

Profile Characteristics of Chilli Growers Affected by Climate Risk in Prakasam District of Andhra Pradesh

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ABSTRACT

Climate risk is one of the major worldwide ecological issues affecting agriculture. Chilli is largely produced in India and Andhra Pradesh. Chilli growers in Prakasam were affected due to climate risks like heavy rains, cyclones and droughts. Crop productivity is uncertain due to late arrival of monsoon. The present study was conducted to study the profile characteristics of chilli growers in Prakasam district of Andhra Pradesh during 2021-22 using *Ex-Post Facto* research design. Two mandals were purposively selected and two villages were selected from each mandal using simple random sampling procedure and thus making a total of four villages. From each selected village, 10 farm households with male, female and offspring involved in cultivating chilli crop were selected purposively and thus, a total of 40 farm households (male, female and offspring) were sampled for the study. Hence, from each village total 30 respondents (male, female and offspring) were selected and thus making total of 120 respondents. The results of the study revealed that most of the male and female chilli growers were middle aged (62.50% and 60.00%) and offspring were young aged (87.50%). Most of the male respondents had high school (35.00%) education, females had primary school (30.00%) education and offspring had intermediate (32.50%) education. Majority of the male, female and offspring chilli growers had medium (57.50%, 55.00% and 50.00%) farming experience, medium (50.00%, 50.00% and 42.50%) annual income, medium (67.50%, 57.50% and 62.50%) risk orientation, most of them were small farmers (35.00%, 35.00% and 45.00%), had medium (62.50%, 62.50% and 57.50%) farm power and machinery, medium (67.50%, 65.00% and 70.00%) level of sources of information, medium (60.00%, 57.50% and 67.50%) mass media exposure, medium (72.50%, 62.50% and 67.50%) extension contact and medium (67.50%, 62.50% and 72.50%) economic motivation respectively.

Keywords: *Climate risk, Chilli growers and Profile characteristics.*

Climate had a significant impact on agricultural operations. Climate risk is one of the major worldwide ecological issues affecting agriculture. Climate risk occurs because of natural disasters, greenhouse gas emissions, extreme high and low temperatures, change in water availability, sea level rise, deforestation, etc. Climate risks cause lot of damage to the humans, plants and animals. Agriculture and horticultural crops were also damaged to a greater extent due to these climate

risks. India is popular as the “Land of Spices”. Chillies, in particular, were in high demand on the global market. Andhra Pradesh is India’s leading producer of chilli with a total production of 7 lakh tonnes during 2021-22 and contributed to 37.35% of share in the country followed by Telangana, Madhya Pradesh, Karnataka and Orissa.

Chilli growers in Prakasam were affected due to climate risks like heavy rains, flash floods, cyclones

and droughts. Chilli growers were facing lot of problems like pest infestation, viral diseases on crop, crop damage, failure of crop and price variations of chilli in the market due to climate risks. Most of the chilli growers struggle to comprehend various aspects of climate and lacks a proper insight into the causes of climate risks and their potential future ramifications. The present study analyzed the profile characteristics of chilli growers affected by climate risk in Prakasam district of Andhra Pradesh.

MATERIAL AND METHODS

The study was conducted in Prakasam district of Andhra Pradesh during the year 2021-22 using *Ex-Post Facto* research design. Two mandals viz., Dornala and Inkollu were purposively selected. Two villages were selected from each mandal using simple random sampling procedure and thus making a total of four villages. From each selected village, 10 farm households with male, female and offspring involved in cultivating chilli crop were selected purposively and thus, a total of 40 farm households (male, female and offspring) were sampled for the study. Hence, from each village total 30 respondents (male, female and offspring) were selected and thus making total of 120 respondents. Pre-tested interview schedule was used to collect the primary data and statistical tools like Arithmetic mean, standard deviation, frequency and percentage analysis, correlation analysis, multiple regression analysis and Friedman test were used.

