Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
Vol.5, No.19, 2015

Exploring the Field Assistant's Activities for Sustainable Development in District Tank, Pakistan

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Abstract
To explore the Field Assistant's (FA) activities for sustainable development in district Tank, Khyber Pakhtunkhwa, Pakistan the present study was conducted during year 2015. Based on guess variability 270 respondents were selected from nine sampled villages Viz. Abizar, Akbari, Amakhel, Gul Imam, Kaka Khel, Kari Shahnoor, Kot Azam, Kiri Haidar and Umar Ada. Data was collected through well structured, pre-tested interview schedule using personal interview method. It was found that that Field Assistants (FAs) provides new information (175 respondents). It was also found that FAs were available at their offices (164) and farmers were satisfied from the solution recommended by FAs, of the problem they reported (159). Chi-square test results showed highly significant (P≤0.01) association among land holding with FAs office visits by farmers and FAs visits to farmer's fields. Similarly highly significant (P≤0.01) association of age was also observed with FAs visit to field. Highly significant (P≤0.01) positive correlation of provision of new knowledge by FAs was also observed with benefits from recommendation of FAs (0.586) and demonstrations (0.61) conducted by FAs. It is concluded that apart from non-availability of proper facilities for FAs they were indulge in performing their duties to their level best. Majority of respondents appreciate their work in improving their knowledge of agriculture, solving their problems, increasing their productivity, uplift of their life and thus results in sustainable development.
Keywords: Field Assistants; Sustainable Development; Field Visits

INTRODUCTION

Agriculture is one of the major income generating sectors of Pakistan. Presently 21% to gross domestic product (GDP) is contributed by agriculture. About 45% of the country labor force is engaged in agriculture sector and 60% of the rural population depends upon this sector for its maintenance. The agriculture sector is further composed of crops, livestock, forest and fisheries sub sectors, which respectively contribute 10%, 10.4%, 0.2% and 0.3%. Thus, crop sector accounts for around 48% of agriculture GDP. Foreign export earning contributes 60% in the economy of Pakistan. The country is blessed with a variety of climatic and geographic regimes which are suitable to grow almost all kinds of food, fiber and cash crops including fruits and vegetables. Wheat and rice are the main staple food crops while cotton and sugarcane are the main cash/industrial crops and the economy of the country is purely dependent on them (GOP, 2013). Agricultural extension services have a pivotal role in agricultural and rural development. It is the major source of technology dissemination and helps the farmers to rationalize the use of natural resources for a sustainable agricultural development. Globally, Agricultural Extension is considered more effective, efficient, and responsive to different categories of farmers (Siddiqui and Mirani, 2012).

In developing countries such as Pakistan, farmers do not even get the opportunity to use new technology for their own benefit because of high risk and cost. An efficient extension system aiming at transferring appropriate practices/ technology to small-scale/subsistence farmers can play a crucial role in the solution/alleviation of this problem (Khan *et al.,* 2010). The agricultural development is a continuous process that requires improved and timely technology according to the socio-economic status of the farmers. The extension workers are responsible, not only transferring of improved technologies but also for educating farmers to adopt these. Though the agricultural production has improved to some extent but still it is not enough for the rapidly increasing population. It is necessary to use the modern methods of agricultural production (Wadduwage, 2006). For this purpose the farmers must be made aware of these methods. The trustable source for the government to transfer these methods to farmers is services of agriculture extension (Adedoyin, 2001). The importance of extension in Pakistan's agriculture cannot be under estimated as large proportion of population in Pakistan depends directly or indirectly on agriculture for their subsistence (Ullah *et al.,* 2014). A properly functional extension – farmers' linkage system is vital for improving farm practices to ensure food security (Jan *et al.,* 2008).

Agricultural extension services include transferring knowledge to farmers, advising and educating farmers in their decision making, enabling farmers to clarify their own goals and possibilities, and stimulating

desirable agricultural developments. Traditional public-sector extension services use a variety of extension programmes to overcome barriers to technological adoption without much success (Anderson & Feder 2004; Anandajayasekeram *et al*., 2008; Aker 2010). Extension methods are some of the major weapons for injecting the modern findings of research in agricultural practices to increase the agricultural production in particular and uplift the rural masses in general. These methods are used as tools by extension workers to bring desirable changes in the behavior of rural masses, to arrange the best learning situations and to create situations in which communication and interaction can take place between extension workers and the farmers. Extension methods are effective means of communication (Aker, 2010) to provide knowledge and skills so that the learner may see, hear and do the things conveyed by Field Assistants. Furthermore, extension methods stimulate adults, youth, male and female for action (Jan *et al.,* 2008).

In order to increase per acre yield of crops, it is essential to raise awareness of improved farming techniques among farming community. They should be effectively motivated and convinced of the utility of these techniques leading to its adoption. This can be accomplished through an organized and effective extension department comprising of well trained, honest and devoted workers, equipped with at least fundamental facilities required for satisfactory functioning (Ali *et al.,* 2008). It is, therefore, necessary to bring forth the factors mainly responsible for receding the pace of adoption of the latest agricultural techniques. This can be done by looking into impediments confronting the farmers as well as extension workers, who are entrusted with the crucial task of extending latest agricultural information to the farmers (Qasim, 2005). Due to utmost importance of agriculture extension in productivity enhancement the present study was conducted to explore agriculture extension agent's activities for sustainable development.

