INTERNATIONAL JOURNAL OF AGRICULTURE & BIOLOGY
1560–8530/2001/03–1–13–15
http://www.ijab.org

Adoption of Recommended Agricultural Technologies by Farmers as an Indicator of Effective Communication by Extension Field Staff

SHER MUHAMMAD, CHRIS GARFORTH† AND KAUSAR ALMAS
Division of Education and Extension, University of Agriculture, Faisalabad–38040, Pakistan
†Department of Agricultural Extension and Rural Development, University of Reading, UK

ABSTRACT

Farmers' awareness of the latest technologies and adoption thereof can mainly be attributed to effective communication by extension field staff. In order to study the existing levels of awareness and adoption by farmers, the recommended sugarcane technologies were selected. The data were collected from 191 sugarcane growers selected at random from 16 villages selected through multistage sampling technique. The empirical evidence suggests that the awareness of the recommended sugarcane technologies among the respondents was very low and consequently the adoption of the same was very poor. Generally, those who were aware of the recommendations, adopted the same, which may imply that lack of awareness on the part of the respondents was the major reason for non-adoption of recommendations. This, in turn, can be attributed to ineffective communication by extension field staff.

Key Words: Adoption; Agricultural technologies; Communication; Extension field staff

INTRODUCTION

The main focus of all communication activities of extension field staff (EFS) is on the adoption of improved agricultural technologies by farmers for increased agricultural production. Effective communication of improved technologies is one of the most important factors of agricultural development (Manandhar, 1990). Thus, the real contribution made by the EFS to achieve this objective can mainly be judged in terms of the knowledge level of the farmers regarding the recommended agricultural practices and adoption thereof as an effect of their communication activities. 'Effect' was regarded as an important ingredient of communication intervention by Lasswell (1972). Harlo and Compton (1967) considered receivers' reaction as the real test of a communication act. Leagans (1971) while associating effective communication with maximum support and action by the receivers also highlighted the same scenario. According to Ali *et al.* (1989), success of the EFS is associated with enhanced knowledge and better adoption of agricultural innovations by the farmers. With these considerations in mind, the researcher included awareness and adoption of sugarcane recommendations as one of the major indicators of effective communication by EFS.

MATERIALS AND METHODS

The study was conducted in tehsil Jaranwala of Faisalabad district. All the sugarcane growers covering both contact farmers and non-contact farmers were considered to be the research population for the present study. From 16 villages selected at random through multi-stage sampling technique, a sample of 191 respondents was drawn by stratified random sampling technique. The data were collected personally by the first author by using interview and observation methods and were analysed for drawing conclusions.

RESULTS AND DISCUSSION

The data presented in Table I reveal that out of four land preparation practices only one (ploughing with cultivator) was not only known to a large majority (70.2%) but also adopted by a majority (65.4%) of the respondents. Deep ploughing was known to only 23% and adopted by a fraction (13.1%) of the respondents. Planking and land levelling were known to slightly more than one-third of the respondents. However, all those who were aware, adopted them. All the practices as a complete package were adopted by only 20.6% of the respondents. Therefore, it can be argued that the land preparation practices undertaken by the growers are inadequate to prepare a friable seedbed. The respondents were asked whether they knew recommended varieties and adopted the same or not. It was observed that out of seven recommended varieties, only one (BL-4) was known to a large majority (79.1%) of the respondents and adopted by relatively larger number (44.5%) as compared to other recommended ones. A vast majority (82.7%) of the respondents was found adopting unrecommended varieties even though in most cases they were aware of the recommended ones. A vast majority (more or less 80%) of the respondents was aware of recommended sowing time for both spring and autumn crops. As regards the adoption of sowing time in spring and autumn crops, majority (54.5%) of the respondents adopted the recommended sowing time in case of spring crop; whereas, percentage of adopters was lower (36.1%) in case of autumn crop.

Table I. Awareness and adoption of recommended sugarcane practices by the respondents