RESULTS AND DISCUSSION

It was clear from the Table 1 that less than two third (62.50%) of the male and three fifth (60.00%) of the female chilli growers belonged to middle age, followed by old age (27.50% and 22.50%) and young age (10.00% and 17.50%) respectively. In case of offspring chilli growers more than four-fifth (87.50%) of them belonged to young

age and the remaining belonged to middle age (12.50%). Friedman test proven significant difference in age levels between male, female and offspring respondents ($\chi^2=71.250$, $p=0.0000$). Thus, it could be inferred that, in all the three groups of respondents majority of them were middle aged (45.00%), followed by young age (38.33%) and old age (16.67%). The results were in line with Raghuvanshi and Ansari (2017), Bhaskar *et al.* (2019) and Bari (2020). The reason for above trend might be due to that middle aged people could work actively and efficiently with more interest and enthusiasm than younger and older ones.

It was evident from the Table 1 that more than one-third (35.00%) of the male chilli growers had high school education followed by middle school (22.50%) graduation (12.50%), an equal proportion of 10.00 per cent each fell in the categories of primary school and intermediate education, an equal proportion of 5.00 per cent each fell in the categories of illiterate and functional literate and none in post-graduation. In case of female chilli growers more than one-fourth of them had primary school (30.00%) education, followed by high school (25.00%), intermediate (15.00%), an equal proportion of 10.00 per cent each fell in the categories of illiterate and middle school education, graduation (7.50%), functional literate (2.50%) and none in post-graduation. Whereas almost one third (32.50%) of the offspring chilli growers had intermediate education, followed by graduation (25.00%), primary school (17.50%), high school (12.50%), middle school (7.50%), post-graduation (5.00%) and none in illiterate and functional literate. Friedman test proven significant difference in education levels between male, female and offspring respondents ($\chi^2=17.510$, $p=0.0002$). It could be seen that in all the three groups of respondents majority of them had high school (24.17%) education, an equal proportion of 19.17

per cent each fell in the categories of primary school and intermediate education, graduation (15.00%), middle school (13.33%), illiterate (5.00%), functional literate (2.50%) and post-graduation (1.67%). The above phenomenon could be attributed to the fact that, in current situation most of the villages have high schools and educational facilities have been increased. Some of the farmers who could afford for higher studies had completed graduation also. The findings were in supportive of the findings of Nwobodo and Agwu (2015) and Reddy *et al.* (2022).

It was obvious from Table 1 that nearly three fifth of the male chilli growers had medium farming experience (57.50%) followed by high (25.00%) and low (17.50%) farming experience. Less than three fifth of the female respondents had medium farming experience (55.00%) and an equal proportion of 22.50 per cent each fell in the categories of high and low farming experience. In case of offspring chilli growers half (50.00%) of them had medium farming experience, followed by low (30.00%) and high (20.00%) farming experience. Friedman test proven significant difference in farming experience between male, female and offspring respondents ($\chi^2=41.776$, $p=0.0000$). It could be interpreted that, in all the three groups of respondents more than half of the chilli growers had medium (54.17%) farming experience, followed by low (23.33%) and high (22.50%) farming experience. The above phenomenon might be because of most of the respondents were middle aged. The results were in line with the findings of Bari (2020) and Yadav (2021).

Half of each of the male and female chilli growers had medium annual income (50.00%) followed by low (27.50%) and high (22.50%) annual income. In case of offspring chilli growers more than two fifth (42.50%) of them had medium level of annual income, followed by low (40.00%) and high (17.50%) annual income. Friedman test proven that

no significant difference in annual income levels between male, female and offspring respondents ($\chi^2=4.505$, $p=0.1051$). It could be inferred that in all the three groups of chilli growers majority (47.50%) of them had medium level of annual income, followed by low (31.67%) and high (20.83%) levels of annual income. The reason might be because of farmers were getting less profit and large number of the farmers were not involved in other occupations. The findings were in line with findings of Sangeetha (2013) and Markana (2015).

