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Farmers Participatory Evaluation of Nationally Released Potato Varieties at Two Districts of West Shoa Zone: An Attempt to Promote Farmers to Farmers Seed Dissemination

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Abstract

Three nationally released potato cultivars namely Tolcha, Wochecha, and Menagesha was evaluated along with a local check, each variety being grown on plot size of 3.75 m x 3 m (11.25 m² size) replicated two times during the rainy season of 2004 cropping season at five locations. A field day was organized at vegetative stage of the crop to evaluate the performance of the varieties in all the locations to assess farmers' reaction to the varieties. Results showed that at all locations Menagesha gave the highest total tuber yield compared both to the other two improved potato cultivars as well as to the local check. The performance of Menagesha was the highest at Birbirsa followed by Awaro-2 and Awaro-1. As average of all locations Menagesha gave a yield advantage of 85.2% over the local variety. At Awaro-2 the local variety was out excelled only by Menagesha while the other two improved varieties (Tolcha and Wochecha) gave significantly lower total tuber yield compared to the local variety called as Shashamanc by the farmers. During the field visit the farmers were able to judge from their observation of the vegetative performance of the cultivars that a variety Menagesha was by far better than all the other varieties tested in performance which also agreed with the highest yield obtained at all locations for this cultivar after harvest.

Introduction

Potato (*Solanum tuberosum* L.) is a very important food and cash crop in Ethiopia, especially in the highlands and mid-altitude area of the country. As a food crop, it has a great potential to supply high quality food within relatively short period of time and is one of the cheapest source of energy (Aberta Agriculture, 1990.). This crop has also proved its worth in feeding the nation in Emergency. In both Toke Kutaye and Ambo Districts this crop serves the farmers as food and as a valuable source of income. Although Ethiopia has a suitable climatic and edaphic conditions for high yield and production of high quality potatoes, the yield obtained by farmers is very low mainly due to lack of high yielding, disease tolerant adaptable improved varieties to be used by farmers. West Shoa Zone in general and Ambo and Toke Kutaye districts in particular are the potential potato growing areas in the zone. Survey result showed that, the area under potato production in Ambo and Toke-Kutaye districts alone is as high as 158 ha (Ambo College of Agriculture, 2002).

Farmers in these two districts use local varieties or a variety called as Shashamane which was introduced to the area long ago through unknown means. The local variety is a low yielder and very much susceptible to diseases especially during the rainy season. This study was, therefore, executed with an objective to evaluate some nationally released potato varieties for their adaptability and yield performance.

Materials and Methods

Three nationally released potato cultivars namely Tolcha, Wochecha, and Menagesha was evaluated along with a local check each cultivar being grown on plot size of 3.75 m x 3 m (11.25 m² size) replicated two times during the rainy season of 2004 E.C. cropping season at five locations. The spacing used was 75 cm between rows and 30 cm between plants within a row for all the potato cultivars. A fertilizer rate (DAP and UREA) recommended by EARO for potato on vertisol and nitosol was applied depending on the soil type of the locations. At harvest total tuber yield was recorded. Ridomil was applied twice at early crop stage to control the attack of late blight.

Results and Discussion

A perusal of data presented in table 1 showed that at all location the performance of Menagesha was by far better compared to all the other improved potato cultivars as well as to local check. At Awaro-1, Kilinto-1 and Birbirsa Menagesha gave significantly higher tuber yield compared to both the improved cultivars (Tolcha and Wochecha) and the local check (Shashamane). At Awaro-2 the same cultivar (Menagesha) still gave significantly higher tuber yield than all the other three cultivars although in this case the local check was superior to the other two improved cultivars. The performance of Menagesha was the highest at Birbirsa followed by Awaro-2 and Awaro-1. As average of all locations Menagesha gave a yield advantage of 85.2% over the local check. A field day was organized at vegetative stage of the crop to evaluate the performance of the varieties in all the locations and by just looking in to the vegetative performance of the cultivars farmers were able to judge from their observation that a variety Menagesha was by far better than all the varieties tested during the field visit which also agrees with the yield obtained for this cultivar after harvest.

