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RELEVANCE AND EFFECTIVENESS OF FARMER TRAINING CENTERS (FTCs) IN GUREWA DISTRICT, EAST HARARGHE ZONE, OROMIA REGIONAL STATE, ETHIOPIA.

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Abstract

Agriculture is the backbone of Ethiopia country economic development strategy and the main source of livelihood in terms of employment, generating foreign currency and raw materials for industries. Farmer Training Centers (FTCs) was established as a means to develop human resource and enhance innovation needed to transform the sector to productive and market oriented system. The main purpose of this study was to analyze the relevance and effectiveness of FTCs in Gurawa woreda in terms of changes in knowledge, attitude and practical levels, and explore institutional linkages with of the FTCs. This study used cross-sectional survey method to obtain the necessary data in 2018/19 production season. The data was obtained from 120 (60 trained and 60 untrained) randomly selected respondents from 4 kebeles using probability proportion to size sampling method. In addition, KII, FGD, and review of available record at FTCs were used for data collection. Relevance of FTCs were obtained based on the identifications of farmers' needs and constraints, content of training, training delivery methods, selection criteria of trainees and appropriateness of period, duration and schedules of trainings were vary among the sampled in the area. Effectiveness of FTCs were identified based on the obtained result of knowledge, attitude and practical assessment of trained and untrained farmers, their mean difference of trained farmers towards the given technologies and commodities were significantly higher than untrained farmers at 1%, 1%, and 5% (p=0.01,0.01 and 0.05) of probability level respectively. According to the linkage mechanisms, the public, private and NGOs was identified as a key actors for institutional linkages which are weak in the functioning of FTCs based training.

Keywords: Effectiveness, FTCs, Institutions, Linkage, Relevance, Status.

Relevância e eficácia dos Centros de Treinamento de Agricultores (FTC) no distrito de Gurewa, Leste de Hararghe, do estado regional Oromia, Etiópia

Resumo

A agricultura é a espinha dorsal da estratégia de desenvolvimento econômico do país da Etiópia e a principal fonte de subsistência em termos de emprego, gerando divisas e matérias-primas para as indústrias. Os Centros de Treinamento de Agricultores (FTCs) foram estabelecidos como um meio de desenvolver recursos humanos e aumentar a inovação necessária para transformar o setor em um sistema produtivo e voltado para o mercado. O objetivo principal deste

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estudo foi analisar a relevância e eficácia dos FTCs em Gurawa woreda em termos de mudanças no conhecimento, atitude e níveis de práticas, e explorar as ligações institucionais com os FTCs. Este estudo utilizou o método de levantamento transversal para obter os dados necessários na safra de produção 2018/19. Os dados foram obtidos de 120 (60 treinados e 60 não treinados) respondentes selecionados aleatoriamente de 4 kebeles usando o método de amostragem de proporção de probabilidade para amostras. Além disso, KII, FGD e revisão dos registros disponíveis nos FTCs foram usados para a coleta de dados. A relevância dos FTCs foi obtida com base nas identificações das necessidades e restrições dos agricultores, conteúdo do treinamento, métodos de entrega de treinamento, critérios de seleção de estagiários e adequação do período, duração e horários dos treinamentos foram variados entre os amostrados na área. A eficácia dos FTCs foi identificada com base no resultado obtido de conhecimento, atitude e avaliação prática de agricultores treinados e não treinados, sua diferença média de agricultores treinados em relação às tecnologias e produtos fornecidos foram significativamente maiores do que os agricultores não treinados em 1%, 1% e 5 % (p = 0,01,0,01 e 0,05) do nível de probabilidade, respectivamente. De acordo com os mecanismos de vínculo, o público, o privado e as ONGs foram identificados como atores-chave para os vínculos institucionais que são fracos no funcionamento do treinamento baseado em FTCs.

Palavras-chave: Eficácia, FTCs, Instituições, Vinculação, Relevância, Status.

Pertinencia y eficacia de los Centros de capacitación para agricultores (Ftc) en el distrito de Gurewa, Zona Este de Hararghe, Oromía Estatal Regional, Etiopía

Resumem

La agricultura es la columna vertebral de la estrategia de desarrollo económico del país de Etiopía y la principal fuente de sustento en términos de empleo, ya que genera divisas y materias primas para las industrias. Los Centros de Capacitación Agrícola (FTC) se establecieron como un medio para desarrollar los recursos humanos y mejorar la innovación necesaria para transformar el sector en un sistema productivo y orientado al mercado. El objetivo principal de este estudio fue analizar la relevancia y eficacia de las FTC en Gurawa woreda en términos de cambios en el conocimiento, la actitud y los niveles prácticos, y explorar los vínculos institucionales con las FTC. Este estudio utilizó el método de encuesta transversal para obtener los datos necesarios en la temporada de producción 2018/19. Los datos se obtuvieron de 120 (60 capacitados y 60 no capacitados) encuestados seleccionados al azar de 4 kebeles utilizando el método de muestreo de proporción de probabilidad al tamaño. Además, se utilizaron KII, FGD y la revisión de los registros disponibles en las FTC para la recopilación de datos. La relevancia de los FTC se obtuvo sobre la base de la identificación de las necesidades y limitaciones de los agricultores, el contenido de la capacitación, los métodos de impartición de la capacitación, los criterios de selección de los aprendices y la idoneidad del período, la duración y los horarios de las capacitaciones variaron entre los muestreados en el área. La eficacia de los FTC se identificó en función del resultado obtenido del conocimiento, la actitud y la evaluación práctica de agricultores capacitados y no capacitados, su diferencia media de agricultores capacitados con respecto a las tecnologías y productos dados fue significativamente mayor que los agricultores no capacitados en 1%, 1% y 5 % (p = 0.01, 0.01 y 0.05) del nivel de probabilidad respectivamente. De acuerdo con los mecanismos de vinculación, el público, el privado y las ONG fueron identificados como actores clave para los vínculos institucionales que son débiles en el funcionamiento de la capacitación basada en FTC.

Palabras clave: Efectividad, FTCs, Instituciones, Vinculación, Relevancia, Situación.

INTRODUCTION

Background of the study

As agriculture is the backbone of the Ethiopian economy, Agricultural Development Led Industrialization (ADLI) strategy has been devised by the Federal Democratic Republic of Ethiopia based on which, the resources required for the expansion of the industry and other development sectors of the country can be obtained when agriculture's output and productivity reliably grow. To this end, the governments is implementing a development strategy with the aim of changing the backward farm practices of the majority of small farmers and improve their living standards by boosting farm outputs and productivity as well as to bring a sustainable economic growth in the country. One of the directions in the implementation of the development strategy is the establishment of agricultural technical and vocational training colleges that train and provide skilled professionals who are assigned to work closely with farmers. The second direction of the development strategy is the establishment and organization of farmers' training centers to provide training to farmers by the professionals that graduate from the colleges (MoARD, 2009).

The main reason for establishing FTCs is to produce skilled farmers that can transform the country's agricultural production from subsistence to market oriented production system, bring a sustainable economic growth by raising the sector's output and productivity. Thus, the main duty of FTCs is to deliver extension service and provide training which is not only limited training on transfer of knowledge, insufficient resources for FTCs but also making the farmer market oriented and there by produce better quantity and quality, i.e., to develop market-driven production system. The training should be based on the need and priorities of the rural community. It should be provided during the slack period of the year and in the farmers' village, provided based on convenient time and place selected by the farmer capable of providing the farmer with the relevant agricultural skill/ knowledge (MoA, 2017).

According to the study of Wuletaw (2014), the training programs must be shaped to meet the needs of the farmers. Identifying and meeting the needs of the particular community requires trainers familiar with and acceptable to the people among whom they work. Among the reasons for the rural households to live in poverty is lack of knowledge and skill on improved farming and poor utilization of new technologies, and there by lack of improvement in agricultural production and productivity. Therefore, agricultural change and development require the mobilization of human resources through means such as education and technical training. Agricultural education and training are key elements in the whole process of agricultural change and the achievement of rising levels of rural prosperity. It can function effectively only if the national system of education as a whole is geared effectively to the needs of development. Agricultural education and training can succeed in their objectives only when integrated into an overall development programs (Seyoum, 2013).

In Ethiopia, there is limited access to modern agricultural knowledge and information by research, private sectors to farmers and other stakeholders. This has resulted to low use of improved technologies and information by end-users, which contributed to low agricultural production and productivity nationwide. Even if technologies are generated, they are often not available to most farmers due to lack of systematic, centralized technology development and dissemination mechanism. Inadequate consideration to farmers needs in research agenda setting and extension package development. As a result of this, there is complaint that technologies by research do not adequately consider farmers' demands in various locations and agro-ecologies (MOA, 2017).

The FTCs was expected to serve as hubs for playing an active role in linking farmers with other institutional support services such as input supply, credit, co-operative promotion, and agricultural produce marketing. To bring realistic transformation in agricultural extension service, farmers must be trained to improve their knowledge, attitude and practice change towards deciding in their own affairs, access to information about agricultural production technology, exposure to improved farming and living practices (Birhanu et al., 2006).

Farmers are more likely to adopt new technologies and become more productive with the help of basic education and extension services. They will be better equipped to make more informed decisions for their lives and to be active participants in improving economic, social and political dimension of development. In particular, it is paramount important to reach rural youth who are the farmers of the future and most of them start farming at a very early age. In rural areas, especially poor farmers, access to education is still much lower and the quality of non-formal education is poorer and often irrelevant to their lives (St. Mary, 2016).

Farmers training centers means a training and information institution that serve as focal point for agricultural development activities within a certain rural kebele administration and that provide various training to farmers (FAO, 2011). Training has also been defined as "a planned process to modify attitude, knowledge or skill behavior through learning experience to achieve effective performance in an activity or range of activities. Training need analysis can be done through various methods like surveys, questionnaires, observations. Effectiveness refers to a measure of the extent to which a training activity achieves its objectives, whether the intended changes in knowledge, skills and attitudes happened, whereas, relevance is concerned with the degree to which the rationale, objectives, and expected impact of a training activity are, or remain pertinent, valid and significant with regard to long-range objectives or identified priority needs and concerns (FAO, 2011).

In the study of Raab et al., (2007), they define the training evaluation as "a systematic process of collecting information for and about a training activity which can then be used for guiding decision making and for assessing the relevance and effectiveness of various training components." This will lead to make improvements during designing future training efforts.

Towards this end formal training was provided to farmers, based on a number of crops, livestock and natural resource management to increase their production and productivity. And thus, the government has launched potential development goals including modular training, extension and information service at FTC. Many efforts have been made by different organization to strengthen this program such as the training of extension agents, newly established and building FTCs (MoARD, 2008).

In addition, in the study of Caffarela, (2002) the systematic processes of farmers training must include; selection of participants, training need assessment, goal and objective setting, organizing training techniques and exercises, and monitoring and evaluation. Although time has elapsed since the government launched FTC-based farmers training, assessment of the relevance and effectiveness of the training and explore the current state of institutional linkages and organizational aspects of FTCs in a specific context is rare. Hence, this study contributes towards addressing such a knowledge gap.

