

## TECHNO-ECONOMIC DEVELOPMENT AMONG THE TRIBAL FARMERS OF NAIP-III IN BANASKANTHA DISTRICT OF GUJARAT

M. A. Tunvar<sup>1</sup>, V. V. Prajapati<sup>2</sup> and B. K. Patel<sup>3</sup>

1 Asstt. Professor, Polytechnic in Agriculture, SDAU, Deesa-385001

2 Principal, Polytechnic in Agriculture, SDAU, Deesa-385001

3 Asstt. Professor, Polytechnic in Agriculture, SDAU, Amirgadh, Dist. Banaskantha - 385130

Email : vvprajapati1969@gmail.com

### ABSTRACT

Planning commission identified 150 districts of the country as disadvantaged districts. In order to improve livelihood security of the people of these disadvantaged districts, a comprehensive project entitled, National Agricultural Innovation Project was promoted by Indian Council of Agricultural Research (ICAR) with the financial support from the World Bank. The NAIP-III was implemented in three disadvantaged districts of Gujarat viz., Banaskantha, Dahod and Dangs of which Banaskantha is under Sardarkrushinagar Dantiwada Agricultural University (SDAU) jurisdiction. Hence, the district was purposively selected for the study. Among 12 talukas of Banaskantha district, two talukas viz., Danta and Amirgadh were purposively selected for the study making a sample size of 185 respondents. The objectives of the project were to increase livelihood security of the tribal farmers by promoting adoption of new agricultural technology among tribal farmers.

**Keywords:** techno-economic, innovation-decision, naip-iii and cotton

### INTRODUCTION

Livelihood has always been more than just a matter of finding or making shelter, transacting money and preparing food to put on the table or exchange in the market place. It is equally a matter of the ownership and circulation of information, the management of social relationships, the affirmation of personal significance and group identity and the inter relation of each of these tasks to the others. All these productive tasks together constitute a livelihood. The National Agricultural Innovation Project-III in three district of Gujarat including Banaskantha district has started its functioning from 1<sup>st</sup> April 2008 with the objective to increase the sustainable livelihood security in tribal area by promoting the adoption of new agricultural technologies and increase the income from agriculture and their by improve the quality of life of the tribal farmers. There is hardly any detailed research available on extent of adoption of recommended agricultural technologies of important crops among tribal community. That's why following objects are studied.

### OBJECTIVES

(a) To study the innovation-decision process in relation to

adoption of recommended cotton technologies among the farmers of NAIP-III jurisdiction

(b) To measure the techno-economic development among the farmers consequent upon adoption of recommended farm technologies

### METHODOLOGY

The NAIP was implemented in three disadvantaged districts of Gujarat viz., Banaskantha, Dahod and Dangs of which Banaskantha is under Sardarkrushinagar Dantiwada Agricultural University (SDAU) jurisdiction. Hence, the district was purposively selected for the study. Among 12 talukas of Banaskantha district, two talukas viz., Danta and Amirgadh were purposively selected for the study as NAIP-III was operating in these talukas. In both the talukas, one cluster having three villages was the operational area of the NAIP. Both the clusters and all six villages (*i.e.*, three in each cluster) were selected purposively. Out of 925 farmers, 20 per cent farmers from each village were selected randomly making a sample size of 185 respondents.

**RESULTS AND DISCUSSION**

**Innovation decision of farmers regarding adoption of recommended crop technologies**

Diffusion of innovations is a theory that describes the spread of new things through social systems as such things are adopted or rejected by individuals. Innovativeness refers to inter-individual differences in how people react to these new things and accounts for much of their success or failure. The data presented in Table 1 indicate the results of

innovation decision process of farmers regarding cultivation of recommended cotton practice. Total nine practices were enlisted and farmers were asked question regarding each practice with respect to the different stages of innovation decision process. Briefly speaking out of 142 farmers having knowledge of the variety(76.75), 114 farmers confirmed the same(61.62) and remaining 28 farmers (15.13 %) dropped the recommended variety. Thus, very few farmers rejected the recommended variety. The probable reason for continuation of the variety by majority farmers may be due to high yield.

