

Knowledge Gaps and Training Needs of Afghanistan's Agricultural Extension Agents

Doe Adovor

Graduate Student,

Michigan State University, Department of Forestry

Room 208, Natural Resource Building, East Lansing, MI 48824

Phone: 517-355-0092, Fax: 517- 432-1143, Email: adovordo@msu.edu

Juan Estrada-Valle

Chief of Party

Development Alternatives Incorporated (DAI)/AAC, Albania

Runsheng Yin

Associate Professor, MSU Department of Forestry

Abstract

The primary focus of this study is to determine the knowledge gaps and training needs of Agricultural Extension agents from the Eastern region of Afghanistan. Survey responses from Extension Agents stationed in Laghman, Kunar, Nangarhar and Nuristan provinces are reported in this paper. Since the study targeted the entire population of Extension Agents (N=104) in all Afghanistan's four eastern provinces, no sampling procedures were used. Furthermore the results may be generalizable only to the study population. A seven part questionnaire consisting of 4-point Likert scales was used to solicit response from the extension agents. Cronbach's alpha coefficients for 92 cases and 147 items produced a reliability statistics of 0.92 suggesting that the study scales have a relatively high internal consistency. Descriptive statistics were used to analyze the data. All the survey respondents were married males between the ages of 22 and 60years. Respondents consider themselves specialists in six major areas: Vegetable production (26%), Plant Protection (16%), Farm management (10), Fruit production (6%) and Agronomy (5%). Majority of respondents (> 60%) specialize in production oriented agriculture with less than 35% specializing in Market Extension. While most respondents claim to have high knowledge of Market Extension and crop production methods, an actual knowledge tests administered to the respondents during a 30day training section covering extension delivery processes and vegetable and fruit production techniques revealed a rather low level of knowledge of these areas. Self-perceived knowledge of Farm Management and Financial techniques was generally low.

Keywords: Agricultural Extension, Marketing Extension, Extension Agent, Knowledge, Perception

Introduction

It is estimated that only 12 percent of Afghanistan's total land area is arable (Jurenas, 2001) and less than 6 percent is currently cultivated (USDA, 2008), yet agriculture remains the number one revenue generator for most Afghans. Even though agricultural production in Afghanistan is seriously constrained by an almost total dependence on erratic winter snows, spring rains and outdated irrigation systems (Jurenas, 2001), agriculture alone accounts for more than 50% of gross domestic product (GDP) and provides employment and livelihoods for more than 70% of the population. It is for this reason that agriculture still remains the most important engine of growth in Afghanistan's economic development.

While the potential exists for increased growth in Afghanistan's agricultural system, several decades of armed conflicts, tribal wars and civil unrests have severely weakened the agricultural system. For example, prior to the Soviet invasion in 1979, the agricultural system had 24 research stations and over 1,000 staff 25 percent of whom were engaged in some form of technical research (Miller 2006). However, decades of political unrest and the mass exodus of the educated class including trained agricultural extension agents has left the agricultural extension system in disrepair. The agricultural extension system, which used to operate in all 371 districts and boasts of over 400 extension units, currently has only 136 functioning extension units most of which are in urgent need of a major over haul and staff training (Miller 2006).

The struggle to rehabilitate Afghanistan's agricultural system is on multiple fronts. On one hand, development efforts by both the Afghan government and international community are focused on rebuilding the human and physical capital while on the hand the appeal for opium poppies production threatens to undermine any gains from rehabilitation efforts. The relatively easy and low cost production of opium backed by quick financial returns makes opium an attractive cash crop of choice for most poor Afghans. A recent report by the United Nations Office of Drug and Crime (UNODC) sheds light on some gains made in the fight against poppy production in Eastern Afghanistan. According to UNODC (2008), Nangarhar a traditionally large poppy growing province, for the first time in 2008 became poppy free. UNODC estimates suggests that in 2007 Nangarhar cultivated 18,739ha of opium, a reduction from 2004 estimates of 28,213 ha. According to UNODC (2008), Kunar and Laghman provinces have also registered a considerable reduction (35% and 24% respectively) in poppy cultivation in 2008.