Statement of the problem

The effect of farmers training at FTCs were to enhance the knowledge, skill and capability of farmers which help the farmers to use new technology and ultimately increase productivity. It is widely agreed that FTCs serve as an entry point to bring about behavioral changes among farmers and lead them towards modern and commercial agriculture. It should also serve as hubs for knowledge and information sharing and centers for promoting best practices. The existing FTC guideline indicates that FTCs are the property of farmers and are expected to be managed by them. However, farmers perceive FTCs as government institutes rather than their own due to low level of awareness and lack of clarity on the basic advantages of it. Currently, their problems are aggravated by inadequate resources, low efforts of DAs to bring about expected changes. As a result, many FTCs have remained idle (MOA, 2017).

Limited training to farmers in FTCs was specifically focused on different agricultural technologies with major emphasis on theoretical concepts which lacks the necessary teaching aids, often one-way, poorly organized, not season-based and agro-ecology oriented. In addition, training impact assessments are not conducted to determine any changes realized and take corrective measures in cases where changes are not satisfactory (MOA, 2017).

According to the study of Kefyalew, (2006), the basic issues such as conduction of appropriate farmer training needs assessment, participating farmers in curriculum development, content determination and deciding the duration and schedule of the training and incorporating farmers' indigenous knowledge in the program to make the learning experience participatory and relevant are among the limitations. Hence, the training process and the organizational aspect of the program had been pursued by using coercion to involve farmers just to fulfill the required quota for the specific particular training of the time (Wuletaw, 2014).

The status of FTC functioning was very low in Oromia Regional state in general and particularly in Gurawa woreda it is not different from other areas. So far, 42 FTCs have been established out of the 45 kebeles in woreda and they started demonstrations of improved forage, crop and natural resource management and conservation related technologies, delivery of farmers training to enhance technical capabilities of the farmers in crop and livestock production activities. And also emphasis has been given in fulfilling the necessary material, human resources and expanding the FTCs outreach throughout the mandate areas of each kebele. However, systematic analysis of the situation in each of FTC with respect to type and the quality of the training offered in terms of content, methodology of delivery, training subject matter with respect to the demands of the direct beneficiaries may be neglected. In addition, factors such as demographic, socio-economic, institutional and organizational aspects may be hinder the effectiveness of farmer trainings, and other related household level issues have not been studies systematically.

Training course modules and curricula guidelines were sent to FTCs from regional bureau of agriculture and rural development. The trainings has been given in the areas of animal, plant and natural resources management. However, training offered in the study area in the past three years was not evaluated to determine their relevance to needs and priorities of farmers and effectiveness in terms of changes in farmers' knowledge, attitude and practice change for enhancing performance (BoARD, 2009).

Moreover, research findings are often verified on very limited farmers' plots without demonstrating them in wider agro-ecologies and socio-economic structures. When such types of technologies are introduced over wide areas with diversified, complex and risks situations, the technologies become unsuitable and leading to little or no adoption. Poor linkage between FTCs and

research institutions, extension and farmers can hamper performance. Therefore, strengthening weak linkages is important for improving the status and performance of FTCs training implementation through creating suitable network with different institutions (MOA, 2017).

Therefore, to address the aforementioned issues, the researcher has to focus on assessment of relevance and effectiveness of farmer training in terms of changes in knowledge, attitude and practice change. In addition, it explore the institutional linkages with other actors and stakeholders

The general objective of the study was to assess the relevance and effectiveness of training conducted at farmers' training centers (FTCs) and explore institutional linkages on FTCs in Gurawa woreda.

Specific objectives of the study

- To assess the current status of farmer training centers in terms of infrastructure, human resource and management aspect in the study area.
- To analyze the relevance of farmers' training to the needs and priorities of trainees in the study area.
- To measure the effectiveness of farmers' training in terms of trainees' knowledge, attitudes, and practice change in the study area.
- To assess the mechanisms and strength of linkage on FTCs with key actors and stakeholders in the study area.

Research questions

1) What is the proportion of fully functional, partially functional and non-functional FTCs?

2) How relevant is the FTCs-based training to the needs and circumstances of different categories of farmers (male, female, youth).

3) How do trainees perceive effectiveness and usefulness of the training that had been offered to them? Have the trainees utilized? To what extent the training offered at the FTCs changed the knowledge, attitude and practices of the participating farmers?

4) What mechanisms are used at FTCs to ensure effective linkage with key actors and stakeholders? Are there missing and/or weak links?

Significance of the study

In this regard, assessing the organizational issues and constraints related to farmers training, has significant contribution in pin-pointing areas that need attention for future improvement. However, so far no research has been done in assessing the overall performance of farmers training centers in addressing priority needs and changing the mindset and practices of the farming community in the study area in particular.

Therefore, this study believes to generate useful information and provide feedback for lower (woreda) level policy makers and development practitioners so as to make the training process demand driven and effective. Moreover, the empirical information generated from this study is expected to serve as a basic document for future reference.

Scope and limitation of the study

The research focused on assessing the relevance and effectiveness of training that had been conducted at FTCs in Gurawa woreda. Besides the scope of the area, the study had their own limitations like the researcher was used one time cross-sectional survey data and their analysis has been limited to comparing randomly selected 'trained' and 'untrained' farmers' knowledge, attitude and practices. Perception of 'trained farmers' were measured by simple tests and observation to gauge the extent to which the training has had impact on them.

However, it is important to note that because of the fact that the agricultural training program delivered throughout the country are more or less similar, its results can be an important inputs to other areas. Moreover, taking the concerting efforts make to collect both qualitative and quantitative data from multiple sources like farmers, development agents, and experts to smoothen the research process can be plus points. Hence, the recommendations and policy implications of the study can be using for other areas of similar contexts and as a basis for further studies.

RESEARCH METHODOLOGY

This chapter describes the approaches and methods employed for data collection and analysis. The first sub-section of this chapter presents the description of the study area. Then the details of methodology to be using to conduct the overall study are discussed such as sampling procedure and techniques, method and instrument used for collecting data pertaining to each of the specific objectives as well as the method employed for data analysis.

Description of the study area

The study was conducted in Gurawa woreda of the East Hararghe Zone, Oromia Region, Ethiopia. It was bordered on the South by Gola Oda, Meyu Muluke, on the West by Bedeno, on the North by Kurfa Chele, and on the East by Fedis woreda. Gurawa town is the administrative center of the woreda is and they have 45 rural kebeles and 2 town kebeles dwellers in the woreda. District has 75 km of dry-weather and 12 of all-weather road, for an average road density of 60.3 km per 1000 square kilometers.

According to CSA (2010), it has a total population of 263,924 of which 133,780 are male and 130,144 are female and the total area of the district is about 1,109.41 km^2. The district has three agro-ecological zones such as *kola (*48.9%), *dega (*20%) and *woinadega* (31.1%). It has also characterized by different landscapes with the altitude ranging from 500 to 3230M above sea level (m.a.s.l). Gara Muleta Mountain is the highest peaks point in the area. The annual rainfall ranges from 550mm to 1,100 mm with annual temperature ranging from 20 ºC - 27ºC (BoARD, 2014).

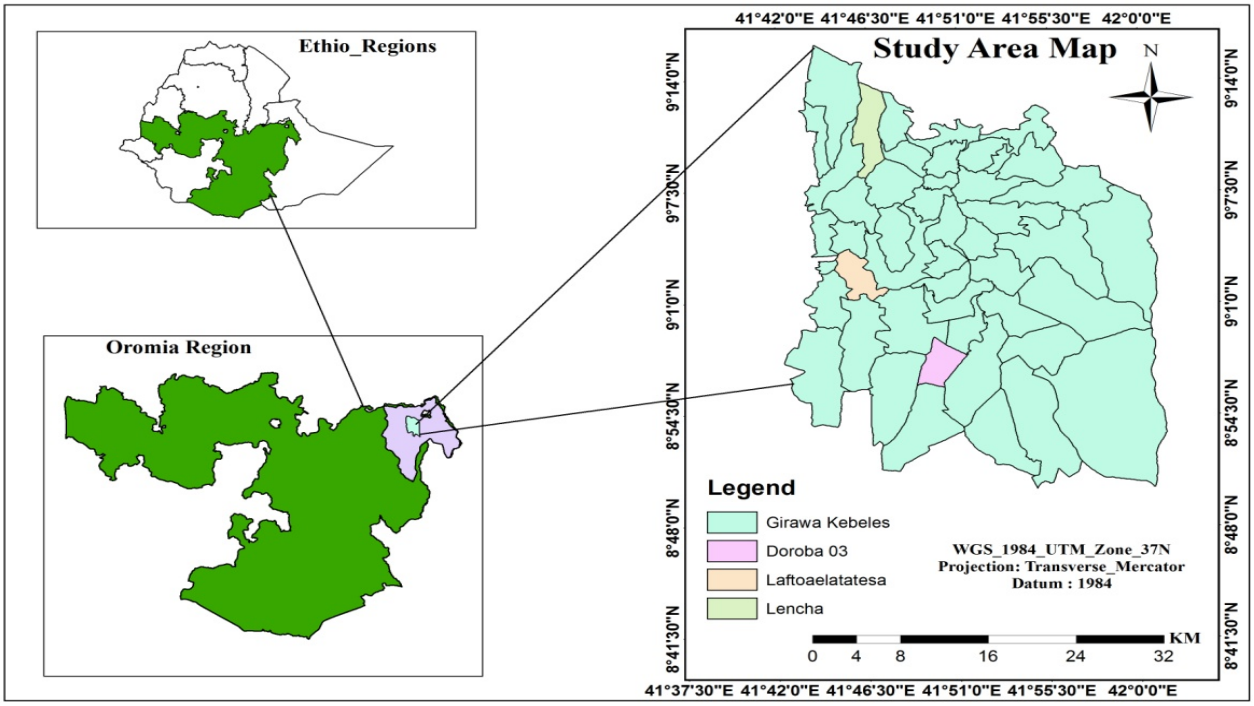
District has a range of water resources suitable for irrigation activities. Traditional irrigation has a long history in the district whereas modern irrigation schemes are not as much. However the estimated area under irrigation to-date is 3,025.5 of which traditional irrigation accounts for 1,842 hectares, modern irrigation covers 690.5 hectares and the area underground water (in the form of well) is 493 hectares that benefits about 29,332 households (BoARD, 2014).

Like in other parts of the country agriculture is the mainstay of the community and also most of the rural kebeles communities were used traditional farming techniques in their farm

demonstration field. The study area is characterized as mixed farming system where the livelihood of the rural community depends both on livestock and on crop farming. Crop production is almost dependent on rain fed. The dominant crops produced in the district are cereals, pulse, and horticultural crop and oil seeds. The cereals are mainly sorghum, maize, and wheat takes the largest portion of production. It is estimated the district has livestock population 106,461 of which cattle population 74,853 comprises the major share followed by small ruminants with a population of 24,971 (Gurawa woreda BoARD, 2014).

