Suitability and Determinants of Agricultural Training Programs in Northern Ethiopia

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This study was conducted in Alamata district, Tigray Regional States of Ethiopia, with the objectives of understanding suitability and determinants of training delivered at village level farmers’ training. Descriptive statistics and binary logit model were used to analyze factors affecting participation in agricultural training programs. Training delivery is found to be suitable in terms of timeliness and timing. But the program is weak in terms of the adequacy and quality of facilities for practical training session and follows up. The finding also revealed that social networks/households participation in cooperatives, local administration and civic organizations have significant influence on training participation. Hence, training delivery in the study area need to take into account these institutions as diffusion multipliers of the training programs and developing follower farmers of each institution is quite pertinent so that the trained farmers should pass on their training to other farmers who could not come to the training.

Key words: Farmers, training, suitability, determinants.

INTRODUCTION

Justification

In the wake to enhance agricultural productivity and production state of the art improvement and hardware agricultural technology promotion are two sides of the same coin. It is obvious that improved seeds, better practices, latest technologies and other essential inputs enhance agricultural productivity and production. It is equally obvious that, this all better practices can come to the farmers only through training. The quality of the training depends on the quality of the extension service. Farmers’ training is an integral component of the agricultural extension services of the country.

The final outcome of the training and extension service would be to qualitatively improve the livelihood of the farmers and to enhance the development of the country at large. Despite this fact, on the ground different stakeholders do not seem to recognize this hard fact as reflected all the deficiencies of village training centers. The deficiencies noted so far include: appropriate farmer training needs assessment, participating farmers in curriculum development, content determination and in 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 as supported by Kefyalew (2006).

These deficiencies see to be glaringly obvious especially in Tigray Region in general and in Alamata district in particular, is no different from other parts of the country.

To address the listed deficiencies 10 village level farmer training centers (VFTCs) have been established out the 13 Kebels within the woreda., with hope to train farmers to improve their general practices, focusing mainly on improving forage & crop production as well as: agro-forestry and conservation techniques. Besides training farmers, the FTC also serves as a point of delivering various inputs (IPMS, 2009).

In the study area, so far emphasis has been given in expanding the outreach throughout the mandate areas of the local community. However, the training delivery system with respect to suitability and its determinants has not studied systematically. Hence, addressing this
knowledge and development gap is of paramount importance in order to re-orient the directions of the training offered at local level towards demand-driven training which is capable of bringing about significant development impacts.

Objectives of the study

This paper aimed at suggesting alternative improvement mechanisms of agricultural training delivery system. Specifically this paper attempts to understand the suitability of agricultural training program and examine factors affecting farmers' participation in the training program.

METHODOLOGY

Description of the study area

Alamata district is located at 600 km north of Addis Ababa and about 180 km south of Mekelle the capital of the Tigray Region. It is the south most districts of the Tigray Region and borders with the Amhara Region from the south and west, and the Afar Region from the east. There are 13 villages and 4 town kebelas in the district. The number of agricultural households of the district is 17,597. The total population of the district was 128,872 in 2011. Altitude of the district ranges from 1178 to 3148 m above sea level; and 75% of the district is low land (1500 m.a.s.l or below) and the remaining 25% is found in intermediate highlands with altitude ranging between 1500 and 3148 m.a.s.l (IPMS, 2005).

Survey Design and Data Collection

The study primarily followed quantitative research design. Three stage sampling procedure was employed to select the required sample size. In the first stage, Alamata district was selected purposively, because of the researchers’ better exposure and easiness in addressing the theme. In the second stage, 4 sample villages were randomly selected from 13 villages in the district. In the third stage, 130 sample respondents were selected using probability proportional to the size of the population of each village. The data for this study were collected during 2011. Semi-structured interview schedule was used to collect primary data about the socio-economic characteristics and institutional factors of the household.

Method of Data Analysis

Descriptive and inferential statistics as well as bar graphs were used to compare and contrast sample households in relation to suitability of the training program. Binary Logit model was also employed to analyze factors affecting participation in training, since it was believed to offer better explanation on underlying relationship between the decisions to participate in the training programs.

The dependent variable in this case is dummy (Yi), which takes a value of:

\( Y \text{ Training} = 1 \) if a given farmer participate in the training program, otherwise 0.

Following Gujarati (1988), Liao (1994), and Hosmer and Lemeshow (1989) the logit model is mathematically described as indicated below.

\[
\ln \left( \frac{P_i}{1 - P_i} \right) = \ln \left( e^{\beta_0 + \sum_{i=1}^{m} \beta_i \chi_i} \right) = Z_{(i)}
\]

If the disturbance term Ui is taken in to account the logit model becomes:

\[ Z_{(i)} = \beta_0 + \sum_{i=1}^{m} \beta_i \chi_i + U_i \]

Where \( \beta_0 \) is the constant, \( \beta_i, = i = 1,2,\ldots,n \) are the coefficients of the independent variables to be estimated. \( \chi_i \) is a vector of independent variables; \( U_i \) is the error term with zero mean and constant variance.

RESULTS AND DISCUSSIONS

Description of Sample Respondents

The suitability of VFTc can be assessed in terms of targeting of the trainee and change of perception of the trainees, farmers’ perception on the process of the training delivery in terms timing, scheduling, monitoring and evaluation after the training.

Suitability of the training in trainee targeting process:

In the first place whether or not the training needs of farm households with different capabilities, resources headship and livelihood options was properly conducted to determine the extent to which farmers training address diversified needs.

