



000340

Volume IV  
ISSN 2306-6873

**P**roceedings of the 4<sup>th</sup> Biennial  
Conference of Ethiopian  
Horticultural Science Society  
12 – 13 April 2013  
Ambo, Ethiopia



**EHSS**

## **Women Farmers in Practices: Opportunities and Challenges in Accessing Potato Technologies in Welmera Ethiopia**

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### **Abstract**

*Women farmer empowerment project was launched in the year 2006 to organize women farmers into Farmer Research Group (FRG) and improve their livelihood through accessing potato technologies. Initially, a total of 25 women farmers in Robi Gebeya kebele of Welmera wereda formed FRG. Consecutive trainings on potato production, gender roles and responsibilities, decision making, entrepreneur skills, among others were given to the FRG. Each women farmer prepared and allocated 20m x 20m plot of land for potato tuber plantation. Initially Jalene and in subsequent years both Gudene and Jalene potato varieties with recommended packages were given to the FRG. Five years data indicate that the number of women farmers who accessed potato technologies increased from 25 to 383. A total of 236 diffused light stores were constructed by women FRG for seed potato storage. Women FRG reserved about 1,251 quintals of seed potato and made own plantation in consecutive years. In addition, women FRG sold 2,521 quintals of both seed and ware potatoes. During these years, price of ware potato increased from 70 Birr to 450 Birr per quintal and that of seed potato increased from 180 Birr to 600 Birr per quintal. Women FRG capacity building, bylaws formation and enforcement, knowledge and information sharing, spirit of competitiveness, accessibility, respect and patience, wisdom and interest, persuasiveness of other farmers, among others were opportunities observed while working with women FRG. Difficulty to handle heavy duties, burden of workload, poor leadership and decision making ability, men influence over women intervention, prioritizing home activities and poor concept of entrepreneurship were among the challenges encountered. Further empowerment of women farmers through training on market outlet choices, entrepreneurship skills, facilitation, decision making and leadership capacity are potential areas for interventions.*

**Keywords:** *Decision making, empowerment, entrepreneurship, leadership, women farmers*



## 1. Introduction

Women farmers produce over 50% of the food that is grown worldwide and more so in most developing countries. Women farmers in Africa play important roles in agricultural production but they are more often considered as family assistants on farmland 'belonging' to their husbands who have a correspondingly enhanced status. In sub Saharan Africa, women farmers produce 80% of food, both for household consumption and for sale. They are usually responsible for food processing and make a major contribution to food storage, transportation and marketing although they seldom control the revenue generated (FAO, 1998).

Ethiopian economy is an agrarian. Agriculture forms the basis for livelihood and creates job opportunity for more than 85% of the population. It accounts for 50% of the Gross Domestic Product (GDP) and 90% of the national export earnings (MoARD, 2007). It provides raw materials for local industries and hence saves foreign hard currency. This achievement in agriculture is as a result of roles and responsibilities each household member plays in day to day activities. Rural women farmers are integrated into the rural economy, which is basically labor intensive and exerts heavy physical toll on all, including children. Rural women farmers for instance play reproductive, productive and community management roles though their contributions to later roles are not well valued (Berhanu *et al.*, 2006). Cognizant to this fact, in traditional Ethiopia, woman's worth is measured in terms of her role as a mother and a wife.

In Ethiopia, over 85% of women reside in rural areas, where peasant families are engaged primarily in subsistence agriculture. But there have been few studies concerning rural women farmers in Ethiopia and many observers have commented on the physical hardship that women farmers experience throughout their lives. Such hardship involves carrying loads over long distances, grinding grain manually, working in the homestead, raising children, cooking, among others. Ethiopian women farmers traditionally have suffered from socio cultural and economic discrimination

and have had fewer opportunities than men for personal growth, education, and employment.

Experiences while working in the research system, and observation from research outputs, trial sites, field days, field visits, etc indicate that women farmers are underrepresented. In other words, women farmers have little access to modern technology, which in turn contributes to limited growth in agricultural production as most farm activities such as weeding, planting, harvesting, etc are borne by women farmers. Improving women farmers' livelihood through accessing modern agricultural technologies is believed to ameliorate their current situation. Cognizant to this fact, Women Farmers Empowerment project was launched to organize women farmers at *Welmera* wereda and create opportunities to access and utilize potato technologies and thereby improves livelihoods of participating women and their families. The objective of this paper therefore is to assess opportunities and challenges of women farmers in accessing improved potato technologies.