More than two third of the male chilli growers had medium (67.50%) risk orientation, followed by high (17.50%) and low (15.00%) risk orientation. Less than three fifth (57.50%) of the female and more than three fifth (62.50%) of the offspring chilli growers had medium risk orientation, followed by low (27.50% and 20.00%) and high (15.00% and 17.50%) risk orientation respectively. Friedman test proven that no significant difference in risk orientation between male, female and offspring respondents ($\chi^2=5.891$, $p=0.0526$). It could be observed that in all the three groups of respondents more than half of them had medium (62.50%) risk orientation, followed by low (20.83%) and high (16.67%) risk orientation. Similar results were observed in the findings of Gowda *et al.* (2011) and Parganiha (2016)

More than one third of each of the male and female chilli growers was small farmers (35.00%), followed by large (20.00%) farmers, medium (17.50%), marginal (15.00%) and semi-medium farmers (12.50%). In case of offspring chilli growers less than half (45.00%) of them were small farmers, followed by semi-medium (20.00%), medium (15.00%), marginal (12.50%) and large farmers (7.50%). Friedman test proven that no significant difference in farm size between male, female and offspring respondents ($\chi^2=1.661$, $p=0.4359$). It could be interpreted that in all the three groups of

Table 1. Distribution of respondents according to their profile characteristics (N=120)

S. No.	Independent variable	Category	Male		Female		Offspring		Total		Friedman Test statistics			
			(n ₁ =40)		(n ₂ =40)		(n ₃ =40)		(N=120)					
			F	%	F	%	F	%	F	%				
1	Age	Young (Upto 35 years)	4	10.00	7	17.50	35	87.50	46	38.33	$\chi^2=71.250^{**}$ p=0.0000			
		Middle (36 to 55 years)	25	62.50	24	60.00	5	12.50	54	45.00				
		Old (56 years and above)	11	27.50	9	22.50	--	--	20	16.67				
		Total	40	100.00	40	100.00	40	100.00	120	100.00				
2	Education	Illiterate	2	5.00	4	10.00	--	--	6	5.00	$\chi^2=17.510^{**}$ p=0.0002			
		Functionally	2	5.00	1	2.50	--	--	3	2.50				
		Literate												
		Primary	4	10.00	12	30.00	7	17.50	23	19.17				
		School (1 st -5 th)												
		Middle School (6 th - 7 th)	9	22.50	4	10.00	3	7.50	16	13.33				
		High School (8 th - 10 th)	14	35.00	10	25.00	5	12.50	29	24.17				
		Intermediate	4	10.00	6	15.00	13	32.50	23	19.17				
		Graduation	5	12.50	3	7.50	10	25.00	18	15.00				
		Post-Graduation	--	--	--	--	2	5.00	2	1.67				
		Total	40	100.00	40	100.00	40	100.00	120	100.00				
		3	Farming experience	Low	7	17.50	9	22.50	12	30.00		28	23.33	$\chi^2=41.776^{**}$ p=0.0000
				Medium	23	57.50	22	55.00	20	50.00		65	54.17	
High	10			25.00	9	22.50	8	20.00	27	22.50				
Total	40			100.00	40	100.00	40	100.00	120	100.00				
Mean	4.05			3.05		2.28								
SD	0.71			1.09		1.24								
4	Annual Income	Low (<Upto 3 lakhs)	11	27.50	11	27.50	16	40.00	38	31.67	$\chi^2=4.505$ p=0.1051			
		Medium (4-6 lakhs)	20	50.00	20	50.00	17	42.50	57	47.50				
		High (> 6 lakhs)	9	22.50	9	22.50	7	17.50	25	20.83				
		Total	40	100.00	40	100.00	40	100.00	120	100.00				

