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AWARENESS OF IMPROVED PRACTICES OF TEFF BY SMALLHOLDER FARMERS IN CHALIYADISTRICT, WEST SHOA ZONE, ETHIOPIA

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ABSTRACT

Ethiopia's major staple crop is Teff (Eragrostisteff). Teff is one of the most important crops for farm income and food security in Ethiopia. Despite the importance of teff in Ethiopia, yields are remarkably low. Low yield due to low adoption of improved agricultural technologies is believed to be the main factor. Awareness is endogenous to the decision to adopt; thus, awareness and adoption are modelled jointly to allow us to interpret awareness as a potential policy variable which can be used to influence the probability of adoption. Therefore, this study was carried out to assess the awareness of improved cultivation and post-harvest management practices of teff by smallholder teff farmers. The study used both quantitative and qualitative research approaches. Cross sectional survey research design was employed to collect data. Among the 19 districts in the West Shoa zone, Chaliyadistrict was purposively selected because this district has 6815 ha of land under teff under cultivation, out of which only 46 ha are under improved practices. The number ofrespondents to be selected from each randomly selected eight villages was determined based on Probability Proportional to Size (PPS). The respondents (239) were selected from the eight villages by using random sampling technique. The data were collected using semi-structured interview schedule, key informant interviews and focus group discussions. The collected data were coded, tabulated and analysed usingdescriptive statistical tests.In this research, it was found that the awareness on mechanical thresher, line sowing, less seed rate and transplanting was less among the respondents, which was a major constraint in adoption. The awareness about the benefits of row planting, transplanting and use of mechanical thresher was low among the respondents. Therefore, the extension agency should put forth more efforts to create awareness on these technologies and its benefits by employing effective and suitable communication methods as the awareness was low on these technologies.

***KEYWORDS**: Awareness, Teff, Ethiopia*

INTRODUCTION

Agricultural growth in Sub-Saharan Africa is considered to be low and not much driven by technological change (World Bank, 2008; De Janvry and Sadoulet, 2010). There is ample evidence showing that the adoption of agricultural technologies as well as the provision of agricultural extension programs can be important stimuli for improvements in agricultural productivity (Duflo*et al.*, 2006). Agriculture in Ethiopia is the foundation of the country's economy. Ethiopia's demand for food grains continues to increase because of population pressure, while supply remain short. The recent Global Hunger Index published on October, 13, 2015 by IFPRI categorised Ethiopia under 'Serious' category in

Global Hunger Index Categorisation with 33.9 Global Hunger Index which is just 1.1 index away from 'Alarming' category (Source:http://essp.ifpri.info).

Ethiopia's major staple crop is Teff(*Eragrostisteff*).Teff is one of the most important crops for farm income and food security in Ethiopia. It is Ethiopia's most important crop by area planted and value of production, and the second most important cash crop (after coffee)(CSA, 2013).Despite the importance of teff in Ethiopia, yields are remarkably low. While in 2012-2013, teff land productivity reached 1.4 ton per hectare, this is rather low when compared to other cereals such as maize (3.1 ton per hectare), rice (2.8 ton per hectare) and wheat (2.1 ton per hectare) (CSA,2013). Low yield due to low adoption of improved agricultural technologies is believed to be the main factor that prevented agricultural production from coping with the rapid population growth in Ethiopia.Based on data from the national scaling up program, farmer-based yield gap analysis was done. The grain yield of up to 3.6 tonnes ha-1 was reported for teff in the recent national scaling up activities(Hailu and Seyfu, 2001).The current evidences showed that there is big gap between the potential teff yield and the actual farmers' yield. "The crop has potential, it's all in the crop management" (Source: http://reap.ifpri.info/2013/08/07/a-little-seed-goes-a-long-way/).The study area, Chaliyaworeda has 6815 ha of land under teff under cultivation, out of which only 46 ha are under improved practices (Source: West ShoaZone Agricultural Office, 2015).

Increasing the rates of adoption of improved production technologies is therefore considered critical for agricultural growth in Ethiopia. Currently, the agricultural policy of Ethiopia gives high priority to increasing food production through the promotion of improved production technologies among smallholders.The literature on issues relating to the adoption of improved technologies in Sub- Saharan Africa is voluminous possibly because improved technologies are critically important in increasing the productivity and welfare of small or limited resource farmers (Sall*et al.,* 2000). However, in such studies, too much emphasis is placed on individual attributes and farm characteristics such as age, literacy, family size, social status, farm size, risk aversion, etc., implying a "person blame" rather than a "system blame" situation.

