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Cotton Marketing: Influence of Certain Demographic Factors in Telangana

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Abstract

The current study attempts to understand the demographic variables and their influence on cotton's marketing problems in three Telangana state districts. These three districts are located in three agroclimatic zones, i.e. Adilabad (NT Zone), Warangal (CT Zone) and Mahabubnagar (ST Zone). The study is based on primary and secondary data collected during the agricultural years 2021-22. Secondary data was collected from the agricultural marketing board, CCI, Telangana State Agricultural Department. Data is processed using descriptive analytical tools and techniques. Most of the farmers, 170 (37.8%), have 11-15 years of experience, followed by 6-10 years (18.9%) and 16-25 years (17.3%), and the farmers with less than five years of experience in farming account for 11.1%. The farmers with more than 25 years of experience are showing interest in cultivating the cotton crop, accounting for 14.9%. Most of the farmers 139 (30.9%) have invested in cotton crop production below one lakh, followed by 2-4 lakhs 117 (26%). Only farmers could invest more than ten lakhs, numbered 41 (9.1%). Most of the farmers are cultivating cotton in an area of less than two acres of land 177 (39.3%), followed by 2-5 acres of land holdings 125 (27.8%) and 5-10 acres holdings 73 (16.2%). The cotton-growing farmers with over 20 acres of land holdings are about 20 (4%). It is also observed that newspapers ranked first among the three impersonal sources of cotton marketing information, followed by radio and television. In contrast, the market committee ranked first out of the six formal personal sources of information, followed by CCI and e-NAM. The data from the informal personal sources of information (nine sources) revealed that cooperative marketing occupied first rank, followed by progressive farmers, relatives, cotton grower associations, farmer's friends, neighbours, trading companies, and commission agents.

***Key words*:** Cotton farmers, Cotton marketing, Marketing problems, Telangana

Cotton is cultivated in tropical and subtropical regions comprising more than 80 countries around the globe. Cotton, scientifically referred to as *Gossypium* spp. bears two types of fibres, viz., long and short fibres and the lint is separated by ginning. The same was marketed as a raw material to the textile industries within and outside the country. India significantly improved crop yields by introducing genetically modified (GM) cotton, technically known as Bt cotton. Cotton varieties or hybrids with long-staple cotton are mostly cultivated, amounting to half of India's total cotton production. The chief states contributing to cotton production are Maharashtra (42.29 lakh ha), Gujarat (25.49 lakh ha), Telangana (20.23 lakh ha), Karnataka (8.21 lakh ha) and Rajasthan (6.83 lakh ha) [1]. India has ranked first place during the year 2021-22in the acreage of world cotton, estimated at 127.39 lakh, which accounts for 36% of the world's area of 333 lakh hectares. The productivity of the cotton crop is about 510 kg/ha, ranked 38th at the international level [2].

According to the USDA, Global 2023-24 cotton area and production are projected as 32.4 million hectares (80.06 million acres) and 116.8 million bales of 217.72 Kg each compared to previous year 118 lakh bales which is 1.2 lakh bales (-1.02%) below the 2022-23 estimates of cotton production led by USA and Pakistan. China is projected at 27 lakh bales in 2023-24 followed by India (25.50 million bales), United States (16.50 million bales), Brazil (13.30 million bales) and Pakistan (6.50 million bales). During 2023-24, cotton area in China and India are projected at 2.95 million hectares (7.28 million acres) and 12.40 million hectares (30.64 million acres) respectively. According to the 3rd advance estimates, Telangana cotton production estimate was 58.54 lakh bales for 2022-23 as against 48.08 lakh bales in 2021-22.

In Telangana state during 2023-24 area under cotton as on 2nd August was 43,38,200 acres as against 45,11,488 acres during 2022-23. Among the districts, Nalgonda stood first with 5,86,453 acres followed by Adilabad (3,85,396 acres), Asifabad (3,35,945 acres), Sangareddy (2,41,748 acres) and Narayanpet (3,29,971 acres) [3]. The low levels of cotton productivity are associated with untimely rains and attacks of pests and diseases; minor pests are becoming major ones, and abiotic stresses are the major hurdles for cotton farming not only by reducing the productivity per unit area but also declining the quality of the raw kapas, finally fetching low price in the markets. The intermediaries in the cotton markets are also playing a key role

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in deciding the market price of the produce. This research study was conducted in the three districts of Telangana to understand the reasons for low prices in the market for cotton growers.

MATERIALS AND METHODS

Sampling procedure

The cotton growers are selected from each district 150 spread across three districts, each district 33.3%, in Telangana state. We used a saturated sample to obtain optimal data by interviewing 450 respondents. In order to improve the performance of the field surveys, a pre-test was conducted by employing a questionnaire. Consequently, a complete statement still needs to be completed, and only a few corrections were carried out in the final preparation of interview schedules for all the respondents. The secondary information collected directly on the Web from different firms' websites comes under study as physically visiting the CCIs and agricultural market yards.