## **2. Approaches and procedures**

The study was conducted at *Robi Gebeya Kebele* of *Welmera* wereda in *Finfine Zuria* Liyu zone of Oromiya regional state in Ethiopia. *Robi Gebeyakebele* was selected through discussions with *wereda* office of agriculture. Baseline data of the *kebele* was generated using participatory rural appraisal (PRA) data collection techniques which mainly focused on age group, marital status and number of family members, landownership, willingness to participate and commitment, among others. Selected women farmers were provided training on potato production technology and post harvest handling. Frequent contact and iterative discussions with women farmers were made to group them into potato women Farmer Research Group (FRG). In order to respond effectively, the group has developed its abiding bylaws to which elected leaders to whom each member was accountable and responsible.

Consecutive trainings were provided to FRG before and after distribution of planting materials. This is believed to raise awareness on decision making, develop technical



skills and raise their entrepreneur skills. Each member then allocated and prepared fine seedbed and hence given freely seeds of potato varieties with recommended packages. The recommended packages include fine seedbed preparation, *Jalene* and *Gudene* varieties, 20mx20m plot size, a spacing of 75cm between rows and 30cm between plants, 119/90kg/ha N/P<sub>2</sub>O<sub>5</sub> fertilizer and hilling 2 to 3 times during production season. Planting was done with direction and advice from office of agriculture and researchers. On plot training on field management techniques with practical demonstration was given to farmers individually on their plots (Figure 1). Besides, on station training was given to update skills and awareness level of members of the group.



Figure 1: On spot training and demonstration to women FRG

Group evaluation was conducted among FRG; in which members visited trial sites and discussed about status of each farmer's trial field. The most important events observed include sharing of experiences, expertise, knowledge, views, and surprises among members. During such evaluation, mismanaged trails were advised to be treated correctly as recommended. Agronomic practices such as weeding, identification of bacterial wilt and potato late blight were shared and managed on individual plot. As soon as the symptom of potato late blight was observed, *Ridomil*

(fungicide MZ 63.5 WP at 3kg/ha) was sprayed once or twice based on occurrence of symptoms. How to mix the fungicide with the required amount of water (450L per ha) and safety measures were demonstrated to FRG and development agents before and during fungicide sprays.

Cross visits were organized by *wereda* experts to share information on women farmer performance and collect feedbacks. This was accompanied with leaflets, posters and pamphlets to aid dissemination and complement observation and oral delivery. Harvesting and transportation of potato tubers to store was carried individually by members. Post harvest handling techniques such as construction of own diffused light store, identification and categorization of seed potato, management of store house, linking with market outlets and monitoring were provided. As a result, most women farmers were able to identify and categorize potato tubers for consumption and seeds. They were provided with training and technical support to construct own diffused light store.

### **3. Results and Discussion**

#### **Lessons learnt**

**Socio economic characteristics**-according to PRA survey, women farmers comprised more than 51% of the total population in the peasant association. Married women comprised 60% of the total women population. Large number of households was headed by women due to divorce or death. About 37 members of FRG were women headed and others live with their husbands. Out of 57 women interviewed, 18 do not have own land for crop production but their own homestead. Interview with 39 women farmers who owned land indicated that five belonged to age group 25-35, 13 belonged to age group 36-50 years, 16 belonged to age group 51-60 and 5 belonged to age group 61-70 years. Though most of them did not attend primary school, majority of peasant association were able to speak Amharic, the national language of Ethiopia. Others predominantly speak *Oromifa*, the native language of the peasant association.



**Women farmers' access potato technologies**-during the initial phase of the project life, only 25 women farmers had access to potato technologies with recommended packages. The number of women farmers who willingly joined to form groups in order to access potato technologies increased year after year. In the subsequent year, the number of members in FRG raised to 96. Currently the number of women farmers being in different FRGs reached to 236 under a total of 10 FRGs (Table 1).