Although the UNODC report only marginally mentioned the role of alternative development interventions in the fight against opium production, it is by no means a coincidence that opium production has drastically reduced in Nangarhar, Kunar and Laghman provinces where USAID's Alternative Development Program (ADP/E) operates. Since 2003, the ADP/E project implemented by the Development Alternatives Incorporated (DAI) brought over 9,000 hectares of farmland under irrigation, incorporated 45,482ha into licit agriculture production generating over 9,480 full-time jobs with several hundred women been integrated into the horticultural value chain.. The project has also repaired over 450Km of road network and expanded the area grown to perennial crops by over 3,000 hectares. It is worth noting that the ADP/E project as at the end of 2008 trained 63,330 farmers in modern agricultural practices and has since 2006 established an annual seeds and fertilizers distribution program (i.e. TIMER program) that provides more than 126,711 farmers in the Eastern region with improved seeds and technical advice on crop production methods. The introduction of a market information system (i.e. TAMAS program) currently helps farmers' cross-check prices of produce in various markets via cell phones text messages before deciding to trade. The TAMAS program has not only facilitated agricultural trade but also reduced the transaction costs associated with crop

production and marketing in Eastern Afghanistan. The renovation of the Jalalabad Fruit and Vegetable Wholesale Market facility by ADP/E has resulted in produce trading of over US\$30 million/year. While the government and the coalition forces continue to play a vital role in poppy eradication and interdiction, without any other economic alternatives poor farmers will have no choice but to return to poppy production. Improved technical skills in crop production and marketing are central to farmers' success in today's agribusiness environment.

This study to determine the knowledge gaps and training needs of extension agents in Eastern Afghanistan recruited its subjects from a 90 day training program organized by the ALP/E program to build the technical capacity of all agricultural extension agents in the Eastern region. At present, limited access to academic centres of excellence, lack of financial resources and a profoundly engrained cultural divide between farmers and agricultural technicians seriously threaten the quality and delivery of agricultural extension programs. Changes that have occurred in agricultural production and agribusiness over the last two decades means that in order to maintain global competitiveness, extension systems have to come to speed with new production and agribusiness methods. There is therefore the need for a well rounded extension force that is conversant with both technical aspects of production agriculture as well as marketing/agribusiness.

Purpose

The purpose of this study was to assess the knowledge gaps and training needs of agricultural extension agents from the Eastern region Afghanistan. The study also describes the demographic characteristics of all Ministry of Agriculture, Irrigation and Livestock (MAIL) extension agents stationed in Laghman, Kunar, Nangarhar and Nuristan provinces in the Eastern region of Afghanistan.

Methods and Data Sources

Sample Selection

The study targeted the entire population (N=104) of agricultural extension agents stationed the Afghanistan's Eastern region hence no sampling methods were used. The USAID Alternative Livelihoods Project/East (ALP/E) project in an effort to support Afghanistan's Ministry of Agriculture, Irrigation and Livestock (MAIL) launched a 30day three sections (90days) extension training program in Jalalabad from June 1st-August 30th, 2008. All Agricultural Extension Agents in the Eastern Region were invited to participate in any one of the training sections. Survey respondents were recruited from the list of extension agents that participated in this USAID sponsored training program.

Out of 104 extension agents stationed in Eastern Afghanistan, 90 agents representing approximately 87% of the target population attended the USAID training program and were included in the survey. Twenty-eight agents participated in June, 30 in July and 32 in the August section. Each monthly section comprised of three 10day modules with topics covering: 1) extension delivery processes, 2) vegetable production and 3) fruit production methods.

All 90 survey respondents were male. The distribution of respondents according to the four eastern provinces is as follows: Laghman (n=10), Kunar (n=27), Nangarhar (n=44) and Nuristan (n=10).

Questionnaire Development

A seven part survey questionnaire was used to solicit responses from the study participants. Respondents were asked to rate on a four-point Likert scale: 1) their motivation and attitudes towards extension delivery in Afghanistan, 2) the perceived role and importance of gender in extension delivery and agricultural development in Afghanistan, 3) their self-perceived knowledge of computer applications to agricultural production and extension delivery and the importance of computer literacy in extension programs. In section 4, respondents were asked to rate on a four-point Likert scale, their self-perceived knowledge of different financial/farm management practices and the importance for extension agents to receive adequately training in such fields. Section 5 addressed respondents' perceived knowledge of marketing and production extension and the importance for extension agents to be adequately trained in these different fields. In section 6, respondents rated their preference for different extension training methods based on perceived effectiveness of the different methods in knowledge transfer. Section 7 of the instrument was used to obtain demographic information. Section 4 of the survey was adopted from Al-Rimawi's (2003) paper on "Jordanian Extension Agents' Attitudes toward Farm Business Management and Training Needs." All the eight sections of the questionnaires were translated into the Pushto language commonly spoken in Eastern Afghanistan. The modified rating scale in table 1 was used to interpret survey results.

