Agricultural Extension Worker Training Needs Survey. The Case Of Irrigation Schemes In The Midlands Province Of Zimbabwe

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ABSTRACT

Agricultural extension plays a very important role in improving crop production at the extension worker/farmer inter-face on smallholder irrigation schemes through the provision of technical and advisory services. In the study 71% of the extension workers had a formal training at National Certificate level, while 28% was at Certificate and Diploma levels. Very limited and relevant on the job training was provided to the resident extension workers in the last five to ten years. Twenty-eight percent of extension workers received no training at all, forty-three percent received training in technical and relevant courses while the remaining twenty-eight percent received training in one relevant and one non-relevant course. Out of a combined list of thirteen pest and diseases mostly found in horticultural crops, one maize pest (Busseola fusca) was known to all respondents, five pests and diseases were known by some extension workers, while the control of eight pests and diseases that included early blight (Alternari solani), late blight (Phytophtora infestans), bean stem maggot (Ophiamyia spp), fruit fly (Dacus spp) and Red Spider mite (Tetranychus spp) were completely unknown to all the respondents. Extension workers indicated a need for training in technical subjects like pest and disease identification and control to close the knowledge gap in order to facilitate provision of effective extension services to farmers.

Keywords: Smallholder, Extension and advisory services, Needs assessment, Formal qualification, on the job training.

1. INTRODUCTION

Irrigation development in Zimbabwe is mostly geared towards food security in the semi arid areas of Zimbabwe where droughts are more frequent. 37% of the country receives sufficient rains for successful rain-fed agriculture, hence the need for full or supplementary irrigation for crop production. Achieving the goal of increasing agricultural production through the harnessing of national potentials like irrigation depends on many factors, among which agricultural extension is likely to be one of the most important (Ammani et al 2010). Given that Agricultural Extension is likely to be one of the most important components, then those driving this vehicle for change become very important as well.

Irrigation development costs in Zimbabwe are in the region of US$ 5000 per hectare (MoAMID 2010). These development costs have to be recovered through increased crop production which will allow for the repayment of the loan and still leave the producer with some capital to enable one to look after one’s family. The Government Extension Services under the Ministry of Agriculture, Mechanization and Irrigation Development (MoAMID) is responsible for providing sound extension and advisory services to these irrigation areas in Zimbabwe. The effectiveness of the extension and advisory services depends on the competency of the Extension workers operating as technical advisors to the farmers at these schemes, hence
the need to provide the Extension workers with on the job training which is in line with their needs. Flippo (1961) in Halim et al (1988) expressed training as being concerned with the activities that are designed to improve human performance on the job that the employee is currently, or hired to do.

2. AGRICULTURAL EXTENSION AND TRAINING FOR EXTENSION SERVICE PERSONNEL

This type of training prepares an individual to enter a professional job, by attending regular classes in a formal institution in order to complete a definite curriculum leading to a formal qualification which could be a diploma or a degree at an entry point of ten and twelve years of schooling respectively. Training programmes are very important for the purpose of developing knowledgeable and experienced personnel who will be able to work with the farming community.

Onazi (1984) in Chizani et al (2006) and Allo (2001) in Omoregbee and Ajayi (2009) stated that one of the main factors limiting the development of effective training programs for extension workers in developing countries is the total lack of information on the training needs of extension workers. Knowles (1970) defines an educational need as the “discrepancy between what an individual (organization or society) wants oneself to be and what one is; the distance between an aspiration and reality.” It is therefore necessary to correct the discrepancy once it is noticed for purposes of improving performance the extension personnel. Gupta et al (2007) describes needs assessment as a process for determining needs or gaps between current and desired conditions. The process involves identifying material problems/deficits/weaknesses and advantages/opportunities/strength and evaluating possible solutions that take these qualities into consideration. Halim and Ali (1998) defined a training need as a condition where there is a gap between “what is” and “what should be” in terms of the incumbents’ knowledge, skills and attitude and behavior for a particular situation. The process of identifying training needs can be conceptualized as a discrepancy analysis that identifies the two polar positions of “what is” and “what should be” Shibah (1993).