MATERIAL AND METHODS

Site of study

The present study was commenced in district Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan during year 2015. Nine villages were randomly selected viz. Abizar, Akbari, Amakhel, Gul Imam, Kaka Khel, Kari Shahnoor, Kot Azam, Kiri Haidar and Umar Ada.

Selection of Sample Size and Respondents

As no prior information was available regarding variability with regards to any characteristic of study interest of the sampling units, the sample size of the farmers per household from sampled villages was determined on the basis of guesses variability i.e. 50 % for maximum sample size as suggested by Kasley and Kumar (1989). The statistical formulae applied for determining the sample size in the absence of knowledge of sample population is as follows:

$$n = Z^2 V^2 / d^2$$

Where

n = Sample size

Z = Normal variate or confidence level about the limit of the error (95%) and constant value for it is 1.96

V= assumed variability with respect to study interest i.e. (50%)

D = Acceptable error margin in the estimates (6%)

$$n = \frac{(1.96)^2 \times (50)^2}{(6)^2} = 267 \text{ say } 270$$

So a sample of 270 respondents was selected and all of these respondents were contacted from the ten sampled villages randomly through personal interview method.

Data Collection Tool (Interview Schedule)

Well Structured and pre-test interview schedule which was composed of open, closed ended questions was utilized for collection of primary data. The interview-schedule was written in English but questions were asked in local languages i.e. Pashto, Saraiki and Urdu in order to clarify each and every question to the respondents. The Interview Schedule was made on the basis of personal observations and study objectives. Respondents were interacted through Personal-interview methods at their fields and home. Secondary data was also used to support primary data, which was collected from published sources. Every possible effort was made to collect good, helpful and first hand data.

Data Analysis

The collected data was subjected to Statistical Package for Social Sciences (SPSS) version 20 for analysis. Descriptive Statistics, Chi-square test (Equation 1) and Pearson's Correlation coefficient (Equation 2) was calculated (Chaudry and Kamal, 2009).

$$\chi^2 = \sum_{i=1}^{c}\sum_{j=1}^{r}\frac{(O_{ij} - e_{ij})^2}{e_{ij}} \quad \text{..... (1)}$$

Where O_{ij} and e_{ij} are called the observed and expected frequencies, respectively

$$\rho_{X,Y} = corr\ (X,\ Y) = \frac{Cov\ (X,Y)}{\sigma_X\ \sigma_Y} = \frac{E[(X-\mu_x)(Y-\mu_Y)]}{\sigma_X \sigma_Y} \text{.....(Equation 2)}$$

RESULTS AND DISCUSSION

Demographic Characteristics

Age has both positive and negative impacts on individual's behaviors. Age is the determiner of a response in various activities of a person's life. Discussion on rational grounds is also dependable on age-factor. According to different reports and research findings, it is a common agreement that age and creativity faculty and adoptability are positively interlinked. In other words, the younger the person, the rapid will be his adoptability and response to any activity, particularly, in communication and comprehension (Iqbal and Nawab, 2013). Data in Table 1 revealed that majority of the respondents were from the age category of 41-50 Years (34.8%) followed by the age category of 36-40 years (24.4%) whereas minimum respondents were observed in the age category of 31-35 years i.e. 10.7%. The instant results revealed that tendency towards agriculture sector were majority of the aged and still in active year's farmers. Literacy level of farmers was another important characteristic, which influences behavior of the farmers in adoption of modern agriculture technologies. Education is the aggregate of all the processes bringing desirable changes in the behavior of human being. For positive change in the behavior of human being education is an important road map. Education improves the quality of mind. An educated person seems to be more thoughtful and tactful as compared to ignorant illiterate person (Ullah *et al.,* 2015). Data in Table 1 depicted that all of the respondents had some of the education background. About 34.4% of the respondents were middle followed by matric (21.5%) whereas minimum (7.4%) number of respondents were observed having education up to primary. Our results are in contrast with that of Rayit (2010) which might be due to sample size and study area who reported that majority (50.8%) of the respondents was illiterate. The size of land holding effects the utilization and adoption of new technology by the farmers and hence affects the agricultural productivity. The population of the world is increasing rapidly due to which demand in food stuff and other necessary daily life goods is increasing against its supply. To overcome all these problems the population of the world should be controlled. Owner-cultivators tend to be more devoted to adopt innovations as compared to tenants (Khan *et al.,* 2012). From the present survey it was found that majority (80%) of the respondents had their own lands for agriculture farming followed by tenant cultivators (11.9%) whereas owner cum tenant were only 8.1%. Similarly majority (55.6%) of the respondents had <5 ha of land followed by 5-10 ha (33.3%) whereas only small part (11.1%) of the respondents had land above 10 ha which were progressive farmers (Table 1).