Beale and Bolen (1955) were among the first to synthesize research that suggested awareness was the critical first stage of the agricultural technology diffusion process. The awareness stage was hypothesized to be followed, over time, by the interest, evaluation, trial and, finally, the adoption stages. They defined awareness as the stage where an individual learns the existence of a technology or practice but has little knowledge about it. Feder and Slade (1984) point out that "farmers actively gather information when they expect it to provide an economic return". Awareness is endogenous to the decision to adopt; thus, awareness and adoption are modelled jointly to allow us to interpret awareness as a potential policy variable which can be used to influence the probability of adoption (Morgenstern, 1996).As evidenced with few empirical works in sub-Saharan countries one of the factors affecting technology adoption is awareness (Uaiene, 2006, Dehinenet*et al.,* 2014).Therefore, this study was carried out to assess the awareness of improved cultivation and post-harvest management practices of teff by smallholder teff farmers.

RESEARCH METHODOLOGY

Research Approach and Design

The study used both quantitative and qualitative research approaches. Cross sectional survey research design was employed to collect data.

Sampling Procedures

Selection of the Study Area

The Federal Democratic Republic of Ethiopia has 9 regions and 2 self-administrative cities viz., Addis Ababa and Dire Dawa. From the nine regions, Oromia region was selected since this region has more percentage share of total area planted under teff (46.74%) (CSA, 2011)

Oromia region consists of 18 zones. West Shoa zone was ranked second in the area under teff cultivation next to East Shoa zone. When compared with the % share in yield, West Shoa contributes less than East Shoa. Further, Ambo University comes under the West Shoa region. Therefore, West Shoa was selected for this study.

Among the 19 districts in the West Shoa zone, Chaliya district was purposively selected because this district has 6815 ha of land under teff under cultivation, out of which only 46 ha are under improved practices (Source: West Shoa Zone Agricultural Office, 2015)

Sample Size Determination

The total number of farmers in the Chaliya district is 26850. All most all the farmers are cultivating teff in the district. Considering this as sampling frame, the sample size was fixed using the formula given by Kothari (2004).

$$n = \frac{Z^2.p.q.N}{e^2(N-1) + Z^2.p.q}$$

Where,

n= sample size

N= population (in this case, total households are 26,850)

Z= the value of the standard variate at a given confidence level (in this case, Z = 1.96 using

95% confidence level)

p= sample proportion, and q= 1-p, (p = 0.8)

e = the acceptable error (in this case 5% since confidence level is 95%)

The sample size of 239 was arrived out using the above-mentioned formula.

Selection of Farmers

The respondents to be selected from eachrandomly selected eight villageswas determined based on Probability Proportional to Size (PPS). The respondents were selected from the eight villages by using random sampling technique. The details of the selection are furnished in Table 1.

Table 1: Details of Selected Respondents from the Villages

S. No.	Name of the Village	Teff Farmersin the Village	Selected Number of Teff Farmers
1	LibanGamo	1125	33
2	Racho	512	15
3	Sokondo	675	20
4	GodaWeliyie	1104	31
5	Chabi Tulu Chori	1116	32
6	Ale Soyema	1325	38
7	Tulu Nacha	1275	37
8	HaroMariami	1135	33
Total			**239**

Source: Own Computation, 2016

METHODS OF DATA COLLECTION

Face to Face Interviews

A well-structured interview schedule was developed and pretested to collect the needed data.

Focus Group Discussion (FGDs)

Six Focus group discussions with ten to twelve persons from different backgrounds (wealth category, gender and age taken into consideration) were organised to obtain precise ground realities.

Key Informant Interviews

Six Key Informants (Development Agents) from the district were interviewed to get their perception regarding the constraints in adoption. In addition, two village leaders, two staff from co-operative societies were also interviewed.

Personal Observation

Personal Observation, a powerful technique in collecting very minute and important information from the people, was also used. Observation is an essential part of gaining an understanding of naturalistic setting and the behaviour of the participants at that setting.

Secondary Data

Secondary data were obtained from published journal articles, books, national and regional policy documents, annual reports of concerned offices in the area, CSA Reports, relevant web sites and etc., and the deficiencies in the present agricultural extension system were identified.

Method of Data Analysis

This study employed descriptive statistical tests.The collected data were coded, tabulated and analysed using SPSS package version 23. Descriptive statistics like percentage, frequency, mean and standard deviation were worked out to describe the results.

RESULTS AND DISCUSSION

Awareness of Improved Practices of Teff

The individual learns of the existence of the new idea but lack information about it. At this stage, the individual is aware of the idea, but lacks detailed information about it (Ray, 2015). So, an attempt was made to study whether farmers

are aware of the existence of the improved cultivation and post-harvest management practices of teff.

