PRE-EXTENSION DEMONSTRATION OF IMPROVED DURUM WHEAT VARIETIES WITH THEIR ASSOCIATED MANAGEMENT PRACTICES IN POTENTIAL GROWING AREAS OF ETHIOPIA

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Abstract: -

The objectives of this on-farm demonstration were to create awareness on the availability and importance of the new durum wheat varieties and to create wider demand pull by reaching large number of users over relatively wider geographical area. In addition to this the study aimed to enhance institutional and functional linkages with key players through joint actions and performances. Training and experience sharing events like field days were used to demonstrate the new improved varieties. For the on-farm demos seeds of the newly released varieties were provided to farmers at the rate of 120 kg/ha on a revolving seed loan basis. The plot size was 10 m x10 m at all locations. Training on agronomic practices (land preparation, sowing, weeding, harvesting and post-harvest handling) was given for farmers and experts by experienced researchers from respective departments. Farmer together with researchers and agricultural experts periodically evaluated the performance of each variety during group visit. Data were collected through field observation and direct measurements. A field day was organized at maturity stage at Akaki, Gimbich, Gelan, L.chiquala, Ambo and Welmera to visit the fields of demonstrated varieties and a total of 4181 participants (2676 male1505 female participants) attended the event. All the demonstrations were perform well at each site and great awareness has been created on the availability and importance of the new durum wheat varieties. In addition, good institutional linkages were established among the partners including district and zonal agriculture offices, seed producer companies and seed producing farmer cooperatives. This study recommend that, on-farmer and farmers' training center (FTC) based demonstrations of improved new varieties would greatly enhance adoption and thereby production and productivity of durum wheat along with minimizing the risks of failures of the newly released varieties at on farm level. Working in collaboration with zonal and district agriculture offices and seed producers proved useful for the sustainability of new improved varieties in production.

Keywords: - *Demonstration, Farmer's training centers, Durum wheat, Varieties,*

INTRODUCTION

Introduction Wheat (Triticum spp.) is widely produced in the highlands and mid-altitudes of Ethiopia. In Ethiopia, it is one of the major cereal crops grown between 6 and 14o N latitudes; and between 35 and 42o E longitude ranging in altitude from 1500m to 3200m. Wheat is the fifth most important cereal crop in area of production, after teff, maize, barley and sorghum and in total grain production, it ranks 4th after maize, teff and sorghum. In productivity, wheat ranks 2nd next to maize and accounts for more than 15 percent of the total cereal output. Ethiopia is the second largest producer of wheat in Sub-Saharan Africa. It is an important crop commodity, which could contribute a major part in achieving the country's agricultural policy objective of food grain self-sufficiency.

Traditionally, durum wheat is an economically important crops used for bread, biscuits and pasta products such as macaroni, spaghetti and noodles are some of the industrial products. In Ethiopia wheat is known to be a major source of energy and protein. Traditionally, durum wheat is used for making "dabo", "dabokolo","ganfo", "kinche" and other types of food. The straw is good source for animal feed and is also used for thatching roofs. The potential of wheat will be its entry into the export market, if production is expanded and productivity is increased. This will save the foreign currency used to import wheat (Zeleke Etal 2019).

However, owing to its economic importance, the area under durum wheat production has been lower as compared to bread wheat production. In Ethiopia there are also different varieties of improved durum wheat released from research center. Even though these varieties are better yielding , they are not well known and by farmers.

Hence, there was a huge yield gap to be bridged in production, productivity and income of smallholder tef growers. Therefore, these improved varieties commands to be communicated through farmers training center (FTC) based together with their accompanying management packages so as to bring substantial improvement in the productivity of smallholder durum wheat growers.

Objectives

- To create awareness on the availability and importance of the new durum wheat varieties
- To enhance institutional and functional linkages with key players through joint actions and performances

1. Methodology

2. Research design and selection of farmers

Nine districts were selected purposively based on potential. 18 target FTCs two from each were selected in collaboration with the crop production experts and development agents of the Bureaus of Agriculture of the respective districts. The criteria used to select target FTCs include: willingness to provide the required plots and labor; representativeness for the district and willingness of the experts to collaborate with researchers. The plots and labor for all the activities like land preparation, planting, weeding harvesting and trashing were given by farmer to conduct the demonstration trail. Plot size was 10 m x 10 m (100 m^2) per variety at each location. Seeds were provided to the participating FTCs at the rate of 120kg/ha. Method demonstration was used to demonstrate the improved durum wheat varieties. Training on agronomic practices (land preparation, sowing, weeding, harvesting and post-harvest handling) were given for farmers and experts by experienced researchers from the various disciplines/departments.

Farmers together with researchers and experts periodically evaluate the performance of each variety during group visit. Data on performances of the varieties and feedbacks from farmers and experts at different stage the crop were collected by researchers.

