

BACKWARD AND FORWARD LINKAGE OF THE POTATO GROWERS WITH DIFFERENT SYSTEM

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ABSTRACT

Potato is one of the important tuber crops in India. Potato produces more food per unit area than wheat, paddy and many other cereals and that much in shorter time. The present study was conducted through Ex-post Facto research design and multistage sampling method. Total 150 potato growers were selected from fifteen villages belongs to three talukas of Aravalli district of Gujarat. The data were collected by personal contact method with help of structured interview schedule and data were coded, classified, tabulated and analysed in the light of objectives. The result found that The major backward linkage developed by the potato growers were, for information on farming activities, potato growers had linkage with fellow farmers, SDAU scientist, private company and commission agent. In case of input procurement potato growers had linkage with input dealers, private companies and fellow farmers. Further, in case of financial assistance, potato growers had linkage with cooperative bank, national bank, GGRC and DOH for subsidy and fellow farmers. The forward linkage about, harvesting purpose potato growers had linkages with fellow farmers, SDAU scientists and private companies. For marketing, potato growers had forward linkages with fellow farmers and private companies.

Keywords: backward-forward linkages, potato growers

INTRODUCTION

Potato (*Solanum tuberosum* L.) is native of the High Andes in South America and it was first introduced in India at the end of the sixteenth or the beginning of the seventeenth century. Potato is one of the important tuber crops in India. Importance of potato as vegetable in human diet has been well recognized. It was viewed in general a common man's food. Potato produces more food per unit area than wheat, paddy and many other cereals and that much in shorter time. It is also excellent in nutritive value and palatability. It is a nourishing article of diet of human being. Potato is a high yielding and short duration crop. Due to high protein-calories ratio and short vegetative cycle, potatoes yield substantially more.

As far as linkages point of view, a critical review of functioning of various institutions/agencies involved in promotion of potato in the country reflects that there are no well defined linkages with potato growers for specific purpose and outputs. There is also duplication of efforts. There is no definite feedback mechanism between research, extension and client system. Backward-forward linkage between the researchers, extension personnel, input providers and technology users is felt necessary. The effective backward-

forward linkage is essential for the prosperous growth of potato industry in the country as it has high export potential.

The total area under potato production in Gujarat is 133.29 thousand ha and production of potato is 3806.95 thousand tonnes with 28.56 tonnes/ha productivity. The total production of potato in Gujarat was ranked fourth with 7.81 per cent contribution having with total production. Banaskantha, Aravalli, Sabarkantha, Mehsana, Gandhinagar and Kheda are leading districts for potato production in this state (Anonymous, 2018). The total area under potato production in Aravalli district is 21.935 thousand ha and production of potato is 689.198 thousand tonnes with 31.42 tonnes/ha productivity (Anonymous, 2018).

OBJECTIVE

To study the backward and forward linkage of the potato growers with different system

METHODOLOGY

The present study was confirmed to "Ex-post Facto" research design as the independent variables were already operated in the study area. The multistage sampling technique was used for select a representative sample of respondents for

present investigation. The present investigation was carried out in Aravalli district of Gujarat state among the 6 talukas of Aravalli district Modasa, Dhansura and Bayad were selected purposively due to highest area and production of potato in district. Five villages were randomly selected from each selected taluka. Thus, total 15 villages having potato growers were selected. Ten respondents from each village were selected by using random sampling techniques making a sample of 150 respondents. The data were collected by personal contact method with help of structured interview schedule.

The independent variables were measured with the help of the scales and indices developed by the past researchers as well as structured schedules which were framed for purpose. Knowledge and backward-forward linkages were considered as dependent variable in present study. Potato growers linkages with different system viz., SDAU Scientist, Officials of Horticulture Department, Government

officials, Growers association, Commission agent, Fellow farmers, Input dealers, National and cooperative bank etc. were considered in order to study the backward and forward linkages developed for production and marketing of potato. The respondents were asked to record their response for each system from where they sought assistance/guidance for getting information for farming activity, procuring inputs, finance assistant, harvesting and marketing. The responses were recorded and data were analyzed using frequency and percentage.

RESULTS AND DISCUSSION

Backward linkages of potato growers with different system

Backward linkage refers as working relationship of potato growers with different system in supporting production activities of potato.