In addition to this, the agricultural extension systems of the study area offers a multitudes of activities such as home-economics, training, visit, arranging field days and NGOs, organizing demonstration trials etc. Attempts have been devoted to employ three development agents at each kebeles in order to offer training on livestock, natural resources and crop production sectors at FTCs. There are 42 FTCs in the districts and 20, 14 and 8 FTCs are categorized under basic, medium and advanced type of FTCs respectively. 8 of them was reached of the FTCs-based training because they are fully-functional. The left 11 and 23 FTCs are non-functional and semi-functional type of FTCs respectively in the area (BoARD, 2014).

Figure 2: Location map of Gurawa woreda



Source: Report of Gurewa BoARD, 2014.

SAMPLING TECHNIQUE

To conduct this research, multi-stage sampling procedure has been employed to select the sample for assessing the relevance and effectiveness of FTCs-based farmer training and for exploring institutional linkage mechanisms to facilitate delivery of farmers training in Gurawa woreda. Multi-

stage sampling procedure has followed to select FTCs from functional FTCs in the woreda and representative sample respondents who attended and not attended the FTC based training.

In the first stage, 8 FTCs have been purposefully selected out of 42 FTCs, and in the second stage, 4 FTCs was selected from them, stratifies random sampling technique has been employed to select sample respondents from both respondents households with at least a member who attended FTC-based training and households who had no member who attended FTC-based training.

Respondents in respective kebeles were categorizing into trained and non-trained households based on their experience of training in FTCs with the assistance of local DAs and other key informants. In total, 60 trained and 60 untrained farmers were selected randomly following probability proportion to size sampling method. Finally, a total of 120 respondents has been selected from the respective list of farmers from 4 kebeles in the study area. In addition to this, an interview were held with 12 DAs and 4 supervisors working at the selected FTCs; and focus group discussion have been conducted with 10 experts of the Gurawa Woreda Office of Agriculture.

Table 2: Sample size of respondents in the study area.

List of kebeles	Sampling Frame			Sample Size		
	Trained	Untrained	Total	Trained	Untrained	Total
Birbirsa	30	80	110	12	13	25
Resa jennata	47	200	247	14	20	34
Giru gemachu	40	186	226	16	17	33
Lafto	55	90	145	18	10	28
Total	172	556	728	60	60	120

Source: - Own compilation, 2019.

Method of Data Collection

To make the data collection process comprehensive and all inclusive, both qualitative and quantitative methods were employed to complement each other and supplementing the deficiencies of each in generating the required information to answer the research questions. Qualitative and quantitative data had been used to supplement and fill gaps inquired during the data collection process, particularly at exploratory phase.

To identify priority issues to focus on for the formal survey, exploratory study has been carried out. For primary data collection, the researcher uses a checklist, group discussion, key informant interview and informal discussion with farmers, supervisors of woreda and development agents have been used.

Secondary data on the bio-physical, socio-economic and demographic factors of the woreda were gathered from Agriculture Office. Additional information about FTCs was gathered from woreda reports, journals, research reports, government publications and books, etc. Semi-structured interview schedule was used to collect primary data from the sample households about

the socio-economic characteristics, institutional factors of the household, the knowledge, attitudes and practices change by the trained farmers and their level of understanding in reference to the delivered training.

Moreover, data on institutional linkage with which FTCs are operating under their current circumstances were gathered through focus group discussion, individual interviews with development agents, experts and site observations which help for triangulation as well as to enrich the findings of this study.

To facilitate the data collection process, the interview schedule that had been developed was pre-tested and finally suitable modification were made by administering on non-sample farmers. The interview has conducted by locally recruit and trained enumerators under the close follow up of the researcher. Training was offered to enumerators about the ways of approaching the respondents, the way to arrange the interview including the time when, and how to control the interview situation and how to record the information accurately.

At the end of the training program the enumerators had the opportunity to practice the interview processes by asking each other, in order to ensure their understanding to each question. Furthermore, before launching the actual survey enumerators together with the researcher had interviewed a limit number of farmers as part of the pre-test. Finally, the actual survey was conducted in selected kebeles where the sampled FTC were found.

Table 3: Summary of data collection methods

Research objective	Require data	Data sources	Method of collection	Instrument for data collection
Assess the current status of FTCs in terms of infrastructure, human resource and management.	Infrastructure and facilities, human resource, governance, planning, monitoring and evaluations of FTCs	DAs, experts, FTC, BoARD, official reports and records	DAs, FGDs, KII, 1st and 2nd data, site observation	Checklists
Analyse the relevance of farmers' training to the needs and priorities of trainees.	TNA, Content, Methods of delivery, Facilitator ability, environment and facilities, Training period, duration and schedule	Sample HHs, DAs, experts, FTC, BoARD, Office reports and records	HH survey, FGDs, KII, 2nd data, site observation	Checklists
Measuring the effectiveness of farmers' training in terms of trainees' knowledge, attitudes and practice change.	Appreciation of situations, views, perceptions, and measuring the change of knowledge, attitude and practice levels	Trained and untrained HHs, FTCs based training, Office reports and record	Knowledge Attitudes and Practice test	Teacher-Made, Likert scale and Practice test

Assess the mechanisms and strength of linkage on FTCs with key actors and stakeholders.	Key actors on FTCs, Coordination, knowledge and information sharing.	HHs, FGs, DAs, experts, NGO.	FGDs, Site observation and KII.	Checklist

Source: - Own compilation, 2019.

The important variables investigated in the research such as, training needs assessment, content, methodology and criteria used for recruiting trainees for the modular training has been measured by using carefully selected items included in the semi-structured interview schedule in addition to the checklist for qualitative data collection. In order to measure the knowledge, attitude and practice levels of farmers' were developed.

This sub-section mainly discusses the tests and techniques employed to measure the knowledge, attitude and practice levels of trained and untrained sample households in order to see their differences. For this study, three training topics has been selected based on their immediate relevancy with the farming systems of the area, and farmers' needs of the training topics, which has been revealed during preliminary exploratory study of the area. These courses: (i) Crop production technology (improved seed production, tillage practice, row planting, compost and manure) (ii) Livestock production technology (improved beef and dairy cattle production and management, and (iii) NRM (Soil and water conservation, Forest management practice).

Method of Data Analysis

Based on the objectives of the study and nature of the available data, different analytical techniques have been employed for the composed of qualitative data generate from sample farmers, group interview, focused group discussion, key informants and other relevant sources; encompass tabulation, triangulation, description, interpretation, appreciation of situations, views, perceptions, and reviewing document contents from multiple sources.

Using descriptive and inferential statistics quantitative data obtain from the sample respondents were compared and contrasted. Descriptive statistics such as, mean, standard deviation, frequency of occurrences and percentage were employed to assess the relevance and effectiveness training delivered at FTC. In addition, inferential statistics such as, chi-squares and t-test was employed to compare the trained and untrained farmers' knowledge, attitude, and practices changes. Knowledge tests (Teacher-made Test) were used to measure the knowledge of both trained and untrained farmers. Moreover, attitude and practices change was measured by Likert scale and practice test response format respectively.

Qualitative data had been collected from institutional stakeholders of FTCs such as NGOs, governmental institutions, credit and input suppliers, research centers and others. FTCs, which have strong linkage with different organizations, have been better capability to run their mandatory roles and effective functions because of their connections. This linkage were measured in ordinal scale as excellent, very good, good, poor, or no linkage with a rating scale assign from 1-5.The whole quantitative data have processes by SPSS version 20. Finally, the results of the analysis has been interpreted and presented accordingly.

Table 4: Summary of data analysis methods

No	Research objective	Methods used for data analysis
1	Assess the current status of FTCs based training in terms of infrastructure, human resource and management aspect.	By employing descriptive statistic, such as, frequency, percentages by using computer software package (SPSS) for analysis of quantitative data.
2	Analyse the relevance of farmers' training to the needs and priorities of trainees.	By employing descriptive statistic, such as, frequency, percentages by using computer software package (SPSS) for analysis of quantitative data.
3	Measuring the effectiveness of farmers' training in terms of their knowledge, attitudes and practice change.	By using cross-tabulation, rating, frequency, percentage and t-test for test of significance differences between mean scores of trained and untrained sampled households in the area.
4	Assess the mechanisms and strength of linkage on FTCs with key actors and stakeholders.	Likert type of scale as excellent, very good, good, poor, or no linkage with a rating scale assign form, discussions with representatives of relevant institutions, 2nd data analysis and interpretation of opinions, concepts narrations.

Source: - Own compilation, 2019.

Data Quality Control

As much as possible the researcher has tried to deal with the respondents politely, trustfully and friendly to get valid information systematically and explain the reason why this research study has been required. In this study to ensure the data quality more relevant, reliable and compete statically information are gathered from the concerned bodies, and then it has interpreted very carefully. Moreover, the collected data has been analyzed appropriately for the existing problems and bringing better solutions based on the results of the findings.

Research Ethical Consideration

The researcher has applied all ethical considerations during this research, before the starting all ethical approval has been obtained from department of RDAE or (advisor). All the literatures concepts in the research were paraphrased and if directly taken there have been quotations and finally all the authors can be present in the end of the reference list. This research is free from any harmful effect on the environment, human beings, flora, fauna and other bodies. Finally, the researcher can respect the rights, dignity, and diversity of all people and also they didn't tolerate any forms of discrimination based on age, gender, race, ethnicity, religion, health conditions like disability and HIV, marital and parental status of the households in the study area.

RESULTS AND DISCUSSION

The main focus of this part is to present the results and discussion on the relevance and effectiveness of FTC-based farmer training in terms of improvements in knowledge, attitude and

practice change by comparing between trained and untrained sample respondents. It also discusses about institutional, organizational dimensions of FTCs, coordination and linkage mechanisms currently existing among the relevant actors expected to work with FTCs at grassroots level.

Background of the Sampled Respondents

This sub-section provides a summary of socio-economic profile of the sampled respondents. Sex, age, marital status, family size, educational level and income of respondents are summarized as indicated in Table 5.

Table 5: Summary of socio-economic profile of the sampled respondents.