**Table 1 : Distribution of respondents according to their innovation decision process about adoption of cotton practices n = 185**

Sr. No.	Recommended practices of cotton	Stages of innovation decision process										Difference	
		Knowledge		Persuasion		Decision		Implementation		Confirmation		Knowledge	Confirmation
		No.	%	No.	%	No.	%	No.	%	No.	%		
1	Variety	142	76.75	134	72.43	123	66.48	117	63.24	114	61.62	28	15.13
2	Seed rate	137	74.05	125	67.56	111	60.00	95	51.35	91	49.18	46	24.87
3	Sowing distance	108	58.37	99	53.51	87	47.02	79	42.70	75	40.54	33	17.83
4	Chemical fertilizer	116	62.70	102	55.31	91	49.18	83	44.86	82	44.32	34	18.38
5	Time of thinning	165	89.18	158	85.40	134	72.43	116	62.70	102	55.13	63	31.05
6	Weeding	161	87.02	143	77.29	126	68.10	121	65.40	117	63.24	44	23.78
7	Irrigation	156	84.32	128	69.18	114	61.62	100	54.05	95	51.34	61	32.97
8	Disease control	114	61.62	97	52.43	88	45.76	81	43.78	77	41.62	37	20.00
9	Insect/ pest control	120	64.86	104	56.21	98	52.97	84	45.40	81	43.78	39	21.08

So far as seed rate and sowing distance are concerned out of 137 farmers having knowledge of seed rate(74.05), 91 farmers confirmed(49.18) the same and remaining 46 farmers (24.87 %) dropped the recommended seed rate. The probable reason of dropping seed rate by nearly one-fourth farmers may be that sowing is done generally by labours and they could not maintain proper spacing and sometimes more seed is required. Looking to sowing distance, 58.37 per cent of the farmers had knowledge about recommend sowing distance of cotton, but 53.51 per cent of the farmers had formed positive attitude towards recommended sowing distance. However, 42.70 per cent farmers implemented that innovation in their field. Lastly, 40.54 per cent farmers confirmed the sowing distance.

Looking to chemical fertiliser is concerned, 62.70 per cent of the farmers had knowledge about recommend chemical fertiliser, but 55.31 per cent of the farmers had formed positive attitude towards recommended fertiliser.

However, 42.70 per cent farmers implemented that innovation in their field. Lastly, 44.86 per cent farmers confirmed the chemical fertiliser. Those applying recommended fertilizers have realised the role of chemical fertilizers in crop production. Hence, majority farmers had continued applying recommended fertilizers.

If we talk about time of thinning and weeding, 89.18 per cent of the farmers had knowledge about time of thinning, but 85.40 per cent of the farmers had formed positive attitude towards thinning. However, 62.70 per cent farmers implemented that innovation in their field. Lastly, 55.13 per cent farmers confirmed the sowing distance. Majority farmers follow the practice of thinning. However, few of them may be due to shortage of labours could not continue it. So far as weeding operation is concerned, 87.02 per cent of the farmers had knowledge about weeding, but 77.29 per cent of the farmers had formed positive attitude towards weeding. However, 65.40 per cent farmers implemented

that innovation in their field. Lastly, 63.24 per cent farmers confirmed weeding operation

In terms of time of irrigation, 84.32 per cent of the farmers had knowledge about irrigation, but 69.18 per cent of the farmers had formed positive attitude towards irrigation. However, 54.05 per cent farmers implemented that innovation in their field. Lastly, 51.34 per cent farmers confirmed irrigation practice. The probable reason for not giving irrigation timely might be due to irrigation shortage because of open well.