- Technical knowledge in agriculture
- Agricultural extension philosophy
- Organization and administration
- Communication in extension
- Program planning
- Use of research methods
- Evaluation of extension programs and human development
Tladi (2004) in Chizani et al (2006) in the assessment of training needs of extension agents in South Central Botswana found that the agents needed training in fourteen job skill areas including among others, interpersonal skills, practical farm skills, conducting needs assessment surveys and mobilizing people to form groups. Molane (1984) in Halim and Ali (1998) emphasized that in service training should be problem centered, learner oriented and time bound, in order to provide the trainee with the sense of purpose, broaden the clientele’s perception as well as increasing the capacity to gain knowledge. The Department of Agricultural Technical and Extension Services in Zimbabwe (Agritex) also has similar areas of in service training which are obligatory to every staff member in the organization. The courses should generally be attended by staff during their service in the organization (see appendix1). This would keep the staff updated and also ensure that any gaps that were not covered during the formal training programmes are attended to.

Uwakah (1979) also came up with similar findings in his study on the training needs of extension staff in Eastern Nigeria. The above findings also present the need for extension agents to have basic theories in the field of extension because actions in extension are continuously testing developed theories like how people learn, and how different management styles influence motivation and performance of extension workers (Garforth 1987). Allo (2001)

In Omoregbie and Ajayi (2009) emphasized the importance of personal characteristics like age, gender, educational status and job experience as very important for extension staff. Education had a significant relationship in many areas of the respondents training needs like communication skills, planning of demonstrations, recording, reporting and pest identification and control. These training needs are very important in the delivery of extension messages to farmers as well as writing of meaningful reports to higher offices of the extension agent’s organization.

Extension Workers operating on irrigation schemes have more focused job activities when compared to the multi-functional extension workers operating under rain-fed agriculture where some of the activities could be non-agricultural in nature. The extension workers are therefore potential facilitators of sustainable agricultural and rural development. Agricultural production under irrigated agriculture has to operate at sustainable levels if it is to continuously cover production costs as well as keeping abreast with new developments like new vegetable or crop varieties, new pesticides and other related technologies under irrigated agriculture. So for extension workers to improve on the job effectiveness, they need continuous in-service.

3. MAIN OBJECTIVE

To identify extension worker training needs required to improve on the job performance.
3.1 SPECIFIC OBJECTIVES
To establish level of formal training of the extension workers
To establish knowledge level of extension workers on pest and disease control
To determine the number of in-service training courses in the last ten years
To establish the training needs of the extension workers.

4. RESEARCH DESIGN

Description of study site

The survey was carried out at seven operating irrigation schemes in the seven districts of the Midlands Province. The schemes included Mkoba (19° 21’08” south latitude and 29° 35’49” east longitude) in lower Gweru; Insukamini (19° 21’48”south latitude and 29° 36’43”east longitude)in lower Gweru; Mawodza (19° 09’ 19” south latitude and 30° 01’04”east longitude) of Chiwundura in Gweru, Mabwematema (20° 14’15”south latitude and 29° 56’28” east longitude) in Zvishavane; HamaMavhaire (19° 42’ 20”south latitude and 30° 32’ 20” east longitude) in Chirumanzu; Ngondoma (18° 27’ 25”south latitude) and 29° 24’ 20” east longitude) in Kwekwe; and Mataga (20° 50’ 50” south latitude and 30° 12’ 45” east longitude) in Mberengwa district.

The Zimbabwe map (figure 1) below shows the ten provinces of the country and the insert, (figure 2) showing the eight administrative districts in the Midlands Province of the country.

Fig 1: Map of Zimbabwe indicating the ten administrative Provinces
Numbers one and two are the Metropolitan Provinces of Bulawayo and Harare respectively, three and four being Manicaland and Mashonalnd Central respectively, five and six being Mashonaland East and Mashonaland West respectively, seven and eight being Masvingo and Matebeleland North respectively, while nine and ten represent Matebeleland South and Midlands Provinces respectively.

![Map of Midlands Province and its eight administrative districts](image)

The survey was restricted to those schemes that were functional at the time of the study, as other schemes were not operating due to challenges like infrastructure breakdown, lack of electricity for pumping etc.

**Selection Procedure**

One Extension worker was purposely selected from each operating scheme. Each scheme is manned by one extension worker, so the survey involved all extension cadres involved in providing services at irrigation schemes.

**Data Collection**

A questionnaire was prepared by the research team, pilot tested and finally taken into the field. Each Extension Worker was asked to complete the instrument on his/her own without any outside assistance. The questionnaire was chosen because it was cost effective and convenient in our situation. All the questionnaires were returned. Key informants like district extension officers and the irrigation personnel stationed at the irrigation schemes were also interviewed during the process. The survey had the blessing of the Provincial offices, in the form of a letter authorizing the research team to approach staff at irrigation schemes. In addition to the letter confirming the authenticity of the team as genuine researchers, it also protected the team from being taken as political agents. The use of a questionnaire facilitated getting the information in a cost effective way since the respondents were able to read and write, and would return the completed instrument through their organisation communication system. Visits and
observations to the irrigation schemes also augmented the questionnaire as a way of collection crop production data at scheme level.