Measurement

The primary data collected from farmers was analyzed statistically, and various variables were compared between three districts, viz., Warangal, Adilabad and Mahabubnagar, through the Chi-square test [4] and interpreted for appropriate conclusions [5]. The investigator applied descriptive statistics analysis [6], percentile analysis [7], and cross-tabulation analysis [8]. Further, the cross-tabulations are measured to the demographic factors of the cotton farmers. The collected data was further analyzed through various computer software: STATA, SPSS and MS Excel.

Objective of the study

1. To study the role of cotton in Indian Agriculture in general and TS in particular.
2. To study the demographic variables and identify the problems in marketing cotton by the cotton growers in TS.

Null hypothesis

There is no relationship between demographic variables and source of finance and method of selling characteristics of cotton farmers.

Empirical hypothesis

There is a positive relationship between demographic variables and source of finance and method of selling characteristics of cotton farmers.

The null hypothesis was rejected, and the original proposition that "There is a significant relationship between demographic variables and source of finance and method of selling characteristics of cotton farmers was accepted.

RESULTS AND DISCUSSION

The data depicted in (Table 1) shows the farmers' cotton farming experience in three Telangana state districts. Most of the farmers 170 (37.8%) have 11-15 years of experience, followed by 6-10 years (18.9%) and 16-25 years (17.3%). The farmers with less than five years of farming experience account for 11.1%. The farmers with more than 25 years of experience are showing interest in cultivating the cotton crop, accounting for 14.9%. This segment of the farmers contributes constantly to the production of cotton crops by facing all the problems occurring during the cultivation of cotton crops across the three districts. Among the districts, Mahabubnagar has more farmers having experience in cotton farming from 11 to 15 years, followed by Adilabad and Warangal districts. Adilabad district farmers show more interest in cotton cultivation, followed by Warangal and Mahabubnagar districts.

Table 1 Demographic facts - Experience of the farmers in cotton farming in Warangal, Adilabad and Mahabubnagar districts of Telangana

Variable (Experience in cotton farming)	Districts			Frequency	Percent
	Warangal	Adilabad	Mahabubnagar		
Up to 5 years	16	19	15	50	11.1
6-10 years	29	31	25	85	18.9
11-15 years	53	57	60	170	37.8
16-25 years	24	28	26	78	17.3
Above 25 years	28	15	24	67	14.9
Total	150	150	150	450	100

Table 2 Demographic facts - investment in cotton production by the farmers in Warangal, Adilabad and Mahabubnagar districts of Telangana

Variable (Investment)	Districts			Frequency	Percent
	Warangal	Adilabad	Mahabubnagar		
Up to one lakh	49	44	46	139	30.9
2-4 lakh	37	46	34	117	26.0
5-7 lakh	34	31	30	95	21.1
8-10 lakh	19	21	18	58	12.9
>10 lakh	11	8	22	41	9.1
Total	150	150	150	450	100

The data portrayed in (Table 2) shows the investment in cotton production by the cotton growers of the three districts of Telangana. Most of the farmers, 139 (30.9%), have invested in cotton crop production below one lakh, followed by 2-4 lakhs 117 (26%). Only farmers could invest more than ten lakhs, numbered 41 (9.1%). A trend was observed among the three districts: the number of farmers increased with decreased investment and vice versa. Several farmers (30.9%) invested less (up to one lakh) compared with 9.1% of farmers investing more (more than ten lakhs), emphasizing the need for credit assistance by government institutions for economically poor farmers. Enhanced income levels drive a farmer to search for new information for applying the same in producing quality cotton. These results are in tune with previous researchers [9]. This information could have enhanced marketability and higher prices for the farmers.

Table 3 Demographic facts - cotton cultivated area of the farmers in Warangal, Adilabad and Mahabubnagar district of Telangana

Variable cultivated area	Districts			Frequency	Percent
	Warangal	Adilabad	Mahabubnagar		
< 2 acres	57	59	61	177	39.3
2-5 acres	44	40	41	125	27.8
5-10 acres	22	27	24	73	16.2
11-15 acres	13	9	8	30	6.7
15- 20 acres	9	8	8	25	5.6
>20 acres	5	7	8	20	4.4
Total	150	150	150	450	100

The above (Table 3) shows the farmers' cotton cultivated area in three Telangana districts. Most of the farmers are cultivating cotton in an area of less than two acres of land 177 (39.3%), followed by 2-5 acres of land holdings 125 (27.8%) and 5-10 acres holdings 73 (16.2%). The cotton-growing farmers with over 20 acres of land holdings are about 20 (4%). It was also observed from the data that fewer farmers and vice versa have cultivated more cotton crops. Table 4.13 revealed that three district farmers were cultivating cotton on their lands. Mahabubnagar is holding more farmers below two acres of cotton-cultivated land, followed by Adilabad and Warangal districts. Even more than 20 acres of cotton field was also cultivated by the Mahabubnagar district farmers, followed by Adilabad and Warangal district farmers.

