

# Farmer-Extension Interaction and the Dissemination of Recommended Sugarcane Production Technologies in the Central Punjab (Pakistan)

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## ABSTRACT

In order to assess the existing role of farmer-extension interaction in the dissemination of recommended sugarcane production technologies, 180 sugarcane growers were taken as study respondents through stratified random sampling technique. It was found that extension agents communicated sugarcane production technologies to 100% large farmers and a large majority of them adopted some of the technologies.

**Key Words:** Adoption; Dissemination; Sugarcane technologies

## INTRODUCTION

Pakistan is basically an agricultural country and agriculture contributes about 25% of GDP and 44% of total employment is generated in this sector (Govt. of Pakistan, 2002). Agriculture is, therefore, a leading sector and backbone of the economy. With an unabated annual population growth rate of 2.16%, the country's population was likely to reach 145.96 million by the year 2002 (Govt. of Pakistan, 2002). Providing sufficient food, fiber and fuel wood for the burgeoning population and raw materials for agro- based industries seems to be a major challenge ahead. Punjab province contains 56% of the cultivated area and 75.32% irrigated area of Pakistan. As regards production, 61.34% of the country's total production of sugarcane is produced in the Punjab (Govt. of Punjab, 2001).

Sugarcane crop serves as a major raw material for production of white sugar and gur (Unrefined sugar balls). Sugarcane tops and molasses are valued as livestock fodder while baggage is used as fuel and as an input to the paper industry. Its shares in value added in agriculture and GDP are 6.3 and 1.5%, respectively (Govt. of Pakistan, 2002). However, the yield gap of sugarcane crop is 73% between research experiments and farmers' fields in the Punjab province (Anonymous, 2002).

The agriculture sector of the Punjab is dominated by small farmers (less than 10 ha) using low input, lacking awareness about improved/tested technologies resulting in low productivity. Research and experience of the developed countries have shown that key to increase per hectare yield lies in the adoption of modern technologies of cultivation (FAO, 1985).

A lot of research has been done on various aspects of agriculture. As a result, a number of new farming practices have been evolved, which if adopted, can revolutionize our

agricultural economy and place it on sound and stable lines. However, in many developing countries including Pakistan wide adoptions of research results remain quite limited. This situation calls for extension agencies to make valuable interaction with the farmers. The extension field staff provides guidance to the farmers regarding improved agricultural techniques right from the preparation of land to the harvesting of crop. A good deal of work was claimed to have done by various agencies to improve agriculture and to improve the rural life. Mosher (1978) states extension as providing farm families with new knowledge and skills related to increasing farm production and improving the level of living of farm families. It was generally agreed upon that the government agencies have been making concerted efforts to promote the welfare of the rural community and trying to bridge the yield gap. It would bring increased productivity and high income leading to uplift the living standards of farming community. The present paper assesses the farmer- extension interaction and the dissemination of recommended sugarcane production technologies in the central Punjab.

The sugarcane, being an important cash crop of the study area, was taken as a target crop. The largest proportion of total sugarcane area of the Punjab was cultivated in Faisalabad division (central Punjab). During 1999-2000, about 232 thousand hectares were planted under this crop with production of 9922 thousand tonnes of cane (Govt. of Pakistan, 2000). On the other hand, various farm level studies conducted by AERU, Faisalabad in the mixed zone of irrigated Punjab showed that this crop occupied from 20 to 35% of total farm area during Rabi and Kharif seasons (Bashir *et al.*, 1999). The underlying reason for relatively more dominance of sugarcane in Faisalabad division is the presence of a number of sugar mills in the area. Above all, this was easily approachable as compared to other cropping

zones of the Punjab. Moreover, the per hectare cane yield in this division was relatively high as compared to other divisions of the Punjab. Faisalabad division had a comparative advantage of producing sugarcane as compared to other cash crops.

**MATERIALS AND METHODS**

A farm level survey was conducted during November 2001 in Faisalabad division, which comprises Faisalabad, Jhang and T.T. Singh districts. From each district, four markazes were selected at random. From each selected 'markaz' 15 sugarcane growers were selected at random as respondents. Thus, total number of respondents was 180. A stratified random sampling technique was adopted to achieve a representative sample. The data were collected through farmers' interviews using a well- structured questionnaire. The data thus obtained were analyzed to draw conclusions and make pertinent recommendations. The farmers were classified into small, medium and large farm categories according to size of their operational land holding. The farmers operating a farm of less than 12.5 acres were termed as small farmers, farmers with an operational land holding between 12.5 to 25 acres were placed under medium farmers, whereas the farmers having more than 25 acres were classified as large farmers. The distribution of the sample farmers is presented in Table I.