**Data Analysis**

Descriptive statistics were used in the data analysis. The results were presented in the form of tables.

### 5. RESULTS AND DISCUSSION

The results and discussion on respondent personal characteristics, length of service within the Government and departmental training courses received as well as knowledge on pests and diseases are presented in the tables below.

**Table 1: Personal characteristics of respondents (n=7)**

<table>
<thead>
<tr>
<th>Socio-economic variable</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
</tr>
<tr>
<td>Educational Level</td>
<td></td>
</tr>
<tr>
<td>Certificate in Agriculture</td>
<td>2</td>
</tr>
<tr>
<td>National Certificate in Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>National Diploma in Agriculture</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Field Survey data 2011*

Females constituted the majority of the extension staff, while males were in the minority. The majority of farmers on irrigation schemes are women. The posting of female extension staff was probably meant to enable good working relationships, although it is not government policy to have women extension workers posted to irrigation schemes.

More than half of the respondents were National Certificate holders, while Certificate and National Diploma were the least respectively. The Certificate in Agriculture was a special case which was meant to fill up vacancies for field extension workers when the country was experiencing exodus of qualified personal to neighboring South Africa and other countries. The special case was just a stop gap as the workers were trained on a system dubbed, 3:9:3,

meaning that the trainees followed a three months pre-service training at an agricultural institution, then got a field posting to get field training under the assistance of an established extension worker for nine months and return for another three months to finish up the program. It was a form of apprenticeship conducted under difficult conditions. The program has since been discontinued as it was reported to have produced poor quality graduates. The National Diploma was taken up after eleven years of schooling (four years of secondary education) while National certificate was normally after nine years of schooling (two years of secondary education). Omoregbee and Ajayi (2009) emphasized the importance of personal characteristics like age, gender, educational status and job experience as very important for extension staff. The pre-service
training for the majority of the staff was considered to be quite low. The current National training program for extension workers in Zimbabwe has been upgraded to diploma and degree levels. The national certificate training was phased out some years ago, but National Certificate graduates are still in the majority of the extension workers serving in the department of Agricultural Technical and Extension Services (Agritex).

5.1 IN-SERVICE TRAINING IN THE PAST 5-10 YEARS.
Table 2 below shows the training that was given to staff in the last 5-10 years, and also the areas that the extension workers would like to trained in order to perform their duties effectively.

<table>
<thead>
<tr>
<th>Irrigation scheme</th>
<th>Extension worker length of service (years)</th>
<th>Training received in the last 5-10 years</th>
<th>Relevance of previous in-service training to current extension duties</th>
<th>Training requested by extension worker.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maboza</td>
<td>3</td>
<td>Agricultural conservation</td>
<td>relevant</td>
<td>Vegetable and fruit production, Agribusiness and cash flows Use of kern level in conservation</td>
</tr>
<tr>
<td>Ngondoma</td>
<td>7</td>
<td>Cotton Production for Transformation</td>
<td>Irrelevant</td>
<td>Potato production</td>
</tr>
<tr>
<td>HamaMavhaire</td>
<td>24</td>
<td>nil</td>
<td>Non applicable</td>
<td>Water scheduling Communication and staff management Irrigation management</td>
</tr>
<tr>
<td>Mataga</td>
<td>13</td>
<td>Induction course</td>
<td>relevant</td>
<td>Irrigation management Master farmer training</td>
</tr>
<tr>
<td>Mkoba</td>
<td>20</td>
<td>Extension methods Horticulture crops Crop survey</td>
<td>Relevant</td>
<td>Integrated pest management Crop census Conservation Fish production</td>
</tr>
<tr>
<td>Mabwematema</td>
<td>15</td>
<td>nil</td>
<td>Non applicable</td>
<td>Water scheduling Irrigation management vegetable production Agribusiness management</td>
</tr>
<tr>
<td>Insukamini</td>
<td>5</td>
<td>Extension methods Horticulture crops Crop survey</td>
<td>Relevant</td>
<td>Water scheduling Irrigation management Vegetable production Fish production</td>
</tr>
</tbody>
</table>