Characteristics	Category	Trained		Untrained		Total	
		F	%	F	%	F	%
Sex	Male	50	83.3	46	76.7	96	80.0
	Female	10	16.7	14	23.3	24	20.0
Age	20-45 years	42	70.0	34	56.7	76	63.3
	46-60 years	14	23.3	20	33.3	34	28.3
	> 61 years	4	6.70	6	10.0	10	8.40
Marital status	Single	5	8.30	10	16.7	15	12.5
	Married	45	75.0	30	50.0	75	62.5
	Divorced	7	11.7	13	21.7	20	16.7
	Widowed	3	5.0	7	11.6	10	8.30
Family size	1-3 family	20	33.3	25	41.7	45	37.5
	4-6 family	30	50.0	20	33.3	50	41.7
	>7 family	10	16.7	15	25.0	25	20.8
Educational level	Illiterate	3	5.0	15	25.0	18	15.0
	Able to read and write	16	26.7	21	35.0	37	30.9
	Grade 1-8	12	20.0	13	21.7	25	20.8
	Grade 9-12	22	36.7	9	15.0	31	25.8
	Certificate holders	7	11.6	2	3.30	9	7.50
Income per year	<10,000 Birr	10	16.7	12	20.0	22	18.3
	10,001-20,000 Birr	20	33.3	21	35.0	41	34.2
	>20,001 Birr	30	50.0	27	45.0	57	47.5

Source: Field survey, 2019.

To summarize the obtained surveyed data of the respondents such as the sex, age, marital status, family size, educational levels and incomes of the interviewer has varied for different reasons. The occurrence of differences may be due to the purposes of the study, the ways of taking samples and methods of assessments. As indicated in table 5, from the sampled interviewer in the selected kebeles, very few numbers which are 10 and 14 of females has categorized under the trained and non-trained members of the surveyed respondent respectively. According to this survey, the participation of females was low when compared to the males participators'. This result agreed with the idea of Seyoum et al. (2014) who has stated that female farmers were not in a position of participating in educational institutions due to marriage, abduction, workload, and cultural settings of communities. The guideline of training has stated that educational level of trainees should be grade 4 and above. As a matter-of-fact, trained farmers vary in their educational level. About 18(15%) were unable to read and write; and as result it may create difficulty to easily deliver the content of FTC based trainings for farmers in the study area.

DESCRIPTION OF MAJOR FINDING OF THE STUDY

The Current Status of Sampled Farmers' Training Centers (FTCs)

According to the data obtained from the KII, all the entire sampled FTCs have almost the same objectives- conducting training, demonstration, providing advisory and other services and also compared their status to others FTCs based on the actual performance they achieved in the study area.

Infrastructure and facilities in FTCs

The infrastructure and facilities availability is different among the 4 sampled FTCs in the study area. All the sampled FTCs have buildings with slight variability in internal facilities. With regards to workshop and residences buildings, Birbirsa and Geru gemachu were among the better equipped FTCs of the woreda. In terms of physical materials such as chair, table and shelves all FTCs are similar. In addition to this, Birbirsa, Lafto and Resa jennata FTCs also have modern electronic materials like telephone and DVD for functioning of training. The sample FTCs also have enough facilities for demonstration of crop production, post-harvest and cultivation materials.

However, facilities for demonstration such as livestock production, post-harvest handling and processing such as beef, dairy and beekeeping are very limited. The all surveyed FTCs also lacks different reference material used for FTCs based training in the study area.

Table 6: Summary of infrastructure and facilities at selected FTCs.

Type of infrastructure	FTCs of kebeles			
	Birbirsa	Lafto	Resa jennata	Geru gemachu
Residence for DA	2	1	1	2
Office and workshop	4	1	2	3
Set for trainer	82	75	63	78

Table	3	4	3	3
Chair and Shelf for DA	5	3	3	4
Class room	1	1	1	1
Telephone and DVD	1	1	1	-
Black board and white board	3	4	3	2
Information board	-	1	1	-
Rain gauge	1	1	-	1
Total	102	92	78	94

Source: Field survey, 2019

Human resource in FTCs

The numbers of development agents in the selected kebeles were varies from FTCs to FTCs; in FTCs like Lafto and Birbirsa, there is an access to irrigation, because of this they have 5 DAs staff members which are working on the areas of irrigation, natural resource management, crop, cooperative and livestock. While in Resa jennata and Geru gemachu only 3 DAs are available working in the areas of agronomy (crop), natural resource management and livestock production.

Table 7: Summary of human resources with work experience at FTCs

Name of FTCs	Number of DAs	Work experience of DAs in year		
		Minimum (years)	Maximum(years)	Average
Birbirsa	5	4	7	5.5
Lafto	5	6	10	8.0
Resa jennata	3	7	12	9.5
Geru gemachu	3	2	8	5.0
Total	16	19	37	28

Source: Field survey, 2019

Work experiences of development agents were also vary with the farmers training centers holding central place to area. From the sampled FTCs like Resa jennata which is 5 km far away from Gurawa town, the average experience of DAs was 9.5 years. While in distant FTCs like Geru gemachu (15km away from the town) the average working experience of DAs was 5 years. As it known experience is a critical factor for successful knowledge and information flow between DAs and local farmers. Hence, alternative incentive arrangement mechanisms need to be developed for DAs who are worked on remote areas so as to benefit the whole farming households equally. Beside to this, the criteria for recruitment on the position of head of DAs are age, experience and skill while promotion is a function of grade point average, performance, efficiency and experiences. With regards to financial management of the FTCs, they don't have any financial matter to run except the DAs salary which is monitored by the woreda agriculture office.

Management of farmers' training centers (FTCs)

According to the obtained data all management side of FTCs in woreda level is under the responsibilities of woreda office of Agriculture and Natural Resource in the research extension core

process. The management team of FTCs are includes rural kebele chairman, manager, 3 DAs, representatives of women, youth and other two model farmers, which formed extension unit at kebele level. While they were governed by kebele chairperson with the help of head of the DAs and others key actors who have direct contact with the issues of FTCs training and agriculture related activities. For the accomplishment of the FTCs training, all of resources were managed by kebele committee headed by chairperson and also FTCs based training is mainly led by head of DAs in that kebele.

The other finding result of this study, it showed that during the discussions with KII and FGDs were held with FTC management members, they indicated that, at this time the FTCs management have their own strengths and weaknesses side toward the accomplishment of the farmers training at FTCs, firstly, the strength side of this members were in all of kebeles there was a team of management members which was known to each other's, there is a plan for what they operated in the kebele, they coordinate and facilitates various field level activities relating to farmers training for their farmers communities, they can mobilize their communities towards the extension activities, organization of farmers and during the delivery of different agricultural inputs in the study area.

Secondly, the main weakness of management level of FTCs team, it was evident that FTCs, they doesn't have clearly defined mandate given from government to effectively authorizing its mandate to carry out the perceived responsibilities at FTCs level, they had no clearly stated formal record that reveals task and performance of management, they works with no or insufficient capacity they had because of they don't have budget for their salary of month.

As it is known, management members working at FTCs have their own skills, motivation, and the opportunity to make the best contribution to the organization. They also need to be organized and relate to each other in the ways that achieved best productive outcomes. However, at present, the FTCs management among the four sampled FTCs kebeles have a different ability to lead their task towards the functioning of the FTCs based training for farmers and also toward giving the extension service to the extent possible with their own initiations to the local communities of the area.

Planning and implementation of activities at FTCs

According to the survey result obtained from all interviewers are responded that 100% of them are said that training of farmer at FTCs was planned by woreda extension expert, DAs of kebele and other stakeholders including head of kebele and local communities of the area. During the planning stage, the farmer identification for training in FTCs is basically based on the DAs pre-consumed knowledge of the commodity to be trained. The major objectives set during the training are improvement of skills, increasing the production and productivity of crops, and technology transfer among the farmers'.

According to the respondent results for fixing the exact day of training practice in FTCs was determined based on the day out of cropping season, religious and cultural holly days in the study area. This training duration was designed by DAs and office of Agriculture and Natural Resource of the district by considering cropping seasons and other technical and agro- ecological situations. Most of the trainings were delivered two days per week and for 2 to 4 hrs daily and also it was

commenced during Saturday and Sunday so as to accommodate most of the farming community need and to use the days which are not allowed to do other farming activities.

As per the data gathered from sample respondents, training sessions were conducted for different durations as short as 8 days to 30 days. For instance, Birbirsa FTC had conducted training from April to June 2019, Resa jennata FTC has conducted for one month of training in February, Geru gemmachu FTC has delivered the training from April to May 2019 and Lafto has been trained only in month of April.

To confirm the result of the study with the training guideline, the training was allowed to be conducted two times per year as per the preferences of trainees for months. The slack periods of production system in Gurawa are around October and February.

Generally, from the finding survey result of this study it implies that there is not a regular schedule for farmers' training in the area, this can reduce the effectiveness of training to learn different type of technologies from the area and also they hadn't a plan of training based on the length and styles of the trainings given in line with the interest of majority of the local farmers.

Monitoring and evaluation of training at FTCs

According to the data obtained from FGDs in all of sampled FTCs for farmers training, they explained that the purpose of monitoring and evaluation is to improve and achieve efficient and effective program implementation performance by providing feedback to the organization at all levels of implementation processes of a training program. Therefore, monitoring and evaluation of farmers training was the duty of DAs and woreda expert, who are responsible for the training implementation at every level of the training program.

The main finding result of this study was, so far head of DAs and concerned woreda experts were not conducted an assessment during and immediately after training/ex-post evaluation in any one of the selected sample of FTCs to assess the positive or negative feedback of the sampled respondents on the situation of farmers' training in the study area. In the end of the training sessions this type of analysis may help the evaluators (woreda expert and DAs) to assess the overall achievement of a given trainers farmers and to draw lessons for future planning of the training.

THE RELEVANCE OF FARMERS' TRAINING AT FTCS

According to this study the relevance of FTCs-based training was analyzed based on the identifications of farmers' needs and constraints, content of training and their relevance, methods of training delivery, selection criteria and their process, their period, duration and their schedules and their environmental facilities. The selected FTCs can be assessed from these different dimensions.

Training Needs Assessment (TNA) at FTCs

As per the evidence obtained from focused group discussions with development agents, there was an attempt made by DAs and woreda experts to conduct training need assessment, but it lacks participation of different stakeholders and direct beneficiaries or trainees before organizing farmers' training. Emphasis was not given for the needs of farmers before the delivery of the training. What they did was, selecting farmers who were presumed to be or was progressive farmers or team leaders of development activities and training was conducted based on the issues what they have in the texts obtained from top levels rather than focused on local farmers' interest.

Training needs assessment can be conducted through direct observation, questionnaire, consultation, FGDs, review of documents on the locality, tests, records, and work samples. On contrary, modular training has got deficiency in almost all of these mentioned techniques. Hence, this result agreed with the findings of Kefyalew (2010) who stated that, there was no effort made to ask farmers' needs before, during and after the training. Tsion (2008) also explained that there was no as such an organized need assessment even in research centers, but it was organized based on the needs of development agents and woreda experts.

Content of training relevance at FTCs

According to the evidence obtained from focused group discussions of the respondents' content of the training is one of the important aspect to be considered in the process of human resource development. The training contents should connected with training needs of the farmers, plan or curriculum and training programs which correspond with the relevance content of the training.

The finding result of this study showed that in all of the selected FTCs the durations of the training varies based on the content and complexity of the topic to be trained. According to the response of the interviewers, the FTCs trainings were providing on different contents of activities, the major areas of the contents were soil and water conservation, household package, compost preparation method, livestock fattening, use of credit, fertilizer usage, agronomic practices such as row planting, irrigation and livestock feed managements etc. In general, even though all contents of trainings were different from one area to another's, the target beneficiaries of the trainings also vary from one FTCs to other FTCs as well.

