

Gender, Farmer Attitudes and Adoption of Biofortified Food Crops in Sub Saharan Africa: The Case of Orange-Fleshed Sweetpotato in Tanzania

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# Gender, farmer attitudes, and adoption of bio-fortified food crops in sub-Saharan Africa: The case of orange-fleshed sweetpotato in Tanzania

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## Introduction & Study Objective

- About 127 million preschool children worldwide suffer from vitamin A deficiency (VAD) with up to 600,000 children dying annually.
- Reduction of VAD through consumption of  $\beta$ -carotene-rich orange fleshed sweetpotato (OFSP) is one proven approach
- Efforts to promote production and consumption of OFSP include changing households' attitudes towards OFSP.
- Sweetpotato is largely a woman's crop but complex intra-household dynamics exist in decision-making and allocation of productive inputs; hence the need to understand the behavior of both women and men.
- While the literature on adoption is vast, the effect of intra-household gender differences in attitudes towards attributes of a technology on adoption remains unknown.
- This study uses a unique gender-differentiated dataset to assess the effect of farmers' attitude on the adoption of OFSP.
- It focuses on sweetpotato growers targeted by a three-year project that promoted the growing and consumption of OFSP as well as utilizing improved planting material of local varieties.



A DVM showing his crop



Farmer planting OFSP

## Results of logit regression models

Variable	Combined	Female	Male
	Coeff( $\beta$ )	Coeff ( $\beta$ )	Coeff ( $\beta$ )
AttScore	0.73***	0.64***	0.66***
Log of age	-1.08*	-1.16*	-1.03*
Farmer's knowledge of a decentralized vine multiplier (DVM)	1.80***	0.92***	0.71**
Nutrition knowledge	1.05***	1.27***	1.03***
Accessed vines using Voucher	0.45	0.78*	0.99**
Vine availability	0.76	0.98**	1.05**
Asset index	0.23***	0.22***	0.20***
Mara	0.69**	0.54	0.38
Shinyanga	2.28***	2.15***	2.00***
Kagera	0.45***	1.80*	2.01*
	Wald chi <sup>2</sup> (16) = 102.88*** Pseudo-R <sup>2</sup> = 0.38	Wald chi <sup>2</sup> (16) = 99.51*** Pseudo-R <sup>2</sup> = 0.37	Wald chi <sup>2</sup> (16) = 94.23*** Pseudo-R <sup>2</sup> = 0.35