**Construction of diffused light store**-construction of diffused light store for better potato seed quality is one of the preconditions for farmers who intend to sell seed potatoes. Taking this case into consideration, the project constructed diffused light store at Holetta research center which can store 100 quintals of potato tubers (Figure 2). The purpose of diffused light at the center was to store revolving seed potato tubers from farmers. This helped to store seed potato for women farmers until each one of them was able to construct own store at farm gate. Initially about 100 quintals of improved potato variety, fertilizer and chemicals were purchased and stored in the store before the usual planting time. Frequent follow up of the stored seeds inside diffused light was made by the research staff to monitor the quality of seeds. At times chemicals were sprayed to minimize pest attack and ensure purity of seeds. Moreover, as indicated in Table 1, in the first cropping season about 17 members of FRGs constructed diffused light store and currently about 137 FRG members constructed diffused light store at their farm gate.



**Figure 2:** Diffused light store constructed at Holetta Research Center

**Potato tuber production-** members of FRGs were able to harvest potato tuber yield with better productivity (Table 1). A maximum of 541qt/ha of potato tuber yield was obtained during 2008/09 cropping season. On average a maximum of 313qt/ha of potato tuber yield was recorded during 2006/07 cropping season. At the first year of the trial, two women FRG members disobeyed the bylaws and did not apply recommended practices as per training, demonstration and evaluation conducted. As a result, the lowest yield (186qt/ha) was obtained from the improved variety, which is far better than the highest yield obtained from the local variety (120qt/ha). The lower tuber yield in some farmers' field was attributed to low soil fertility status and poor crop management including agronomic and crop protection practices. As responded by farmers, potato tuber yield greater than 120qt/ha provides better income even if they sell as ware potato directly to the consumers.



**Table 1:** Member of FRGs, DLS constructed and mean potato yield across years (2006/7-2010/11)

Year	Member of women FRG	DLS constructed	Yield (qt/ha)	
2006/07	25	17	Minimum	186
			Maximum	488
			<b>Average</b>	<b>313</b>
2007/08	96	63	Minimum	41
			Maximum	454
			<b>Average</b>	<b>264</b>
2008/09	183	113	Minimum	47
			Maximum	541
			<b>Average</b>	<b>239</b>
2009/2010	223	132	Minimum	82
			Maximum	407
			<b>Average</b>	<b>243</b>
2010/2011	236	137	Minimum	46
			Maximum	409
			<b>Average</b>	<b>173.7</b>

**Note:** Each year the number of FRG members exceeds the number mentioned because some farmers who start consuming potato in August, who sell ware potato for immediate household cash need and who did not record yield were excluded. Moreover, some farmers who left tubers in the field until they are ready for sale, and some farmers who do not want to see changes in color of the seed tuber while left simply at home were also excluded.

### Income from potato sales

All FRG members believe that all of them earned better income from the intervention than they used from local cultivars. During the first year, a quintal (100kg) of fresh ware potato tuber was sold for 70 Birr at local market whereas seed potato that was kept for 3-4 months after harvest was sold for 350 Birr per quintal. However, farmers noted a quintal of potato tuber stored for seed purpose loses about 30% of its weight and hence the benefit reduces at that rate. There are also larger tubers that do not meet requirements of seed tubers and must be sold as ware potatoes. The net income a farmer earned by storing potato tuber for seed purpose than selling immediately for consumption was approximately 245 birr/qt for the 2006/07 cropping year. Currently (in 2012) a quintal of fresh potato tuber for consumption sold at local market fetches 450 Birr while seed potato stored for 3-4 months fetches 600 Birr per quintal with more

net income of 320 Birr for stored seed potatoes. Moreover, women FRGs reserved 1,251 quintals of seed potato tubers for own plantation and sold 2,521 quintals of seed potato tubers to different market outlets. Thus they served as one of the seed potato tuber sources in the country.

