

GENDER DIFFERENCES TO ACCESS EXTENSION SERVICE ON NEW WHEAT PRODUCTION TECHNOLOGY: THE CASE OF WHEAT PRODUCERS IN DIGALU TIJO WOREDA ARSI ZONE OROMIYA, ETHIOPIA

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ABSTRACT: *The case study was conducted in three selected kebeles of Digalu Tijo District, Arsi Zone, Oromia Regional State of Ethiopia with the objectives of investigating the difference of access of new wheat packages of men and women, identifying the barriers to women to adopt new wheat varieties. Purposive sampling method was used to select 60 individual respondents, 6 key informants and 3 different focus groups for discussion session. Data was collected using interview guide, focus group discussion guide and key informant checklist. The data were analyzed using statistical package for social science (SPSS) software version 20 and categorization of themes was done to analyze the qualitative data. Transcription, coding and organizing were carried out to make the data meaningful and prepare report. Quantitative methods (frequency and percentages) were employed to analyze quantitative data. The result of the study shows, in wheat production, men have more exposure to events like field days, trainings and other community meetings although both women and men were wheat growers. This implies women have low access to information on wheat production than their male counter parts. Not only this, but as result indicated, the highest percentage share in decision to adopt new wheat packages and primary contact for receiving packages are for men 61.7% and 78.3% respectively. The study revealed that all family members benefited from new wheat packages. There were serious challenges like disease outbreak, input cost, timely input supply and input shortages and lack of information access. These challenges reduced yield and income of the farmers and affected all family and community members even though women and children were highly vulnerable to the effect of the production barriers. The study also identified that no one was negatively affected with the introduction of new wheat technology packages. All respondents confirmed that they were benefited from new wheat technology packages.*

KEY WORDS: wheat production, household head, women headed household, technology, packages,

INTRODUCTION

Women should be considered half part of the society and emphasis must be made to let them contribute more to the development of society. Still there are cases in many places women are marginalised of equal participation with men. Many development programs that aim to alleviate poverty and improve investments in human capital consider women's empowerment a key pathway by which to achieve impact and often target women as their main beneficiaries (Mara van den Bold, 2013). The participation of Women in development activities can contribute a lot in a given country development program. The full integration of rural women in the process and practice of sustainable development would strongly determine the level of

success or failure (World Watch Institute, 2013) as cited by Osita-Njoku and Chikere princewill, 2015.

The rates of women participation in development activities in developing countries are low as compared to men. It is crucial to allow women participation in development activities to minimize the risk of poverty. (Mara van den Bold, 2013) many interventions that aim to alleviate poverty and improve investments in human capital consider women's empowerment as a key pathway by which to achieve impact.

Although women play a crucial role in farming and food production, they are often disadvantaged and face greater constraints in agricultural production than men (Meinzen-Dick et al. 2011; World Bank, FAO and IFAD, 2008). Rural women are consistently less likely than men to own land or livestock, adopt new technologies, access credit or other financial services, or receive education or extension advice (FAO 2011). Increasing women's control and ownership of assets, tangible and intangible, can increase their participation in decisions about household livelihood strategies (van den Bold et al, 2013; Santos et al, 2013; Johnson et al, 2014; Das et al 2013) as cited by Meinzen-Dick et al. 2011.

Currently Ethiopia tries to substitute importable wheat by producing by its self as importing wheat costing Ethiopia many millions of dollars which is pricey for developing countries. In order to raise production and productivity, no doubt to minimize the challenges facing in wheat production like gender differences in access of agricultural extension services. Marieka Klawitter et al. (2009), Gender has been found to influence adoption of improved wheat varieties and other technologies, as in the central highlands of Ethiopia where 30% of maleheaded households (MHHs) adopted improved varieties as compared to 14% of female-headed households (FHHs).

