Full Length Research Paper

A study of professional competencies of agriculture officers to cope with problem of weeds in North West Frontier Province-Pakistan

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Professionally competent Agriculture Officers (AOs) play an important role in increasing the agriculture production through communicating new findings about the damage caused by weed. It has been tried to find the professional competency of AOs to cope with the weed problem in North West Frontier Province (NWFP), Pakistan. This study was initiated during in January, 2007 where 112 questionnaires were distributed among the AOs across all 24 districts of NWFP. One hundred and eleven AOs returned the questionnaires and the data were analyzed using SPSS version 16. The analysis revealed that all the officers had basic understanding of weed science. However; 7% of AOs had the required knowledge related to weeds. Majority of the respondents were not in a position to point out the weeds of major and minor crops. Same was the case regarding lack of farmers' guidance in herbicide application. About 95% respondents rated weed science related knowledge from important to very important. The present findings recommends that the AOs are supposed to be trained in weed related problems, so that they can cope with the weed management problem of the farming community, for the increase of the quality and quantity of agricultural commodities and to raise the socio-economic status of rural people.

Key words: Agriculture Officers, weeds, professional competency.

INTRODUCTION

A predominant sector of Pakistan's economy is agriculture. The contribution of agriculture is about 21% to GDP and provides employment to 44% of the civilian labor force (GOP, 2008). Agriculture is not the only source of foreign exchange earnings through exports of cotton, cotton products and rice, but it also provides raw materials to industries and consumes products of several industries as inputs. Provincial Agricultural Extension for

improving agricultural practices to increase agricultural productivity. So failing to achieve self- Department is responsible for transferring of agricultural technology and providing technical guidance to farmers sufficiency in major agricultural products has always been attributed to inefficiency of our agriculture extension services. (Pervaiz, 2001; Khan, 2000; Shafi, 1995; Nawab and Lawrence, 1994; Idrees, 1994; Ahmad, 1993; Iqbal, 1990; Hussain, 1983; Hayat, 1982; Naz, 1987; Jalvi, 1981; Muhammad, 1981). Despite an increase in yield low productivity of Pakistan's agriculture is one of the major

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areas of concerns for our planners, policy makers and research workers. Presently there is big difference between the actual and the potential yields of major crops.

Reports have shown some yield gaps of 72% for wheat, 83% for rice, 88% for maize, 78% for sugarcane and 72% for cotton, vis-à-vis to their potential yields under experimental conditions. Wheat productivity is 44% of Mexico's rice, 43% of Egypt's maize, 33% of Turkey's, cotton 75% of Mexico's a nd Sugarcane 66% of India (Goverment of Pakistan, 1991). These differences between the potential and the actual yields is attributed to farmers' lack of awareness about the application of scientific research and new knowledge to agricultural practices.

According to several studies extension specialists are one of the primary sources of information for county extension agents (Radhakrishna and Thompson, 1996; Shih and Evans, 1991). According to Gibson and Hillison (1994), Baker and Vallalobos, (1997) suggestion; effective specialists should clearly understand the extension education process.

In addition, they must understand the human development, learning and social interaction processes and they must become knowledgeable about the organization within which they work. Weeds are a serious problem in all agricultural lands throughout NWFP especially in irrigated belts. It decrease crop yield in a variety of ways. According to estimated data weeds cause Rs. 100 billion per annum in NWFP (Anonymous, 2007).

According to Khan et al. (2006) weeds compete with the major crops for water, nutrients, space and light, thus reduce the crop yield. These weeds can be controlled through educating the farmers by agriculture officers who are competent and trained in weeds. As majority of the farmers in Pakistan and especially in NWFP are illiterate and have no access to newspapers, research articles and other agriculture related magazines and therefore, they are totally dependent on the agricultural extension agents. Keeping in view the importance of weeds, this study was conducted to judge the possessed and required levels of professional competencies of agricultural extension agents in NWFP.

MATERIALS AND METHODS

All Agriculture Officers (AOs) of Agricultural Extension Department were the pool of information of this study. Number of AOs in various administrative districts widely varies across the province (NWFP) ranging from one to eleven depending upon intensity of agricultural activities.

District D. I. Khan has the highest number of AOs (11) while district Shangla and Kohistan have the lowest number (1).

Data source

The study was based on both primary and secondary data. Primary data were obtained through a carefully prepared and pre-tested questionnaire. Secondary data were obtained through published sources. The questionnaire along with instructions/expl- anatory sheet was mailed to all AOs through the Director General Agricul tural Extension office (N.W.F.P.), who is the overall in change of provincial agricultural extension service.