5	Risk orientation	Low	6	15.00	11	27.50	8	20.00	25	20.83	$\chi^2=5.891$ p=0.0526
		Medium	27	67.50	23	57.50	25	62.50	75	62.50	
		High	7	17.50	6	15.00	7	17.50	20	16.67	
		Total	40	100.00	40	100.00	40	100.00	120	100.00	
		Mean	14.28		12.9		13.48				
		SD	2.3		2.75		2.86				
6	Farm Size	Marginal (Upto 2.5 acres)	6	15.00	6	15.00	5	12.50	17	14.17	$\chi^2=1.661$ p=0.4359
		Small (2.5 to 5 acres)	14	35.00	14	35.00	18	45.00	46	38.33	
		Semi-medium (5 to 7.5 acres)	5	12.50	5	12.50	8	20.00	18	15.00	
		Medium (7.5 to 10 acres)	7	17.50	7	17.50	6	15.00	20	16.67	
		Large (> 10 acres)	8	20.00	8	20.00	3	7.50	19	15.83	
		Total	40	100.00	40	100.00	40	100.00	120	100.00	
7	Farm power and machinery	Low	8	20.00	8	20.0	8	20.0	24	20.0	$\chi^2=4.616$ p=0.0994
		Medium	25	62.50	25	62.5	23	57.5	73	60.8	
		High	7	17.50	7	17.5	9	22.5	23	19.2	
		Total	40	100.00	40	100.0	40	100.0	120	100.0	
		Mean	22.50		22.5		20.48				
		SD	5.93		5.91		6.16				
8	Sources of agricultural information	Low	7	17.5	8	20.0	5	12.5	20	16.7	$\chi^2=15.257^{**}$ p=0.0005
		Medium	27	67.5	26	65.0	28	70.0	81	67.5	
		High	6	15.0	6	15.0	7	17.5	19	15.8	
		Total	40	100.0	40	100.0	40	100.0	120	100.0	
		Mean	26.33		24.9		27.7				
		SD	3.57		3.47		3.72				
9	Mass media exposure	Low	7	17.5	9	22.5	3	7.5	19	15.8	$\chi^2=52.300^{**}$ p=0.0000
		Medium	24	60.0	23	57.5	27	67.5	74	61.7	
		High	9	22.5	8	20.0	10	25.0	27	22.5	
		Total	40	100.0	40	100.0	40	100.0	120	100.0	
		Mean	12.45		10.93		14.28				
		SD	1.89		1.79		1.65				
10	Extension contact	Low	4	10.0	10	25.0	7	17.5	21	17.5	$\chi^2=19.693^{**}$ p=0.0000
		Medium	29	72.5	25	62.5	27	67.5	81	67.5	
		High	7	17.5	5	12.5	6	15.0	18	15.0	
		Total	40	100.0	40	100.0	40	100.0	120	100.0	
		Mean	18.93		15.9		17.73				
		SD	3.02		3.28		2.97				
11	Economic motivation	Low	8	20.0	11	27.5	5	12.5	24	20.0	$\chi^2=3.361$ p=0.1863
		Medium	27	67.5	25	62.5	29	72.5	81	67.5	
		High	5	12.5	4	10.0	6	15.0	15	12.5	
		Total	40	100.0	40	100.0	40	100.0	120	100.0	
		Mean	13.78		13.68		14.18				
		SD	2.36		2.45		2.6				

respondents nearly two fifth of them were small farmers (38.33%), followed by medium (16.67%), large (15.83%), semi-medium (15.00%) and marginal farmers (14.17%). The reason was due to fragmentation of land across generations in the family. The results were similar to the findings of Parganiha (2016) and Hussain *et al.* (2020).

Less than two-third of the each of the male and female chilli growers had medium (62.50%) farm power and machinery, followed by low (20.00%) and high (17.50%) farm power and machinery. In case of offspring chilli growers less than three fifth of them had medium (57.50%) farm power and machinery, followed by high (22.50%) and low (20.00%) farm power and machinery. Friedman test proven that there was statistically no significant difference in farm power and machinery between male, female and offspring respondents ($S_{\chi^2}=4.616$, $p=0.0994$). It could be observed that in all the three groups of respondents majority (60.83%) of them had medium farm power and machinery, followed by low (20.00%) and high (19.17%) farm power and machinery. The results were in line with the findings of Sangeetha (2013) and Shrivastava (2018). A large number of farmers were using M.B. plough, cultivator, sprayer, tractor, pump set. A least number of farmers were using animal power, rotavator and drippers in their farm. No farmer was using rain gauge which would have been because of lack of awareness.

