

# The impact of health message and social norm interventions on farmers' willingness to pay for biofortified crops: Evidence from discrete choice experiment on biofortified maize in Ethiopia

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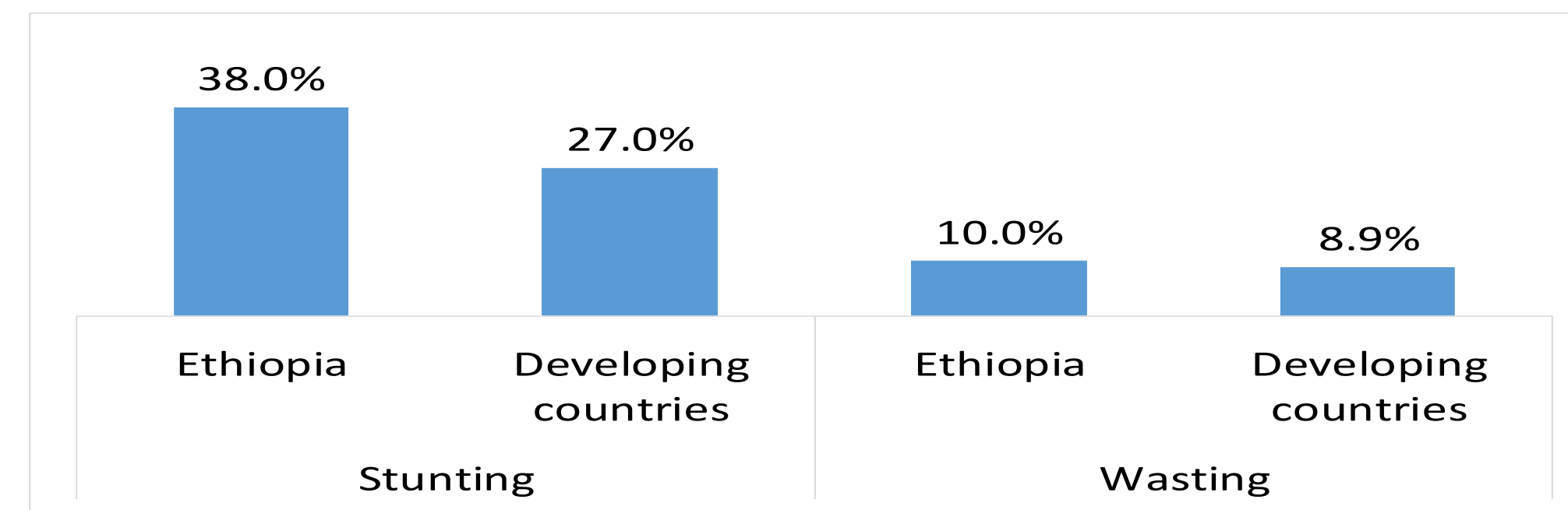
## Introduction

Malnutrition is one of the most pressing challenges for Ethiopia

. Population =102.4 million

. Children under the age of 5=15.2 million

Prevalence of malnutrition among under five population (1)



Bio fortification is recognized as an effective and efficient nutrition sensitive-agriculture intervention(2).

Study crop: Maize

. The most important and cheapest source of calorie intake in the country (3)

. Produced and consumed by significant proportion of the country (4)

. Identified as ideal candidate for biofortification.

Availing relevant information about a product (messaging) (5) and describing how most people behave in a given situation (social norm) (6) affects agents information sets and play a role in agent's decision process (production and consumption of bio fortified crop).

However, there are limited studies in developing country context that assess the complementary nature of these interventions.

The objective

. To identify the effect of health messaging and social norm intervention on the farmers willingness to pay for biofortified maize seed.

This work differs from other studies in the following two important ways;

. Examine whether the above two intervention complement to each other or not

. Uses a huge and rich dataset which give more precise estimate of the effect size improve the generalizability of the achieved results.

## Methods

A discrete choice experiment (DCE) has been conducted.

Attributes	Description	Levels considered
Seed price	Market price of one kg of maize seed in Ethiopian birr.	3 levels (24ETB, 35 ETB, 47ETB,)
Product price	Market price of one kg of maize in Ethiopian birr.	3 levels (7.00ETB, 8.25ETB, 9.50ETB)
Origin of the seed	Source of the seed	4 levels (Other farmers, private traders, government, NGOs)
Bio-fortification status	Whether or not the maize is bio-fortified	2 levels (bio-fortified, Not bio-fortified)
Colour of the grain	The colour of the maize grain.	2 Levels (yellow, white)

. Choice sets

. 48 choice sets using random selection without replacement

. Optimally divided into 6 equal blocks (8 choice sets per participants)

Sample size: 2,022 smallholder households (responding to 16,176 choice set), selected randomly the three major maize producing regions of Ethiopia (Amhara; Oromia; and Southern Nations, Nationalities and Peoples (SNNP) regions).

	Information treatment	
Social Norm Treatment	(YES, YES)	(YES, NO)
	(NO, YES)	(NO,NO) Control

Experimental design: Two treatments Information and social norm treatments

Description of the treatments;

. Information treatment : informing respondents the importance of consuming food prepared from bio-fortified maize.

. Social norm treatment: making participants believe that consumption of foods prepared from nutritionally enhanced maize is both common and socially desirable

. Primary outcome measures: Farmers willingness to pay for biofortified maize

. Data analysis: Mixed logit model with flexible distribution s estimated.