The questionnaire comprised of various questions. However, in the present article only weeds related competencies of AOs were included. Two main categories were used as level possessed and required level and there were five choices of each category. The choices in each category were; VL = Very low, L = Low, M = Medium, H = High and VH = Very High. The respondents placed one check-mark each in possessed and required levels to capture the level and intensity of competencies.

Sampling procedure and sample size

As per information provided by the office of the Director General Agricultural Extension, NWFP, total number of Agricultural Officers (AOs) in the NWFP is 112, posted in 24 administrative districts across the province. The selected competencies areas were identified based on the job description of AOs. This approach has been followed by several authors in the past (see for example, Ali (1991), Randavary and Vaughn (1991), Najjingo and McCasline (1991), Easter (1985)). The data were analyzed statistically using computer software Statistical Package for Social Sciences (SPSS) and the percentages of the respondents were calculated.

RESULTS AND DISCUSSIONS

Competency of Agriculture Officers in identification of weeds of major field crops

The number of respondents (Figure 1) showed that majority of the extension agents know the basic concepts about the weeds and reported that they recognize the weed species and the specific related problems (compete for nutrients, etc.). Thus, they possess the basic knowledge however, due to changing scenarios of weeds related problems, these agricultural professionals need to be properly trained. Regarding the required level of competency of agricultural extension agents rated the weed science activity as a vital component for extension agents (Figure 1) . They reported that they know about the weeds of wheat, maize, rice and sugarcane.

However, the weed flora of different geographical areas is different from one another and their assignment to another zone results in problems in identifying the new weed species. Two and seven of the respondents rated their competency as very low and low respectively, while 37, 46 and 19 respondents rated their self perceived competency in identification of weeds of major crops as medium, high and very high respectively (Figure 1). Sixty-
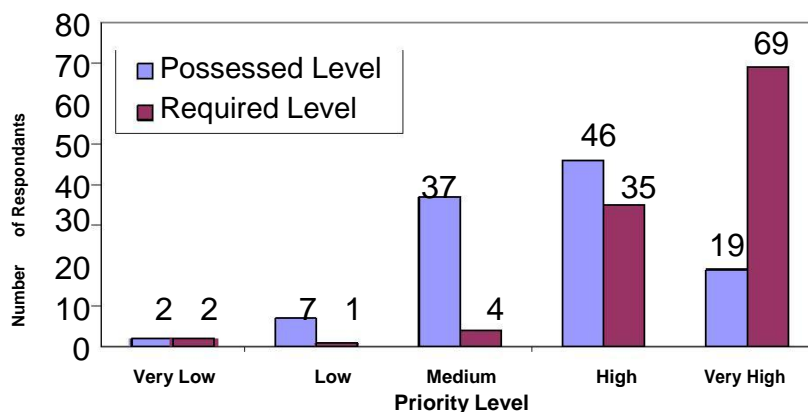
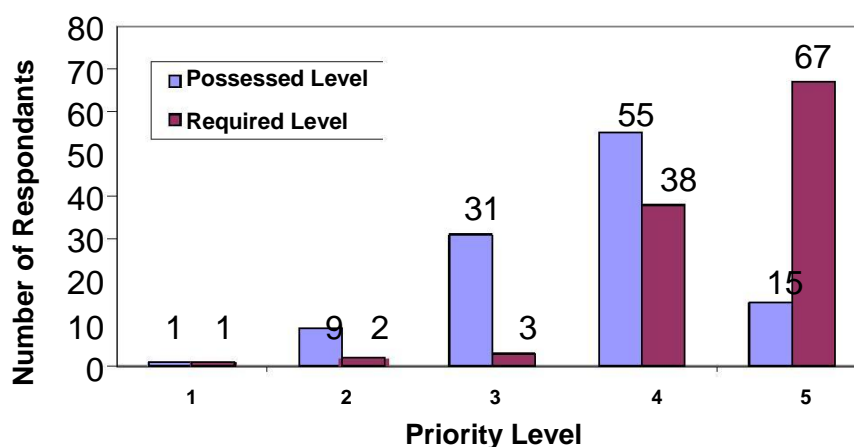**Figure 1.** Competency of AOs in identification of weeds of major field crops.

Figure 2. Competency of Agriculture Officers in identification of weeds of minor field crops.

nine respondents reported that the required competency in identification of major crops as very high and 35 respondents rated required competency as high. Two and one respondents respectively showed that the required level of competency in identification of weeds of major crops as very low and low.

Extension education has been employed in agriculture with particular emphasis on its role as an instrument for promoting change among the farming community for securing and providing information base for planners and policy makers in order to make accurate decisions.

Extension is a non-formal education, which provides advisory services using the educational process to help clients in acquiring knowledge and skills to cope effectively with needs and problems they face in their own socio-economic contexts (Boone, 1989; Carter, 1993; Rahim, 1995; Swanson et al., 1998). All the AOs consider the weed identification as an important factor for satisfying the farmers' needs. As weeds related problems

have been increased due to changing cropping systems and excessive use of fertilizer and irrigation, extension agents should be trained in weed identification which is a prerequisite for successful weed management program.