Table 1
Modified Rating Scale

Sections of the Instrument	Rating Scale			
	1 1-1.75	2 1.76-2.50	3 2.51-3.25	4 3.26-4
1, 3, 4, 5	Very Low	Low	High	Very High
1	Strongly Disagree	Disagree	Agree	Strongly Agree
2	None	Very Few	Few	Many
2, 3, 4, 5	Not At All Important	Fairly Important	Important	Very Important
4	Never	Occasionally	Often	Always
5	1 day	3-5days	At least 2 Weeks	At least 1 Month
5, 6	Intensive	Intensive	Effective	Very Effective
5, 6	Not at all Recommended	Somewhat Recommended	Effective Recommended	Very Recommended

Instrument Reliability and Data Analysis

The data was coded and analyzed using SPSS 17.0 for windows. Descriptive statistics including frequencies, means, standard deviations and cross tabulations were generated during data analysis. When the instrument reliability was calculated using SPSS 17.0, the Cronbach's alpha for 92 cases and 147 items was 0.92 suggesting that the study scales have a relatively high internal consistency. Variables derived from test instruments are declared reliable only when they produce replicable and stable responses over repeated administration under which they are likely to be used (Santos, 1999) and a reliability coefficients of 0.80 or higher are considered acceptable in most social science applications (UCLA Academic Technology Services, 2005).

Results

Motivation and Attitudes Towards Extension Delivery

Section one of the survey asked respondents (n=88) to rank on a four-point Likert scale their level of motivation in performing extension work. With 1= "Very Low", 2= "Low", 3= "High" and 4= "Very High", no respondents ranked their level of motivation as either "Very Low" or "Low". Using the modified rating scale in table 1 above, majority of respondents said their motivation level was "Very High" (M=3.65, SD= 0.48)

While it may be true that salaries levels (i.e. high or low) significantly influence workers motivation towards the performance of their duties, job satisfaction from other sources other than salary alone also plays an important role in determining extension agents' attitudes towards work. While the survey did ask respondents to list their current salaries, there was no specific question addressing respondents' satisfaction with their present salaries. In order to understand what affects motivation levels, respondents were rather asked to rate the degree to which they agree or disagree with four statements relating to their job satisfaction. With 1= "Strongly Disagree," 2= "Disagree," 3= "Agree" and 4= "Strongly Agree," respondents were asked to rank the statement that "I feel good about my job as an extension agents." Using the rating scale in table 1, majority of respondents said they "Strongly Agree" (M=3.66, SD=0.50, n=90) with this statement. Ratings for question 2: "I am respected in my community," was similar to that of question 1. Majority of respondents "Strongly Agree" (M=3.60, SD=0.73, n=90) with this statement 2. Question 3 stated: "My job is the first step in Afghanistan's agricultural and economic development." Again majority of respondents "Strongly Agreed" (M=3.88, SD=0.33, n=90) with this statement. In question 4 respondents were asked rate the statement: "My ability to effectively bridge the gap between research and field production is the key to Afghanistan's agricultural and economic development." More than 85% of respondents said they "Strongly Agree" (M=3.83, SD=0.48, n=90) with this statement. The responses to these four questions partly explain respondents' high motivation levels regarding their jobs as extension agents.

Importance of Gender in Extension and Agricultural Development

Section two of the survey instrument asked respondents to estimate on a four-point Likert scale the number of women involved in agricultural extension delivery in their respective districts. With 1= "None" (0), 2= "Very Few" (1-25), 3= Few (26-50) and 4= Many (>50), 33% of respondents said there were "No" (0) women extension agents working in their districts, while another 33% said there were "Very Few" (1-25) women in their districts. About 23% said there were "Few" (26-50) women workers while another 11% said there were "Many" (>50). The mean rating and SD obtained for this question was (M=2.12, SD=1).

The relatively high SD suggests that there is very little consensus amongst extension agents regarding the number of women involved in agricultural extension in Eastern Afghanistan.