Backward linkages of potato growers for information on farming activities

Table 1: Backward linkages of potato growers for information on farming activities (n=150)

No.	Purpose	Sources											
		SDAU Scientist		Officials of Horticulture Department		Fellow farmers		Commission agent		Grower Association		Any other please specify	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Information of layout and land preparation	41	27.33	0	0	109	72.67	0	0	0	0	Priv. com. 21	14.00
2	Nutrient Management	74	49.33	0	0	66	44.00	32	21.33	0	0	Priv. com. 53	35.33
3	Irrigation Management	50	33.33	0	0	95	63.33	0	0	0	0	Priv. com. 40	26.67
4	Plant protection	63	42.00	0	0	98	65.33	58	38.67	0	0	Priv. com. 51	34.00

Table 1 reveals that the different farming activities carried out by potato growers, among these information of layout and land preparation potato growers had linkage with fellow farmers (72.67 per cent) followed by SDAU scientists (27.33 per cent) and private company (14.00 per cent). Further, linkage about information on nutrient management, nearly half (49.33 per cent) of the respondents had linkage with SDAU scientist followed by fellow farmers (44.00 per cent), private company (35.33 per cent) and commission

agent (21.33 per cent). In case of information on irrigation management, nearly two third (63.33 per cent) of the potato growers had linkage with fellow farmers followed by SDAU scientists (33.33 per cent) and private company (26.67 per cent). For information about plant protection, nearly three fourth (65.33 per cent) of the potato growers had linkage with fellow farmers followed by SDAU scientist (42.00 per cent), commission agent (38.67 per cent) and private company (34.00 per cent).

Backward linkages of potato growers for input procurement

Table 2: Backward linkages of potato growers for input procurement

(n=150)

No.	Purpose	Sources											
		Govt. agencies		Input dealers		Fellow farmers		Grower association		Own		Any other please specify	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Seeds	0	0	58	38.67	04	02.67	0	0	71	47.33	Priv. com. 78	52.00
2	Inorganic fertilizer	0	0	89	59.33	0	0	0	0	0	0	Co.oper soci. 114	76.00
3	Organic fertilizers	0	0	30	20.00	42	28.00	0	0	78	52.00	0	0
4	Bio-fertilizer	0	0	61	40.67	0	0	0	0	0	0	0	0
5	Herbicides	0	0	150	100.0	0	0	0	0	0	0	0	0
6	Insecticides and pesticides	0	0	150	100.0	0	0	0	0	0	0	0	0

The data pertaining to backward linkages of potato growers for input procurement are presented in detail in Table 2. For procurement of seed, more than half (52.00 per cent) of the potato growers had linkage with private companies followed by own source of seeds (47.33 per cent), input dealers (38.67 per cent) and only 2.67 per cent potato growers had linkage with fellow farmers. In case of procurement of the inorganic fertilizer, more than three fourth (76.00 per cent) of the potato growers had linkage with co-operative society and nearly three fifth (59.33 per cent) had linkage with

input dealers. Further, procurement of organic fertilizers, more than half (52.00 per cent) of the potato growers had their own source followed by fellow farmers (28.00 per cent) and had input dealers (20.00 per cent). For procurement of bio-fertilizers, slightly more than two fifth (40.67 per cent) of the potato growers had linkage with input dealers. For procurement of herbicides, insecticides and pesticides, all the (cent percent) potato growers had linkage with input dealers.

Backward linkages of potato growers for financial assistance

Table 3: Backward linkages of potato growers for financial assistance

(n=150)

No.	Purpose	Sources											
		National banks		Co-operative banks		Fellow farmers		Private source		Own		Any other please specify	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Input purchase	49	32.67	72	48.00	0	0	0	0	29	19.33	DOH 63	42.00
2	Labour payment	0	0	0	0	15	10.00	0	0	135	90.0	0	0
3	Installation of MIS	29	19.33	59	39.33	0	0	0	0	12	8.00	GG RC 115	76.67
4	Harvesting and post harvesting (Hired implement, tractor, digger etc.)	0	0	0	0	22	14.67	0	0	128	85.33	0	0

The data shown in the Table 3 about backward linkages of potato growers for financial assistance reveals that the financial assistance of input purchase, nearly half (48.00 per cent) of the potato growers had linkage with cooperative bank followed by nationalize bank (32.67 per cent) and own (19.33 per cent). More than two fifth (42.00 per cent) farmers had linkages with Department of Horticulture for subsidy in input purchase. Further, the financial assistance about labour payments indicated that vast majority (90.00 per cent) of the potato growers used their own savings followed by fellow farmers (10.00 per cent). In case of installment of MIS financial assistance, more than three forth (76.67 per cent) of the potato growers had linkage with GGRC (Gujarat Green

Revolution Company) for subsidy followed by co-operative banks (39.33 per cent), nationalized banks (19.33 per cent) and 8.00 per cent of the potato growers had used their own savings for installment of MIS. For harvesting and marketing assistance majority (85.33 per cent) of the potato growers had used their own savings followed by fellow farmers (14.67 per cent).