In Ethiopia, improved wheat varieties and their production packages are developed by researchers mainly in research sites and tested on farmers' fields. This top down approach to variety selection and seed production in Ethiopia resulted in low rate of varieties' adoption since that does not address target farmers. Samantha Hautea (2016) "In countries like Ethiopia and Nepal, where most of the farmers are women, using some form of participatory variety selection and a gender lens is extremely important in improved variety adoption," said Coffman, vice-chair of the Borlaug Global Rust Initiative and DGGW primary investigator. Anja Christinck et al (2017) developing gender perspectives in plant breeding can thus be seen as part of a general approach to improving the scientific understanding of agricultural systems, and to understand the needs for, as well as potential benefits of, new technologies for specific groups of users.

Additionally, in order to incorporate and reach women in the project, need to understand if the sources of knowledge on different wheat varieties have an impact on trait preference and willingness to adopt new preferences for female headed households and female spouses. By incorporating women's preferences and understanding how knowledge is transferred the project aims to hasten the process and increase the adoption and dissemination of the new technology (improved wheat varieties). Building on the Durable Rust Resistance in Wheat (DRRW) global

partnership, Delivering Genetic Gain in Wheat (DGGW) will mitigate serious threats to wheat brought about by climate change and develop and deploy new strains of wheat that are heat tolerant as well as resistant to wheat rusts and other diseases. DGGW uses modern tools of comparative genomics and big data to develop and deploy varieties of wheat that incorporate climate resiliency as well as improved disease resistance for smallholder farmers in these politically vulnerable regions.” Deadly wheat pathogens have been moving from the wheat fields of northern and East Africa into the Middle East. In their rush to identify genes that can resist evolving and virulent new strains of the disease known as stem rust, BGRI scientists have developed collaborative arrangements and facilities, with the crucial support of national governments and agencies, to screen thousands of samples of wheat each year from every continent under rust infection, to identify resistant lines.

Thus, the case study is attempted to investigate gender difference in access of extension services on new wheat technology packages.

Research question

How do wheat improvement technology packages impact men and women that have adopted them?

Objectives of the study

General objective

The case study is to identify the difference of access of new wheat technology packages on women and men those adopt them.

Specific Objectives

1. To investigate the difference of access of new wheat packages of men and women
2. To identify the barriers to women to adopt new wheat varieties?

RESEARCH METHODOLOGY

Digalu Tijo District is one of the twenty five Districts of Arsi Zone Oromia regional states of Ethiopia and located 23 km to north of Assela town and 198 km to south East of Addis Ababa and it has 92,700 ha of land. The district is situated at the coordinate between 7°19'22” and 7°36'54” N and 39°20'59” and 38°33'26” E and it has 23 kebeles and divided in to two major agroecology. These are mid land 6 kebeles and highland 17 kebeles. The district has minimum temperature of 15°C and maximum temperature of 20°C. It has 1000mm minimum and 1500mm maximum annual rainfall .The study was done after selection of three kebeles namely Burkitu Alkasa, Ashebeka and Sagure Mole. These kebeles are among major wheat production potentials from all kebeles in the same District.

Source: compiled by Authors

From each Kebele, 20 farmers, 2 key informants and one focus group and a total of 60 respondents, 6 key informants and three focus group participants were selected purposively and based on the willingness of the farmers for the study.