So far as disease and pest control is concerned, 61.62 per cent of the farmers had knowledge about disease control, but 52.43 per cent of the farmers had formed positive attitude towards disease control. However, 43.78 per cent farmers implemented that innovation in their field. Lastly, 41.62 per cent farmers confirmed disease control. Hence, majority farmers might have continued the practice. Briefly speaking, out of 120 farmers having knowledge of insect/pest control, 81 farmers confirmed the same and remaining 39 farmers (21.08 %) dropped insect/pest control practice. Out of this, only 43.78 per cent of the farmers adopted recommended

method of insect/pest control.

It can be concluded that the highest rejection rate was observed in case of irrigation (32.97 %) followed by time of thinning (31.05 %) and seed rate (24.87 %). Further, 24.87, 23.78 and 21.08 per cent farmers rejected the technologies viz., seed rate, weeding and insect pest control technology, respectively. The practices viz., disease control, chemical fertilisers, sowing distance and variety were rejected by 20.00, 17.83 and 15.13 per cent farmers, respectively.

#### **Techno-economic developments consequent upon adoption of recommended farm technologies among the farmers**

Techno-economic developments are the change that occurs to individual or a social system as a result of adoption or rejection of an innovation. The difference of resultant changes that occurred after implementation of NAIP-III viz., technical change, economic change and social change among farmers were considered to be techno-economic development.

#### **Technical change**

The data in respect of technical change are presented in Table 2.

**Table 2 : Distribution of respondents according to their technical change**

**n=185**

Sr. No.	Technical change	Frequency	Percent
1	Crop diversification (4)	130	70.27
2	Adoption of micro-irrigation system (5)	18	09.72
3	Purchase of new farm equipments (4)	25	13.51
4	Purchase of animals (4)	34	18.37
5	Expanding irrigation area in <i>rabi</i> and summer (2)	90	48.64
6	Change in cropping pattern (3)	87	47.02
7	Increased extension contact (2)	142	76.75
8	Increase use of mass media (2)	63	34.05
9	Subscription of farm magazine (1)	32	17.29
10	Purchasing of agriculture literature (1)	14	07.56
11	Construction of animal shed (2)	12	06.48
12	Construction of green house (3)	08	04.32
13	Construction of poly house (3)	06	03.24
14	Preparation of vermicompost (2)	63	34.05
15	Purchase of addition land (5)	08	04.32

It can be concluded from Table 2 that due to implementation of NAIP-III project in the research area and frequent visit of extension personnel, scientists and experts of NGO, 76.75 per cent of the respondents had increased extension contact followed by crop diversification (70.27 %), expanding irrigation area in *rabi* and summer (48.64 %) and change in cropping pattern (47.02 %), respectively.

#### **(b) Economic change**

The data regarding economic change are presented in Table 3. The data presented in Table 28 show that due to implementation of NAIP-III project, 75.67 per cent of the respondents had started celebration of festivals, followed by change in food habit (66.48 %), change in clothing pattern (57.30 %) and able to take loan from bank (53.98 %). There

was a little amount of change in remaining aspects related of respondent purchased electric iron and new land line to economic change. It is interesting to note that none telephone.

**Table 3 : Distribution of respondents according to their economic change**

**n=185**

Sr. No.	Economic change	Frequency	Percent
1	Construction of new house (5)	06	03.24
2	Change in food habit (2)	123	66.48
3	Purchase of bicycle (1)	12	06.48
4	Purchase of bike (2)	08	04.32
5	Purchase of radio (1)	09	04.86
6	Purchase of television (1)	06	03.24
7	New landline telephone (1)	00	00.00
8	Purchase of mobile phone (1)	64	34.60
9	Change in clothing pattern (2)	106	57.30
10	Sending children for higher education at taluka/district/state level (2)	28	15.13
11	Purchase of utensils (2)	67	36.21
12	Purchase of electric fan (2)	52	28.10
13	Purchase of electric iron (1)	00	00.00
14	Celebration of festivals (1)	140	75.67
15	Able to do better medical treatment (1)	53	28.64
16	Able to take loan from bank (1)	98	53.98

It can be concluded from Table 3 that due to implementation of NAIP-III project in the research area, 75.67 per cent of the respondents had celebrated their festival followed by change of food habit (66.48 %).