Forward linkages of potato growers for harvesting and marketing

Forward linkage refers as working relationship of potato growers with different system in supporting post production activities and marketing of potato.

Forward linkages of potato growers for harvesting

Table 4: Forward linkages of potato growers regarding harvesting

(n=150)

No.	Purpose	Sources											
		SDAU scientist		Officials Of horticulture department		Fellow farmers		Private source		Grower association		Any other please specify	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Time of harvesting	41	27.33	0	0	84	56.00	64	42.67	0	0	0	0
2	Harvesting method	41	27.33	0	0	82	54.67	62	41.33	0	0	0	0
3	Grading	35	23.33	0	0	80	53.33	61	40.67	0	0	0	0

The results presented in Table 4 regarding forward linkage of potato growers in harvesting, nearly three fifth (56.00 per cent) of the potato growers had forward linkages with fellow farmers for information regarding time of harvesting followed by a private company (42.67 per cent) and SDAU scientist (27.33 per cent). In case of information about harvesting method, more than half (54.67 per cent) of

the potato growers had linkages with fellow farmers followed by a private company (41.33 per cent) and SDAU scientist (27.33 per cent). The information regarding grading, more than half (53.33 per cent) of the potato growers had linkages with fellow farmers followed by a private company (40.67 per cent) and SDAU scientist (35.33 per cent).

Table 5: Forward linkages of potato growers regarding marketing

(n=150)

No.	Purpose	Sources											
		Govt. agencies		Input dealers		Fellow farmers		Private company		Grower association		Any other please specify	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Storage facilities	0	0	0	0	82	54.67	0	0	0	0	0	0
2	Place of marketing	0	0	0	0	84	56.00	66	44.00	0	0	0	0
3	Price	0	0	0	0	112	74.67	38	25.33	0	0	0	0
4	Time of marketing	0	0	0	0	84	56.00	66	44.00	0	0	0	0

Forward linkages of potato growers for marketing

The data pertaining to forward linkages of potato growers for marketing presented in detail in Table 5. The information regarding storage facilities, more than half (54.67 per cent) of the potato growers had forward linkages with fellow farmers. Further, the information on place of marketing and time of marketing, more than half (56.00 per cent) of the potato growers had linkages with fellow farmers followed by a private company (44.00 per cent). In case of information about price of produce, nearly three fourth (74.67 per cent) of the potato growers had linkages with fellow farmers followed by a private company (25.33 per cent). None of the potato growers had forward linkages with government agencies, input dealers and growers association for information regarding place of marketing, price and time of marketing. The results are in line with Gotyal (2007), Patel (2015) and Ganga (2020).

CONCLUSION

The information on layout and land preparation, potato growers had linkage with fellow farmers (72.67 per cent). While information on nutrient management, potato growers had linkage with SDAU scientist (49.33 per cent). Whereas, information on irrigation management, potato growers had linkage with fellow farmers (63.33 per cent). In case of information on plant protection, potato growers had linkage with fellow farmers (65.33 per cent). In case of procurement of seed, potato growers had linkage with private companies (52.00 per cent). Whereas, procurement of the inorganic fertilizer, potato growers had linkage with co-operative society (76.00 per cent) and input dealers (59.33 per cent). Further, procurement of organic fertilizers, potato growers had their own source (52.00 per cent). While procurement of bio-fertilizers, potato growers had linkage with input dealers (40.67 per cent). The procurement of herbicides, insecticides and pesticides, all (cent per cent) the potato growers had linkage with input dealers. Further, in case of inputs purchase, potato growers had linkage with cooperative bank

(48.00 per cent). Whereas, in labour payments, potato growers used their own savings (90.00 per cent). While installment of MIS, potato growers had linkage with GGRC (Gujarat Green Revolution Company) for subsidy (76.67 per cent). Further, for harvesting and marketing assistance, potato growers had linkages with fellow farmers (53.33 per cent).

The forward linkage about, information regarding time of harvesting, potato growers had linkages with fellow farmers (56.00 per cent). Whereas, in case of information on harvesting method, potato growers had linkages with fellow farmers (54.67 per cent). Further, in case of information on grading and packaging, potato growers had linkages with fellow farmers (53.33 per cent). The information regarding storage facilities, potato growers had forward linkages with fellow farmers (54.67 per cent). While information on place of marketing and time of marketing, potato growers had linkages with fellow farmers (56.00 per cent). Further, information on price, potato growers had linkages with fellow farmers (74.67 per cent).

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