Table 1 - Demographic attributes of Respondents

Variable	Categories	%	Standard Error
Age of Respondents	<30 years	13.7	0.076
	31-35 years	10.7	
	36-40 years	24.4	
	41-50 years	34.8	
	> 50	16.3	
Literacy Level	up to primary	7.4	0.87
	up to middle	34.4	
	up to matric	21.5	
	up to intermediate	17	
	up to graduate	10.7	
	professional	8.9	
Tenurial status	tenant cultivator	11.9	0.41
	owner-cum tenant	8.1	
	owner cultivator	80	
Land Holding	<5 ha	55.6	0.042
	5-10 ha	33.3	
	> 10 ha	11.1	

Field Assistant Activities

Field assistants are the agent of change and link between farmers and research institute. The field assistant is the

key figure in the whole extension organizational setup because of the multi-purpose nature of his work. They play an important role in uplift of rural life and sustainable development. Keeping in view the importance of field assistants their performance was evaluated and it was found that; Majority of the respondents (172) visited field assistant office and reported that office was accessible (133 Respondents). Similarly majority (164) of the respondents witnessed that FAs were available in their offices whereas 182 respondents reported that they visits their fields which was still very less which might be attributed to the fact that due to poor incentives and non-availability of proper convince for FAs from Agriculture Extension Department they were unable to cover all area under their jurisdiction. Overwhelming majority (175 Respondents) reported that they provided new information to us (Table 2) and during field observation and informal discussion it was also noted that new information was mainly of new varieties of tomatoes and wheat, utilization of modern machinery e.g. Laser leveler etc. and above all identification of weeds in tomatoes and their management. Field demonstration was not conducted by FAs as it should be and thus only 123 respondents reported that FAs conducted field demonstrations. It was found that the demonstration conducted were about application of fertilizers and seedbed preparation for tomato cultivation and nursery raising. Greater number of respondents (167) reported that FAs recommendations help them in tackling their problems whereas 103 were not in favor of the FAs recommendation being helpful to them (Table 2). Furthermore farmers were also investigated about their knowledge about improved practices and it was found that majority of the respondents (238) had information about improved practices which represents a good sign of sustainable development. Results of chi-square test showed highly significant ($P \leq 0.01$) association among land holding with FAs office visits and FAs visits to field. Significant association ($P \leq 0.05$) was also observed among landholding with new knowledge provision, demonstration, benefits from recommendations and knowledge about improved practices (Table 2). Non-significant association of landholding was observed with FAs office accessibility, FAs availability in office and satisfaction from problem reported. Similarly highly significant ($P \leq 0.01$) association of age was also observed with FAs visit to field which might be due to the fact that old age respondents had built terms with FAs and thus they were visited by FAs often. Benefits of recommendation had also highly significant association with age of the respondents whereas significant ($P \leq 0.05$) association of age was observed with FAs office accessibility, new knowledge provision, satisfaction from problem reported and knowledge about improved practices (Table 2).

Table 2. Association of Land holding and Age with Other Extension Activities

Variable	Yes	No	Association with land holding	Association with age
			χ^2 Value	χ^2 Value
Field Assistant office Visit	172	98	28.115**	12.176NS
FAs Office Accessibility	133	137	8.494NS	35.796*
FAs Availability in office	164	106	16.451NS	17.716NS
FAs Visit to Field	182	88	143.8**	140.6**
New Knowledge Provision	175	95	17.982*	57.715*
Demonstration	123	147	45.228*	27.162NS
Satisfaction from Problem Reported	159	111	75.706NS	88.616*
Benefit Of Recommendations	167	103	79.117*	90.96**
Knowledge about improved Practices	238	32	28.495*	36.193*

Pearson's Correlation Coefficient

Results of Pearson's correlation coefficient are present in Table 3. It is evident from the Table 3 that provision of new knowledge by FAs were significantly ($P \leq 0.05$) positively correlated with Age (0.22), Education (0.279), Landholding (0.258), Frequency of FAs visits (0.492) and FAs office accessibility (0.47). Similarly highly significant ($P \leq 0.01$) positive correlation of provision of new knowledge by FAs was also observed with benefits from recommendation of FAs (0.586) and demonstrations (0.61). Non-significant correlation was observed with tenurial status and knowledge about improved practices.

Table 3. Relationship between new knowledge by Field Assistants and other variables

Variables	Correlation coefficient (r^2)
Age	0.22*
Education	0.279*
Tenurial status	0.043NS
Landholding	0.258*
Frequency of FAs visits	0.492*
FAs Office Accessibility	0.47*
Benefit Of Recommendations	0.586**
Demonstration	0.61**
Knowledge About improved practices	0.21NS

CONCLUSIONS

From the present study it was concluded that apart from non-availability of proper facilities for FAs they were indulge in performing their duties to their level best. Majority of respondents appreciate their work in improving their knowledge of agriculture, solving their problems, increasing their productivity and thus uplift of their life. It is dire need that FAs must be furnished with modern equipment of communication and convince so that they can easily visit fields of farmers or communication instantly.

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