### **Opportunities**

**Capacity building**-capacity of women FRGs at *Robi Gebeya of Welmera wereda* was built through training on potato production, management, post harvest handling, entrepreneurship, decision making, and facilitation and leadership skills. They were provided information on sources of markets for inputs such as chemicals and linking to better market outlets for their produces. Simple cost-benefit analysis related to selling their produces at farm gate, local markets and seed potato tuber markets were advised and consulted. The benefit of storing potato as seed sources as compared to selling immediately for consumption was presented in economic terms.

**Formation of bylaws**-women FRG members established bylaws in a participatory manner to which members were accountable. They elected chairperson, assistant chairperson, secretary and treasurer for FRG. The bylaws include fixed meeting date per month, to be punctual during the meeting date and avail at 8:30 in the morning, construction of diffused light store, store own seed for next cropping season, among others. Any member who arrives late (after 3:00 in the morning) must be punished by paying 1 birr to FRG and absentee must be punished by paying 2 birr per meeting. Moreover, a women farmer who disobeyed potato management practices must not be connected to better markets. Repeated disservice and mismanagement leads to complete dismissal from membership and access to improved technologies.

**Construction of Diffused Light Store (DLS)**-in the first year, 68% of the women FRG constructed own diffuse potato light store using available local materials. Currently 58% of the total FRG members constructed their own diffused potato light store (Table 1). A day to day follow up of stored seed potato to ensure quality of seed potato for



the next cropping season had been implemented. Many of them were found devoted, trustworthy and patient to apply what they were shown trained and thought.

**Sharing of knowledge and information-***Wereda* experts took leadership and organized cross visits, field days and field visits to other farmers, development practitioners and other actors. At the end of the first year, a total of 100 farmers and 10 development agents, researchers and *wereda* experts participated during cross visit and provided constructive feedbacks. Every year, the number of farmers, researchers, technical assistance, development practitioners, among others who participated in cross visits, field days and field visits increased. FRG members had got chance to share their wealth of experiences, experts, views, opinions and challenges that they acquired while working in FRG and during cross visits, field days and field visits.

**Competition for better performance-**competition in this regard was among women FRG members for the ability to manage their trial plots as per recommendation. Since FRGs evaluated the performance of trial plot of individual women farmer during group evaluation, each farmer tried to manage to be ranked first or best. In this regards, it was observed that working together had encouraged them to develop spirit of competition. Some women farmers failed to manage because at initial phase of the intervention they allocated poor soil for the trial and hence in the process lost competitive spirit.

**Accessibilities-**accessibility is contextualized as the easiness of getting women FRG members during supervision, monitoring and feedback assessment. As compared to men farmers, many women farmers stay and work around homestead and were easily available to transfer information, provide inputs and extension services and to arrange or change date of meeting due to unforeseen reasons. On contrary, men farmers in many cases stay far away from homestead or engaged mainly on social or natural resource management activities and as a result were not easily available to properly transfer information.

**Respect and patience**-respect in this regard is perceived as the value women farmers provide to outsiders, such as extension and research staff. Women farmers value outsiders and respect their ideas, information, and materials, among others. They were very patient even at times outsiders get disappointed with their mismanaged plots.

**Wisdom and interest**-women farmers have great desire to change or improve their livelihood. They are very much willing to participate in interventions that improve theirs and their family's income. They have their own indigenous knowledge that if can be complemented into scientific knowledge would shape development projects and interventions client-oriented, need based and problem centered. In addition, they are devoted and trustworthy in activities to which they are responsible and accountable.

**Persuasion of women farmers**-women farmers are a good source of farmer to farmer information dissemination and hence have high acceptance among rural communities. Therefore, they have great potential to persuade, convince and mobilize other women farmers for development interventions.

### **Challenges**

**Physical fitness**-experiences with women farmers reveal that they faced difficulty to handle heavy duties such as hoeing, plowing, harvesting, transporting harvests to store and markets, ridging and construction of DLS, management and post harvest handlings. To make women farmers benefit from potato technologies, they need labor support either from household members or community or labor augmenting technologies.

**Burden of work activities**-experiences with women farmers show that potato production and marketing had added workload over existing household activities. In traditional society such as the areas intervened, women farmers were engaged in home activities, marketing, social responsibilities and routine agricultural production activities.