As a follow-up, respondents were asked to rate on a four-point Likert scale their perceptions of women's role in Afghanistan's agricultural development. With 1= "Not at all Important," 2= "Not Important," 3= "Important," and 4= "Very Important," respondents were asked to react to the following statements: 1) "Women's role in Afghanistan's overall agricultural development," and 2) "The need for women to be encouraged to play an active role in providing agricultural extension services." Using the modified rating scale in table 1, majority of respondents acknowledge that women play an "Important" (M=3.22, SD=0.73, n=90) role in Afghanistan's agricultural development and that it is "Very Important" (M=3.41, SD=0.73, n=90) that women be encouraged to play an active role in providing agricultural extension services in Afghanistan. It is important to note that all survey respondents were married males, yet the above results demonstrate respondents' overwhelming support for women's involvement in agricultural extension work. This result sets the stage for an open dialogue on how best to integrate women into the extension system in Eastern Afghanistan. It is a well recognized fact that women play a significant role in agricultural development in developing countries. Afghanistan is not an exception hence it is only reasonable that building a women extension force will help address some of the gender sensitive issues related to agricultural production in Afghanistan.

Knowledge of Computer Applications to Agricultural Production

Section three of the survey asked respondents (n=90) to rank on a four-point Likert scale how often they use computers in the course of performing their duties. Majority of respondents said they "Never" (M=1.6, SD=0.74) use computers. In a follow-up question which asked respondents to rank their self-perceived knowledge of computers, majority of respondents rated their knowledge as "High" (M=2.70, SD= 0.96). Most of the respondents rated as "Very Important" the need for extension agents to be trained in computer applications relevant to their extension work. It is worth noting that, respondents' answer to the second question on knowledge rating serious contradicts their response to the question on frequency of computer use. It is difficult to explain how respondents rated their knowledge of computers to be "High" yet the same respondents claim they "Never" used computers. It might be possible that this particular question did not translate the way it was intended by the researchers hence the conflicting results.

Self-Perceived Knowledge of Different Financial and Farm Management Practices

Section four of the survey instrument asked respondents to rank on a four-point Likert scale their self-perceived knowledge of various financial and farm management skills and the importance for extension agents to receive adequate training in these fields. According to the modified rating scale in table 1, respondents (n=90) ranked their self-perceived knowledge as following: Book keeping: "High" (M=3.11, SD=0.78), Optimum input use: "High" (M=2.89, SD=0.87), Simple methods of calculating the financial position of farms: "High" (M=2.77, SD=0.92), Short and long term budgeting: "Low" (M= 2.48, SD=1.15), Creating balance sheets: "Low" (M=2.23 , SD=1.00), Analysis and interpretation of income statements: "Low" (M= 2.24, SD=1.08), Computer applications on technical and financial management: "Low" (M= 2.23, SD= 1.08), Credit management: "Low" (M= 2.12, SD= 1.11).

From the interpretation of the means obtained on perceived knowledge, it may be said that respondents perceive knowledge of financial and farm management skills range between “Low” (M= 1.76-2.50) and “High” (M= 2.51-3.25).

When asked to rate the importance of extension agents to be trained in the eight different farm management and financial techniques all (n=90) respondents regardless of whether their perceived knowledge of the specific fields was “Low” or “High,” unanimously said it was “Very Important” (M= 3.46-3.84, SD= 0.40- 0.9) for extension agents to receive adequate training in the above mentioned fields. Figure 1 below compares the mean responses for each of the eight different financial and farm management skills.

