

ADOPTION OF POTATO CULTIVATION TECHNOLOGY BY THE POTATO GROWERS UNDER CONTRACT FARMING

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ABSTRACT

Most of the farm operators being small and marginal farmers in India, there are problems in getting quality raw material for processing, marketing, and distribution, especially in perishable high value crops but contract farming which was restricted, largely, to seed production earlier; spread to perishable produce and has now become the dominant and growing mode of raw material production and procurement co-ordination among the processors and fresh produce market and exporters. Potato is very important perishable high value crop in North Gujarat Agro-climatic zone of Gujarat state with the cultivating area of 97,204 hectare in six districts of North Gujarat (Anon.2014-15). Therefore, the present investigation was conducted in the North Gujarat Agro climatic Zone of Gujarat state. Two districts viz., Banaskantha and Sabarkantha occupy the highest area under potato cultivation in North Gujarat and hence, were selected purposively for study. Ten potato growers were randomly selected from twenty villages. In all, 200 contracting potato growers were selected for the study. Important motivated factors farmers toward contract farming were; assured price, price stability, no tension of marketing, technical advice to control pests and diseases, no cash payment for seed. Majority (78.00%) of the potato growers had medium to high level of adoption regarding potato cultivation technology. With respect to practice wise adoption, maximum farmers adopted the practices viz., improved varieties, plant protection, irrigation, seed treatment, fertilizers management and land preparation in case of potato cultivation. The independent variables viz., education, mass media exposure and level of knowledge, age, land holding, occupation, annual income, cropping sequence, and risk orientation had positive and significant correlation with the adoption of potato cultivation technology by the potato growers.

Keywords: extent of adoption, potato cultivation technology, contract farming

INTRODUCTION

Most of the farm operators being small and marginal farmers in India, there are problems in getting quality raw material for processing, marketing, and distribution, especially in perishable high value crops (Saran et al., 2020). The processing and marketing firms faced issues of high cost, lack of adequate availability, poor quality and timeliness. On the other hand, there are gluts in market for such producers and farmers realized low or un- remunerative prices. After the opening up to the Indian economy and entry of many domestic and multinational players in to agribusiness sector, contract farming which was restricted, largely, to seed production earlier, spread to perishable produce and has now become the dominant and growing mode of raw material production and procurement co-ordination among the processors and fresh produce market and exporters.

Potato is very important perishable high value crop in North Gujarat Agro-climatic zone of Gujarat state with the cultivating area of 97,204 hectare in six districts

of North Gujarat (Anon., 2014-15). Therefore, the present investigation was undertaken with following objectives.

OBJECTIVES

- (1) To identify factors motivating farmers for contract farming in potato cultivation
- (2) To assess the extent of adoption of potato cultivation technology by potato growers under contract farming
- (3) To ascertain relationship between selected personal, socio-economic, situational, communication and psychological characteristics of the potato growers and their extent of adoption of potato cultivation technology

METHODOLOGY

The present study was conducted in the North Gujarat Agro climatic Zone of Gujarat state. Two districts viz., Banaskantha and Sabarkantha occupy the highest area under potato cultivation in North Gujarat and hence, were selected purposively for study. Among all the talukas of

Banaskantha and Sabarkantha districts, four talukas viz., Disa, and Dantiwada of Banaskantha district and Idar and Vadali talukas of Sabarkantha district occupy highest area under potato cultivation comparing other talukas. Therefore, these four talukas were selected purposively. After the selection of talukas from both the districts, a list of potato growing villages of respective talukas under contract farming was obtained from the contracting firms. From the list, five villages from each selected taluka were purposively selected for the study on the basis of higher potato growing area under contract farming. Thus, total number of selected villages was twenty. A list of the potato growers of each selected villages were obtained from the contract farming firms. Ten potato growers were randomly selected from each village. In all, 200 contracting potato growers were selected for the study.

RESULTS AND DISCUSSION

Factors motivating the farmers toward contract farming

Motivational factors referred to the factors which motivated farmers to cultivate potato under contract condition. Factors motivating farmers are generally oriented towards maximization of the profits and have better contact with technical advisor of contracting firms to seek special knowledge of new innovations resulting in adoption. The data are presented in Table 1.