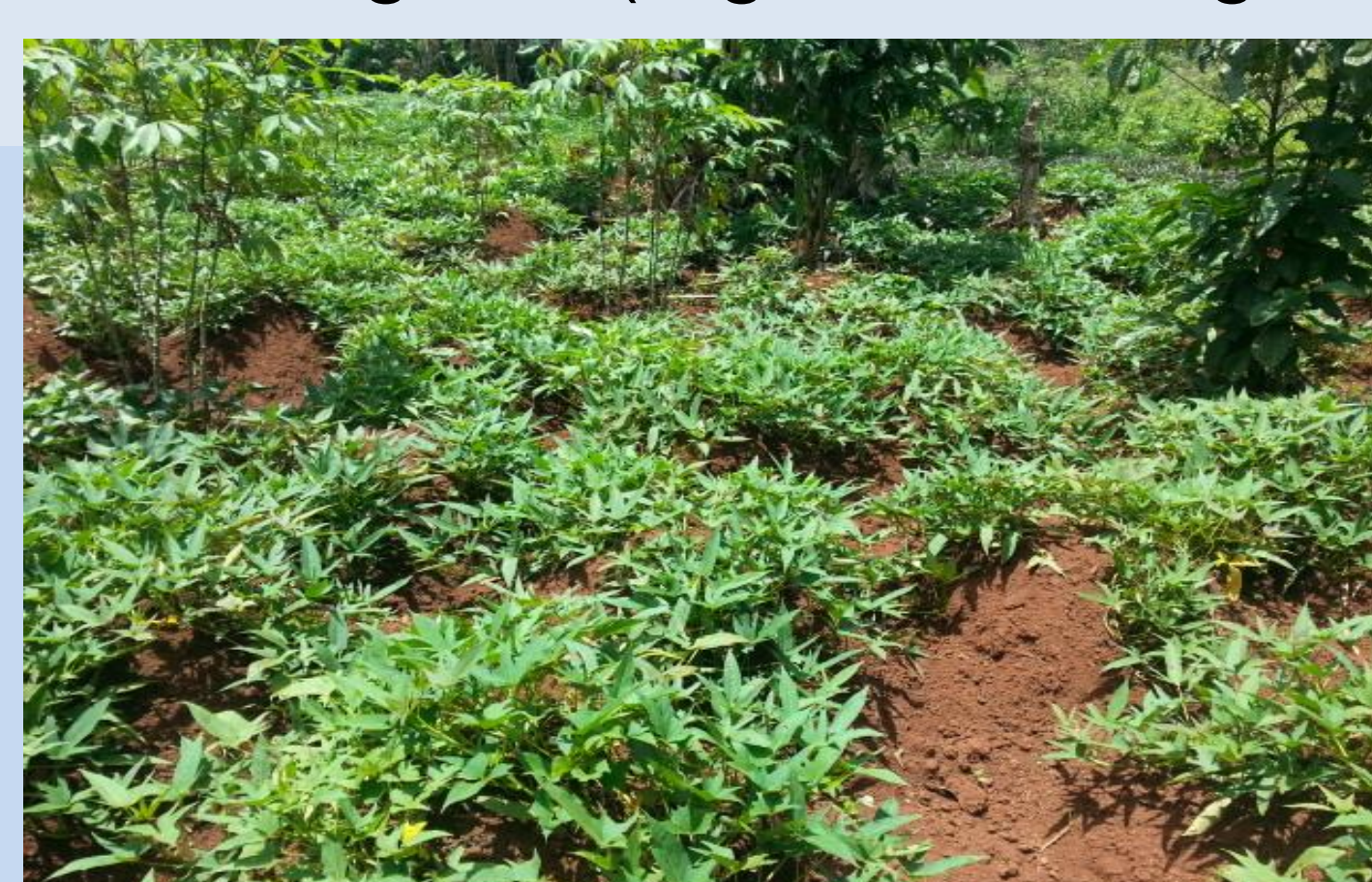
OFSP consumption

## Methodology

- Data used were collected from 327 smallholder farmers' households in the Lake zone region of Tanzania by interviewing both male and female respondents using the same set of questions .
- A two-step procedure was followed to assess the effect of the male and female farmers' attitude on the initial adoption of OFSP. All respondents would have retained their varieties through at least one dry season at the time of the interview.
- 1<sup>st</sup> step: Exploratory factor analysis was used to measure the latent attitude construct and to generate attitude scores (attscore), computed based on OFSP attributes: taste, yield, storability, and appeal to children.
- 2<sup>nd</sup> step: Logit regression models were estimated for male and female respondents separately and jointly for the whole household to assess the effect of the male and female attitude on OFSP adoption.
- The dependent variable was a binary variable equal to one if the household grew OFSP anytime between 2010-2012, zero otherwise. The estimated model was specified as:

$$\ln(P_{ofsp}/1-p_{ofsp}) = \beta_0 + \beta_1 attscore + \dots + \beta_n x_n$$

- The study tested the hypothesis that women's and men's attitude has no effect on likelihood of OFSP adoption i.e.  $\beta_1=0$
- The control variables (X) included age, asset ownership index, and dummies for knowledge of decentralized vine multiplier (DVM), nutrition dummy, use of voucher, regions (e.g., mara, kagera), and vine availability.



OFSP crop in the field

## Discussion, conclusions & implications

- As hypothesized, the study finds that gender-differentiated attitudes affect the likelihood of OFSP adoption.
- Other factors that influence the likelihood of adoption include age, farmers' knowledge of a decentralized vine multiplier (DVM), farmers' knowledge of the nutritional benefits of OFSP, and the wealth status of the farmer.
- The study concludes that, given other socioeconomic factors, male and female farmers with positive attitude towards OFSP attributes are more likely to adopt OFSP.
- The study further concludes that attitude towards OFSP is a uni-dimensional construct related to nutrition beliefs, taste, yield, storage, and the fact that OFSP is loved by children.
- The study findings imply that:
  - ✓ Taking farmers' attitudes into consideration can enhance the production of bio-fortified crops.
  - ✓ Breeding and promotional efforts should also consider farmers' perceptions of the attributes of bio-fortified crops.

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