

Full Length Research Paper

Comparison between public and private extension services for sugarcane production in Muzaffargarh District, Punjab, Pakistan

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Received 12 February, 2018; Accepted 26 April, 2018

Sugarcane industry is at second position after textile industry in Pakistan. By the export of refined sugar, it plays a significant role in the economy of the country. Public and private sectors extension field staff work with sugarcane growers to improve their per acre yield. The research was conducted to compare and identify the services provided by those two sectors. A total of 150 respondents were selected randomly and interviewed to collect data through a structured interview schedule. The data were analyzed using Statistical Package of Social Sciences (SPSS). It was revealed that private sector provided commodity services such as improved sugarcane seed more than the public sector. However, public sector provided agriculture machinery on subsidized basis whereas private sector did not have any of such facility but was ahead in providing the advocacy services, arranging trainings/workshops, paying farm/home visits, organizing method demonstrations and arranging agricultural fares (Kissan Mellas) for farmers due to better funding. However, Agri. Helpline calls system of public sector was found more effective.

Key words: Extension services, sugarcane, extension field staff (EFS), public sector and private sector.

INTRODUCTION

Sugarcane is one of the main crops among major cash crops of Pakistan. It is cultivated mainly for sugar and sugar related products along with an input for paper and card board industry of the country. Sugarcane provides raw material for the production of white sugar and *gur* (unrefined sugar balls). Sugarcane tops and molasses

are used for value addition to livestock fodder while bagasse is used for fuel and paper making. The sugar industry is playing a key role in agro based industrial improvement of the country. It accounts for 3.4% in agriculture value addition and 0.7% in gross domestic product (GDP) of Pakistan (Wasti and Ahmad 2017).

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The factors affecting sugarcane production in Pakistan includes high prices of inputs, low prices of sugarcane and its by products, delay in payments by sugar mill owners and lack of scientific knowledge among the farmers for higher production. The land preparation, use of farmyard manure (FYM) and diammonium phosphate (DAP), procurement of quality seed and its proper sowing, weeding, cost of irrigation and fertilizer were found as important factors in gaining net higher income by the sugarcane growers.

The government should focus to reduce the cost of inputs to increase the net income of the sugarcane growers. In this regard Nazir et al. (2013) reported that growers were still using old and traditional methods of sugar production. They did not use the modern methods of cultivation like proper use of FYM; inter culturing, fertilizer application, sprays and timely irrigation to the crop. The problems of post-harvest losses included; improper handling, harvesting and inadequate availability of transport facilities. Labour had also impact on higher input cost of the sugar cane crop.

To overcome these factors extension education is very helpful in increased technical efficiency of the farmers in getting higher production of sugarcane. Training of farmers can take place through routine farm inspection visits by extension staff, formal and regular meetings with farmers' groups at the time of the relevant farm activity performed by the growers, for example, seed sowing, transplanting, fertilizing, pest and disease control, harvesting etc (Nuthall and Padilla, 2009).

Davidson and Ahmad (2002) argued that both public and private extension systems offer competing, conflicting and overlapping programmes. Both sectors provide extension services only to contact farmers, which severely affect the diffusion of information process. Private sector extension was facilitating to larger, resource-rich farmers and excluding other farmers because of its profit motives. Hussain et al. (1994) further strengthened by arguing that small and illiterate farmers were not being entertained by the extension services of both sectors. Large landholding farmers got information about new technology from private sector that did not pass it on to smallholders and illiterate farmers despite having majority in the country. It was, however, observed that public sector extension was providing services to educate the farmers, not necessarily towards those with large landholdings.

Private extension staff was facilitating the farmers more than the public agricultural extension staff. The vehicles had been provided to every extension field staff for field tours and it was being treated as an attractive travel facility offered by the private sector. Economic analysis revealed that there was a ratio of 1:10 on spending of public and private sector extension agents. The public sector extension agents were only given bicycle to visit the farming communities for extension work (Khooharo, 2008). Swanson and Samy (2016) were of the view that

to increase effectiveness of extension programmes there was a need to promote public - private partnership for any effective national extension system designed for 21st century.

In Pakistan, agricultural extension services are being provided by the extension field staff (EFS) of Agriculture Department. To up lift the living standard and to improve quality of life of rural people, who are nearly about 67% of the whole population, government has implemented so many extension systems but unfortunately, all of them were abolished and terminated one after the other due to multidimensional problems including use of top down approach and ineffective linkage between the researcher, farmer and extension worker (Lodhi et al., 2006).

In the present study, private sector (Fatima Sugar Mills Limited) is considered which came into being in 1992. It was built in east of the Indus River, more or less in the centre of the country. The challenges faced by the organization in sugarcane cultivation were water logged area and competition with cotton crop sown in available cultivable land for higher income. As such, the Mills had limited availability of sugarcane for sugar production. The private sector was making efforts to increase sugarcane production by working with the farmers through different extension techniques.