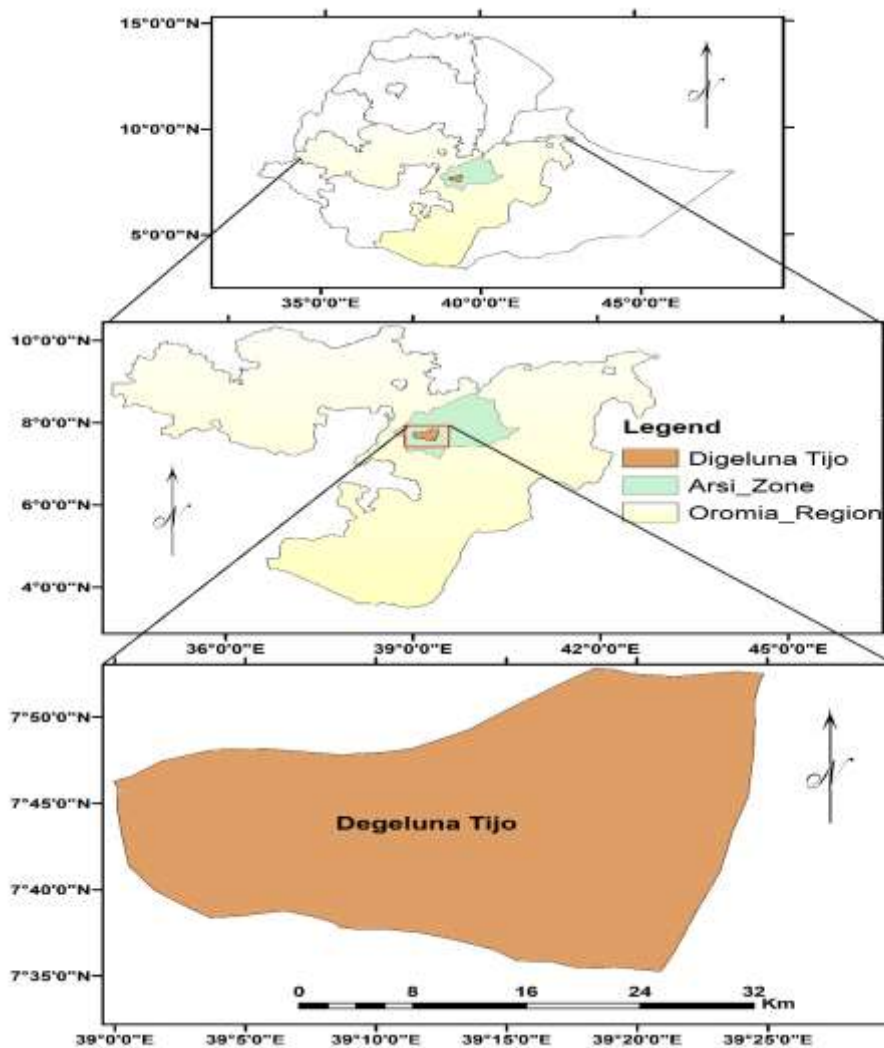


Figure 1. Map of study area.

Qualitative Methods

Qualitative data were collected using key informant interview and focus group discussion. Focus group discussion guide and interview schedule were used for data collection. Three focus group discussion sessions which contain 10 participants each were conducted. The participants were selected from the three different kebeles. The participants were 10 women only group, 10 men only group and 10 (men and women mix) group. These were excluding the individual interview. The recorded and wrote down qualitative data was transcribed to Ms- word and coded and organized to meaningful text document and triangulated with quantitative data.

Quantitative methods

The study used 60 individual interviews. The interviewees were selected purposively those who are wheat producers as a major crop. The sessions were held based on their conveniences. For instances, women were interviewed in the afternoon while men were contacted in the morning time. This was based on the time preferences of the respondents in relation with the

work that they have in the day. The collected quantitative data was entered to SPSS software version 20 and analyzed using simple descriptive statistics like frequency and percentages.

RESULTS AND DISCUSSION

Demographic Features and socio-Economic characteristics of respondents

First section of the interview schedule dealt with the personal information about respondents. Of the 60 individual respondents, 71.7% were male and the rest 28.3% were women. The acquired data confirmed that a large number of respondents 41.7% were in the age range of 31-40 years old. Out of total interviewees, only 10% were more than 60 years old. Majority of respondents, 88.3% were married. 10% were widowed and only 1(1.7%) of the respondents were divorced but none of them single in terms of marital status. A large number 91.7% of the respondents were those who can read and write while 8.3% of them were cannot read and write. All 100% of the respondents were farmers and majority of them have a large family size ranging from 8-10 in the household.