More than two third of the male (67.50%) and less than two third (65.00%) of female chilli growers had medium level of sources of sources of agricultural information, followed by low (17.50% and 20.00%) and high (15.00% and 15.00%) respectively. In case of offspring chilli growers more than two third of them had medium (70.00%) level of sources of agricultural information, followed by high (17.50%) and low (12.50%) level of sources of agricultural information. Friedman test proven that

there was statistically significant difference in sources of agricultural information between male, female and offspring respondents ($c^2=15.257$, $p=0.0005$) It could be observed that in all the three groups of respondents more than two third of them had medium (67.50%) level of sources of agricultural information, followed by low (16.67%) and high (15.83%) level of sources of agricultural information. The findings were in consonance to the findings of Sanap (2015) and Jangwad (2018). The reason might be due to fact that most of the farmers had medium contact with extension functionaries.

Three fifth of the male chilli growers had medium (60.00%) mass media exposure, followed by high (22.50%) and low (17.50%) mass media exposure respectively. Less than three fifth of the female chilli growers had medium (57.50%) mass media exposure, followed by low (22.50%) and high (20.00%) mass media exposure. In case of offspring chilli growers, a little more than two third of them had medium (67.50%) mass media exposure, followed by high (25.00%) and low (7.50%) mass media exposure. Friedman test proven significant difference in mass media exposure between male, female and offspring respondents ($c^2=52.300$, $p=0.0000$). It could be inferred that in all the three groups of respondents more than three fifth of them had medium (61.67%) mass media exposure, followed by high (22.50%) and low (15.83%) mass media exposure. Similar results were found in the findings of Kumari (2014) and Markana (2015). A large number of farmers use television, mobile apps and read newspaper. A very few farmers were reading magazines, participating in kisan melas and listening to radio. None of them were reading books on agriculture like 'Vyavasaya Panchangam'.

Less than three-fourth of the male chilli growers had medium (72.50%) extension contact, followed by high (17.50%) and low (10.00%)

extension contact. More than half of the female and offspring chilli growers had medium (62.50% and 67.50%) extension contact, followed by low (25.00% and 17.50%) and high (12.50% and 15.00%) extension contact respectively. Friedman test proven significant difference in extension contact between male, female and offspring respondents ($\chi^2=19.693$, $p=0.0000$) It could be found that among all the three categories of respondents more than two third (67.50%) of them had medium extension contact, followed by low (17.50%) and high (15.00%) extension contact. The results were in concordance with the findings of Sanap (2015) and Yadav (2021). Among informal sources of contact, almost all the farmers had extension contact with friends, relatives and neighbours, a large number of farmers had contact with progressive farmers and input dealers. Among formal sources of contact, a few farmers had extension contact with village secretary, Village Agricultural Assistant, Agricultural Extension Officer, Mandal Agricultural Officer, Horticulture Officer and scientists. No farmer had contact with Assistant Director of Agriculture and Joint Director of Agriculture.

More than two third (67.50%) of the male and more than three fifth (62.50%) of the female chilli growers had medium economic motivation, followed by low (20.00% and 27.50%) and high (12.50% and 10.00%) economic motivation respectively. Nearly three fourth of the offspring chilli growers had medium (72.50%) economic motivation, followed by high (15.00%) and low (12.50%) economic motivation. Friedman test proven no significant difference in economic motivation between male, female and offspring respondents ($\chi^2=3.361$, $p=0.1863$). It could be interpreted that, in all the three categories of respondents majority (67.50%) of them had medium economic motivation, followed by low (20.00%) and high (12.50%) economic motivation. The findings

were congruence with the findings of Sanap (2015) and Jangwad (2018).

CONCLUSION

The findings of the study revealed that most of the male and female chilli growers were middle aged and offspring were young aged. Most of the male respondents had high school education, females had primary school education and offspring had intermediate education. Majority of the male, female and offspring chilli growers had medium farming experience, medium annual income, medium risk orientation, most of them were small farmers, had medium farm power and machinery, medium level of sources of information, medium mass media exposure and medium economic motivation.

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