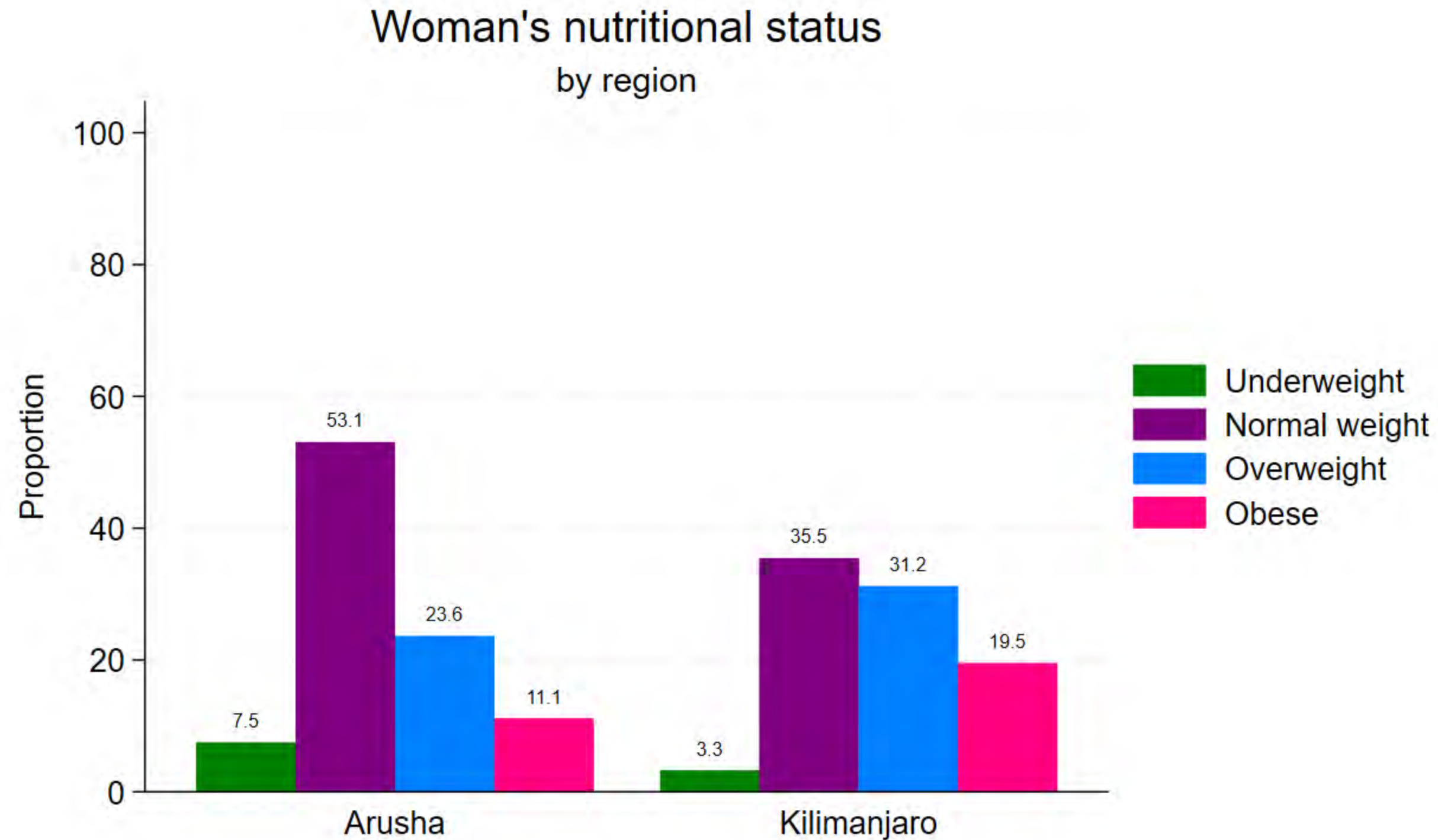
- African nightshade
- Collard greens
- Chinese cabbage
- Amaranth leaves
- Sweet potato leaves
- Spinach