Table 1. Demographic features of Respondents

Features		Frequency	Percentage
Age	20-30	9	15.0
	31-40	25	41.7
	41-50	12	20.0
	51-60	8	13.3
	>60	6	10.0
Sex	Male	43	71.7
	Female	17	28.3
Marital status	Single	0	0
	Married	53	88.3
	Widowed	6	10.0
	Divorced	1	1.7
Educational level	Literate	55	91.7
	Illiterate	5	8.3
primary occupation	Farming	60	100.0
family size	3-4	2	3.3
	5-7	19	31.7
	8-10	26	43.3
	11-13	13	21.7
	relationship with household head	Wife	6
	Son	1	1.7
	household head	53	88.3
Ethnicity	Oromo	60	100

Source: Survey, 2017

Similarly, all respondents were Oromo ethnic group. Of the 30 focus group participants, 10 were women only group, 10 were men only group and 10 were men and women participants.

Of the key informants, 3 were men and 3 were women, and all of them were literate and can read and write. Overall, the respondents were wheat producers.

Farming activities and wheat production

All respondents and participants grow wheat as a major crop for consumption and sale purposes although they grow different crops as additional crops. 10(16.7%) of the interviewees confirmed that wheat production is mandatory for them even if they could not grow other crops like faba bean, field pea, onion and garlic. As indicated in table 2, that respondents discussed about the production, processing and marketing as follows; In Men headed household farming activities from the point of land preparation to even selling the production process has been done by the head of the household, however the women/the wife participate sometimes for land preparation, land clearing, weeding and harvesting in addition to food preparation which is rely on women. In case of Women headed household, unlike that of women in men headed household they participate in all agricultural activities from the beginning of land preparation to harvesting and selling. Furthermore they are responsible to the same activities those women in men headed households are responsible for like food preparation. It is nearly the same for daughter the activities those they have been doing with women in men headed or women in women headed household, while the son participates in the same activities as men, however selling belongs to women in women headed household. As data from FGD revealed, obtaining seed, selling the product, grinding flour and baking bread or making injera are not the duty for son.

Table 2. Farming activities and wheat production

Activities	Men	Women/ Wife	Women in women headed household	Daughter	Son
Land preparation	*****	***	*****	**	***
Land clearing	***	****	*****	**	***
Obtaining seed	****	**	*****	*	*
Transporting seed	***	***	****	**	*****
Planting/sowing	****	***	****	*	***
1 st weeding	****	***	****	*	***
2 nd weeding	****	***	****	**	***
Fertilizer	****	***	****	**	***
Application					
Chemical	*****	*	**	*	*****
application					
Harvesting	****	***	****	**	****
Transporting to market	***	***	****	**	****
Selling	****	***	*****	*	*
Grinding flour	*	****	***	**	*
Making bread/ <i>Injera</i>	*	*****	****	***	*

Source: Survey, 2017

Note: *****= always, ****= Usually, ***= sometimes, **= rarely, *= never

Wheat improvement packages: access and benefits

Respondents were asked about participation in extension education programs like field days, training and community meetings. As on the Table 3, unlike that of women/wife, most of the time men are involved in such programs. Among 53 married women, only 17% have been participating in extension program, but the men/husband overlaid 83%. Data obtained from focus group discussion also revealed that men have more exposure to different extension education programs than their women counter parts. 78.3% of the respondents revealed that men were the primary contact for receiving the new wheat packages in the household as far as he is a husband. The group participants and key informants confirmed that men had prioritized to expose participation. A number of respondents 70% stated that their source of information on new wheat technology packages were Development Agents(DA's) of the kebeles followed by 26.7% access information from bureau of agriculture and rural development (BOARD).