**Leadership and decision making-**in traditional society such as the study area, men usually possess leadership and decision making power over household as well as community resources. Women farmers do have little knowledge about leadership and decision making in relation to groups because they did not have enough exposure to facilitation, leadership and decision making power. Hence concept of facilitation, leadership and decision making were not developed well with women farmers and thus took time to bring behavioral change. Yet it requires more interventions not only to women farmers but also to household members. As a result, they lacked confidence to start leading, facilitating and making decision on group matters.

**Men or husband influence-**even if the project targeted women farmers, the husband had influence over activities such as wilt management, seed maintenance, DLS construction, and marketing of seeds.

**Priority-**all women farmers participated in the intervention replied that they prioritize home activities than agricultural activities. This is therefore a challenge to outsiders who wanted to bring improvement in the livelihood of women farmers and their family.

**Entrepreneur concept-** in many cases women farmers are engaged in subsistence mode of production where majority of their income balances expenditure. In other words, they do not have entrepreneur and profit maximization skills. In addition, they have weak experiences in organizing themselves into groups to access credit, information and market outlets. These are still challenges that women FRGs face and if not solved will be threats to the opportunities. This therefore demands resources, time and energy of outsiders because it will take longer period to bring change and orient them towards profit making.

#### 4. Conclusion and recommendation

In the attempt to empower women farmers by accessing improved potato technologies and knowledge, initially 25 women farmers were organized into potato women FRG. Trainings were given on potato production, management, input utilization, post harvest handling, entrepreneurship, decision making, facilitation and leadership skills; and field visits were organized to enhance information and knowledge exchange. Moreover, women FRGs evaluated individual plots and provided constructive comments for improvement during the course of production. Close supervision and follow up were made both by research staff and development agents from *wereda* office of agriculture.

Five years data indicate that the number of women farmers who accessed potato technologies increased from 25 to 383. A total of 236 DLSs were constructed by women FRGs which enabled them to store seed potato. Women FRGs reserved about 1,251 quintals of seed potato and used for planting their own fields in the consecutive years. In addition, women FRGs sold about 2,521 quintals of both seed and food potatoes. During these years, price of food potato increased from 70 birr to 450 birr per quintal and that of seed potato increased from 180 birr to 600 birr per quintal. Unless it is due to uncontrolled social/household problem, women farmers were punctual to their meeting time. Even if they were absent due to convincing problems, they leave message to at least one of the committee members. Compared with men biased technology transfer approach, women farmers relatively share knowledge, information and technology better to non participating farmers. Many women farmers managed their trials before the evaluation day and tried to be best among groups creating a spirit of competition among members. Compared to conventional technology transfer approach, women farmers were found easily accessible to outsiders than men farmers during supervision, monitoring and feedback assessment. Many of them demonstrated their ability of respecting outsiders and portrayed patience in times when outsiders get disappointed with their mismanaged trials. In general, women farmers were fast learners and adopt technologies better than men



farmers. Difficulty to handle heavy duties, burden of workload, poor leadership and decision making, men influence over their interventions, prioritizing home activities and poor concept of entrepreneurship are factors that challenged empowerment of women farmers. Further empowerment of women farmers through training, entrepreneurship skills, facilitation, market outlet choices, decision making and leadership capacity are potential areas for interventions. Moreover, encouraging them to produce potato at larger hectares and seek for market outlets are areas for further interventions.

## 5. References

- Berhanu Kuma, Fekede Feyissa and Kedir Nesha. 2006. Gender Based Analysis of Livestock Production Systems at Kuyu wereda in North Shao zone, Ethiopia. Pp 88-00. In Tamrat Degefa and Fekede Feyissa (Eds). Institutional arrangements and challenges in market-oriented livestock agriculture in Ethiopia. Proceedings of the 14<sup>th</sup> annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, September 5-7, 2006. Part II: Technical Papers.ESAP, Addis Ababa. 230 pp.
- Food and Agricultural Organization of the United Nations. 1998. Rural Women and Food Security: Current Situation and Perspectives. FAO, Rome.
- MoARD (Ministry of Agriculture and Rural Develeopment of Ethiopia). 2007. New Agricultural Extension Service Process Description and WorkingProcedure, Addis Ababa.