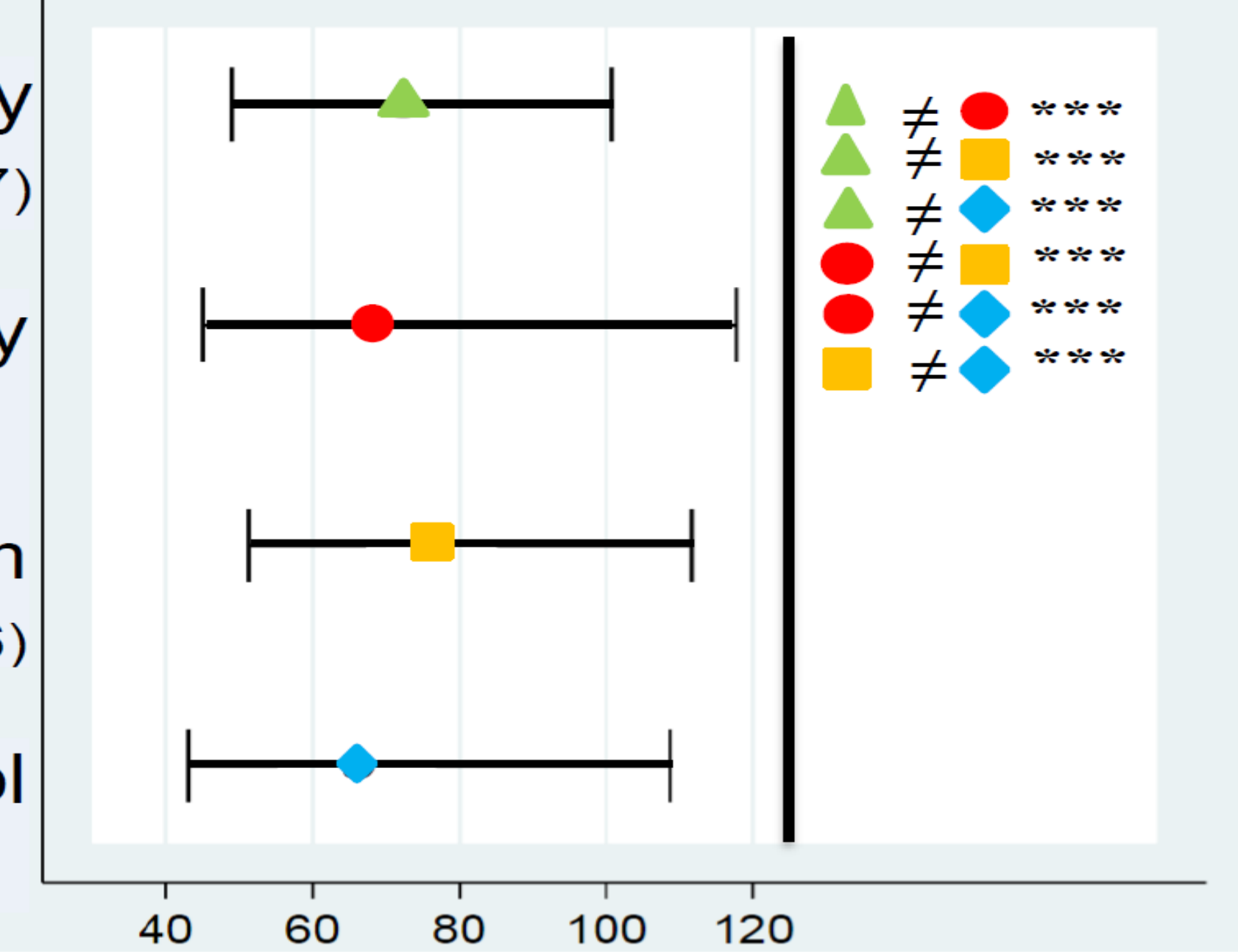
## Results

Information Only  
(N=4,056, Res.=507)

Social norm Only  
(N=4,128, Res.=516)

Info. & Soc. Norm  
(N=4,208, Res.=526)

Control  
(N=3,784, Resp. =473)



Note: WTP for bio fortified maize seeds (ETB/kg). Mean and 95% confidence interval. \*, \*\* and \*\*\* denote group difference significance at \* 1%, 5% and 10% significance level. Bonferroni correction was employed to account for multiple tests.

Interaction effects:

From the maize attributes

. Color: On average farmers are wtp more to white maize (irrespective of its biofortification status)

. Source of Seed: Farmers are wtp for government sourced seeds.

Socio-demographic variables

Sex of respondents, Previous exposure, Education

## Conclusions

. Nutrition message only slightly increases farmers' wtp for yellow biofortified maize

. Social norm treatment only does not seem to significantly increase wtp

. Combining both treatment have showed to have the biggest effect on farmers wtp

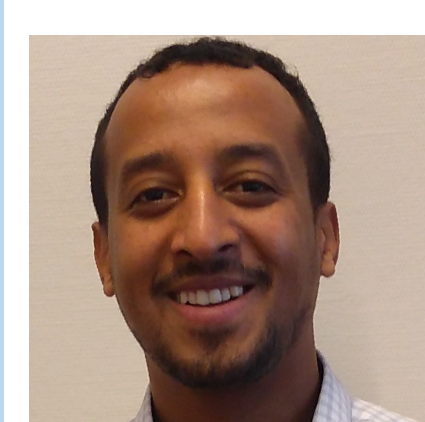
. Socio-demographic and attributes of the maize moderated the treatment effects.

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