

# Demonstration of Faba Bean( *Vicia faba* L.) Varieties, in Some Selected Woreda's of Sidama Zone SNNPR

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## Abstract

Faba bean is major grain legumes cultivated in Ethiopia with the altitudes ranging from 1800-3000 m above sea level. The yield of faba bean is strongly influenced by several factors such as farmer management. Therefore it requires demonstration of the suitability of available varieties to certain physical conditions and management practices. Thus, the recently released varieties of faba bean were on-farm demonstrated in three districts of Sidama zone, SNNPR, with the objective of obtaining high yielding faba bean varieties (ies). Three faba bean varieties (Tumsa, Walki and local check) were demonstrated (from July to December, 2017) on selected farmers' fields. Yield data as well as farmers' preference was assessed during grain filling period. Variety Walki gave highest yield (35 qt) at Hula whereas variety Tumsa gave highest yield in Melga (28.4) and Dara (12 qt). The highest yield gap against local check was obtained for variety Tumsa at Melga (17.0) and Dara (11.18) whereas variety Walki gave the highest yield gap at Hula (33). Similarly, variety Tumsa received the highest farmer's ranking (2.67) mainly for its high pod load and seed size. However, in terms of lodging resistance local check was preferable. In general variety Tumsa is preferable at all locations.

**Keywords:** Demonstration, Faba bean, Farmer preference, variety, *vicia faba*

**DOI:** 10.7176/JBAH/13-15-02

**Publication date:** September 30<sup>th</sup> 2023

## 1. Introduction

Faba bean is among the major grain legumes cultivated in Ethiopia and is used extensively as a break crop in the highlands and has been considered as a meat and skim-milk substitute (Oplinger, 1982). It is mainly cultivated in altitudes ranging from 1800-3000 m above sea level (Getnet and Yehizbalem 2017) with the annual area coverage of 443966 ha (26.86% of total area allocated to pulses) producing over 848655 tons of grain (30.65% of pulses production). On the other hand, in SNNPR, faba covers the total area of about 63,279 ha (26.40 % of total area allocated to pulses) and produces 104,077 tons of grain (29.15% of total pulses production). On the other hand, faba bean in the Sidama zone covers 4305 ha (15.38% of area allocated to pulses) producing 6887 tons per year (18.66% of pulses production). Moreover, faba productivity of faba bean in Sidama zone (1.60 t/ha) is less than that of the regional (1.65 t/ha) and national averages (1.91 t/ha) (CSA, 2016) which could be attributed to low use of improved production technologies or inputs. For instance, the national crop area covered with fertilizers, improved seeds, pesticides, irrigation during *belg* (*minor*) season is about 45.12, 5.87, 8.11 and 7.49 %, respectively, (CSA, 2018). The yield of faba bean is strongly influenced by several factors including environmental conditions, farmer management and the physical characteristics of the field in which they are grown. On the other hand, variety performance has rarely been consistent from year to year or location to location which in return requires demonstration of the suitability of available varieties to certain physical conditions and management practices. Thus, the recently released varieties of faba bean were on-farm demonstrated in three districts of Sidama zone, SNNPR, with the objective of obtaining high yielding faba bean varieties (ies) and to identify farmers' selection criteria for future breeding programs.

## 2. Methodology

### 2.1 Description of the study area

The Experiment conducted in SNNPRS in Sidama zone (Dara, Hula and Melga) districts. This zone has geographic coordinates of latitude, North, 5' 45" and 6' 45" and longitude, East, 38' and 39'. The altitude ranges from 500 m to 3500 m above sea level. Sidama has a mean annual temperature of 15°C and 24.9°C, minimum and maximum respectively. Its annual rain fall ranges from 400 mm-1999 mm. Sidama is generally a fertile area, varying from flat land to highland (Sidama Development Corporation, Planning and Statistics (2000). Three faba bean varieties (Tumsa, Walki and local check) were planted during main cropping season (July to December, 2017) on selected farmers' fields. Two farmers in Melga, 1 in Hula and 2 farmers in Dara district were selected based on their prior experience on using improved varieties, closeness to village gate or main road, and selected as model farmers by district agrioffices. Land preparation involved three times plowing before planting whereas plot size was 10 m x 10 m for each variety with 1.5m between plots, 40 cm between rows and 10 cm between plants within row. Field management also involved three hand weeding when necessary and the application of 100 kg/ha diammonium phosphate at the time of planting.

## 2.2. Data Collection

Yield data as well as farmers' preference was assessed during grain filling period. Farmers' selection criteria were pod load, seed size, and lodging resistance. The preference assessment was made during field days using 65 farmers (56 male and 9 females) (Table 1).

Table 1. Participant farmers, crop experts and DA's on the field day of faba bean demonstration fields.

No.	occupation	M	F	Total
1	Woreda administrator/delegate, Woreda and Kebele agricultural SMSs and DAs	14	5	19
2	Model farmers from:-			
	2.1 Hula District/Woreda	29	6	35
	2.2 Dara District/Woreda	27	3	30

## 2.3. Results and Discussions

Table 2. Yield (qt/ha) and farmers' ranking using three parameters of three faba bean varieties at Melga, Hula and Dara districts during 2016/17 main cropping season

Variety	Melga (n= 2)		Hula ( n = 1)		Dara (n = 2)		Mean	Ranking(Hula and Dara)			
	Yield	Yield gap	Yield	Yield gap	Yield	Yield gap		Pod load	Seed size	Lodging resistance	Mean
Walki	24.7	13.3	35	33	6.25	5.43	21.98	2	2	1	1.67
Tumsa	28.4	17.0	25	23	12	11.18	21.80	3	3	2	2.67
Local	11.4		2		0.82		4.74	1	1	3	1.67

\* n= number of farmers; 1= poor, 2= good, 3= very good.

Variety Walki gave highest yield (35 qt) at Hula whereas variety Tumsa gave highest yield in Melga (28.4) and Dara (12 qt). The highest yield gap against local check was obtained for variety Tumsa at Melga (17.0) and Dara (11.18) whereas variety Walki gave the highest yield gap at Hula (33). Similarly, variety Tumsa received the highest farmer's ranking (2.67) mainly for its high pod load and seed size. However, in terms of lodging resistance local check was preferred (Table 2).

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