Competency of AOs in identification of weeds of minor field crops

Very few AOs possess the knowledge to identify of weeds of minor crops. Majority (55) of the AOs possess higher competency level in identification of minor crops. Fifteen respondents possessed very high level of competency in identification of weeds of minor crops. Majority of the respondents (67) reported that AOs should possess very high competency in identification of weeds of minor crops. Over 95% of the AOs reported that the required level of competency in identification of weeds should be high and very high as shown in Figure 2.
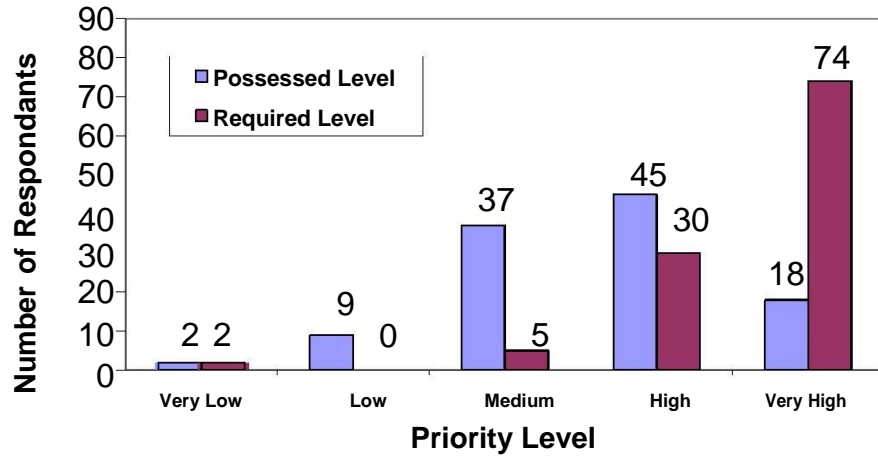
Figure 3. Competency of AOs in guidance of farmers in use of herbicides against weeds.

These results show that the extension agents of NWFP are not properly trained in the weed related problems. Based on the result of this study it can be concluded that the subject of weed science so that the AOs can effectively communicate with the farming community. As the changes in composition of weed communities occur overtime, identification of weed is further complicated. Frequent trainings are expected to solve this problem. According to Alonge and Martin (1995), the first step toward adoption of new ideas by farmers is to provide information on sustainable practices. What has emerged, however, is bipolar evidence from proponents among extension agents on this subject. Agencies and institutions engaged in information dissemination and educational activities often have high responsibilities regarding these topics, yet still have a high need for information and education themselves, responsibilities whom themselves have information and education needs (Rollins and Golden, 1994)).

Fast changes in society, technological developments, complex roles and responsibilities of professionals require continuing education, continuous learning, in-service training and in most cases, graduate education (Merriam and Caffarella, 1991; Darkenwald and Marriam, 1982) emphasized the importance of staff development to stimulate intellect, to increase knowledge, to keep abreast with new advances and developments and for organizational effectiveness.

Competency of AOs in Guidance of farmers in use of herbicides against weeds

Farmers' guidance is the ultimate goal of agricultural extension agents. However, without proper training extension agents cannot address the weed related

issues. The data in Figure 3 shows that 45 respondents possessed high competency in guiding farmers about correct use of herbicides while 18 respondents possessed very high competency in instructing farmers about the use of herbicides. Only 11 respondents possessed low to very low knowledge about herbicides use. Majority of the respondents (104) reported that extension agents should possess high to very high level of competency in guiding farmers about herbicides use. This difference may be due to the fact that few extension agents are working in arid zones and the crops are totally dependent on rainfall. Therefore, weeds are not a big problem in those regions; weeds rather become a big problem in irrigated and fertile zones. Agunga (1995) noted that extension agents need to be trained in sustainable agriculture in order to develop their understanding, competence and ability to teach and communicate the concepts to farmers and others. As farmers are the end users of weed management campaigns, Agricultural Extension Agents should be trained and motivated to transfer the knowledge to the end users. Proper weed identification and selection of appropriate weed control method can result in higher crop yield and economic returns, which will ultimately contribute to the farmers economical improvements. Agriculture officers must be competent in a wide range of agricultural concepts which helps to raise income of the farming community.

Conclusion

It is concluded from the study that AOs should possess high to very high level of competencies in identification of weeds of major and minor field crops as well as use of herbicides to control weeds in field crops. The AOs of

NWFP extension department at present possess medium to high level of competency in identification of weeds and use of herbicides. Thus, they need further training to enhance their competencies related to weeds problem.

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