Of the 130 sample households, 66 of them have been trained and the rest were untrained. With regards to gender of the respondents there is significant difference was noticed within each groups where by the male upper hand had better chance than their counter parts. From the sampled respondents 89.7% of trainees were model farmers while only 10.3% of model farmers were untrained. This difference is found to be significant at less than 1 % probability level. Obviously the progressive
Table 1. Demographic and institutional indicators of suitability of the training program

<table>
<thead>
<tr>
<th>Indicators of suitability in targeting</th>
<th>Training category</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender of the respondent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>62 (53)</td>
<td>55 (47)</td>
</tr>
<tr>
<td>Female</td>
<td>4 (30.8)</td>
<td>9 (69.2)</td>
</tr>
<tr>
<td>Being a model farmer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not model</td>
<td>40 (39.6)</td>
<td>61 (60.4)</td>
</tr>
<tr>
<td>Model</td>
<td>26 (89.7)</td>
<td>3 (10.3)</td>
</tr>
<tr>
<td>Credit use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>46 (46)</td>
<td>54 (54)</td>
</tr>
<tr>
<td>Yes</td>
<td>20 (69)</td>
<td>9 (31)</td>
</tr>
<tr>
<td>Cooperative membership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>Yes</td>
<td>58</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: survey result, 2011.

Table 2. Socio-economic indicators of suitability of the training program

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Training status</th>
<th>Mean</th>
<th>t-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Trained</td>
<td>42.67</td>
<td>42.45</td>
</tr>
<tr>
<td>Family size</td>
<td>Un-trained</td>
<td>6</td>
<td>4.6</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>1.3</td>
<td>0.67</td>
</tr>
<tr>
<td>Livestock ownership</td>
<td></td>
<td>5.56</td>
<td>4.15</td>
</tr>
<tr>
<td>Land size</td>
<td></td>
<td>7.22</td>
<td>5.82</td>
</tr>
</tbody>
</table>

Source: survey result, 2011

Farmers especially those who hand better exposure are reflected a better usage of the training program.

Similarly there is also significant difference between trained and untrained farmers with respect to credit use and being memberships of rural cooperatives (Table 1). Significance means difference between trained and untrained households with respect to family size, livestock ownership, education level and land size. These all implies the availability of relevant information in showing gap in the relevance of the training program in considering all target categories of the rural people.

**Farmers’ Perception on suitability of training program**

**Timeliness:** Training delivered earlier to farming calendar is plausible from farming communities’ perspective as it enhances their planning horizons. Out of the total sample respondents 80.3 % of them perceive that the training delivered at village level is earlier to the normal farming calendar whereas, 19.7 % of them have negative perception with respect to timeliness of the training probably subsequently about, 61 % of the respondents agreed on suitability of the timing (length of the training session) too (figure 1). This implies that the training programs are being conducted after considering the seasonal activities.

**Adequacy and quality of facilities:** Farmers were asked if they agree on the adequacy and quality of facilities available for practical training session, with regards to this issue about 59.1 % of them disagreed on adequacy and quality of facilities to demonstrate the theoretical knowledge delivered in the class room training session (figure 1).

**Monitoring and evaluation after the training:** In regards to this issue, about 84% of the respondents have disagreed on the availability of monitoring and evaluation systems of the training programs delivered at village level. Even some of the respondents mentioned as there are no follow up at all as systems in the villages (figure 1).

**Factors affecting farmers’ participation in agricultural training programs**

The Maximum likelihood estimate of the logistic regression model is significant at less than 1% probability level and the models correctly categorized 89.9 % of the respondents into training participant and non-participants. This indicates the existences of useful information in the estimated model. Of the 19 hypothesized explanatory variables, only 8 were found significantly determined the probability of training participation. Here after discussion...
will be made on the significant determinants of participation in the study area.

**Gender of the household head (Gen):** The coefficient of this variable is positive and significant at less than 1 percent probability level towards the male folk. All other factors being kept constant, being male-headed household increases the probability of training participation by a factor of 219. This implies that male-headed households have a higher probability of participation than their counterparts perhaps this could be because of the extra workload of females in reproductive and community management may hinder females from participation in training programs.

**Leadership Position of the household head in civic organizations and local administration**

Farmers in development groups and cooperatives leadership positions are found as active participants in training programs. Perhaps, the possible explanation is that those who hold leadership position might have better information and know how on the importance of the training programs as there is no information asymmetric information for such people due to their frequent exposure to social and political gatherings.

**Members of cooperatives, farmers’ organization, women association and local administration**

The coefficient of being members of cooperatives, farmers’ organization and local administration turned out to be consistent with our prior hypothesis and it was found to be positive and significant at less than 1 percent probability level. The result of the logit model showed that, the probability of participation increased by factor of 10 and 11 for farmers who are members of cooperatives and farmers’ organization, respectively than their counterparts. Perhaps, the possible explanation is that those who are members of this organization might have been better information and know how on the importance of the training programs. Contrary to the above statement, being members of women association has a negative coefficient and is also statistically significant. Perhaps, the possible explanation is that those who are members of women association might give less emphasis to agricultural matters and have been busy with women’s affairs and related agendas as a result. And I think they might assume they do not need to attend themselves as they are represented by their sub-contractors.
SUMMARY AND CONCLUSION

Training program delivered at village level is found to be suitable in terms of timeliness and timing while weak in facilities as well as follow up after the training. The finding also revealed that, institutional structures such as membership in cooperatives, local administration and civic organizations have significant influence in training participation. Hence, training delivery in the study area need to take into account these institutions as diffusion multipliers of the training programs. Moreover, developing follower farmers of each institution is quite pertinent so that the trained farmers should pass on their training to other farmers who could not come to the VFTC. Equally important, trainers need to give the chance to those who have not been trained previously and non-members of these institutions rather than delivering the training now and then to those who are members of the aforementioned institutions as this is also parts of equity issue.

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