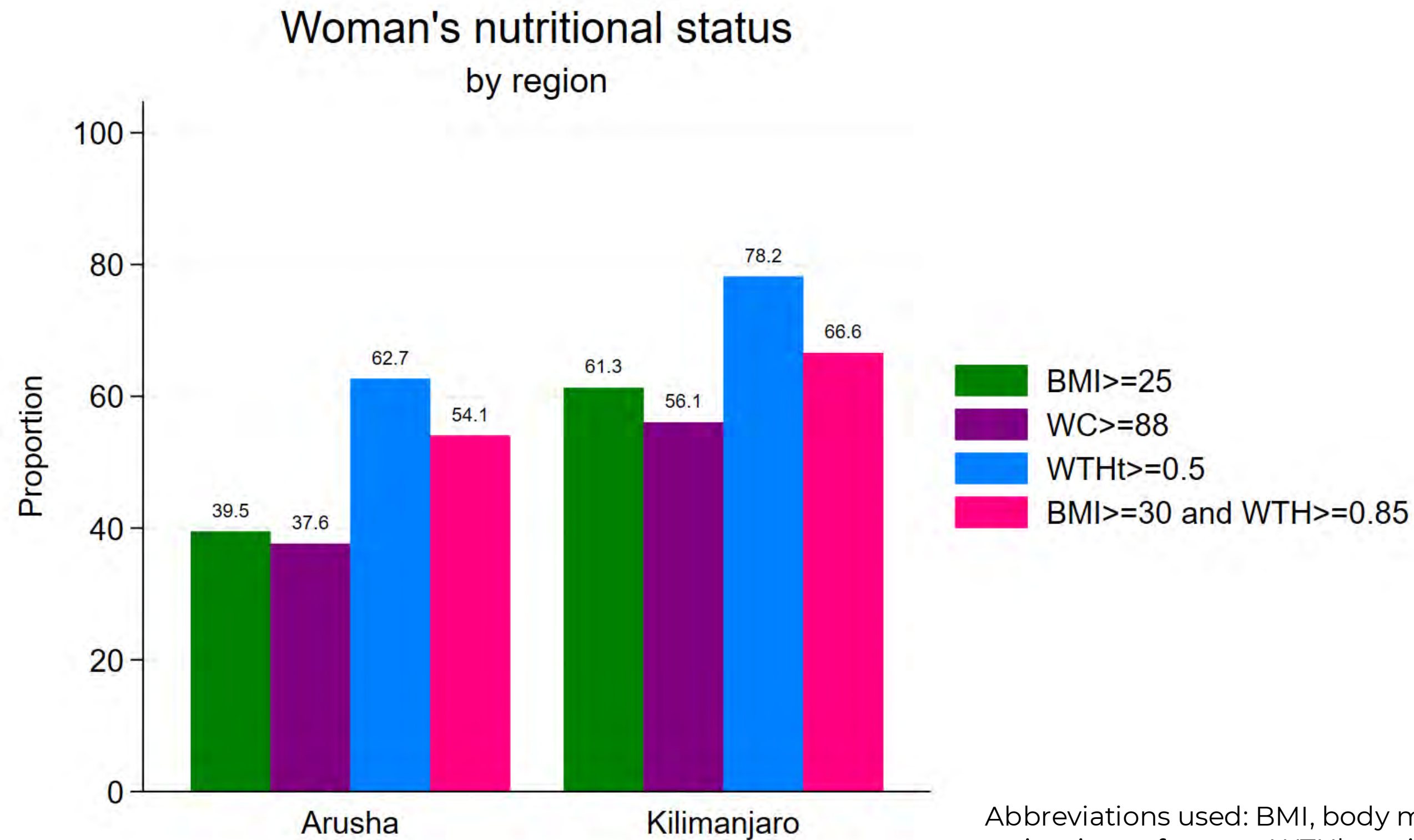
Food security



Women's nutritional status



Women's overweight and obesity



Abbreviations used: BMI, body mass index; WC, waist circumference; WTHh, waist-to-height ratio; WTH, waist-to-hip ratio

Key takeaways



Key takeaways

- Smallholder farmers with 40% growing vegetables (higher proportion in Arusha than Kilimanjaro)
- Vegetables are grown for 2.4 months on average
- Most households farm 1 or 2 vegetables
- Food insecurity is high particularly in Arusha
- Overweight and obesity prevalence in women is high, particularly in Kilimanjaro
 - Up to 78% of women in Kilimanjaro and up to 63% in Arusha are overweight or obese
 - Higher prevalence if using metrics associated with non-communicable diseases



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Thank You



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Website
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