Farmers cultivate sugarcane to earn income for improved living and meeting their social needs. These goals are not always met due to low income return to farmers from the cane (Waswa et al., 2012). Production per acre of sugarcane is much lower than expected. That is only 600 to 650 monds per acre then the expected average yield of 850 monds per acre. This decrease in production may due to many reasons which need to explore. In Pakistan both public and private extension services are available to farmers. Both sectors work with different objectives. So there is a need to compare public and private sectors extension services, which sector is contributing towards sustainable agriculture. The present study was conducted with following specific objectives.

- (1) To explore the extension services provided by public and private to sugarcane growers.
- (2) To analyse the various extension teaching methods used by public and private in the study area.

MATERIALS AND METHODS

Muzaffargarh is the district of Punjab province. It is divided into four tehsils namely, Muzaffargarh, Kot Addu, Jatoi and Alipur. The present study was conducted to obtain sugarcane growers perception in tehsil Kot Addu of district Muzaffargarh for comparing the effectiveness of public and Fatima Sugar Mills (FSM) sector extension services with regard to promotion of sugarcane production in the area. Two sugar mills namely Fatima and Sheikho were functioning in the tehsil. They were considered as the main purchasers of sugarcane crop for sugar production.

Therefore, tehsil Kot Addu was purposefully selected to analyze the working of extension services of public and private sector out of

Table 1. Comparative analysis of the provisions of extension services of public and private sector (n = 150).

Extension services	Public		Private		t-value	Sig*
	Mean	SD	Mean	SD		
Commodity						
Sugarcane improved seed	2.13	0.83	2.84	0.85	-3.72	0.000**
Fertilizer	2.67	0.57	2.81	0.69	-0.41	0.72 ^{NS}
Agricultural machinery	2.29	0.61	0.00	0.00	0	0
Pesticide/weedicide	0	0	0	0	0	0
Advocacy						
Communication of farming problems to EFS	2.11	1.3	2.10	1.21	.046	0.964 ^{NS}
Provision of timely information	1.16	1.1	1.95	1.05	-4.29	0.000**
Awareness of latest research work	1.86	0.59	2.26	0.90	-2.45	0.036*
Solutions about farming problems by EFS	1.00	1.1	1.78	0.71	-4.60	0.000**
Motivation to adopt improved technology	1.96	0.83	2.53	1.03	-2.55	0.017*
Technical facilities						
Soil/water testing	1.41	1.2	1.78	1.26	-1.64	0.103 ^{NS}
Skills improvement	1.00	0.00	1.86	0.95	-10.5	0.001*
Training/workshop	2.21	0.63	2.60	0.59	-2.2	0.024*

Scale: 1= Very low 2 = Low 3 = Medium 4 = high 5 = Very high.

*Sig =Significant at 0.05 Level ** Sig =Significant at 0.0 Level, NS = Non-significant.

the two, the extension service of Fatima Sugar Mills was chosen on random basis. From public sector, the agriculture extension department of Government of Punjab was selected for the study. The lists of contact sugarcane growers of both sectors (contact farmers of Fatima Sugar Mills and public sector) were obtained. Simple random sampling technique of sampling was applied and 75 farmers from each sector were selected. An interview schedule was developed. It was pretested and needed changes were made before recording the responses of the study respondents through interviews by the researcher. The collected data were analyzed by using Statistical Package for Social Sciences (SPSS).

RESULTS AND DISCUSSIONS

Provision of extension services by both sectors

Extension services were provided in terms of advocacy, provision of commodities and technical services both by public and private sectors. Mengal et al. (2012) suggested that instead of selective approach to progressive and large farmers, private and public sectors should give importance and provide services to small farmers as well. Onyenkazi and Gana (2009) observed that private sector extension was more effective in disseminating information to the farmers.

The T-test was applied to study the comparative analysis of public and FSM extension services on the basis of commodities supplied to the respondents for promotion of sugarcane production. Table 1 shows the perception of the respondents regarding both the extension services. Results revealed significant difference

in FSM intervention to provide improved sugarcane seed as commodity support ($x = 2.84$) to their clients compared to the public sector extension ($x = 2.13$). While Public sector had an edge in providing the facility of agriculture machinery on subsidized basis ($x = 2.29$) to their target farmers. It was worth noting that FSM did not provide agricultural machinery to their target clientele at all.

Furthermore, both public sector and FSM extended advocacy services to their clients. Data indicated that among various extension services of advocacy, FSM was found better and significant at 0.0 level than public sector in providing timely information ($x = 1.95$ and $x = 1.16$), problem solving ($x = 1.78$ and $x = 1.0$), in creating awareness of latest research work significant at 0.05 ($x = 2.26$ and $x = 1.86$) and motivation to adopt improved technology ($x = 2.53$ and $x = 1.96$). FSM also performed better than the public sector in providing technical facilities like skills improvement ($x = 1.86$ and $x = 1.0$) and trainings/workshops ($x = 2.60$ and $x = 2.21$) and significantly different with $P < 0.05$.

However, commodity facilities like fertilizer ($x = 2.81$ and $x = 2.67$), communication of advocacy services ($x = 2.10$ and $x = 2.11$) and soil and water testing facilities ($x = 1.78$ and $x = 1.41$) of technical services were statistically non-significant.