**Table I. Distribution of the sample farmers**

Districts	Number	Per cent Farmers	Farm size groups			All
			Small	Medium	Large	
T. T. Singh	60	33.3	30	22	8	60
Faisalabad	60	33.3	31	18	11	60
Jhang	60	33.3	23	14	23	60
Total	180	100	84	54	42	180

**RESULTS AND DISCUSSION**

**Location of the agricultural extension offices.** Location of

the offices of the Agriculture Officers (AOs) may have some effect upon the extent of their acquaintance with farmers. The information gathered in this regard is given in Table II which depicts that average distance from farmers' villages to offices of AOs was 10.22 Km in the study area.

**Visits of agricultural extension agents (AEAs) to farmers.** Table II reveals that (AEAs) paid 1.25 visits/month to large farmers. Whereas they paid visits off and on at small and medium farmers' villages/fields. Hussain (1983) reported that majority of the extension workers neither took interest in extension activities, nor performed their duties honestly; whereas, Asi (1988) stated that about 43 and 35% of the respondents were visited some times by Field Assistants (FAs) and AOs, respectively. According to Akhtar (1990) FAs and AOs had never visited farmers as reported by 40.00 and 59.33% of the respondents, respectively.

**Visits of farmers to AEAs.** Visits of the farmers to the offices of the AOs for reporting their problems show the interest of the farmers as well as the confidence developed by the AEAs among the farming community. The greater the confidence in the AEAs, the more frequent visits will be paid by the farmers. Table II reveals that relatively more medium farmers (24.3%) paid visits to the offices of AOs followed by large farmers (18.5%), but only 1.27% small farmers paid visits to the offices of AOs in the study area. Asi (1988) concluded that about 39 and 35% of the respondents paid visits to the offices of FAs and AOs respectively. The above results are more or less in agreement with those of Zia (1981) and Naz (1987) who concluded that majority of the respondents paid visits to the offices of the AEAs. Akhtar (1990) reported that 87.22% of the respondents paid visits to the offices of the FAs for getting information on various aspects of their day-to-day problems.

**Frequency of farmers' visits to the AEAs.** Table II depicts that a significant proportion of medium farmers 88.9% paid one visit per month to the offices of AOs, which was higher than that of large (75%) and small farmers (60%); whereas, a large proportion of small farmers (40%) paid two visits

**Table II. General information about sample farmers by farm size groups**

General information	Farm size groups			All
	Small	Medium	Large	
Distance from village to Agri.Office (km)	10.27	10.43	9.88	10.22
AEAs' visits/month	0.88	0.91	1.25	0.98
Farmers' visits to the office of AEAs	1.27	24.3	18.5	17.6
Frequency of visits to offices of AOs				
One visit/month	60.0	88.9	75.0	77.8
Two visits/month	40.0	00.0	25.0	16.7
Three-Four visits/month	00.0	11.1	00.0	5.6
Having no contact with AEAs. Reasons for				
No interest				
No time	25.0	22.7	14.3	22.0
No need	39.6	27.3	61.9	41.8
No acquaintance	27.1	40.9	19.0	28.6
	4.2	4.5	00.0	3.3

per month to the offices of AOs, which was higher as compared to other farm size groups. Only 11.1% medium farmers paid three to four visits per month to the offices of AOs. Akhtar (1990) reported that 10.00 and 50.56% of the farmer respondents attended regular and occasional meetings, respectively. The main reason for not attending the meetings as reported by 34.44% of them was that they were not informed about them.

**Reasons for not consulting AEs.** Table II reveals that 22.0% farmers of the study area were not interested to consult AEs, whereas a significant proportion of large farmers 61.9% had no time to contact AEs which was high as compared to other farm size groups. Table II also depicts that 28.6% farmers of the study area had no need to consult AEs because they preferred to use their own technologies. Akhtar (1990) concluded that only 41.67% of the respondents knew the FAs both by name and face. FAs were known only by face to 30.00 and only by name to 14.44% of the respondents. He further found that 13.89% of the respondents did not have any acquaintance with the FAs; whereas, AEs did not communicate sugarcane production technologies to 3.3% farmers of the study area.