Recommendations	Awareness		Adoption	
	No.	%	No.	%
Land Preparation				
Deep ploughing	44.0	23.0	25.0	13.1
Ploughing with cultivator	134.0	70.2	125.0	65.4
Planking	72.0	37.7	71.0	37.2
Land leveling	72.0	37.7	72.0	37.7
Varieties				
Recommended only	15.0	7.8	33.0	17.2
Un-recommended only	25.0	13.1	79.0	41.4
Both	151.0	79.1	79.0	41.4
Sowing time				
Spring crop	151.0	79.1	104.0	54.5
Autumn crop	156.0	81.7	69.0	36.1
Seed rate				
By area	121.0	63.4	115.0	60.2
By weight	14.0	7.3	14.0	7.3
By number of sets	01.0	0.5	01.0	0.5
Planting techniques				
Double set sowing	47.0	24.6	22.0	11.5
Strip sowing	0.0	-	0.0	-
Fertilizer				
FYM	163.0	85.3	118.0	61.8
Chemical fertilizer				
Plant crop	42.0	22.0	19.0	10.0
Ratoon crop	42.0	22.0	05.0	2.6
Inter crop	22.0	11.5	05.0	2.6
Inter cultural operations				
Blind hoeing	21.0	11.0	19.0	10.0
Subsequent hoeing	133.0	69.6	36.0	18.9
Earthing up	70.0	36.7	29.0	15.2
Irrigations				
Spring crop	51.0	26.7	13.0	6.8
Autumn crop	49.0	25.7	15.0	7.9
Weedicides				
Gesapex Combi-80wp	31.0	16.2	10.0	5.2
Plant protection measures	0.0	-	0.0	-
Harvesting				
Early varieties	23.0	12.0	20.0	10.5
Mid varieties	17.0	8.9	07.0	3.7
Late varieties	24.0	12.6	22.0	11.5

More than 60% of the respondents were aware of and adopted recommended seed rate in terms of their traditional area-measurement units (merla); whereas, the seed rate by weight was known to only 7.3% of the respondents. The awareness about seed rate by number of sets was negligible. Only about one-fourth of the respondents were aware of double-set sowing; whereas, the other two techniques were not at all known to any of the respondents.

A vast majority (85.3%) of the respondents was aware of farmyard manure (FYM) and a good percentage (61.8%) of them adopted the same. As regards recommended dose of chemical fertilizers for plant crop, very few (22%) respondents were found to be aware of current recommendations and about half of them were found to be adopters. Less than one-fourth of the respondents were aware of recommended dose of chemical fertilizer for ratoon crop, and only one in ten in case of inter crop. However, adoption was the same (2.6%) both in ratoon and inter crops. It was further observed during data collection that in most cases the respondents were found using over dose of urea (nitrogen). A great majority (72.3%) of the respondents were aware of recommended time for application of FYM and adopted accordingly; whereas, only less than one-fourth of the respondents were aware of application timings of chemical fertilizers and all who were aware had adopted the same.

Lodging is another serious problem in sugarcane crop as it not only reduces crop yield and quality to a great extent but also makes harvesting of the crop very difficult. Moreover, it encourages side sprouting and rat infestation, which become causes of poor yield and quality. Earthing-up is considered to be the most effective solution to this problem. If it is performed at the most appropriate time, its effect can be multiplied because the magnitude of losses depends on the extent and time of lodging (Fasihi and Malik, 1989). So both the precision in undertaking earthing-up operation and the most suitable time for this operation seem to be crucial. A large majority (more or less 60%) of the respondents was unaware of this important operation both for spring and autumn crops. Consequently, the adoption was also found to be very low in this respect. Only one-fifth of the aware respondents adopted earthing-up in case of spring crop and about half of the aware respondents adopted in case of autumn crop.

Irrigation holds a position of paramount importance in crop husbandry and is generally regarded as lifeblood for soil. Perhaps that is why Antholt (1990) argued that the term of reference for agricultural productivity in the next century is very likely to be yield per unit of water. A more reliable supply of irrigation water encourages farmers to put more efforts and more inputs into production, and thus lead to higher returns per unit of all inputs used (Farrington and Abeyratne, 1982). Its adequate and wise use becomes even more important especially in circumstances where water supply is very limited. Fasihi and Malik (1989) reported that irrigation is the major constraint in sugarcane production. The available water supply through canals is sufficient to meet only 50-60% of the water requirements of the cane crop. In such a delicate situation, the farmers are required to be familiar not only with the real irrigation needs of the crop but also with the critical stages of the crop when irrigation must never be missed. The data show that respondents' awareness regarding the recommended number and proper timings for irrigation was very low, with a large majority (more than 70%) being unaware of the recommendations; whereas, adoption status was even more disappointing. There is no denying the fact that irrigation water supply is far below the level actually required by the farmers, but at the same time much of this shortage can be attributed to poor management practices undertaken by the farmers. Research studies indicate 30-40% conveyance losses due to poorly maintained

watercourses. In addition, 20-30% irrigation application losses have been reported due to undulating fields and traditional irrigation methods (Govt. of the Punjab, 1987). About 10-20% losses of available water occur in watercourses below the *mogha* (outlet) as delivery losses such as seepage, leakage, improperly closed outlets, rat holes, absorption of water, over flow of water in the channels etc. (Nasir & Hyder, 1987). The present data also confirm this situation as precision land levelling and maintenance of watercourses had not been undertaken by a large majority of the respondents.

