

Pre-scaling up of Improved Fababean Technologies in Jarso and Kersa Districts of East Hararghe Zone

Oromia Megersa

Oromia Agricultural Research Institute, Fadis Agricultural Research Centre, Harar, Ethiopia

ABSTRACT

Pre-scaling up of Doshia was conducted at Jarso and Kersa districts to increase farmers' production and productivity of faba bean. A total of 80 farmers were involved in the pre-scaling up of fababean. The Doshia variety was used on a plot size of 0.125ha of land. Afgug and Kersa Tola kebeles were selected from Jarso and Kersa districts purposively based on their potential for faba bean production. Farmers, development agents, and experts participated in the training given. The number of participants in the training was 62. The crop covered 10 hectares during the production years. Descriptive statistics was used to analyze the quantitative data while narration and argument were used to analyze the qualitative data. The yield performance of the variety was 33.64 qt/ha and 30.35 qt/ha at the Jarso and Kersa districts respectively. The district agriculture and seed multiplying enterprise should cooperate for further dissemination of faba bean in the study areas and similar agroecologies.

KEYWORDS: *Fababean, Improved Variety, Pre-scaling up, Doshia, District*

1. INTRODUCTION

Fababean was the most important pulse crop in terms of both area coverage and the volume of annual production in the country (CSA, 2021). Nationally about 511,908.4 ha of land were covered annually by faba bean. The productivity of faba bean is about 2.1 tons /ha which is far below the potential of the crop. Oromia followed by Amhara Regional States are the largest producers and together account for 83.20% of the country's faba bean production (CSA, 2017). In Ethiopia, the national average yield of faba bean is 2.11 t ha⁻¹ (CSA, 2017) which is low compared to Egypt and the United Kingdom's 3.47 and 3.83 t ha⁻¹, respectively (FAOSTAT, 2018). Fababean covered about 443,107.88 hectares of land with an annual national production of 8,389,438.97 tones with an average yield of 1893 kg ha⁻¹ (Solomon *et al.*, 2019).

The extensive use of chemical fertilizers in cropping systems for enhancing fertility and agronomic yield induces several issues regarding environmental pollution and soil degradation (Getachew, 2018). Hence, it is very crucial to exploit inexpensive and eco-friendly sources of nitrogen replenishment such as biological nitrogen fixation. Its products are a rich

source of high-quality protein in the human diet, while its dry seeds, green haulm and dry straw are used as animal feeds (Cholez, 2020; Dudek, 2018). Fabean has a high market price that brings high returns to the farmers. However, most highland farmers are using local varieties that are not disease tolerant which leads to low yields. Therefore, to overcome the lack of improved seed, the pre-scaling up of improved faba bean technology is conducted to increase the production and productivity of the farmers producing fababean.

Objectives

- To create a wider demand for fababean technologies in the targeted districts
- To improve the production and productivity of fababean-growing farmers in the targeted districts
- To improve farmers' income
- To strengthen key stakeholders' linkages

2. Materials and Methods

2.1. Description of the Study Area

Kersa is one of the district in the East Hararghe Zone of the Oromia Region of Ethiopia. The district is

How to cite this paper: Oromia Megersa "Pre-scaling up of Improved Fababean Technologies in Jarso and Kersa Districts of East Hararghe Zone" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-8 | Issue-5, October 2024, pp.1200-1202, URL: www.ijtsrd.com/papers/ijtsrd72747.pdf



IJTSRD72747

Copyright © 2024 by author (s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



bordered on the South by Bedeno, on the West by Meta, on the North by Dire Dawa, on the Northeast by Haro Maya, and on the Southeast by Kurfa Chale. The administrative center of the district is Kersa. The altitude of this woreda ranges from 1400 to 3200 meters above sea level. Jarso is bordered on the South by the Harari region, on the West by Kombolcha, on the North by the city of Dire Dawa, on the East by the Somali Region, and on the Southeast by Gursum. The administrative center of this woreda is Ejersa Goro. The altitude of this woreda ranges from 1050 to 3030 meters above sea level. Mountains Gara Sirirta, Aybera, Kilisa, and Bekekalu are among the highest peaks.

2.2. Site and Farmers' selection

Afgug and Tola kebeles were purposively selected based on the potentiality of the crop from the Jarso and Kersa districts respectively. The sites were selected based on the potentiality, and appropriateness of the area by considering slope, access to road, and suitable for repeatable monitoring, and evaluation from sowing to harvesting. Farmers were selected based on their interest, land provision for this pre-scaling up, interest in cost-sharing, and willingness to share experiences with other farmers. Farmers' selection was undertaken in collaboration with DAs, Woreda experts, and multidisciplinary Researchers. 80 Farmers were purposively selected for the pre-scaling up of the improved Fababean variety

2.3. Research Design

One improved fababean (Dosha) variety on a plot size of 0.125ha of land per farmer in a clustered approach was used. Spacing of 40cm*10cm between rows and plants was used respectively. 80 farmers were beneficiaries of the variety. Seed rate of 134 kg/ha and fertilizer rate of 100kg/ha NPS was applied.

