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Socio-economic and communicational characteristics of respondents studied under demonstration component of NICRA project

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Abstract

The National Innovations on Climate Resilient Agriculture (NICRA) project aims to improve resilience of Indian agriculture to climate change and climate vulnerability by the way of strategic research and technology demonstration. This investigation was undertaken to know socio-economic and communicational characteristics of respondents studied under demonstration component of NICRA project. The study was confined to Ratnagiri district from Konkan region and Aurangabad (*Chattrapati Sambhajinagr*) districts from Marathwada region of Maharashtra state. All the ten operational villages of the NICRA Project i.e. five villages from Ratangiri district and five villages from Aurangabad (*Chattrapati Sambhajinagar*) district were selected. Further five villages from each district were selected for getting responses from non-beneficiary respondents. In all, 70 beneficiary farmers from NICRA villages and 70 non-beneficiary farmers from Non-NICRA villages were selected randomly from each selected district. Thus, a total of 280 farmers from two district i.e.140 from Ratnagiri district and 140 from Aurangabad i.e. *Chattrapati Sambhajinagar* district were selected for the present investigation.

The data were collected by using well developed interview schedule. The data were collected, tabulated and analysed by using proper statistical measures. The study revealed that the majority of respondents fall within the 40 to 59 years age group. This middle-aged group is more actively involved in farming compared to their younger and older counterparts. The educational profile of the respondents reveals a disparity between regions. The study shows that a significant number of respondents have small to semi-medium land holdings. The annual income levels of the respondents varied significantly between the two regions. Mass media exposure among the beneficiary farmers is relatively high, particularly due to their participation in training sessions conducted by KVK.

Keywords: Socio-economic, charactristics, demonstration, project

Introduction

The National Innovations on Climate Resilient Agriculture (NICRA) project aims to improve resilience of indian agriculture to climate change and climate vulnerability by the way of strategic research and technology demonstration It is a network project of Indian Council of Agricultural Research (ICAR) implemented in various districts of the country since 2011. The technology demonstration component of the project deals with demonstrating assured technologies for adaptation of crop and livestock production system to climate variability. This component was implemented in selected vulnerable districts of the country through location-specific interventions.

These programmes did receive some success in ensuring adoption of agricultural technologies, but still large gap was found between technologies generated at research institutions and those adopted at the farmers' fields. It is estimated that about 70 per cent of the available technologies are not adopted by the farmers. The major reasons for low adoption of agricultural innovations enumerated as follows:

- Most of the technologies generated were not stable and compatible with farmer's needs.
- System of top-down approach in technology transfer.
- Lack of ensuring people's participation in preparing and execution of the programmes.
- Emphasis on individual contact rather than group action.

Here, an efforts was made to know socio-economic and communicational characteristics of respondents studied under demonstration component of NICRA project.

Materials and Methods

This investigation was confined to Ratnagiri district from Konkan region and Aurangabad (*Chattrapati Sambhajinagr*) districts from Marathwada region of Maharashtra state. All the ten operational villages of the NICRA Project i.e. five villages from Ratangiri district and five villages from Aurangabad (*Chattrapati Sambhajinagar*) district were selected. In the villages of Ratnagiri district, improved technology in paddy & horse gram were intervened and in

Aurangabad (*Chattrapati Sambhajinagr*) district Maize & Bengal gram were intervened to the respondents through demonstrations activity during 2018-19 to 2020-21.

For the selection of respondents, a list of all farmers was collected from the office of Krishi Vigyan Kendra of the respective district who implemented the NICRA Project in the respective villages. From the obtained list, 70 beneficiary farmers from NICRA villages and 70 non-beneficiary farmers from Non-NICRA villages were selected randomly from each selected district. Thus, a total of 280 farmers from two district i.e.140 from Ratnagiri district (70 beneficiary and 70 non-beneficiary) and 140 from Aurangabad i.e. *Chattrapati Sambhajinagar* district (70 beneficiary and 70 non-beneficiary) were selected for the present investigation.

The data were collected by using well developed interview schedule. The data were collected, tabulated and analysed by using proper statistical measures. For age, annual income and mass media exposure respondents were classified into three groups based on mean $\pm$ standard deviation and by following standard techniques in land holding the respondents were categorized. For education categories made in education at respective state level was followed.

Results and Discussion

Profile of respondents gives an idea of their socio-economic and communicational characteristics at a glance. The level of knowledge, attitude and adoption of respondents are influenced by these characteristics. Due to limitations of the study important characteristics were identified and have been included in this chapter. These characteristics are age, education, land holding, annual income and mass media exposure.