Weeds cause adverse effects on sugarcane crop by reducing tillering, cane stand and yield to a considerable extent, because these compete with the crop for nutrients, light, water and space. They have become a serious problem during the last few years causing adverse effects on crop yield. According to Fasihi and Malik (1989) weeds reduce cane yield by about 20%. In extreme cases, the major crop is totally suppressed and a failure. Therefore, eradication of weeds from the field is normally regarded as an essential step towards a successful crop. Hoeing is generally considered as an effective method to minimise weed infestation. Blind hoeing was known to only 11% of the respondents and adopted by almost all aware respondents; whereas, a large majority (69.6%) of the respondents was found aware of the subsequent hoeings, but only about one-fourth of them had adopted. Among various weed control methods, chemical weed control seems to be appropriate and effective especially in those situations where other methods cannot be effectively employed due to one or the other reasons. It was found during data collection that the respondents could not properly control various weeds mainly due to labour problem. Therefore, in such situation, use of chemicals seems to be justified. Moreover, weedicides were regarded as more effective than cultural methods of weed control (Fasihi & Malik, 1989). Many of the weedicides on the recommended list were absolutely unknown to the respondents. Only one weedicide i.e. Gesapex Combi-80 WP was known to only 16.2% and adopted by only 5.2% of the respondents.

During the last few years, insect/pests and diseases have become a very serious problem causing a massive reduction in yield and quality of sugarcane. Unless appropriate plant protection measures are taken, all other efforts and investment made in raising the crop would be fruitless. Chemical control measures are generally considered as the most effective for this purpose. It was observed that only rats were known as sugarcane pests to a vast majority (80.1%) of the respondents. Gurdaspur borer and top borer were other insects known to relatively greater number of respondents. None of the respondents was found aware of the recommended plant protection measures except for rat control. Even so, only a fraction (15.7%) of the respondents were found aware of chemical control measures against rats, all of whom used them. Many respondents were found using kerosene oil as insecticide and claimed it to be effective.

CONCLUSIONS

The awareness level of the respondents regarding recommended sugarcane production practices was very low and consequently the adoption of the recommendations was also very poor. However, in general, those who were aware of recommendations, adopted the same, which implies that lack of information on the part of the farmers might be the major cause of non-adoption. This can be attributed to ineffective communication by EFS. They have not come up with their expected role as effective communicators of agricultural technologies among the farmers.

REFERENCES

Ali, M.M., A. Halim and M.A. Hossain, 1989. Farmers' characteristics affecting agricultural knowledge and adoption of innovations. *Bangladesh J. Tr. Dev.,* 2: 1–7, GTI, BAU, Mymensingh.

Antholt, C.H., 1990. Strategic issues for agricultural extension in Pakistan: Looking back to look ahead. Presented at seminar on productivity thru agricultural extension in Pakistan, March 7, 1990. FFC, Islamabad, Pakistan.

Farrington, J. and F. Abeyratne, 1982. *Farm power in Sri Lanka. Development study 22.* Universiy of Reading, Deptt. of Economics and Management.

Fasihi, S. and K.B. Malik, 1989. Sugarcane Research Institute Faisalabad: 50 Years of Research (1935-85). Govt. of the Punjab, DAI, Lahore, Pakistan.

Govt. of the Punjab, 1987. *On Farm Water Management Project in Punjab - An Introduction.* DAI, Lahore, Pakistan.

Harlo, E. and H. Compton, 1967. *Practical Communication.* Longman's Supervisory Series. Vol.2.

Lasswell, H.D., 1972. The structure and function of communication in society. *In: Schramm, W. & Roberts, D.F. (eds). The Process and Effects of Mass Communication.* pp 84–99. Univ. of Illinois Press, Urbana, Chicago, USA.

Leagans, J.P., 1971. Extension education and modernization. *In: Leagans, J.P. & Loomis, P.L. (eds). Behavioural Change in Agriculture, Concepts and Strategies for Influencing Transmission.* pp 101–47. Cornell Univ. Press, USA.

Manandhar, M.K., 1990. Communication behaviour of extension workers. Paper presented in extension research workshop, Dec. 13-14, 1990. LAC, Pokhara, Nepal.

Nasir, M.S. and S.K. Hyder, 1987. *Economic Problems of Pakistan.* Ilmi Book House, Lahore, Pakistan.

(Received 02 July 2000; Accepted 10 November 2000)