2.4. Information sharing and ways of communication

Training, exchange visits, and field days, preparing leaflets, posters, proceedings, and publications in international journals.

2.5. Methods of Data Collection and Data Collected

Both quantitative and qualitative data were collected through personal field observation, individual interviews, and focus group discussions using checklist. Quantitative data such as the number of farmers who participated in FRG, yield performance, and number of stakeholders who participated in the training were collected. Qualitative data were farmers' perceptions of the new technology.

2.6. Data Analysis Methods

Quantitative data was summarized using descriptive statistics (Percent, mean, minimum, and maximum), while the qualitative data were analyzed using narrative explanation and argument.

3. Result and Discussion

3.1. Training provided for stakeholders

Multidisciplinary Fadis Agricultural Research Center researchers have participated in training delivery. The team members involved in the training delivery were research-extension, socio-economic, and agronomist. The training was given on improved fababean production, market information and experience sharing and technology transfer approaches.

Table 1: Number of participants in the training

No.	Participants	Male	Female	Total
1	Farmers	30	12	42
2	DAs	12	3	15
3	District experts	4	1	5
	Total	46	16	62

Among the training participant stakeholders, 67.7 % were farmers. This showed that most of the training participants were farmers. Of those farmers, 28.57 % are female farmers' participants.

Table 2. Yield performance of fababean across the districts.

Kebele	Varieties	Mean	Maximum	Minimum
Afgug	Dosha	33.64	35.60	29.30
Kersa Tola	Dosha	30.35	33.20	24.80
total/combined		32.00	35.60	24.80

The grain yield of the improved fababean variety (Dosha) was 33.64 and 30.35 in quintal per hectare at Jarso and Kersa districts respectively.

4. Exit strategy

The mandate of Fadis Agricultural Research Center (FARC) starts from technology generation or adaptation to demonstration and up to the pre-scaling up stage in which the target participants are limited in scope. It is important to see an alternate option in which a mass of farmers can be involved in the technology promotion through strategic mechanisms.

The main collaborator of the Fadis agricultural research center was the Office of district agriculture in the study area. This is to keep the extension system linkage among those organizations and to enhance the continuity of technology for wider coverage until a better new technology option is developed. Fadis Agricultural Research Center and

the respective districts of Offices of Agriculture have discussed how to keep the continuity of the technology and wider scaling up to the larger areas with the facilitation of Fadis agricultural research center. Therefore, the wider scope or dissemination of the technology should have remained to be implemented by the Office of Agriculture of the respective districts.

5. Conclusion and Recommendation

A multidisciplinary team and participatory technology transfer are essential for sustainable technology transfer and to help many farmers have access to technologies. The dissemination of disease-tolerant and high-yielding variety through the participatory approach on farmers' fields is essential for the improvement of production and productivity of fababean. The grain yield of the improved fababean variety (Dosha) was 33.64 and 30.35 in quintal per hectare at Jarso and Kersa districts respectively. Creating market linkage for both seed and grain production improve the utilization of the introduced technologies. *The district agriculture and seed multiplying enterprise should cooperate for further dissemination of faba bean in the study areas and similar agroecologies.*

6. References

- [1] Cholez, C. 2020. Exploring inter-firm knowledge through contractual governance: A case study of production contracts for faba-bean procurement in France. *Journal of Rural Studies*, 73, 135–146. <https://doi.org/10.1016/j.jrurstud>.
- [2] CSA (Central Statistics Agency).2017. Agricultural Sample Survey, Area and Production of Crops, Addis Ababa, Ethiopia
- [3] CSA. 2021. Agricultural sample survey 2020/21: Report on area and production of major crops (Private Peasant Holdings, Meher Season). In *Statistical Bulletin* (Vol. 590). Addis Ababa, Ethiopia.
- [4] Dudek, S. 2018. Forecasting production effects of irrigated faba bean (*Vicia faba* var. minor) depending on drought levels. In *Research for Rural Development* (Vol. 2, pp. 77–82). <https://doi.org/10.22616/rrd.24.2018.054>
- [5] FAOSTAT (Food and Agriculture Organization Statistics).2018. Statistical database of agricultural production. Rome, Italy
- [6] Getachew Agegnehu. 2018. Soil fertility and crop management research on cool-season food legumes in the central highlands of Ethiopia. *Ethiopian Journal of Agricultural Sciences* 28: 95-109.
- [7] Solomon, Y., Tsebaye, T., Melese, E., & Anteneh, B. 2019. Participatory Demonstration of Improved Variety of Faba Bean with its Full Packages in Gamo Gofa Zone, SNNPRs, Ethiopia. *Acta Scientific Agriculture*, 4(1), 44–48.