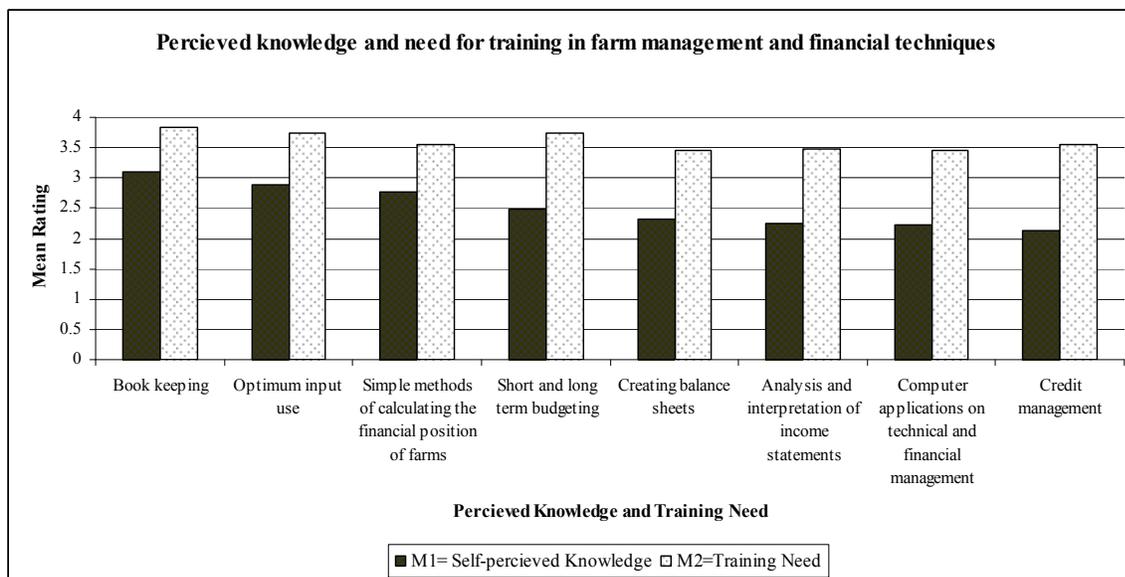


Figure 1. Perceived knowledge and need for training in farm management and financial techniques

Knowledge of Production and Marketing Extension

Section five of the survey instrument asked respondents to rank on a four-point Likert scale their self-perceived knowledge of 11 different skills broadly classified under marketing and production extension. Based on the modified ranking scale in table 1, respondents ranked their self-perceived knowledge as following: Timing of planting: “Very High” (M=3.36, SD=0.64), Successive scheduling during planting: “Very High” (M=3.32, SD=0.73), Appropriate methods and timing of harvests: “Very High” (M=3.28, SD=0.65), Crop selection based knowledge of optimal growing conditions and market demand: “High” (M=3.23, SD=0.78), Appropriate grading techniques: “High” (M=3.19, SD=0.77), Appropriate packaging techniques: “High” (M=3.11, SD=0.79), Market information and price analysis: “High” (M=3.09, SD=0.79), Appropriate sorting techniques: “High” (M=3.07, SD=0.61), Introduction of new crops: “High” (M=3.04, SD=0.79), Identifying export market opportunities: “High” (M=3.04, SD=0.87), Food safety standards: “High” (M=2.91, SD=0.80).

Even though all respondents claimed to have either “Very High” or “High” level of knowledge in production and marketing extension, all 90 respondents said they believe it was “Very Important” (M= 3.62-8.83, SD= 0.37-0.53) for extension agents to receive adequate

training on all the marketing extension skills listed above. Figure 2 below compares the respondents' perceived knowledge and need for training in marketing and production extension.