Based on the survey data gathered from interview schedules, 50(83.3 %) respondents explained that the training content was relevant in terms of fulfilling the interest of farmers' communities; whereas the left 10(16.7 %) of respondents explained that the training content was not relevant.

To summarize this result, it was confirmed that as indicated by Fisseha (2009), all conducted training was curriculum based and relevant to the farming system, but it doesn't mean that only training contents can achieve the stated objectives for successful training results. Because of the training guideline was developed by higher experts at Federal level and interpreted to the local language at regional level, where the training manuals were prepared to train farmers based on their tasks and duties without involving them directly while the contents of training modules were produced.

Most of the time, the given decision on the content of the training relevance is highly attached to the needs and problems, and inclusiveness of farmers' indigenous knowledge in the

study area. On the other hand it means that knowing the components on which the farmers are willing to be trained and practices their experiences in the demonstration site was very important.

Table 8: Relevance of contents issues in FTC based training.

No	Training content relevance	Very good	Good	Fair	Poor	Total
1	Practices to farmer assured problems and needs	9.1%	25.9%	40.3%	24.7%	100
2	Incorporation of farmers indigenous knowledge (IK)	13.4%	30.6%	41.2%	14.8%	100

Source: Field survey, 2019.

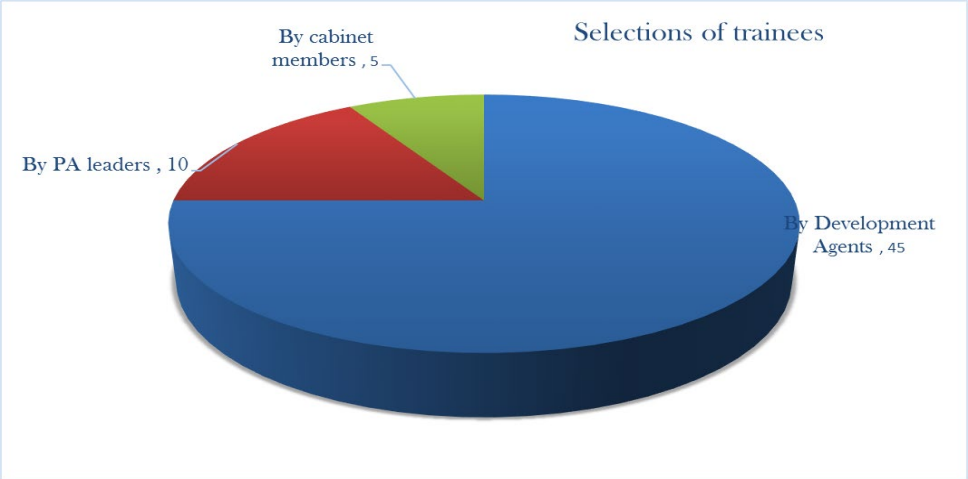
Based on table 8 result of data about 35% (very good and good) of the trained respondents appreciate the practices that includes problems and needs of households. Whereas about 65% (fair and poor) respondent of them were not appreciate or fell unsatisfactory on the content relevance issues. This result showed that most of the training offered at farmers training centers were not appreciate the problems and needs of the households. On the inclusiveness of farmers' indigenous knowledge to the relevance content of training, 44% (very good and good) of them appreciated; while 56 %(fair and poor) were unsatisfactory on the training content relevance issues of indigenous knowledge of farmers.

Generally, the result of this study was confirmed with the study of Kolawole, (2001) which implies that incorporation of practices that pressing problems/needs of farmers' and indigenous knowledge to the training was very important for the achievement of the relevance of trainings to ensuring new knowledge, experiences, concepts and skills of farmers.

Trainees actor and selection criteria for farmers at FTCs

During the focus group discussion and interviewer of the selected respondents in the study area, different actors were involved in assessing methods and approaches of how the trainees' selection process can be implemented. For the accomplishment of stated objectives of the FTCs based training of farmers, the major actors who involve in trainees selection was identified by different actors of trainee in all of the sampled FTCs by selected interviewer were gave their responses on selection processes of trainees undertaken through development agents, kebele leaders and cabinet members of Gurawa woreda as it described in the figure 3.

Figure 3: Selection of trainees by different actors for FTCs.



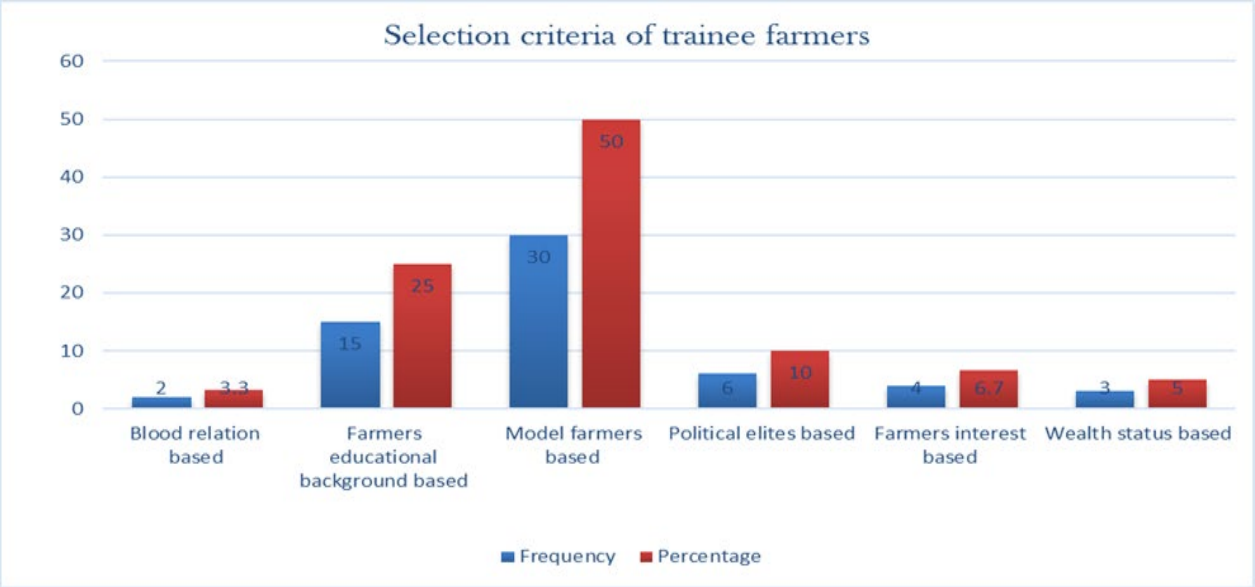
Source: field survey, 2019.

According to the result data in figure 3 revealed that, there are different actors who were involved in farmers' FTCs training. About 45(75%), 10(16.7%) and 5(8.3%) of the trainees were selected by development agents, kebele leaders and woreda cabinet members respectively selected by the sampled respondents in the study area.

To summarize the above ideas in shortly, The finding result of this study was confirmed with the study of Adebabay et al., (2008), they explained that, for achieving the relevance of FTCs based training according to the data of their study implied that, the selection of trainees' were employed by three common actors, they are DAs, kebele leader and cabinet members of middle level.

The other important issue for the relevance of FTCs based training was the selection criteria of the trainees' farmers. As it illustrated in figure 4, the result of data showed that most of the trained farmers who participate in FTCs based training responded that, the selection criteria of the farmer trainees were based on 30(50%) model farmers', followed by 15(25%) farmers' educational background and 6(10%) political affiliation, respectively, while about 4(6.7%) and 2(3.3%) of them reacted that the selection criteria of the farmer trainees were farmers' willingness and blood relation based respectively. However, 3(5%) of the respondents point out that wealth status based criteria. Generally, the result of this study shows that, most of respondents which are 45(75%) of them were based on model farmers and educated farmer selection criteria used in the study area.

Figure 4: Criteria for trainee farmers' selection process



Source: field survey, 2019.

The new finding of the researcher was tried to report here is, the result of this study was not confirmed with the study of Adebabay et al., (2008), they explained that the main criteria used to select the farmers that are underlined by the guideline of FTCs training were innovative, creative, interested and voluntary youth who have been withdrawn from schools and involved in agricultural activities, those who engaged in agricultural activities, model and exemplary farmers, age of 18 and above, both male and female farmers, grade four and above and ability to share knowledge obtained to their colleagues. However, based on the obtained result of data from the selected respondents of the study was explained that, the selection criteria for the trainees farmers were based on different criteria such as blood relation, educational background of farmers, model farmers', political elites, farmers interest and wealth status based.

Training period, duration, and schedule at FTCs

According to the result obtained from the interviewed sample of the respondents, they described that relevance of the training can be affected by many aspects such as period, duration, and schedule dimension of farmers training in FTCs. As it indicted in table 9, the farmers for whom the training programs prepared was bounded by a number of responsibilities, among the important points were the convenience of the selected time, duration and schedule were variables that signifies the uniqueness of training on the front line for the selected respondents of farmer's households in the study area.

Table 9: Relevance of time, duration and schedule of FTC based training.

No	Relevance of training issues	Very good	Good	Fair	Poor	Total
1	Timeliness of training	37.6%	42.4%	16.2%	3.80%	100

2	Duration of training	28.4%	12.3%	20.7%	38.6%	100
3	Schedule of training	13.1%	40.8%	32.9%	13.2%	100

Source: Field survey, 2019.

Based on the result of table 9, it showed that from the existing timeliness of trainings delivery about 37.6% and 42.4% of them were responded that very good and good appreciated respectively. About of 16.2% of them also respond that fairly on the timelines of the training. Despite of this about 3.8% of them feel disappointed on the timeliness of the training delivery. This implies that at least to a considerable occasion, the trainings are being conducted in inappropriate times.

Duration of training can be affect the relevance of the training in many aspects and also setting the appropriate length of the training period is sufficient condition for successful training session. Based on the result of table 9, it showed that the length of the training period was about 28.4%, 12.3%, 20.7% and 38.6% of the respondents were very good, good, fair, and poor respectively appreciated the duration of training for which they are satisfied on the training program. This obviously shows that the duration of training was not in line with the interest of the farmers but to the interest and provisions of the training resource persons.

Schedule of the training is an instrument used to measure the relevance of farmers training. Based on the result of table 9, it showed that the schedule of the training was about 13.1%, 40.8%, 32.9% and 13.2% of the respondents were very good, good, fair and poor respectively satisfied on the training program convenience of the selected season of the year at which the FTCs based training was conducted for farmers in the study area.

To conclude the assumptions of time frame, duration and schedule of training issues which are important for the selected respondent farmer's. Out of the total sample respondents 80 % of them respond that the existing training was timeliness in terms of delivery with respect to farming activities and rainfall patterns. In regard to the duration of training about 59.3% of the respondents who have participated in FTCs training also perceive irrelevance of duration as compared to what they have been exposed in other training environment. In regards to suitability of schedule of the training about 53.9% of the respondent who join in the FTCs training were appreciated while about 46.1% of the trained farmers have negatively respond on the suitability of schedule of the training.