Application of extension methods by both sectors

Farmers were inquired about the extension methods

Table 2. Comparative analyses of the extension methods used by public and private sectors (n = 150).

Methods	Public		Private		t-value	Sig*
	Mean	SD	Mean	SD		
Farm/home visits	1.92	1.005	2.70	0.697	-5.164	0.000**
Office calls	2.55	0.760	1.83	0.747	3.904	0.000**
Group meetings	2.37	0.768	2.48	0.799	-0.726	0.469 ^{NS}
Result demonstration	1.99	1.028	0	0	0	0
Method demonstration	1.3	0.552	2.97	0.944	0	0.037*
Field trips	-	-	-	-	-	-
Radio talks	2.10	0.557	1.94	0.680	0.834	0.382 ^{NS}
TV talks/shows	1.50	0.548	2.64	0.729	-4.652	0.000**
Agri. Helpline	2.21	.726	1.37	1.275	2.987	0.004**
Kissan Mellas	0	0	3.04	.930	0	0
Pamphlets	2.71	.682	2.56	.735	1.061	0.282 ^{NS}

Scale1: 1 = Very low 2 = Low 3 = Medium 4 = high 5 = Very high.

*Sig =Significant at 0.05 Level ** Sig =Significant at 0.0 Level, NS = Non-significant.

applied by public and FSM extension field staff .The result revealed that most of the extension methods used by both the sectors were common except the field trips made by the FSM extension service. Farm/home visits made to the farmers by FSM extension field staff was more with ($x = 2.7$). That was in line with a study result of Mengal et al. (2012) which revealed that private sector extension field staff paid farm visits on fortnightly basis compared to the public sector. Method demonstration, TV, farm/home visits and result demonstrations were came in between fair and satisfactory categories, but first two methods that is, method demonstration, TV showed inclination towards fair category and rest of the two farm/home visits, result demonstrations landed towards satisfactory category. In addition, radio, agri. helpline, group meetings, office calls and pamphlets came in between low and medium categories. The office calls and pamphlets showed their inclination towards medium category. The results of t-test given in Table 2 reveal that there was significant difference between EFS of public and FSM in applying method demonstration for providing information to farmers regarding sugarcane production at 0.05% of significance level. In addition, farm/home visits, office calls, TV talks/show and agri. helpline were having significant difference at 0.01%. However pamphlets, Kissan Mellas, radio talks and group meetings were at statistically non-significant level at 0.05% of probability.

Effectiveness of extension methods

The perceptions about the effectiveness of the extension methods applied by both the sectors were determined by asking respondents which method was found more suitable to them in diffusion of information by EFS. The data summarized in Table 3 reflects that farm/home

visits, result demonstrations, method demonstrations, pamphlets and Kissan Mellas were showing inclination in between satisfactory and good categories as effective methods applied by the FSM sector extension whereas method demonstrations and Agri. Helpline methods used by the public sector were considered more effective. T-test results indicated that effective extension methods which were significantly different at 0.00 levels were farm/home visits, result demonstrations, Agri. Helpline and Kissan Mellas. Only use of TV talks/shows were found having statistically significant difference at 0.05% whereas office calls, group meetings, method demonstrations and pamphlets were having non-significant difference.

CONCLUSIONS AND RECOMMENDATIONS

Both public and private sector extension services worked for the promotion of sugarcane production within their available resources. However, the private sector (FSM extension service) provided better services in terms of commodity provision, advocacy and technical assistance to the farmers compared to the public sector extension service. Similarly, same types of extension teaching methods were used by both the sectors for dissemination of information to the sugar cane growers. Kissan Mellas were, however, arranged only by private extension service. Training programmes for awareness of improved sugarcane production technology may be conducted timely and regularly by both sectors.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

Table 3. Comparative analyses of the effectiveness of extension methods used by public and private sectors (n = 150).

Methods	Public		Private		t-value	Sig*
	Mean	SD	Mean	SD		
Farm/home visits	1.38	1.075	2.89	0.793	-8.564	0.000**
Office calls	2.36	0.903	2.56	0.511	-1.044	0.394 ^{NS}
Group meetings	2.44	0.598	2.42	0.552	0.147	0.885 ^{NS}
Result demonstrations	2.38	0.648	2.88	0.590	-4.374	0.000**
Method demonstrations	3.09	0.854	2.92	0.860	1.178	.241 ^{NS}
Field trips	-	-	-	-	-	-
Radio talks	-	-	-	-	-	-
TV talks/shows	2.61	0.704	2.30	0.638	1.941	0.053*
Agri .Helpline	2.57	0.535	1.00	0.000	3.960	0.005*
Kissan Mellas	1.42	1.200	2.84	0.868	-7.263	0.000**
Pamphlets	2.73	.521	2.74	0.631	-0.058	0.954 ^{NS}

Scale1: 1 = Very low 2 = Low 3 = Medium 4 = high 5 = Very high.

*Sig =Significant at 0.05 Level ** Sig =Significant at 0.0 Level, NS = Non-significant.

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