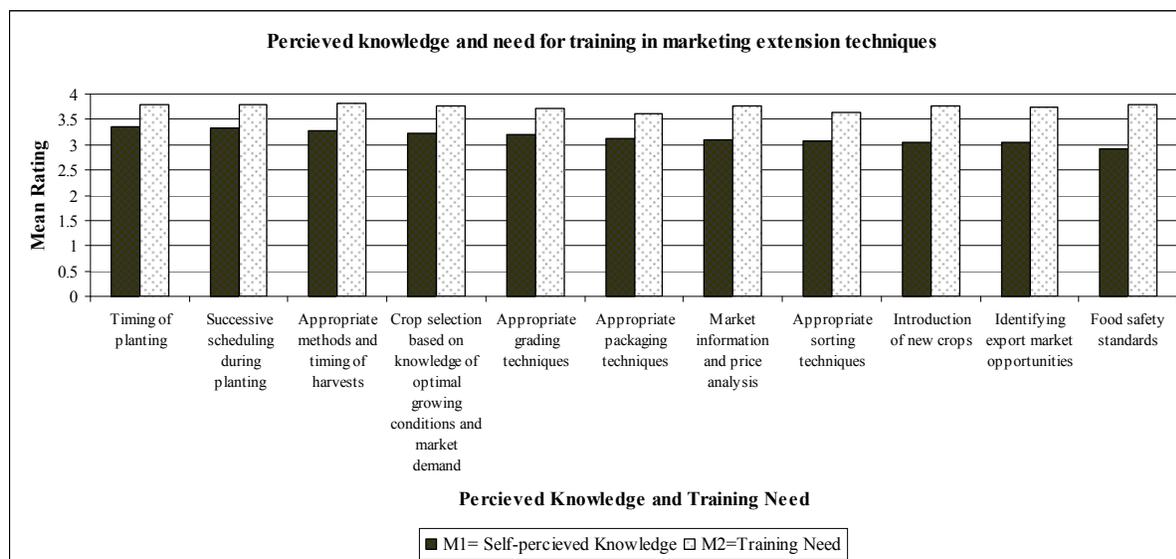


Figure 2. Perceived knowledge and need for training in market extension techniques

Training and Extension Delivery Methods

In section 6a survey respondents were asked to rank on a four-point Likert scale their preference for different modes of extension training programs. Majority of the respondents (86%) said they prefer “At Least 1 Month Long” (M=3.78, SD= 0.60) training programs as opposed to “At Least Two Weeks,” sections or “3-5 Days Intensive,” or “1 day Intensive” sections. “1 Day Intensive training was the least preferred (2%). When asked to rank In terms of knowledge and skill transfer, which of following extension training delivery mode is the most effective, 90% of survey respondents rate “At Least 1Month Long” sections (M=3.86, SD= 0.50) as the most effective.

While it may be true that extension officers in Eastern Afghanistan stand to benefit tremendously from a well planned and coordinated multiple day training sections, the cash pay-off (i.e. anywhere between \$10-40/day) provide a good reason for respondents to prefer “At Least 1Month Long” sections. In a region where the average monthly income of an extension staff in is approximately 3369.80 Afghani (Equivalent to \$67.40 based on an exchange rate of \$1=50Afghani), multi-day training programs that often provide lodging plus daily per diems also provides an incentive for participation.

Preference for Different Extension Delivery Methods

In section 6b respondents ranked on a four-point Likert scale the perceived effectiveness of the different methods used in extension training programs. Based on the modified ranking scale in table 1, respondents ranked the effectiveness of various training methods follows: Field visits with a short report of field activities: Very Effective (M= 3.77, SD= 0.48, n=90), Simple multiple choice exams Very Effective (M= 3.58, SD= 0.58, n=90), Daily group discussions sections: Very Effective (M= 3.54, SD= 0.60, n=90), Short question and answer sections during class presentations: Very Effective (M= 3.48, SD= 0.657, n=89), Power point presentations:

Very Effective (M= 3.38, SD= 0.63, n=88), Flip charts: Very Effective (M= 3.35, SD= 0.62, n=89), Calling on trainees at random to answer question: Very Effective (M= 3.27, SD= 0.76, n=90), Simple role play: Effective (M= 3.24, SD= 0.66, n=90), Use of Flash cards: Effective (M= 3.23, SD= 0.66, n=90).

When respondents were asked to rate the degree to which they will recommend any of the training methods listed in section 6a above, all 9 training methods were Strongly Recommended (M=3.80-3.34, SD= 0.45- 0.75) for future training. Figure 3 below compares the mean results for effectiveness ratings with those of recommendations to use each method in future training. It is worth noting that all of these methods were employed in the 90 day training program hence it is fair to say that respondents are in a good position to rank these methods based on their personal experiences.