Generally, the result of this study was confirmed with the study of CTA working document (2000), they categorically suggested that the aim of farmers training is not just to convey knowledge and skills in one-short intensive training courses, but also to involve rural people in the development activities through a continuous process of learning week after week. When the training is imparted on daily life related critical activities, it should be continuous and completely well connected to the activities which undertaken for the farmers beneficiaries.

Training environment and facilitators' ability at FTCs

The basic requirements for the relevance of FTCs-based training for farmers were achieved through the fulfillment of an appropriate training material/aids, venue and facilities for demonstration site was tried to describe in table 10.

Table 10: Relevance of training environmental facilities at FTCs

No	Relevance of training environment	Very good	Good	Fair	Poor	Total
1	Training environment and teaching aids	13.1%	40.4%	30.8%	15.7%	100
2	Suitability of the venue/place of training	65.4%	25.3%	6.60%	2.70%	100
3	Appropriateness and quality of training facilities	22.5%	18.7%	26.3%	32.5%	100

Source: Field survey, 2019.

As it was depicted in table 10, based on the result of environmental facilities issue, about 13.1%, 40.1%, 30.8% and 15.7% of the respondents were responded very good, good, fair and poor respectively. It conclude that most of them 53.5% the respondents appreciated the training materials used at FTCs in transferring the planned training objectives. While a few of them 46.5% felt that the materials/aids used at FTCs training was not relevant during the training sessions to deliver the desired knowledge to the trainers farmers in the area.

Based on the result of suitability of the venue and place of training issue, about 65.4%, 25.3%, 6.60% and 2.70% of the respondents were responded very good, good, fair and poor respectively. Generally, 90.7% of the farmers response was appreciated, feel relevant or convenient and the rest 9.3% of them were disappointed with the venue where the training is delivered.

Based on the result of adequacy and quality of training facilities, about 22.5%, 18.7%, 26.3% and 32.5% of the respondents were responded very good, good, fair and poor respectively. Generally, regarding the adequacy and quality issue, 41.2% of the respondent has positive response, on the other hand where as a majority 58.8% of the respondents were reflected negative response on the adequacy and quality of training facilities.

The result of this study was confirmed with the study of Swanson et al. (1998), explained that training materials, venue or place trainings and adequacy and quality of training facilities are essential for farmers training activity once the training contents are identified. It is also good to use a variety of training materials and methods throughout a training to maintain the interest of the trainees.

According to the result achieved from the FGDs interview in the study area, the relevance of facilitator's ability on FTCs-based training was delivered by local administrator, development agent, woreda and zonal experts.

The relevance of FTCs based training for farmers were achieved through increasing the abilities of trainers' through their knowledge, practical farming skills, communication skills and follow up and regular evaluation of the trainers were described in table 11.

Table 11: Relevance of facilitators' ability on FTCs based training.

No	Relevance of facilitators ability	Very good	Good	Fair	Poor	Total
1	Knowledge of the trainers (DAs)	39.8%	33.2%	19.7%	7.30%	100
2	Practical farming skills of the trainers	24.5%	35.5%	33.6%	6.40%	100
3	Communication skill of the trainers	35.4%	40.6%	19.7%	4.30%	100
4	Follow-up and regular evaluation	7.60%	9.50%	22.8%	60.1%	100

Source: Field survey, 2019.

Based on the result of knowledge of trainers, about 39.8%, 33.2%, 19.7% and 7.30% of the respondents were responded very good, good, fair and poor respectively. Generally concerning the knowledge issue about 73% of the trained farmers have positive response on the knowledge of trainers, but 27% of the farmers who participated in FTC training did not appreciate the knowledge of trainers.

In this study, the results of practical farming skill of trainers and their interaction with the farmer trainees was also investigated. Regarding this issue, about 24.5%, 35.5%, 33.6% and 6.40% of the respondents were responded very good, good, fair and poor respectively. Generally, about 60% of the respondent have positive reaction, while 40 % of the trained farmers have not appreciated the practical farming skill of the trainer.

Regarding the result of communication skill of trainers about 35.4%, 40.6%, 19.7% and 4.30% of the respondents were responded very good, good, fair and poor respectively. Generally, among the total trained farmers 76% was appreciated and the rest about 24% trained farmers were not appreciate the communication skill of the resource persons for training at FTCs.

According to the result of the follow up and regular evaluation of trainers about 7.60%, 9.50%, 22.8% and 60.1% of the respondents were responded very good, good, fair and poor respectively. In these regard the finding of this result showed that about 17.1% of the trained farmers responded positively, while 82.9% were negatively reflected on follow up after the training. Unfortunately, the general discussions made with trained farmers they indicated that there were no exposure of regular follow-up and evaluation of activities after training was undertaken in the area.

Generally, the finding of this study was confirmed with the study of Kefyalew, (2006) Ousman, (2007) and Tsion, (2008), the training organizers might not consider the value of regular follow-up and evaluation of activities in completing the training process and end up the training.

Training delivery methods for farmers at FTCs

The relevance of FTCs based training can be affected by length, preferred style and mix of training are very important methodological aspects as it shown in table 12.

Table 12: Training delivery dimensions at FTCs based training

Items of delivery dimension	Categories	Trained farmers	
		Frequency	Percent
Length of trainings	Sufficient	52	86.7
	Not sufficient	8	13.3
Style of trainings	With interval	48	80
	Continuous	12	20
Training delivery methods	Theoretical	45	75
	Practical	10	16.7
	Balanced	5	8.3

Source: Field survey data, 2019

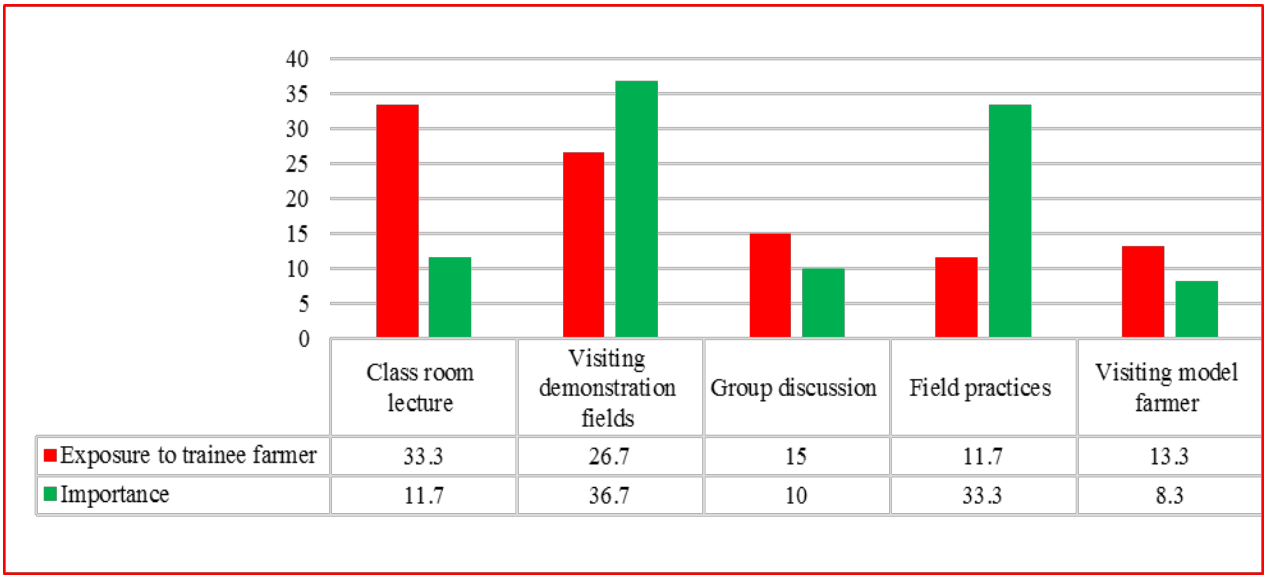
According to the survey data gathered from respondent farmers through interview schedules the time allowed to take length of time was sufficient as 52(86.7%) of sample respondents' and 8(13.3%) was not sufficient according to respondents. Styles of the training are also essential aspects towards farmers' day-to-day activities and continuous practices in rural areas. Hence, 48(80%) of respondents were preferred with-interval style of the training due to farming practices need continuous follow up while 12(20%) of the responses indicated continuous ways of training. The other finding result of this study was about 45(75%), 10(16.7%) and 5(8.3%) of the trainees indicated that trainings were carried out more on theoretical, practical and mixed type of parts respectively responded by the interviewer on the content of training in the study area.

The results of this study was not supported by the study of Adebaby et al., (2007), they explained that the most challenging issues in FTCs based training was methods of training and proportions of training methodology. The syllabus of farmers training has been designed to be 80% practical and 20% theoretical oriented. Training materials, skills of trainees, interest of trainees and trainers, demonstration sites, etc. were supposed to be convenient for the delivery of the training but practically it did not happen.

On the other hand, the results achieved from the key informants and FGDs, the main limitations/challenge of training delivery methods/systems were observed in the areas. Some of them was mismanagement of time, mostly depend on theoretical, disorganized delivery of the training and absence of fully participatory on training with absence of commitment and interest in the selected FTCs of Birbirsa, Resa jennata, Giru gemmachu and Lafto FTCs in the study area.

In the methods of training delivery and their importance in FTCs choosing the proper teaching methods are paramount important. A training plan has a better chance of success when its training methods are carefully selected. There are a variety of methods and techniques for conveying information to trainees, but not all of these are equally suitable as it described in figure 5.

Figure 5: Training delivery methods and their importance at FTCs



	Class room lecture	Visiting demonstration fields	Group discussion	Field practices	Visiting model farmer
Exposure to trainee farmer	33.3	26.7	15	11.7	13.3
Importance	11.7	36.7	10	33.3	8.3

Source: Survey result, 2019.

As it indicated in the figure 5, it describes that farmers' responses on teaching methodologies used during training session. In this regard class room lecture, visiting demonstration fields, group discussion, field practices and visiting model/exemplary farmers field are the major methods used in the study area.

From the total trained farmers' most of them 33.3% and 26.7% were responded class room lecture and visiting demonstration fields respectively, are the first and second dominant training methods in the study area. Others 15.0% and 13.3% respondents were responded group discussion and visiting model farmers were also used the third and fourth teaching methods respectively. Only 11.7% of the respondents point out, field practice was the fifth means of teaching methods.

With regards to their importance, respondents indicated that the class room lecture 11.7%, field practices 33.3%, and visiting demonstration fields 36.7%, and others 10.0% and 8.3% respondents are group discussion and visiting model farmers respectively, are all important at varying degree, although some difference was observed, most of the respondents appreciated visiting demonstration fields and field practices, respectively as the most suitable methods in addressing the outcomes of the training.