**Extension methods used by AEs.** Table III reflects that only 5.0% farmers of the study area indicated farm visit as an extension method used by AEs. A large proportion (above 70%) of small and medium farmers told that farmer's meetings were used by AEs. Proportion of large farmers (30.8%) was higher among the other farm size groups who told that farm visits and farmers' meetings were used by AEs. Only a few farmers of the study area reported result demonstrations extension method used by AEs. These results are partially in line with those of Tenney (1985) who concluded that village meetings and demonstrations were the most effective extension activities for the diffusion of new farming systems and technology.

**Extension methods as perceived by farmers.** Table III reveals that 50% of large farmers perceived farm visits better than other extension methods which was high as compared to other farm size groups, whereas, a notable proportion of small and medium farmers (above 50%) perceived farmers' meetings the best among other extension methods which was higher than large farmers. A fraction of the farmers regarded result demonstrations as

best extension method.

**Sugarcane production technologies communicated by AEs.** Table IV depicts that AEs communicated information regarding sugarcane varieties, sowing methods, fertilizer application, plant protection, eradication of weeds and irrigation methods to 100% large farmers which was high among small and medium farmers (76.50 and 78.60%, respectively) in the study area.

**Table IV. Sugarcane production technologies communicated by AEs to sample farmers by farm size groups**

Sugarcane production technologies	Farm size groups			All
	Small	Medium	Large	
Varieties, sowing methods, fertilizer application, plant protection, eradication of weeds and irrigation methods	76.50	78.60	100.00	82.50

**Adoption of sugarcane technologies communicated by AEs.** Table V reveals that a great majority of large farmers (72.7%) adopted the sugarcane production technologies i.e. varieties and sowing methods; whereas, the adoption of other technologies like fertilizer application, plant protection, eradication of weeds and irrigation methods was lower than varieties and sowing methods but it was relatively high among other farm size groups in the study area.

**Table V. Adoption of sugarcane technologies by sample farmers by farm size groups**

Sugarcane production technologies	Farm size groups			All
	Small	Medium	Large	
Varieties	63.6	63.2	72.7	65.4
Sowing methods	40.9	42.1	72.7	48.1
Fertilizer application	22.7	15.8	36.4	23.1
Plant protection	22.7	36.8	45.5	32.7
Eradication of weeds	22.7	27.8	45.5	29.4
Irrigation methods	27.3	27.8	27.3	27.5

## CONCLUSIONS

The average distance of the offices of AOs from

**Table III. Extension methods used by AEs as reported by farmers by farm size groups**

Extension methods	Farm size groups			All
	Small	Medium	Large	
Farm visits	3.8	4.5	7.7	4.9
Result demonstrations	00.0	00.0	7.7	1.6
Farmers' meetings	76.9	72.7	46.2	68.9
Farm visits+Farmers' meetings	19.2	22.7	30.8	23.0
Result demonstrations+ Farmer's meetings	00.0	00.0	7.7	1.6
Best extension method				
Farm visit	47.4	36.8	50.0	44.2
Result demonstration	00.0	5.3	7.1	3.8
Farmer's meetings	52.6	57.9	42.9	51.9

villages was found to be 10.22 Km in the study area. AEAs paid 1.25 visits per month to large farmers. However, they visited small and medium farmers off and on. More medium farmers (24.3%) paid visits to the offices of AOs than large farmers (18.5%). A significant proportion of medium farmers (88.9%) paid visits occasionally to the offices of AOs, which was higher than large (75%) and small farmers (60%). A significant proportion of large farmers (61.9%) had no time to contact AEAs which was high as compared to other farm size groups; whereas, 22.0% farmers of the study area were not interested to consult AEAs. A large proportion (above 70%) of small and medium farmers reported farmer's meetings as extension method used by AEAs, which was higher than large farmers. A notable proportion of small and medium farmers (above 50%) perceived farmer's meetings the best among other extension methods, which was higher than large farmers. AEAs communicated sugarcane production technologies i.e. varieties, sowing methods, fertilizer application, plant protection, eradication of weeds and irrigation methods to 100% large farmers which was high among small and medium farmers (76.50 and 78.60%, respectively). Above 70% large farmers adopted the sugarcane production technologies i.e. varieties and sowing methods. However, the adoption of technologies like fertilizer application, plant protection, eradication of weeds and irrigation methods was relatively low.

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