

Demonstration of Improved Tef Varieties at Selected Midland Districts of Guji Zone

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Abstract

The activity was conducted for two consecutive years, 2014 and 2015/16 at Adola Rede and Ana Sora district to evaluate the performance of improved tef varieties along with management practices under farmers' circumstances, to raise farmers' knowledge and skill on improved tef production and management practices. Peasant association were selected with respective agricultural offices based potentiality of the area in tef production. Training was given for farmers, Development Agents and experts on tef production and recommended packages of tef. 0.3kg of tef and DAP was used for the experiment. The two improved tef varieties demonstrated was Tseday and Boset against the local varieties. Participating farmers were capacitated through training, follow up, exchange visits and mini field days. The two improved Tef varieties (Tseday and Boset) delivered as demonstration showed good in yield and reaction to disease while the locally diffused varieties were lower in yield from time to time and affected by disease. Farmers in the area should use Tseday and Boset variety in order to increase their tef production and enhance their livelihood.

Keywords: evaluate, adaptable, transferred, reaction, tef

1. Introduction

Tef (*Eragrostis tef*) is a self-pollinated and warm season cereal crop; believed to have originated in Ethiopia, and have been domesticated and used throughout the world due to its excellent nutritional value as grains for human consumption and as forage for livestock (Baye, 2014). Ecologically, tef is adapted to diverse agro-ecological regions of Ethiopia and grows well under stress environments better than wheat, barley and other cereals known world-wide (Refissa, 2012). It tolerates low moisture conditions and often considered as a rescue crop that survives and grows well in the season when early planted crops fail due to moisture stress. Because of this, it is said to be a "low-risk" crop for farmers. For better performance, it requires an altitude of 1800-2100 masl, annual rainfall of 750-850 mm and a temperature range of 10-27° C (Adera, 2016).

In Ethiopia, Tef is important cereal crops that 24.02% of all land under cultivation is covered by Tef (first among all cultivated crops in terms land coverage) and contribute 17.57% to grain production, second next to maize in terms contribution to total grain production (CSA, 2015). Tef has both cultural and economic value for Ethiopian farmers. In recent days it is among the cash crops and has been attracting an export market due to its nutritional value and is believed to be gluten free. Tef straw, besides being the most appreciated feed for cattle, is also used to reinforce mud and plaster the walls of house and local grain storage facility called *gotera* (Adera, 2016, Minten *et al.*, 2016).

Tef is the main crop produced in the midland area of Guji Zone. Usually the crop is sown after other crops (maize and haricot bean) are harvested. The crop is produced for both household consumption and cash crop. Tef could be produced in both seasons (*meher* and *belg*) hence the crop is used for double cropping purpose which increases farmers' production and income. The straw of tef is also used for construction of house and used as the main feed resource for cattle during drought. Despite the importance of tef the yield of the crop is low in the midland area of Guji zone due to lack of improved seeds, drought resistant and low application of the recommended packages of tef. To over-come these problems demonstration of tef was initiated

Specific Objective

- ❖ To evaluate the performance of improved tef varieties along with management practices under farmers circumstances.
- ❖ To raise farmers knowledge and skill on improved tef production and management practices
- ❖ To enhance the network between research, farmers and agricultural offices.

2. Description of the study areas

Adola Rede district located around Adola town which is situated at a distance of 470 km from Addis Ababa and 120 Km from the zonal capital city, Negele Borena. It is an area of where a mixed farming and Sami- nomadic economic activity takes place, which is the major livelihood of the local people.

The total area of the district is 1254.56km². Astronomically, Adola Rede district is located between 5°44'10" - 6°12'38" northing latitudes and 38°45'10" - 39°12'37" easting longitudes. The district is characterized by three agro- climatic zones, namely Dega 11%humid, Weina Dega 29% sub humid and Kola 60% dry arid respectively. Most of the earth surface of the district is ups and down of the land surface with an elevation ranging from 1500

meters up to 2000 meter in the larger southern portion of North Western part. Plains, dissected hill plateau and mountain as well as valleys and gorges characterized the relief of the district.

The major soil of the district are Nitosols (red basaltic soils) and Orthic Acrisols. They are red brown and black brown in colors and they are found on sloping terrain. Therefore, their agricultural utilization is good under natural vegetation. The percentage coverage of each soil is Red soils 80%, Brown soil 15% and Black clack 5% respectively. And Ana Sora district was established in 2001 E.C budget year, it is separating from Bore district in order to facilitate public service and give necessary solutions on public issues. The district is situated at a distance of 410km from Addis Ababa and 180 km from zonal capital city, Negelle. The district has an area of about 798.740km²; it is an area where mixed farming economic activities take place, which are the major livelihood of the people. The expansion of social service, secondary economic activities and modern means of transportation and communication are in their early stage of development.