Table 2 Awareness of Improved Practices of Teff

S. No.	Improved Practices	Aware		Unaware	
		No.	%	No.	%
1	Variety – Quncho	211	88.30	28	11.70
2	Land Preparation – Reduced number of ploughings	183	76.60	56	23.40
3	Herbicide Application - “Round up” spray	207	86.60	32	13.40
4	Line Sowing	150	62.80	89	37.20
5	Less Seed rate	165	69.00	74	31.00
6	Transplanting method	112	46.90	127	53.10
7	Fertilizer Recommendation	196	82.00	43	18.00
8	Threshing (Using Mechanical thresher)	88	36.80	151	63.20

Source: Survey data (2016)

The perusal of data presented in Table 2 reveals that transplanting method and threshing by mechanical thresher are the two technologies that were unaware by 53.10 and 63.20 per cent of the respondents respectively. Whereas, varietal details, land preparation, herbicide application and fertilizer recommendations were aware by 88.30, 76.60, 86.60 and 82.00 per cent respectively. The technologies like line sowing, less seed rate and transplanting were aware by 62.80, 69.00 and 46.90 respectively. Line sowing requires less seed rate and transplanting further reduces the requirement of seed rate and these technologies give more yield when compared with the traditional method of sowing by broadcasting. Therefore, the extension agency should put forth more efforts to create awareness on these technologies by employing effective and suitable communication methods.

Awareness of Benefits of Improved Teff Practices

Table 3: Benefits of Improved Practices of Teff

S. No.	Benefits of Improved Practices	Aware		Unaware	
		No.	%	No.	%
1.	Quncho variety gives more yield when compared with traditional varieties (n=211)	194	91.94	17	8.06
2	Ploughing 2-3 times avoids nutrients loss due to soil erosion (n=183)	90	49.18	93	50.82
3	Herbicide application helps in controlling weeds better than hand weeding and reduces the cost on labour (n=207)	173	83.57	34	16.43
4	Row planting makes weeding easier, reduce competition of teff plants with weeds for nutrients (n=150)	110	73.33	40	26.67
5	Row plantingresultsinstronger stalks and bigger leaves, and teff plant brimming with large seed heads (n=150)	110	73.33	40	26.67
6	Line sowing improves yield by helping the plants getting optimum sunlight and more nutrients from soil (n=150)	110	73.33	40	26.67
7	Less quantity of seed rate is enough if row planter is used; which paves way for less number of plants and reduces competition between plants for nutrients (n=165)	108	65.45	57	34.55
8	Transplanting method further reduces the seed rate and improves yield (n=112)	47	41.96	65	58.04
9	Application of Urea and DAP at the recommended level increases the yield (n=196)	172	87.76	24	12.24
10	Mechanical Thresher helps in reducing grain loss and reduce labour requirements (n=88)	36	40.91	52	59.09

Source: Survey data (2016)

It is inferred from Table 3 that majority of the respondents (91.94%) were aware of the benefits of the improved variety. The benefits of fertilizer application and herbicide application were known by 87.76 and 83.57 per cent of the respondents respectively. The benefits of row planting and using less seed rate were aware of by 73.33 and 65.45 per cent of the respondents respectively. The benefits of transplanting method and use of mechanical thresher were known by 41.96 and 40.91 per cent of the respondents respectively. In general, the awareness about the benefits of row planting (similar to the finding of Bekabil*et al.,* 2011), transplanting and use of mechanical thresher was low among the respondents. The ATA is taking more efforts in popularising row planting and transplanting in teff as these methods were found to increase the yield of teff. In spite of these, the awareness of benefits of these technologies was low. Also, the use of mechanical thresher reduces the post-harvest loss while threshing compared to threshing using conventional method. Therefore, the extension agency should concentrate on creating awareness among the farmers on the benefits of row planting, transplanting and use of mechanical thresher.

CONCLUSIONS AND RECOMMENDATIONS

In this research, it was found that the awareness on mechanical thresher, line sowing, less seed rate and transplanting was less among the respondents, which was a major constraint in adoption.In general, the awareness about the benefits of row planting, transplanting and use of mechanical thresher was low among the respondents. The lack of awareness of benefits of row planting and transplanting was a constraint in the adoption of improved practices as revealed by the participants of FGDs and KIIs.

The ATA is taking more efforts in popularising row planting and transplanting in teff as these methods were found to increase the yield of teff. In spite of these, the awareness of benefits of these technologies was low. Also, the use of mechanical thresher reduces the post-harvest loss while threshing compared to threshing using conventional method.

Therefore, the extension agency should put forth more efforts to create awareness on these technologies and its benefits by employing effective and suitable communication methods as the awareness was low on these technologies.

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