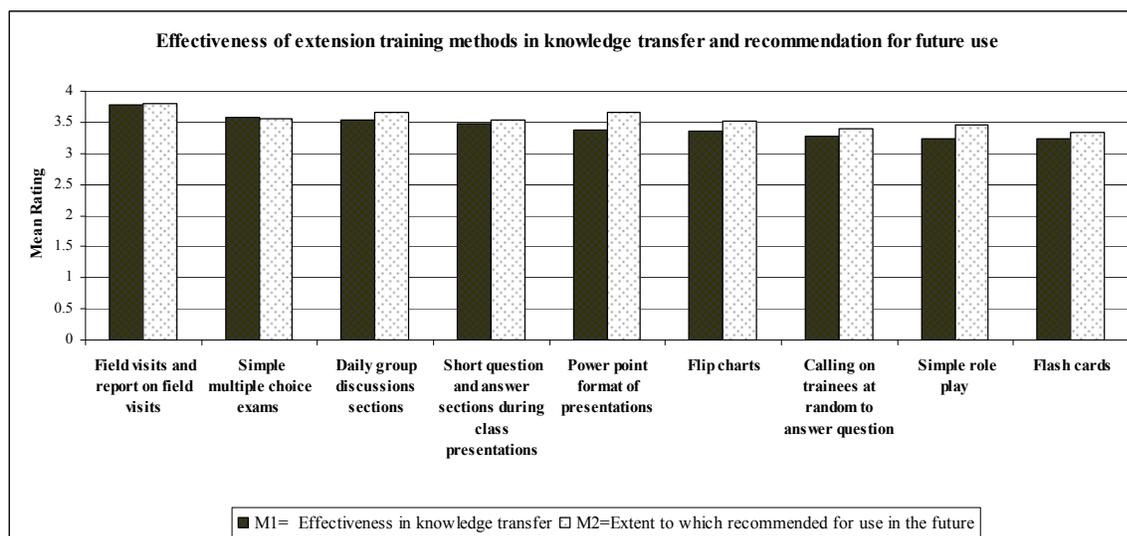


Figure 3. Effectiveness of extension training methods and recommendation for future use

Demographic

All 90 extension agents who participated in this survey were males. About 27% of respondents (n=87) were under the age of 30, 22% were between 30 and 39, 17 % were between 40 and 49 and 35% were between the ages of 50 and 60. The mean age was 40.5years. The oldest and youngest respondents were 22 and 60 years respectively. Out of 85 respondents, 59% classified themselves as district level extension officers, 33% district level extension workers and 8% provincial level extension officers. About 7% out of 82 respondents take home less than 2999Afghani per month. Majority of respondents of surveyed (81%) said they earn between 3000 and 3999 Afghani per month while 4% earn between 4000 and 4999 Afghani per month. About 9% earn above 5000Afghani monthly. Out of n=89, about 24% classify themselves as vegetable production specialists, 6% as fruit production specialists, and 6% as livestock specialists. About 34% classify themselves as market extension specialists while 10% say they are farm management specialists. Plant protection specialists account for 16% of all survey respondents. Approximately 5% classify themselves as specialists in Agronomic practices.

Cross tabulations

All survey respondents had scores from three multiple choice exams taken at the end of each 10day module of the ADP/E 30 day training section. Exams scores on: 1) Extension

processes, 2) Vegetable and 3 Fruit production methods were obtained and analyzed using cross tabulations. In the cross tabulations, scores obtained in a three part multiple choice exams were grouped into Low (0-49), Average (50-75) and High (75-100) scores. The grouped scores were then cross tabulated with several variables to determine which once significantly influence exam scores. Educational level and age were found to be the two variables significantly influenced respondents' performance on the actual knowledge tests/exams. Frequency of workshop/training attendance did not have a significant influence on knowledge test performance. Table 2 below presents a breakdown of respondents' age categories and educational levels.

Table 2
Respondent Age Categories and Educational Levels

Variable/Scale N = 90	<i>N</i>	Percent			
		20-29	30-39	40-49	50-60
Education	81				
PSC		0	0	0	1
SSC		1	3	6	21
UD		22	15	6	7

PSC- Primary School Certificate, SSC- Secondary School Certificate, UD- University Degree (Bachelors)

Actual Knowledge Test/Exam Scores Aligned with Education

The cross tab results suggest that a statistically significant difference exists between respondents' performance on Exam 1 (Extension Processes) and their educational levels ($\chi^2 = 15.04$, $p = 0.005$, $n=85$). The results obtained for Exam 1 suggests that, of those who had Low (0-49) scores, 21% were SSC holder, while 11% had UD. Among the Average (50-75) performers, 1% had PSC, 11% had SSC and 24% had UD. For High (75-100) scorers 26% had UD and 7% had SSC certificate. Generally, UD holders performed better than their PSC and SSC counterparts on Exam 1.

The cross tab results suggest that a statistically significant difference exists between respondents' performance on Exam 2 (Vegetable Production Methods) and their educational levels ($\chi^2 = 11.41$, $p = 0.02$, $n=85$). The results are as follows: Low (0-49) performers: SSC (26%), UD (20%). Average (50-75) performers: PSC (1%), SSC (7%), and UD (21%). High (75-100) performers: PSC (1%), SSC (6%) and UD (19%). The results also suggest that the only PSC respondents scored average on Exam 2. More than 60% of all SSC respondents had a "Low" score compared to less than 45% for their UD counterparts. Similarly, 15% of SSC respondents had an "Average" score compared to 26% for their UD counterparts. For the "High" score category, 24% of SSC respondents belong to this category as compared to 31% for their UD counterparts. In general UD respondents performed better on the Exam 2 than both PSC and SSC respondents.