The respondents were asked whether they have adopted new wheat technology packages in the last five years and revealed that all of them had adopted new wheat technology packages and they confirmed that decision on to adopt new wheat technology packages made by men 61.7% followed by men and women by 25% in the household while women headed households decided it by themselves because they are responsible for all their household activities. This implies decision making power of women differs depending on whether she is household head or she is a wife otherwise the husbands tend to be decision maker. Majority of the respondents 43.3% confirmed that all family members have access to new wheat packages even though control and responsibility on these packages were fallen in the hands of wife and husband and husband by the percentages of 53.3% and 51.7% respectively. Majority of respondents 93.3% revealed that the new wheat packages contain all packages while some of them accessed only seed, fertilizers and training with percentages of 1.7, 3.3 and 1.7 respectively. The respondents were asked about the usefulness of new wheat packages and responded as if all of them 100% have benefited from new wheat packages.

The group participants and key informants confirmed that they benefited from new wheat packages. Men and women said that the benefit of new wheat technology packages was more mere consumption, they were capable to produce surplus for market supply after they adopted new wheat packages. Describing the benefit of new wheat technology packages, a woman key informant brought forward her views as follows "We really benefited from the new wheat packages. Before the introduction of these packages we used to harvest/ gain fewer products which were even not enough for home consumption. We were suffering much before we get the new packages; we used to face food shortage in household as a result of less production of wheat grain. Currently we are able to produce surplus for sale in addition to our home consumption." After identifying the benefit of new wheat technology packages, the study went further to investigate whether there were any one negatively affected by these packages and all respondents and participants confirmed that no one was negatively affected by these packages in the household and in the community of the study areas. A large number of respondents 93.3% used all the packages while 6.7% had the content that was not used.

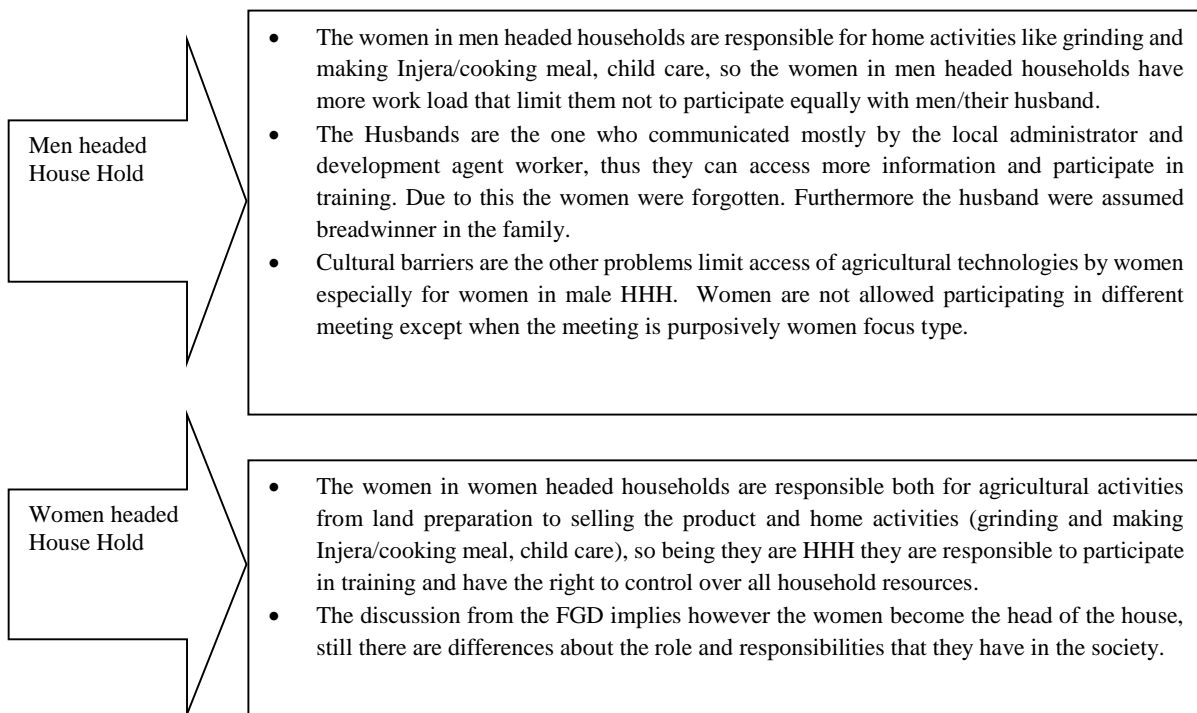
Table 4. Wheat improvement packages: access and benefits