Age of Respondents

The data incorporated in Table 1 revealed that, majority of respondents belongs to age group of 40 to 59 years. This age group alone constitutes 65.35 per cent of total sample. Whereas, 20.36 and 14.29 per cent respondents were less than 40 years and more than 59 years of age groups, respectively.

The data further reveals that, 65.00 per cent Konkan region respondents and 65.71 per cent Marathwada region respondents selected under study belonged to age group of 40 to 59 years. Whereas, 16.43 per cent Konkan region respondents and 24.29 per cent Marathwada region respondents belonged to age group less than 40 years. The representation of more than 59 years age group of the Konkan region respondents and Marathwada region respondents were found to be 18.57 and 10.00 per cent, respectively.

The findings indicate that the majority of respondents fall within the 40 to 59 years age group. This middle-aged group is more actively involved in farming compared to their younger and older counterparts. A likely reason is that middle-aged individuals have taken up the parental occupation, continuing the family tradition of farming. In contrast, older farmers often face physical limitations that hinder their ability to work on the farm. Younger farmers, due to higher levels of education, tend to seek employment opportunities outside of agriculture. They may perceive farming as a non-profitable venture due to factors such as unstable yields and non-remunerative market prices.

The present findings are similar to findings of Sriharinarayana (2013) [12], Kumari (2014) [7], Babu (2019) [3] and Singh (2020) [11].

Education

To develop an understanding about the level of education of selected respondents, respondents were classified into six categories i.e. pre-primary, primary, secondary, higher secondary, graduate and post-graduate level. Their frequencies were counted and converted into percentage for all the categories of respondents. Interestingly not a single illiterate respondent was found and this might be due to efforts of Government on education. Results are presented in Table 2.

The data evident from Table 2 revealed that, 46.79 per cent of total respondents were educated up to secondary class. In the same category Konkan and Marathwada region respondents were 45.00 per cent and 48.57 per cent, respectively. Whereas, 18.92 per cent respondents were educated up to primary class, 13.93 per cent educated up to higher secondary, 11.43 per cent educated up to graduate level and 7.50 per cent educated up to pre-primary level. Only 1.43 per cent respondents found educated up to post-graduate.

A close observation of region wise respondents reveals that in case of graduate level education only 3.58 per cent beneficiary respondents were from Konkan region, whereas, 19.28 per cent from Marathwada region. Respondents who have studied up to pre-primary education was found 10.71 per cent in Konkan region and 4.29 per cent in Marathwada region.

Further, in case of Konkan region beneficiary and non-beneficiary respondents, it is seen that, majority of respondent's education was up to secondary level, i.e. 55.72 per cent and 34.29 per cent, respectively. Similarly, in Marathwada region where majority of beneficiaries (54.29%) and non-beneficiaries (42.86%) educated up to secondary level. Further, analysis of this data clearly indicates that beneficiary respondents were more educated than non-beneficiary respondents except respondents of Marathwada region who studied higher secondary and graduate level. In this region non-beneficiary were more educated than beneficiary respondents.

The educational profile of the respondents reveals a disparity between regions. In the Konkan region, a majority of the respondents are marginal and small farmers who could not afford higher education due to their financial constraints and the lack of educational facilities in their villages. This contrasts with the Marathwada region, where access to education might be relatively better, reflecting in the respondents' educational attainment.

The results are somewhat in line with Ahire and Kapse (2017) [2] and Babu (2019) [3] but results are not confirming with findings of Pise *et al.* (2018) [8] and Kumar (2022) [6].

Land Holding

The data of Table 3 shows that, 37.50 per cent of total respondents had marginal land holding (up to 1 ha), followed by 27.86 per cent of them having semi-medium size (2.01 to 4 ha) and 22.14 per cent had small size of land holding (1-2 ha), whereas, 12.50 per cent of them were

having land holding up to medium size i.e. above 4 hectares. Whereas, large land holders were not included in NICRA programme.

A close observation of data further indicates that, in case of Konkan region, 70.00 per cent respondents had marginal land holding, followed by 20.71 per cent having small size of land holding, 6.43 per cent having semi-medium and only 2.86 per cent respondents had medium land holding. This is due to the fact that in konkan region hilly area is more in western part and per capita agricultural land is comparatively less. Whereas, in Marathwada region 49.29 per cent respondents had semi-medium land holding followed by 23.57 per cent of them having small size of land holding and 22.14 per cent respondents had medium land holding. From the above results it can be concluded that 50.00 per cent respondents possessed land holding of small to semi-medium size in the study area.