**(c) Social change**

The data regarding social change are presented in Table 4.

**Table 4 : Distribution of respondents according to social change among tribal farmers**

**n=185**

Sr. No.	Social change	Frequency	Percent
1	Membership in village institution (1)	118	63.78
2	Official position in one or more formal organisation (2)	36	19.45
3	Official position in SHGs (2)	48	25.94
4	Official position in social organisation (2)	14	07.56
5	Official position in political organisation (2)	22	11.89
6	Participation in meeting of villagers (2)	127	68.64
7	Participation in meeting of Gram Sabha (2)	98	52.97

The data presented in Table 4 indicate that 68.64 per cent of the respondents had participated in the meeting of villagers followed by 63.78 per cent had enrolled themselves in village institution. Further, 52.97 per cent of the respondents had participated in meeting of Gram Sabha and 25.94 per cent had official position in Self Help Groups. The number of farmers brought change in other aspects was few.

It can be concluded from Table 4 that due to implementation of NAIP-III project in the research area and

frequent visit of extension personnel, scientists and experts, 68.64 per cent of the respondents had participated in the meeting of villagers.

**(d) Overall techno-economic change**

Overall techno-economic change among the respondents was calculated by summing up the score of all the sub-indicators under three major indicators. The respondents were classified into three categories of techno-economic development using Mean ± S.D. The results are presented in Table 5.

**Table 5 : Distribution of respondents according to their overall techno-economic development****n = 185**

Sr. No.	Category	Frequency	Percent
1	Low (up to 41 score)	47	25.40
2	Medium (42 - 59 score)	93	50.27
3	High (Above 59 score)	45	24.33

It can be seen from Table 5 that nearly half of the respondents (50.27 %) had medium techno-economic development followed by 25.40 per cent with low and 24.33 per cent with high techno-economic development. It can be concluded that 74.60 per cent of the respondents had medium to high techno-economic development. The probable reason might be their medium adoption of cotton crop and micro irrigation technology.

### CONCLUSION

So far as innovation decision process is concerned, the highest rejection rate was observed in case of irrigation (32.97 %) followed by time of thinning (31.05 %) and seed rate (24.87 %). Whereas, lowest rejection was observed in case of variety (15.13 %) followed by sowing distance (17.83 %) and use of chemical fertilizers (20.00 %).

Major technical changes were increased extension contact (76.75 %) and crop diversification (70.27 %). Major economic changes were celebration of festivals (68.40 %) among tribal farmers and change in food habit (66.48 %). Major Social changes were observed in Participation in meeting of villagers (68.64%), membership in village institution (63.78%) and Participation in meeting of Gram Sabha (52.97%).

It was observed that nearly half (50.27 %) of the respondents had medium techno-economic change followed by 25.40 per cent with low and 24.33 per cent with high techno-economic change.

### REFERENCES

- Chinchmalatpure., Umesh, R. and Mayani, V.V. (2014). Correlates of socio-techno-economic changes in rehabilitated place of project affected farmers. *Gujarat Journal of Extension Education*. 24: 87-89.
- Parikh, A. H., Soni, N. V. and Chaudhari, J. K. (2015). Technological gap in adoption of improved cultivation practices by soyabean growers. *Gujarat Journal of Extension Education*. 26(2):192-194.
- Patel, R. R. Pandya S. P. and Patel, P. K. (2016). Characterization of farming system in north west agro climatic zone of Gujarat state. *Gujarat Journal of Extension Education*. 27(2): 206-208.
- Timbadia, C.K. (2001). A study on techno-economic consequences of drip irrigation system among farmers of Gujarat State. Ph.D. Thesis (Unpublished), Submitted to Navsari Agricultural University, Navsari.