Table 1: Rank orders of motivational factors of the farmers toward contract farming

(n= 200)

Sr. No.	Motivational factors	No.	Per cent	Rank
1	Price stability	172	86.00	II
2	Assured price	177	88.50	I
3	Technical advice to control pests and diseases	165	82.50	IV
4	Delivery from farm (minimize transportation cost)	160	80.00	VI
5	Recognition at national level	86	43.00	VIII
6	No storage requirement	156	78.00	VII
7	No tension of marketing	169	84.50	III
8	No cash payment for seed	162	81.00	V

As seen from the table 1 important factors motivated farmers toward contract farming were; assured price (88.50%), price stability (86.00%), no tension of marketing

(84.50%), technical advice to control pests and diseases (82.50%), no cash payment for seed (81.00%), delivery from farm (minimize transportation cost) (80.00%),no storage requirement (78.00%). The only motivational factor mentioned by less than half of the respondents was, recognition at national level (43.00%).

From the above result, it can be concluded that important motivated factors farmers toward contract farming were; assured price, price stability, no tension of marketing, technical advice to control pests and diseases, no cash payment for seed.

The probable reason for such type of findings may be that these factors are attracting respondents to adopt potato cultivation under contract farming. The finding is line with the finding of swinnen (2006) Damor (2021) and Bhabhor, and Makwana (2021).

Extent of adoption of potato cultivation technology by the contracting farmers

Adoption is a decision making mental process to continue use of an innovation. In this study, adoption mean acceptance of full use of potato cultivation technology under contract farming. It is rigidly stated that the adoption of recommended package of practices is an instrument for making agriculture a better and more profitable enterprise. Considering this fact, an attempt had been made to find out the extent of adoption of potato cultivation technology by the contracting farmers. On the basis of adoption score obtained by the potato growers, the adoption quotient was calculated for individual respondents with the help of formula developed by Sengupta (1967). The respondents were then, classified into three categories on the basis of \pm S.D. from the mean (X). The classification of respondents is presented in Table 2.

Table 2: Distribution of potato growers according to their adoption of potato cultivation technology

(n=200)

Sr. No.	Extent of adoption	Number	Percent
1	Low (below 65.62 per cent)	43	21.50
2	Medium (between 65.62 to 82.14 per cent)	109	54.50
3	High (above 82.14 per cent)	48	24.00

Mean=73.88

S.D.= 08.26

It is clear from table 2 that 54.50 per cent of potato growers had medium level of overall adoption regarding potato cultivation technology followed by 24.00 per cent and 21.50 per cent of the respondents who had high and low extent of overall adoption, respectively.

Thus, it can be concluded that majority (78.00%) of the potato growers had medium to high level of adoption regarding potato cultivation technology. The probable reason might be that price assurance was the biggest attraction for the farmers for growing more profitable high-value cash crop under contract farming and gaining recognition among the

farming community. This finding is in the line with the finding reported by Mane (2013), Melkunde (2013) and Poshiya et al., (2020).

Practice wise adoption level of potato growers about potato cultivation technology

Practice wise adoption was also measured. To assess the practices wise adoption mean adoption index was calculated for each practice. The data regarding practice wise adoption of the potato growers is depicted in Table 3.

Table 3: Practice wise mean adoption index of potato cultivation technology among the potato growers (n=200)

Sr. No	Recommended practices	Total maximum score	Total obtained score	Obtained mean adoption index	Rank
1	Land preparation	600	480	80.00	VI
2	Improved varieties	1000	885	88.50	I
3	Seed treatment	400	340	85.00	IV
4	Sowing	800	630	78.75	VII
5	Spacing	200	126	63.00	X
6	Fertilizers management	1000	830	83.00	V
7	Earthing up and weeding	800	590	73.75	VIII
8	Irrigation	1000	855	85.50	III
9	Plant protection	1200	1040	86.66	II
10	Crop rotation	600	340	56.66	XI
11	Harvesting	200	135	67.50	IX
12	Grading	400	190	47.50	XIII
13	Storage	1000	490	49.00	XII

Table 3 state that among the different potato cultivation practices, maximum farmers adopted the practices viz., improved varieties (88.50%) and plant protection (86.66%) and were ranked first and second, respectively. The practices viz., irrigation (85.50%), seed treatment (85.00%), fertilizer management (83.00%), land preparation (80.00%), sowing (78.75%), earthing up and weeding (73.75%), harvesting (67.50%), spacing (63.00%) and crop rotation (56.66%) were ranked third, fourth, fifth, sixth and seventh, eighth, ninth, tenth and eleventh, respectively. Whereas, the practices viz., storage (49.00%), and grading (47.50%) was adopted by less than half of the respondents.