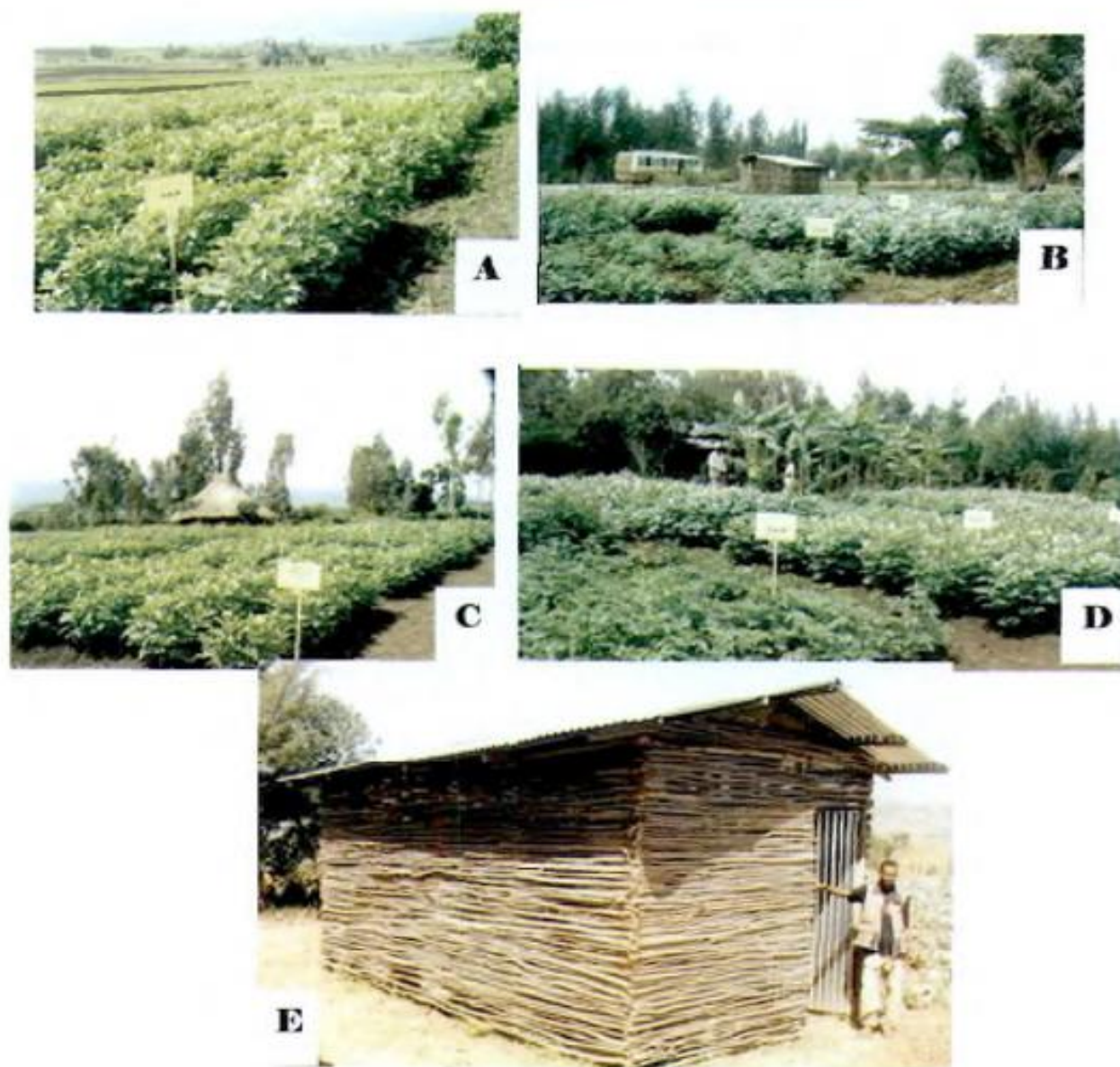


Figure 1. View of potato adaptation trial farm at Awaro-1 (A) Birbirsia (B) Awaro-2 (C) Kilinto-1 (D) and DLS constructed (E) for farmer at Birbirsia on-farm site

With the fund obtained from the Ethiopian Science and Technology Commission farmers who participated in this experiment were made to save the seed of superior cultivars and sell their seeds to further disseminate seeds of the superior cultivars after storing it in the DLS which was constructed by the researchers. In general a total of 5 DLS were constructed each DLS being constructed for two neighboring farmers to be jointly used for potato seed tuber storage. At Awaro, it was however, observed that the farmers was no more using the DLS for the purpose it was constructed for and rather they used it to live inside it.

Table 1: Yield of potato varieties in different location in Toke Kutaye and Ambo Districts

Varieties	Total tuber yield (kg plot ⁻¹) at different locations				
	Awaro-1	Awaro-2	Kilinto-1	Kilinto-2	Birbira**
Tolcha	60.75 ^a	56.25 ^c	47.00 ^b	-	57.50 ^a
Wochecha	60.55 ^a	55.75 ^c	48.50 ^b	49.0 ^b	57.25 ^a
Menagesha	80.85 ^a	92.00 ^a	71.50 ^a	62.5 ^a	112.0 ^a
Local check	63.55 ^{b*}	77.70 ^{b*}	46.25 ^b	42.0 ^c	47.5 ^b
Mean	66.42	70.42	53.31	51.17	68.56
LSD (5%)	10.0	10.9	6.8	5.8	13.5

*Values are from previously introduced variety called as Shashamane not from actual local variety

** Soil type is nitosol for this location while the other sites are characterized by black soil (vertisol)

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