Parameters	Variables	Frequency	Percentages
Participation in extension Programs	Husband	44	73.3
	Women/HHH	7	11.7
	husband and wife	9	15.0
Sources of information on new wheat packages	DA's	42	70.0
	BOARD	16	26.7
	Radio	2	3.3
Improved wheat adoption in the household	Yes	60	100
	No	00	00
Decision to adopt new wheat packages	Husband	37	61.7
	Wife	8	13.3
	husband and wife	15	25.0
Primary contact for receiving packages	Husband	47	78.3
	Wife	9	15.0
	husband and wife	4	6.7
Package contents	Seed	1	1.7
	Fertilizers	2	3.3
	Training	1	1.7
	All	56	93.3
Responsibility on packages	Husband	31	51.7
	Wife	9	15.0
	husband and wife	20	33.3
control over packages	Husband	18	30.0
	Wife	9	15.0
	husband and wife	32	53.3
Access to packages	all family	1	1.7
	Husband	8	13.3
	Wife	3	5.0
	husband and wife	23	38.3
Decision on packages	all family	26	43.3
	Husband	16	26.7
	Wife	7	11.7
	husband and wife	32	53.3
Usefulness of packages	all family	5	8.3
	Yes	60	100
Negative effect of new packages	No	60	100
Packages that was not used	Yes	4	6.7
	No	56	93.3

Source: Survey, 2017

Barriers to women to adopt wheat technology to their counter parts

The data from FGD revealed that there are some barriers limiting the participation of women as like as men/Husband.



The respondents and all participants were asked to mention the challenges they faced in wheat production. According to acquired from key informants and group participants, the farmers in these kebeles are struggling challenges in the process of wheat production. The major challenges mentioned were shortage of input, seeds, high input cost, poor input supply systems, and wheat diseases (stem rust, yellow rust) and lack of access to information on new wheat packages. The study also assessed which household or community group are affected with these challenges and how these challenges did affected the members of household.

All participants stated that production challenges cause yield reduction which in turn made them loose income. One key informant confirmed that women and children were the groups those exposed to the effect of the challenges as they face food shortages as a result of yield and income reduction while others revealed that all family members affected with the effect of production challenges. By determining how the challenges affected members of household and community, the respondents were asked whether new wheat technology helped them to overcome these challenges or not. The respondents confirmed that new wheat packages improved the situation very well. Over all the respondents and participants of current study confirmed that new wheat technology packages helped them in many ways. They experienced yield improvements, income development and food self-sufficiency after the adoption of new wheat technology packages. Some of them confirmed that they solved the old age production problem after the introduction of new wheat technology packages.

CONCLUSION AND RECOMMENDATION

In the study area wheat is major crop where almost all farmers are growing it. As the result indicates, concerning its production, men have more exposure to events like field days, trainings and other community meetings although both women and men were wheat growers. These resulted owing to women have low access to information on wheat production than their male counter parts. Regarding training during planting, harvesting and post-harvest handling, the men groups often participate in training while only some women were beneficiary. Field day occasions are the important session to get for researcher facts about specified crop acceptance and its traits and it is most of the time occupied by men farmers. The women farmers can rise important issues during participation regarding quality traits of crops that is why some organizations required women involvement during participatory variety selection. Women considered half parts of the society and need to be giving emphasis for participating and access of agricultural technology as men farmers. It is not only the availability of technology that can bring improvement in production but the way to use the available technology and human resource can bring valuable impact on production. There should be room for women farmers' way to access wheat technology/improved packages considering they can play their role in agricultural growth. Creating awareness and tend to educate the women can be solution.

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