In generally, the finding results of this study was agreed with the findings of Seyoum (20016), who reported that training method is a strategy or tactic that a trainer uses to deliver the content so that the trainees were used to achieve the objectives of a particular training. In addition to this, skill orientation of the training process is an instrument used to measure the relevance of training methods. In this case, combination of theory and practice in training is essential to better improvement. In general most of the training was highly theoretical and lecture type of methodology hence, redirecting in mixing both theory and practice should be future assignment.

THE EFFECTIVENESS OF FARMERS TRAINING IN TERMS OF KNOWLEDGE, ATTITUDE AND PRACTICE

To measure the effectiveness of farmers training, they can be evaluated by taking various parameters such as improving farmers' knowledge, attitude and practice of beef cattle, dairy and soil and water conservation management practices. The sample respondents were 60 trained and 60 untrained farmers.

In this study, assessment in knowledge, attitude and practice in promoting those commodities was performed using descriptive statistics such as frequency, percentage and statistical tests. The difference between trained and untrained farmers was compared by using independent sample t-test. The frequencies and percentages of respondents were ranged as low, medium and high categories in order to understand distributions of each group of farmers.

Measuring of trainees knowledge

For the assessment of farmers knowledge in the study area, a 'teacher-made-test' was constructed and administered to look at the knowledge level of farmers with 5 questions having 17 obtainable scores for trained and untrained farmers on fattening, dairy and soil and water

conservation practices. Independent sample t-test was applied to compare the mean difference of trained and untrained farmers' knowledge results which presented in table 13.

The answers of respondents were evaluated and categorized into low (0-5), medium (6-11) and high (12-17) based on the score ranges. This distribution shows the frequency, percentage of trained and untrained respondents that explained in table.

Table 13: Knowledge scale of trained and untrained respondents

Scale of knowledge	Trained		Untrained		Total	
	F	%	F	%	F	%
Low	0	0.00	4	6.70	4	3.3
Medium	22	36.7	40	66.7	62	51.7
High	38	63.3	16	26.6	54	45.0
Total	60	100	60	100	120	100

Source: Field survey data (2019).

The result obtained from the study shows that the trained farmers gained more knowledge as compared to untrained farmers. About 36.7% and 63.3% of the trained respondents had acquired medium to high level of knowledge respectively, while 66.7%, 26.6% and 6.7% of the untrained farmers had acquired medium to high to low level of knowledge of the same practices respectively. However, untrained farmers also know something about beef cattle, dairy and SWCM practices due to knowledge and information sharing, different extension activities conducted in the area. But from the result obtained, it could be seen that FTCs based training kept the farmers more knowledgeable in promoting those commodities.

Table 14: Knowledge test of trained and untrained respondents

Respondents	N	Mean	SD	t- value	p-value	t-table at 1% probability level
Trained	60	19.83	5.11	3.130**	0 .01	2.576*
Untrained	60	16.23	3.96			
Total	120	-	-	-	-	

Source: Field survey, 2019. ** Significant at 1 % probability level

The result reported in table 14 shows that, the t-calculated value was greater than the t-table value at 1% of probability levels, it clearly indicated that there was high significant difference between mean scores of knowledge of two groups of farmers with respect to FTCs based training regarding knowledge of selected practices at (probability p= 0.01). The data reported in table 14 indicates that the trained farmers had better level of knowledge than untrained farmers.

The main finding results of this study was in lined with the findings of Babur (2009), who reported that knowledge of coffee management practices on the members of farmer's field school was higher than the non-members of the farmers field school. Even though the training content was

differs, these findings can also agree with the findings of Kefyalew (2006) and Tsion (2008) that trainings kept the trained farmers were more informed and acquired knowledge. Moreover, field visit, tour and demonstration practices upgrade farmers' knowledge and skill.

Measuring of trainees Attitude

For measuring trainees' attitude in the study area, the selected trainees' attitudes of respondent farmers was measured by Likert scale standard. The scale allows to measures the degree of positive or negative attitude toward using the technology of beef, dairy and SWCM in the selected 4 kebeles of FTCs. The responses of farmers were categorized into low (0-6), medium (7-13) and high (14-20) score ranges.

Table 15: Attitudinal scale of trained and untrained respondents

Scale of Attitude	Trained		Untrained		Total	
	F	%	F	%	F	%
Low	-	-	-	-	-	-
Medium	8	13.3	12	20.0	20	16.7
High	52	86.7	48	80.0	100	83.3
Total	60	100	60	100	120	100

Source: Field survey data (2019)

The obtained results in table 15 shows that, 13.3% of trained respondents were from moderate attitude followed by 86.7% with more favorable attitude about improved beef, dairy and SWCM management practice; whereas, 20.0% of the untrained respondents were found to have moderate attitude followed by 80.0% with more favorable attitude about improved commodities as it indicated in the study area. The mean scores of trained and untrained farmers' attitude was analyzed by using independent sample t-test and their results were presented in table 16.

Table 16: Attitudinal test of trained and untrained respondents.

Respondents	N	Mean	SD	t- value	p-value	t-table at 1% probability level
Trained	60	25.60	3.91	3.471**	0.01	2.576*
Untrained	60	23.17	3.21			
Total	120	-	-	-	-	

Source: Field survey, 2019. ** Significant at 1% of probability level

The result obtained from table 16 shows that, the t-calculated value was greater than the t-table value at 1% of probability levels, it clearly indicated that the attitude of trained and untrained farmers showed that the mean scores attitude of trained respondents were significantly higher than that of untrained respondents on selected practices at (probability p= 0.01). This shows that trained

farmers had more significantly favorable attitude towards those market oriented commodities as compared to untrained farmers.

In the findings of Kefyalew (2006) and Tsion (2008), they showed that the evidence of strong positive attitude by the trained farmers are due to participatory and group learning that geared the farmers towards a more favorable attitude as compared to untrained farmers. It is suggested that trained farmers have acquired better knowledge through farmer training about commercial commodities so as to make their attitude highly favorable than untrained farmers.

Measuring of trainees practice

For the achievements of the objectives of this study, practices of farmers were evaluated based on their responses on the application of recommended technologies of beef cattle, dairy and SWCM. The practice was operationalized as the application of knowledge acquired from the training and transfer of learning. In order to know practices used by trained farmers, an assessment was administered with questions having eleven scores on trained and untrained farmers for beef, dairy and SWCM. The responses of farmers were categorized into low (0-3), medium (4-7) and high (8-11) based on the score ranges.

The difference between trained and untrained farmers' practices was compared by using frequency, percentage and chi-square was calculated at significant value of 5% (p=0.05) as indicated in table17.

Table 17: Practice scale of trained and untrained respondents

Scale of practice	Trained		Untrained		Total	
	F	%	F	%	F	%
Low	10	16.7	25	41.7	35	29.2
Medium	36	60.0	20	33.3	56	46.7
High	14	23.3	15	25.0	29	24.1
Total	60	100	60	100	120	100

Source: Field survey data (2019)

The result obtained from table 13 shows that, trained farmers had low, medium and high categories in 16.7%, 60.0%, and 23.3% level of practice respectively regarding improved beekeeping, dairy and fattening practices with reference to its management systems. However, almost 29.2%, 46.7% and 24.1% of untrained farmers were found in low, medium and high level of practice categories of the same technologies respectively. The mean practices of trained and untrained farmers were analyzed by using independent sample t-test and results are presented in table 18.

Table 18: Practice test of trained and untrained respondents.

Respondents	N	Mean	SD	t- value	p-value	t-table at 5% probability level
Trained	60	5.35	1.93	2.224**	0.05	1.960*
Untrained	60	4.26	1.44			
Total	120	-	-	-	-	

Source: Field survey, 2019. ** Significant at 5% probability level

The result obtained from table 14 shows that, the t-calculated value was greater than the t-table value at 5% of probability levels, it clearly indicated that the practice comparison of trained and untrained farmers showed that the mean scores of practices of trained respondents were significantly higher than that of untrained on selected practices at (probability p= 0.05). This may be due to the fact that trained farmers might have attended farming practices of dairy and fattening with 'learning by doing' programs.

The result of this study was in agreement with the findings of Babur (2009) who stated that the management practices of coffee by farmer's field school member farmers were significantly higher than those of non-farmers field school member farmers. Even though, trained farmers had frequent contacts with facilitators during the training periods that result in to higher knowledge in promoting diverse commodities practices in their locality.

INSTITUTIONAL LINKAGES MECHANISMS OF FTCS WITH DIFFERENT ACTORS

In this section the researcher was tried to discuss briefly about the institutional, organizational management and linkage mechanisms with which FTCs are functioning under their current circumstances. Provision of training alone cannot bring about the required improvement without linkages with other institutions for the success of FTCs based training for farmers. All of the selected FTCs have served for different purposes such as giving skill training, extension services, meetings and various community development activities in the study area.

Linkage of key Actors and their role in relation to farmer training

According to the study of Ananda jaya sekeram et al., (2008), linkage mechanism is the concept, procedures, arrangements, devices or channels that bridges the gap between components of the system and allows communication between them. The purpose of this section is to list actors, who were involved for farmers' trainings, and looking in to the roles of actors, and how the linkage system is functioning. For the undertaking of any project intervention, the first step is to identify the key actors who bring about or prevent change in an innovation system. For the achievement of the stated objectives of this study, the researcher was discussed through FGDs, KII and site observations. The main stakeholders which included in the functioning of the FTCs based training participants such as farmers, DAs, kebele supervisors, woreda experts, zone officer, researchers and relevant institutions were consulted.

The main actors of linkage involved in the FTCs based training for farmers, were categorized in to public sectors include: DAs, administrators, cooperatives, primary schools, Oromia Credit and Saving Share Company (OCSSC), Bureau of Agriculture and Rural Development (BoARD), Woreda of Agriculture and Rural Development Office (WoARD), ATVETs, Ministry of Agriculture and Rural Development (MoARD), Haramaya University and other organs.

Private actors and NGOs were also identified as key actors with regard to the FTCs based training for farmers, these actors were farmers themselves and Integrated Seed Sector Development (ISSD) project. Thus, a total of 12 actors were identified who are involved in training

of the farmers' in the study area (See Appendix Table 1). There are other actors, which could have contributed for FTCs related to farmer trainings. Some of missed actors that identified based on KIIs and FGDs are Care project, investors and regional research center.

The other main finding result of this study achieved during the researcher was discussed through FGDs, KII and site observations in the study area, the linkages of potential actors had many opportunities such as to develop trust and confidence among partners of development, it enables sharing of roles and responsibilities to foster an interdisciplinary and holistic approach, upgrading of the potentials of DAs in their professional career. This opportunity can be addressed to farmers in advising, close extension service and it enables to share knowledge and information, enhancing the chance for employment and job creation in addition to the farming activities in the area. and linkages had also some challenges such as roles and responsibilities of DAs and supervisors are not clearly defined towards training, lack of continuity of training for farmers, presence of high turnover of DAs, since many of them are learning at degree level in other subjects, presence of duplication of work, inadequate skills and knowledge of training facilitators at kebeles and woreda level, and formation of high communication barriers between farmers, researchers, and NGOs as they work together.