Hence, it can be concluded that maximum farmers adopted the practices viz., improved varieties, plant protection, irrigation, seed treatment, fertilizers management and land preparation in case of potato cultivation.

Association between selected personal, socio-economic, situational, communication and psychological characteristics of the farmers and their extent of adoption of potato cultivation technology

The adoption or acceptance of recommended agricultural technology is a complex process involving sequence and thought of actions. The action of individual farmer is governed by personal, socio-economic, situational, communication and psychological variables. Thus, the coefficient of correlation was worked out to know the association between selected characteristics of potato growers with their extent of adoption of potato cultivation technology. The results in this regard are presented in Table 4.

The independent variables viz. education, mass media exposure and the level of knowledge had positive and highly significant correlation with the adoption potato cultivation technology by the potato growers at 0.01 level

Table 4: Association between the characteristics of potato growers and their adoption of potato cultivation technology under contract farming (n = 200)

Sr. No.	Independent Variables	Correlation Coefficient (r value)
X ₁	Age	0.2200*
X ₂	Education	0.4598**
X ₃	Farming experience	-0.1032
X ₄	Size of family	-0.3622**
X ₅	Social participation	0.1217
X ₆	Land holding	0.2484*
X ₇	Occupation	0.2662*
X ₈	Annual income	0.1968*
X ₉	Cropping sequence	0.1637*
X ₁₀	Yield gap	-0.1370
X ₁₁	Mass media exposure	0.3868**
X ₁₂	Risk orientation	0.1749*
X ₁₃	Knowledge	0.8065**

**0.01 level of significance and * 0.05 level of significance

of significance. While, age, land holding, occupation, annual income, cropping sequence and risk orientation had positive and significant correlation with the adoption potato cultivation technology by the potato growers at 0.05 level of significance. Only size of family could establish negatively significant correlation with the adoption of potato cultivation technology by the farmers. Remaining variables *viz.*, farming experience, social participation and yield gap could not established any significant correlation with the adoption potato cultivation technology by the potato growers.

CONCLUSION

Important factors of motivated farmers toward contract farming were; assured price (88.50%), price stability (86.00%), no tension of marketing (84.50%), technical advice to control pests and diseases (82.50%), no cash payment for seed (81.00%), delivery from farm (minimize transportation cost) (80.00%) and no storage requirement (78.00%). Majority (78.00%) of the potato growers had medium to high level of adoption regarding potato cultivation technology. With respect to practice wise adoption, maximum farmers adopted the practices *viz.*, improved varieties (88.50%) and plant protection (86.66%) which were ranked first and second, respectively. The practices *viz.*, irrigation (85.50%), seed treatment (85.00%), fertilizer management (83.00%), land preparation (80.00%), sowing (78.75%), earthing up & weeding (73.75%), harvesting (67.50%), spacing (63.00%) and crop rotation (56.66%) were ranked third, fourth, fifth, sixth and seventh, eighth, ninth, tenth and eleventh, respectively. Whereas, the practices *viz.*, storage (49.00%), and grading (47.50%) were adopted by less than half of the respondents. The independent variables *viz.*, education, mass

media exposure and level of knowledge had positive and highly significant correlation with respondents' adoption of potato cultivation technology at 0.01 level of significance. While age, land holding, occupation, annual income, cropping sequence, and risk orientation had positive and significant correlation with the adoption of potato cultivation technology by the potato growers at 0.05 level of significance. Only size of family could establish negatively significant correlation with respondents' adoption of potato cultivation technology. Remaining variables *viz.*, farming experience, social participation and yield gap could not established any significant correlation with adoption of potato cultivation technology by the potato growers.

CONFLICT OF INTEREST

The authors of the paper declare no conflict of interest

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