The study shows that a significant number of respondents have small to semi-medium land holdings. This trend can be attributed to the subdivision and fragmentation of land holdings, a consequence of the nuclear family system prevalent in the study areas. The continuous division of ancestral land among successive generations has led to smaller individual land parcels, affecting the overall size of land holdings.

Similar results were reported by Agrawal *et al.* (2016) [1] and Pise *et al.* (2018) [8]. The findings are dissimilar with results of Kumar (2022) [6].

Annual Income

The data included in Table 4 visualize that, out of the total 240 respondents, 82.50 per cent respondents had medium level of annual income (Rs.54,953/- to Rs.5,46,909/-) from all sources and 13.57 per cent respondents had their family income more than Rs.5,46,909/-per annum, while remaining 3.93 per cent respondents earned their family income less than Rs.54,953/- per annum from all sources in the study area.

A close view of annual income of beneficiary and non-beneficiary respondents of Konkan region highlights that, majority of beneficiary respondents (94.28%) and non-beneficiary respondents (92.86%) were in the medium income group i.e. Rs.54,953/- to Rs.5,46,909/- per year. Further, from Marathwada region 61.43 per cent beneficiary respondents and 81.43 per cent of non-beneficiary respondents had annual income from Rs.54,953/- to Rs.5,46,909/-per year. Whereas, 35.71 per cent beneficiary respondents and 14.29 per cent non-beneficiary respondents were found in high income group (more than Rs. 5,46,909/- per annum) in Marathwada region.

A close observation to the data about Konkan and Marathwada region respondents reveals that in case of beneficiary and non-beneficiary of Konkan region possessed low to medium level of income. Whereas, in case of beneficiary and non-beneficiary respondents of Marathwada region, respondents possessed medium to high level of income. Further, analysis of data shows that Marathwada region respondents had more income as compare to Konkan region respondents.

The annual income levels of the respondents varied significantly between the two regions. In the Konkan region, most respondents have marginal land holdings and rely primarily on agriculture for their livelihood, resulting in lower income levels. Conversely, in the Marathwada region, respondents generally possess semi-medium to medium land holdings and supplement their income with additional activities such as dairy farming. This diversification of income sources contributes to higher overall income levels in Marathwada.

The findings are similar to the findings of Praveenbabu *et al.* (2016) [9], Babu (2019) [3] and Singh (2020) [11]. However, dissimilar results observed by Rathod *et al.* (2013) [10].

Mass media exposure

The data presented in Table 5 revealed that out of 280 respondents, 63.57 per cent respondents were reported to have medium level of mass media exposure, whereas, 17.50 per cent respondents reported to have low level of mass media exposure and remaining 18.93 per cent respondents were observed in high level of mass media exposure.

A close observation of this Table shows that, majority of respondents from both Konkan and Marathwada region respondents were observed in medium level of mass media exposure i.e. 56.42 per cent and 70.72 per cent, respectively. Further noted that, 24.29 per cent and 13.57 per cent of respondents reported to have high level of mass media exposure in Konkan and Marathwada region, respectively. In Konkan region 42.86 per cent beneficiary and 5.72 per cent non-beneficiary respondents had high mass media exposure, whereas, in Marathwada region 27.14 per cent beneficiary respondents had high mass media exposure but in case of non-beneficiary not a single one had high exposure to mass media. From the above data it can be conclude that, beneficiary respondents had more mass media exposure than non-beneficiary respondents in the study area.

Mass media exposure among the beneficiary farmers is relatively high, particularly due to their participation in training sessions conducted by KVK (Krishi Vigyan Kendra) scientists in NICRA (National Innovations on Climate Resilient Agriculture) implemented villages. These training sessions have likely educated farmers on the use of mobile apps, toll-free numbers, and farm broadcasts via TV and radio. Consequently, beneficiary farmers exhibit medium to high levels of mass media exposure, in contrast to non-beneficiary farmers who might not have had the same level of access to these resources.

The present findings are relevant to findings reported by Kiranmayi (2013) [5], Devi *et al.* (2013) [4], Praveenbabu *et al.* (2016) [9] and Kumar (2022) [6] but slightly dissimilar with results of Babu (2019) [3].