Source: Survey data 2011

All the extension workers indicated training need in technical agricultural subjects that are quite relevant for their job, while one indicated a need for training in staff management because of the supervisory role that the respondent was involved in. Crop census was also requested because the respondents are also expected to submit annual returns to central government on agricultural production statistics from the irrigation schemes.
Two extension workers received no training at all, three received training in two technical and relevant courses and one on Extension methods; one attended a technical course and the last one attended one technical and one irrelevant course out of the six main areas of competency of the extension worker’s core-business (Shibah 1993). The training was done in the last five to ten years indicating a need for re-training of extension workers. Extension workers on two schemes (Insukamini and Mkoba) attended three training courses each, possibly due their being close to the district offices as well as being exposed to visits by agro-chemical representatives that visit the schemes on isolated occasions. The training carried out ranged from nil training to an average of one course in three years.

5.2 KNOWLEDGE ON PESTS AND DISEASE CONTROL

Agricultural Extension workers were asked to list the pest diseases frequently encountered by farmers in their vegetable plots and the chemicals they recommend to farmers in order to control them. Out of a combined list of thirteen pests and diseases, one maize pest (Busseola fusca) was known by almost all respondents, while five pest and diseases were known to some degree by some of the workers. The control of eight other pests and diseases which included; early blight (Alternaria solani), late blight (Phytophthora infestans), bean stem maggot (Ophiomyia spp), blister beetle (Mylabris oculata) fruitfly (Dacus spp) and Red Spider Mite (Tetranychus spp) were completely unknown to all of them. One Certificate and one diploma holder had knowledge on the control of five of the commonly known pests and diseases as indicated in the Table III below.

<table>
<thead>
<tr>
<th>Table 3: Knowledge on Pest and Disease Control among Extension Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Training</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Certificate in Agriculture</td>
</tr>
<tr>
<td>National Certificate in Agriculture</td>
</tr>
<tr>
<td>Diploma in Agriculture</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

The results above confirm the findings by Omoredbee and Ajayi (2009) that education had a significant relationship in many areas of the respondents needs like;

Communication skills
Planning demonstrations
Recording and reporting and
Pest and disease identification and control
The extension workers appear to be outdated on disease and pest control knowledge, which can only be obtained through regular on the job training by experienced staff that are exposed to technology developments through research and other sources. The extension workers may find it difficult to plan and carry out demonstrations for farmers due to their knowledge limitations.

6. CONCLUSIONS AND RECOMMENDATIONS

On the job Extension worker training was very low as indicated by the number and relevance of courses attended by extension workers in the last 5-10 years. Limited on the job training and lack of knowledge on diseases and pests control indicates the gap between their existing knowledge and current crop diseases and pest management. The level of pre-service training also shows the importance played by this aspect in the quality of extension personnel.

Extension worker training should receive high priority if the services provided by the Extension services is to enhance agricultural production on irrigation schemes in Zimbabwe. Technology development is dynamic in irrigated agriculture; hence the need to continuously update training requirements of the extension personnel as well providing latest research findings through in-service training courses and visits.

Acknowledgements

The research team would like to express their sincere thanks to the Chief Agricultural Extension Officer for Midlands Province; Mr. Peter Chamisa, for facilitating the survey among the seven operating schemes in the different districts. The time afforded by the Agricultural Extension Workers in attending to our survey is very much appreciated.

7. REFERENCES

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APPENDIX 1

Department of Agricultural Technical and Extension Services courses for areas of competency and the content items for Extension Workers based on Shibah’s (1993) six main areas of competency.

1. Management and organization of Extension Services
   - Induction
   - Agricultural Extension Methods

2. Planning and evaluation of extension programs
   - Extension Program Planning including Diagnostic Survey
   - Training of Trainers (Extension Training)

3. Extension Methods and Aids
   - Writing and Editing
   - Audio visual Aids

4. Rural Development
   - Integrated Rural Development
   - Gender in Agricultural Extension
   - Communication for Rural Development
   - Project Preparation and Management

5. Research and Evaluation
   - Training Evaluation

6. Technical Agricultural subjects
   - Farm Management one up to four.
   - Animal Power one up to five
   - Tractor Power one up to five
   - Bee keeping (Apiculture)
   - Horticulture (Principles)
   - Horticulture (Production)
   - Agro forestry
   - Post Harvest Technology
   - Safe Use of Pesticides
   - Cotton Production
   - Tobacco Production
   - Irrigation A, B and C.