A field day was organized at maturity stage of the crop for wider dissemination of the project impact to other farmers and stakeholders. Participants of the field day were farmers, different stakeholders, kebele administration officials, district bureau of agriculture and natural resource and researchers.

Data collection and analysis

Grain yield per plots were measured at in all of the target demonstration locations and ranking matrix was used to compare the performance of the varieties in terms of disease resistance, lodging resistance, consumption and marketability (Table 1). Both farmers and experts from each of the districts were participated in evaluating the performance of the varieties. Numbers of trained farmers on the availability and importance of the technology and their perception/opinion/feedbacks on improved durum wheat varieties were recorded. The number of farmers participated in training, field visits and field days were also recorded.

Results and Discussion

Based on the grain yield per plots (100 m^2) Utuba, Tesfaye and Donmathion varieties ranked as high yielder respectively. All varieties have a good performance at Gimbichu district. The highest yielder variety at most locations was utuba with 22-47Qt/he productivity. The grain yield per plot of Tesfaye was 48Qt/he at Gimbich which is the highest record (Table 1). Even if farmers and experts had appreciated the performances of the Utuba and Donmathion varieties, the performance of Utuba variety was remarkable at all locations in terms of some criteria like, disease resistance and yield whereas

Donmathion was lodging resistance, market and consumption preference (Table 1). In general, the performance of Utuba, Donmathion and Tesfaye was good in all the locations and they were appreciated by both farmers and experts.
This study proved that, pre-extension demonstration is a best way to popularize the newly released Durum wheat varieties and to recommend the variety/ies suitable for the respective test locations. The report by Gezahegn *et al*., (2006) also revealed that agricultural demonstration is a best way for widespread the new technology and increase adoption.

Table 1: Grain yield and matrix ranking (based on estimated yield, disease resistance, lodging resistance, consumption preference and marketability) of durum wheat varieties demonstrated

Durum wheat varieties	Grain yield per district (qt/hec)									Average yield
	Ambo	Dendi	Ejersalafo	welmera	Akaki	Gelan	Ginbichu	Lume	Liben chuquala	
Tesfaye	23	18	38	46	39	17	48	26	16	30.1
A.Tena	22	22	25	23	36	18		25	25	21. 8
Utuba	24	23	28	38	38	22	47	27	26	30.3
Donmation	-	-	-	-	-	23	47	30	20	30
Fetan	-	-	-	-	-		39	27	17	27.7

Matrix ranking of varieties performance

Durum wheat varieties	Traits for comparison					Frequency	Rank
	Yield	Disease resistance	Lodging resistance	Market preference	Consumption		
Tesfaye	2	1	3	0	0	6	4
Alem tena	0	0	0	1	1	2	5
Utuba	4	4	2	2	2	14	2
Fetan	1	2	1	3	3	10	3
Donmathion	3	3	4	4	4	18	1

A field day was organized at Akaki, Gimbich, Gelan, L.chiquala, Ambo and Welmera to visit the fields of demonstrated varieties and a total of 4181 participants (2676 male1505 female participants) attended the event (Table 2). Participants were researchers, seed producers (both private and community based), farmers from different districts, experts from district and Zones and & Oromia Bureau of Agricultural and Natural Resources (BoANR). Utuba, Donmathion and Tesfaye were selected as best variety by farmers and other stakeholders. The major lesson learnt from the event is that participating different stakeholders in the evaluation the varieties can help for easy acceptance and promotion of newly released varieties.

Table 2: Field Day participants

Districts	Wheat Filed Day Participant									
	Farmers		DA		Expert		Youth		Others	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Akaki	504	76	0	0	0	0	0	0	0	0
Gimbichu	220	65	0	0	0	0	0	0	0	0
Gelan	86	16	0	0	14	2	0	0	0	0
L.ziqala	1270	1028	0	0	0	0	0	0	0	0
Ambo	267	57			63	24	0	0	28	6
Welmera	128	31	44	23	21	5	0	128	31	44
Total	2475	1273	44	23	98	31	0	128	59	50

3. Conclusions and Recommendations

All the demonstrations were performed well at each of the locations and great awareness on the availability and importance of the new durum wheat varieties was created. A wider demand pull was created by reaching large number of users over relatively wider geographical area though demonstration and field day events. In addition to this, good institutional linkage was developed between partners such as farmers, district and zonal agriculture offices, seed producer companies and seed producing farmers' cooperatives.

This study recommend that, demonstration of improved new durum wheat varieties at FTC level is an excellent and effective working approach to enhance the promotion and the acceptance newly released varieties and thereby to increase the production and productivity of the crop. This is because of the fact that the FTCs are mostly visited by all farmers during the field days as well as during their own business. Working in collaboration with zonal and district agriculture offices and seed producers is a good for the sustainability of newly released improved varieties in production.

4. Reference

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