3. Sampling procedure

Purposively two districts, Adola Rede and Ana Sora And four PAs from two districts were selected within the two years, based on their potentiality to demonstrated technologies. The selection of PAs and participating farmers were carried out by close collaboration with district agricultural offices, DAs, opinion and PAs leaders.

4. Method of data collection

Regular interaction with farmers, personal observations and key informant interview were used to collect the data.

5. Data analysis Method

Simple descriptive Statistics and qualitative analysis of farmers' feedback were used to analysis data.

6. Results and Discussion

The experiment was executed at Adola Rede and Ana Sora Districts through FRGs to evaluate the performance of improved tef varieties along with management practices under farmer's circumstances, to raise farmers' knowledge and skill on improved tef production and management practices, to enhance the network between participating organs. Two improved Teff varieties (Tseday and Boset) were demonstrated at four (4) Peasant Associations (PAs) of two Districts against local check for two consecutive years. Single block design (10m *10m) was used. The 30Kg/ha seed, 60Kg/ha DAP and 40Kg/ha UREA was applied. Training were given for 120 farmers, 12DAs and Eight (8) experts on the demonstration of improved teff varieties. Technical support, Follow up and supervision were done. Mini field day was arranged at Adola Rede district of Dole Peasant Association. So that results and information about teff production was communicated among participating farmers of different PAs. During the occasion farmers, DAs, agricultural office experts were satisfied by observing the demonstrated tef technologies and they demanded for these technologies for further pre-scaling up activities since demonstration activities could not ensure the availability of these improved seeds. Beside further promotion of teff technologies the mini field day organized was enhanced the linkage between research and agricultural offices as many agricultural problems were raised and to be solved accordingly.



Fig.1 Mini field day conducted at Adola Rede district, Dole site.

Table 1. Demonstrated yield of tef over two years

Variety	Adola Rede district from 10*10 plot size in Kg								Ana Sora district from 10*10 plot size in Kg		Average yield per hectare (in quintal)
	2014/15				2015/16				2014/15	2015/16	
	Gobicha	Adama Diba	Dole	Ave.	Gobicha	Adama Diba	Dole	Ave.	Sololo Kobo	Sololo Kobo	
Tseday	14.5	15.7	15	15.1	14.6	13.1	10.3	12.7	13.5	10.5	12.95
Boset	11.6	14.4	11.7	12.6	14.4	14.8	9.1	12.8	11.3	8	11.18
Local	10	13.2	8	10.4	7.2	9.2	7.8	8.1	7	6	7.88

7. Farmers' preference criteria

Farmers have their own preference to use certain technology. Yield per plot determines acceptability of tef by farmers. The higher yield than locally disseminated tef variety increase farmer's motivation to grow the recommended and improved tef variety. In the midland area of Guji zone rain fall is not uniform and scarce. Thus, early mature is preferred by farmers. Tseday variety was early mature than both Boset and Local varieties thus preferred by farmers to over-come drought. But Tseday variety shatter unless harvested as soon as it matured.

Tef is multipurpose crop in the midland of Guji Zone as household consumption, as cash crop and the straw is used for house making. The straw is also used as feed for cattle in the case drought. Boset variety was preferred as it has strong and more straw than Tseday which has thin straw that easily broken to pieces. Tef color also increase the demand of tef due to market demand white tef. Thus white tef is used to increase incomes of farmers. White tef injera is also culturally used for holidays and cerebrations. Thus Tseday and Boset were white in color attracting farmers to produce instead of producing mixed local variety which has low price and only used for household consumption.

Table 2. Farmers' preference of teff

Tseday	Boset	Local
High yielder	Relatively low yielder	Lower
Early mature	Relatively late mature	Late
Tolerant to disease (Leaf rust)	Tolerant to disease(Leaf rust)	not at all
Not lodge	Not lodge	At some place lodge
White in color	White	Mixed
Thin and few straw	Has strong and more straw	Few straw

8. Conclusion

The demonstration was conducted midland district of Guji zone, Adola Rede and Ana Sora districts. The two improved variety of tef demonstrated were Tseday and Boset. Farmers Research Groups evaluated Tseday and Boset during belg season of 2015 and 2016 on their farm. These varieties get acceptance over local varieties due to their high yielder, early mature and no-lodging status. Therefore, Tseday and Boset variety should be further disseminated in the midland of Guji zone to increase tef production in the area.

9. Recommendations

Farmers should use Tseday and Boset in their teff farming. These varieties were promised for further extension since they have good yielder, early mature and have importance against local varieties. Thus farmers should multiply both varieties to improve their teff production and income from teff. Tseday variety should be harvested as soon as it matured to minimize the shattering problem.

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