In general, presence of weak linkage between the potential actors were disrupts the knowledge flow processes, lowers adoption rate, increase time lag between developments, reduce efficiency in the use of resources, unnecessary completion and duplication of efforts, and make confusion among farmers regarding to which institutions they form linkage.

This study was agreed with the study of Tesfaye (2009), it describes that any research centers institution can play their own contributions in terms of promoting different varieties of crops and other commercialized commodities and others facilities like preparing a demonstrations field, giving training of farmers and development agents. There are various non-governmental organizations that have been implementing for the achievements activities of FTCs functionality. If institutional innovation and linkage mechanisms improved, FTCs can have better performances.

Organizational management aspects of FTCs based training

For the fulfilment of the FTCs based training for farmer in the area, organizational development intervention aims was to promote and assist local institutions to become more effective, viable, autonomous and legitimate to make decisions on local affairs. In this study, assessment of management aspects of FTCs was carried out to see the actual setting by which FTCs operate currently.

To put it in a nut shell, from the selected FTCs which had basic materials and facilities, like class rooms, offices, residence, exhibition center, workshops, electricity, telecommunication and water would perform better training in the area. During this interview, they stated that there were no formal financial systems and procedures to be administered at FTCs level. However, it was observed that, there are no enough residence houses for DAs in both lafto and Giru gemachu FTCs. The DAs need to travel daily on average an hour to reach the FTCs from their residence in Gurawa towns. This can affected effective use of working hours of the day since the DAs are required to spend two hours a day to travel on foot.

Regarding the finding of the result obtained from survey data through FGDs, KII and site observations showed that, the main strengths for the intervention to enhance management of FTCs in the study area was, establishment of FTCs in 42 kebeles in the center of area, there was community participation at the time of construction mostly in Birbirsa and Resa jennata FTCs kebeles and a few farmers have better devotions and commitments towards training, so that they could scale up best practices they have to others kebele farmers.

The main weaknesses for the intervention to reduce the management of FTCs in the study area was lack of active participation of rural households in the regular training programme, lack of coordination between farmers, research, agricultural extension office, NGO and other relevant institutions, lack of demonstration areas for FTCs and the lands were not substituted for owners of the tenures, lack of transport facilities, there is no clear training policy documents at hand how to integrate stakeholders towards training, there was a problem of handling system of farm equipment's and offered teaching aids, and there was no monitoring, evaluation, follow up and feedback on training implementations in the study area.

This study was confirmed in line with the findings of Habte Mariam (2007) also noted that, to provide skills training along with the required information, the DAs needs to be equipped with the necessary facilities such as, the seed, fertilizer, planting material, chicken hay box, energy saving stove etc., because of those material presence they cannot quit the training up on completion of the theoretical part. Regardless of financial resources obtained at FTCs, such as, revenue from income generating activities of own compound are informally administered by FTCs management for such purposes as, monthly payment for security service, purchase of seeds and other inputs for the next cropping season, etc.

Knowledge and Information Sharing in relation to farmer training

Linkage mechanisms for communication enable to generate transfer, share, and use knowledge and information that available when it is required. There are different ways of knowledge and information sharing techniques. The focus of this part is to assess knowledge and information sharing services. Knowledge can be transferred and shared through delivery of various sources such as training, field days, demonstrations, experience sharing, market, mass media, formal and informal meetings and discussions.

The DAs stationed at FTCs besides conducting farmers training and technology demonstration, they facilitate various field level activities relating to extension, on-farm research, mobilization, organization of farmers, input delivery, services provision by various state and non-state actors. DAs are supported by both public and non-governmental organization in different areas of their daily activities, they supported FTCs training primarily based on information collected during the appraisal with DAs and the FTCs management bodies.

The public actors such as regional, zonal and woreda bureaus of agriculture and rural development, Fedis agricultural research center, Gurewa ATVET and Haramaya University research affairs office are the important sources of knowledge and information of the FTCs.

At FTCs level, kebeles administration is an important key actor in mobilizing farmers for collective actions like natural resource rehabilitation and management, encouraging farmers' participation in extension packages, organizing and supporting cooperatives. Beside, farmers'

organizations like Gurewa farmers' cooperative and privet firms are also important actors in supporting the FTCs.

Generally, in this study, assessment of management aspects of FTCs focused on formal and informal institutions available for functioning of FTCs management committee at farmers' level. Resa jennata FTC has a better linkage followed by birbirsa FTCs and lafto, with different sources of finance, information, knowledge and technologies (See Appendix Table of 2).

This study was confirmed in line with the findings of Kefyalew (2006), they showed that the undergoing training by formal and informal institutions such as community skill training centers, research centers, farmer field schools, NGOs and exposing ones to scientific information help individuals to think rationally and logically in all aspects of the life.

SUMMARY AND RECOMMENDATIONS

SUMMARY

This study was attempt to assess the relevance and effectiveness of FTCs-based farmer training in terms of knowledge, attitude and practice change by comparing between trained and untrained farmers and exploring institutional linkage at FTCs in Gurawa district.

The current status of all sampled FTCs were compared to each other's based on the actual performance they achieved such as availability of infrastructure facilities, human resource and their work experiences, management aspects of FTCs were vary among the sampled in the area. With regards to infrastructure facilities, Birbirsa and Geru gemachu were among the better equipped FTCs of the woreda. The numbers and work experiences of DAs were varies from one FTCs to others FTCs in order to carry out the perceived responsibilities at FTCs level. The FTCs management have their own strengths side likes coordinate and facilitate various field level activities relating to farmers training and weaknesses side likes absence of a clearly defined mandate given from government to effectively authorizing its mandate to carry out FTC based training.

All planning and implementations activities at FTCs was conducted by woreda extension expert, DAs of kebele and other stakeholders including head of kebele and local communities of the area. So far no one of sampled FTCs has been conducted post evaluation to assess the positive or negative feedback of the implemented activities on the situation of trained and untrained target groups of sampled farmers. This type of evaluation may help the evaluators (woreda expert and DAs) to assess the overall achievement of a given trainers farmers and to draw lessons for future planning of the training.

The relevance of FTCs based training was analyzed based on the identifications of farmers' needs and constraints, content of training, training delivery methods, selection criteria of trainees and appropriateness of period, duration and schedules of training facilities. For this reasons, the training needs assessment was undertaken by DAs and woreda experts but it lacks participation of direct beneficiaries or trainees and different stakeholders before organizing training.

Even though, the content of training relevance is highly attached to the needs/problems of farmers and inclusiveness of farmers' indigenous knowledge, in most of the training offered at FTCs were not appreciate the problems and needs of the farmers before the delivery of the training in the area.

This study conclude that training delivery methods are essential for better improvement of the capability of individual trainees, during the interview of these participants most of the trained farmers responded that the training which offered at FTCs was highly theoretical oriented rather than practical session in the area. In addition to this, the major actors which involves in trainee selection are DAs, head of kebele leaders and woreda cabinets. To create a conducive training delivery systems in the area the selection of trainee farmers were based on different criteria such as blood relation, farmers' educational background, model farmers', political elites, farmers' interest and wealth status based in the study area.

The study has revealed that FTCs based farmer training was relevant in most of the offered training components in the area of crop, livestock, natural resource etc. and the durations of the training varies from one FTCs to others based on their content and complexity of the topic to be trained during 2011/2012 production season in the study area. And also the timeliness and schedules of training was not in line with the full commitment and interest of the farmers rather than it is based on the interest and provisions of the training resource persons.

As a general most of the trained farmers respond that the training which offered at FTCs based couldn't achieve its objectives to address the required level of knowledge sharing experiences to the sampled respondents without solving mismanagement of time, absence of a systematic needs assessment, highly theoretical rather than practical, absence of participatory method of training, and disorganized delivery of the training without lesson plan of cropping seasons, absence of clear linkage mechanisms to integrate with other FTCs, technical and other agro ecological situations.

The effectiveness of FTCs based farmer training in the study area was evaluated using Likert scale categories, t-test and teacher made test to measure the knowledge, attitudes and practice change of trained and untrained farmers respectively. Hence the result of knowledge indicated that there was significance difference mean between trained and untrained farmers at 1% probability level.

Attitude scale was also administered and the result showed that trained farmers have more favorable attitude towards the given technologies and commodities than untrained farmers at 1% probability level. Based on the practice assessment of trained and untrained farmers, the mean difference of practice of trained farmers were significantly higher than untrained farmers at 5% probability level.

According to the survey result of this study, the functional linkages mechanisms' between actors were performing different from one FTCs to others. Different key actors were identified such as public, private, NGOs and others missed actors such as investors, research center that were involved for various types of roles in FTCs based training activities and their functioning.

For instance, the perception of the main actors revealed that there was an existence of poor coordination among participants which makes them as responsible for poor performance and structural missing link between actors. Their linkage management aspects of FTCs were focused on formal and informal institutions which can available to generate transfer, share, and use knowledge and information that available when it is required for the functioning of FTCs at farmers' level. But there were no formally established mechanisms to coordinate tasks between actors in the study area.

RECOMMENDATIONS

Based on the findings of the study the following points are recommendations that need to get due attention by all concerned:-

- For the proper functioning and better accomplishment of FTCs, the status and potential of FTCs should be strengthen by enhancing the capability of the DAs as well as farmers at least through experience sharing from within and at most through creating suitable network with different institutions to each FTCs in the study area.

- To increase the relevance of the FTC based training, the trainers will have to give more emphasis for proper training need assessment, increases females participations, focus on practice based training rather than theoretical, selecting relevant content of training, make uses of indigenous knowledge, regular follow up mechanism and sharing of experience among FTCs so as to adopt the successful results /lessons developed throughout the study area.

- To reduce the existences of disparities among sampled FTCs in the area of developing knowledge, attitude and practical transformation of farmers by joint follow-up and regular evaluation of activity at all levels of FTCs training through participation of all concerned stakeholders to make the roles of FTCs continuously effective until the farmers are acquainted with best practices.

- To achieve the training objectives in the area of private, public, NGOs and missed actors should have to be reconfigured into training policy development analysis so as to make the integration participatory, take advantages of opportunities to improve institutional linkages and innovative performances by encouraging their commitment and better interactions among the actors.

- To solve the financial constraint in the daily routine activities of all FTCs, the woreda agriculture and natural resource office will have to collaborate with different entrepreneurs and private investors to establish projects of asset creation to search other income options from other actors like research centers, University and NGOs for the study area.

- Finally the researcher recommend that, further study should have to be conducted to improve the relevance and effectiveness of farmers training at FTCs in different aspects to generate more information in order to enhance the knowledge, attitudes and practices of farmers which can serve as an experience for others further studies has to be conducted at woreda, regional and national level.

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