The cross tab results for Exam 3 scores aligned with education level suggest that educational level did not significantly affect performance on Exam 3 (Fruit Production Methods) ($\chi^2 = 5.02$, $p = 0.28$, $n=85$).

Knowledge Eest/Exam Scores Aligned with Age

In this section respondents' age was categorized into "Young (22-39) and Old (40-60). The cross tabulation results for Exams 1, 2, and 3 aligned with the age category variable suggests that age significantly explains differences in exams performance. The cross tab results are as follows: Exam 1: ($\chi^2 = 13.27$, $p = 0.001$, $n=87$), Exams 2: ($\chi^2 = 17.13$, $p = 0.00$, $n=87$), Exam 3: ($\chi^2 = 9.97$, $p = 0.007$, $n=87$). When all three exams results were averaged and cross tabulated with age, the following results were obtained for the Average Score: ($\chi^2 = 25.21$, $p = 0.00$, $n=87$). A closer look at the overall performers suggests that 51% of all respondents in the Old (40-60) age category ($n=45$) had Low (0-49) Average Score compared to only 7% of their "Younger (22-39) counterparts. Similarly, 50% of "Younger" respondents had High (75-100) scores when all the three exams scores were averaged compared to only 4% of their "Older" counterparts. These Average results look very similar to Exams 1, 2, and 3 scores examined separately. Hence it may be concluded that respondents in the "Young (22-39) category performed better in all three in class knowledge test than their Older (40-60) counterparts. If the assumption is that the "Older" age category has longer field based experience than their "Younger" counterparts then perhaps the results would have been different if the three exams had included field based/practical hands-on exercises.

Conclusions and Recommendations

The purely technical orientation of extension agents from Eastern Afghanistan raises serious questions about the preparedness of the extension staff to build a globally competitive agricultural sector in the East. Several studies including Al-Rimawi, (2006) have shown that most agricultural extension programs in developing countries are heavily tilted towards production agriculture with little or no emphases on business or marketing. This fact is backed by the results from this study. As illustrated in the finding more than 60% of respondents specialize in some production oriented agriculture. To fully exploit new market opportunities as well as overcome new challenges, extension in lesser developed countries need to upgrade their agricultural production and business management skills to fit today's agribusiness environment (Vijayaragavan, Singh and Wason, 2005). While efficiency in production agriculture use to be enough to improve farm income and living standards, in today's world improved technical efficiency alone are no longer enough. Future training for extension agents needs to shed light on the importance of agribusiness and marketing in a holistic extension development plan. In order for an agricultural extension system to be effective in making the maximum impact on it clients (i.e. resource poor or resource rich farmers), extension agents need to possess ample technical knowledge, both of production and marketing of farm produce. Transfer of technical production technology from research stations may be enough to produce a bountiful harvest but a lot more market intelligence is needed to transform production into sales. If poor farmers are to enjoy the full advantage of the new opportunities offered through the advancements in crop research (e.g. improved varieties), farm produce must reach a wider range of markets including high end dynamic markets. Technology transfer alone without the necessary marketing skills falls short of what is needed to improve the livelihoods of rural farmers.

Educational importance

Agricultural extension services whether in developed or developing countries provide the building blocks for effective development of a country's agricultural system. Like in most

developing countries, Afghanistan is currently experiencing a surge in urban population growth resulting from rural-urban migration. This surge means that fewer and fewer households are currently producing their own food. Also, increasing local and regional demand for agricultural produce particularly fruits and vegetables from fellow Arab states including Dubai, Qatar, Jordan and Kuwait hold tremendous positive external benefits for Afghan farmers. However, these new demand points can only enjoy substantial supply response if farmers have ample knowledge of new production technologies and are effectively linked to these dynamic markets. The results of this study hopefully uncovers some knowledge gaps in the agricultural production and extension delivery system in Eastern Afghanistan and provide a baseline against which future development of the extension services will be measured.

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