Table 1: Distribution of respondents according to their age (n =280)

Sr. No.	Age (years)	Konkan region						Marathwada region						Grand Total	
		Beneficiary		Non-beneficiary		Total		Beneficiary		Non-beneficiary		Total			
		f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Young (< 40)	11	15.71	12	17.14	23	16.43	18	25.71	16	22.86	34	24.29	57	20.36
2.	Middle age (40 to 59)	49	70.00	42	60.00	91	65.00	39	55.71	53	75.71	92	65.71	183	65.35
3.	Old (> 59)	10	14.29	16	22.86	26	18.57	13	18.58	01	1.43	14	10.00	40	14.29
	Total	70	100	70	100	140	100	70	100	70	100	140	100	280	100

Mean= 49.50, S.d. = 9.29, f = frequency, % = per cent

Table 2: Distribution of respondents according to their level of education (n =280)

Sr. No.	Education (std)	Konkan region						Marathwada region						Grand Total	
		Beneficiary		Non-beneficiary		Total		Beneficiary		Non-beneficiary		Total			
		f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Pre-primary (up to 4th)	1	1.43	14	20.00	15	10.71	4	5.71	2	2.85	6	4.29	21	7.50
2.	Primary (5th-7th)	13	18.57	20	28.57	33	23.58	12	17.14	8	11.43	20	14.29	53	18.92
3.	Secondary (8th-10th)	39	55.72	24	34.29	63	45.00	38	54.29	30	42.86	68	48.57	131	46.79
4.	Higher secondary (11th-12th)	12	17.14	10.	14.28	22	15.71	7	10.00	10	14.29	17	12.14	39	13.93
5.	Graduate (13thto 15th)	5	7.14	-	--	5	3.58	7	10.00	20	28.57	27	19.28	32	11.43
6.	Post-graduate	-	--	2	2.86	2	1.43	2	2.86	-	--	2	1.43	4	1.43
	Total	70	100	70	100	140	100	70	100	70	100	140	100	280	100

f = frequency, % = per cent

Table 3: Distribution of respondents according to their size of land holding (n =280)

Sr. No.	Land holding (ha)	Konkan region						Marathwada region						Grand Total	
		Beneficiary		Non-beneficiary		Total		Beneficiary		Non-beneficiary		Total			
		f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Marginal (Up to 1.00)	42	60.00	56	80.00	98	70.00	3	4.29	4	5.71	7	5.00	105	37.50
2.	Small (1.01 to 2.00)	19	27.14	10	14.28	29	20.71	19	27.14	14	20.00	33	23.57	62	22.14
3.	Semi-medium (2.01 to 4.00)	5	7.14	4	5.72	9	6.43	25	35.71	44	62.86	69	49.29	78	27.86
4.	Medium (4.01 to 10.00)	4	5.72	-	--	4	2.86	23	32.86	8	11.43	31	22.14	35	12.50
	Total	70	100	70	100	140	100	70	100	70	100	140	100	280	100

f = frequency, % = per cent

Table 4: Distribution of respondents according to their annual income (n =280)

Sr. No.	Annual income (Rs.)	Konkan region						Marathwada region						Grand Total	
		Beneficiary		Non-beneficiary		Total		Beneficiary		Non-beneficiary		Total			
		f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Low (< 54953)	2	2.86	4	5.71	6	4.29	2	2.86	3	4.28	5	3.57	11	3.93
2.	Medium (54953 to 546909)	66	94.28	65	92.86	131	93.57	43	61.43	57	81.43	100	71.43	231	82.50
3.	High (> 546909)	2	2.86	1	1.43	3	2.14	25	35.71	10	14.29	35	25.00	38	13.57
	Total	70	100	70	100	140	100	70	100	70	100	140	100	280	100

Mean = Rs.300931, S.d. = 245978, f = frequency, % = per cent

Table 5: Distribution of respondents according to their mass media exposure (n =280)

Sr. No.	Mass media exposure (score)	Konkan region						Marathwada region						Grand Total	
		Beneficiary		Non-beneficiary		Total		Beneficiary		Non-beneficiary		Total			
		f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Low (< 2.48)	4	5.71	23	32.86	27	19.29	2	2.86	20	28.57	22	15.71	49	17.50
2.	Medium (2.48 to 7.78)	36	51.43	43	61.42	79	56.42	49	70.00	50	71.43	99	70.72	178	63.57
3.	High (> 7.78)	30	42.86	4	5.72	34	24.29	19	27.14	-	--	19	13.57	53	18.93
	Total	70	100	70	100	140	100	70	100	70	100	140	100	280	100

Mean= 5.13, S.d. = 2.65, f = frequency, % = per cent

Conclusion

The study's findings highlight the significant impact of regional differences on the profile characteristics of farmers. Factors such as access to education, the fragmentation of land holdings, and the diversification of income sources play crucial roles in shaping the economic and social status of farmers in these regions. Furthermore, the role of extension services and training programs in enhancing farmers' awareness and adoption of modern agricultural practices underscores the importance of targeted interventions to improve agricultural productivity and sustainability.

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