Innovation Forum opined that nearly 90% of the cotton-growing farmers cultivated cotton in less than two hectares (ha) of land and are located in developing countries viz., Southeast Asia, Central and West Asia, and Africa, including another 30 countries considered LDHC (Low Human Development Countries) under HDI (Human Development Index) [10]. The results followed other researchers [11], who also opined that farming experience, education, area under cotton cultivation and distance of agricultural farm from wholesale market significantly affect the marketed surplus of seed cotton. In contrast, seed cotton's marketing cost and sale price were recorded as non-significant.Moreover, the small landholders were incapable of utilizing the hired labour. Therefore, they were compelled to work themselves from sowing the seed to marketing their raw cotton. Due to unawareness and slackness on their part during pesticide spraying, they could not take the safety measures essential during spraying; as a result, they are facing health hazards, ultimately disturbing their health and causing more medical bills, as earlier reported [12] leading to more debts and taking money from lenders with more interest.

Table 4 Source of market information received by the cotton farmers of three districts of Telangana state

S. No.	Source of Information	Warangal			Adilabad			Mahabubnagar		
		Total	Mean	Rank	Total	Mean	Rank	Total	Mean	Rank
A	Impersonal Sources									
	1. Radio	374	2.49	2	382	2.54	2	374	2.49	2
	2. Newspapers	376	2.5	1	153	1.02	3	150	1	3
	3. Television	150	1	3	371	2.47	1	376	2.5	1
B	Formal personal information									
	4. Central lab research institute	0	0	0	0	0	0	0	-	6
	5. e-NAM	693	4.62	3	695	4.62	3	693	4.62	3
	6. Directorate of marketing and information	0	0	-	0	0	-	0	-	4
	7. Directorate of cotton development	0	0	-	0	0	-	0	-	5
	8. Market committee	843	5.62	1	848	5.62	1	843	5.62	1
	9. CCI	714	4.76	2	729	4.76	2	714	4.76	2
C	Informal personal sources									
	10. Trading companies	300	2	7	310	2	7	899	5.99	3
	11. Commission agents	150	1	8	161	1	8	1091	7.27	1
	12. Cooperative marketing societies	1091	7.27	1	1103	7.27	1	1074	7.16	2
	13. Cotton grower associations	815	5.43	4	830	5.43	4	665	4.43	5
	14. Progressive farmers	1074	7.16	2	1090	7.16	2	815	5.43	4
	15. Farmer friends	665	4.43	5	682	4.43	5	300	2	7
	16. Relatives	899	5.99	3	907	5.99	3	150	1	8
	17. Neighbours	450	3	6	467	3	6	450	3	6
	18. Other sources	0	0	9	18	0	9	0	0	9

The above (Table 4) depicts the source of information received by the cotton-growing farmers of Warangal, Adilabad and Mahabubnagar districts. The source of information has been divided into three categories viz., impersonal (A – radio, newspapers and Television), formal personal (B – central lab research institute, e-NAM, directorate of marketing & information, directorate of cotton development, market committee and CCI) and informal personal sources (C – trading companies, commission agents, cooperative marketing societies, cotton grower associations, progressive farmers, farmer friends, relatives, neighbours and other sources) of information. Experiences from developed and developing countries indicate that farmers' access to good quality information has benefited them in terms of increased agricultural production and reduction in the cost of production [13,14]. A study on the entrepreneurial behaviour of cotton farmers in Surat district of South Gujarat revealed one of the major constraints that are becoming hindering factors in the growth and development of cotton growers as entrepreneurs in the MSP is low, unavailability of market information, poor

financial assistance by the credit lending institutions, and unavailability of local markets [15]. The data from the Warangal district of Table 4.0 reveals that of the three impersonal sources of information, newspapers ranked first, followed by radio and television. Whereas the districts Adilabad and Mahabubnagar revealed that television is the first source of information, followed by radio and newspapers. These results are in tune with scientific orientation of previous researchers [16], which is positively correlated with mass media as Similar results were also reported by previous workers [17, 18]. Out of the six formal personal sources of information, the market committee ranked first, followed by CCI and e-NAM. The other four sources mentioned for information are unknown to farmers of Warangal, Adilabad and Mahabubnagar districts. The data from the informal personal sources of information (nine sources) revealed that cooperative marketing occupied first rank, followed by progressive farmers, relatives, cotton grower associations, farmers friends, neighbours, trading companies, and commission agents in both Warangal and Adilabad districts. Whereas the farmers from Mahabubnagar district optioned commission agents as the first source of information, followed by cooperative marketing societies, trading companies, progressive farmers, cotton growers' associations, neighbours, farmers' friends and relatives. Study to understand the private or paid agricultural extension and advisory services that are provided by the retired professors of the state agricultural universities (SAUs), professionals from the department of extension, financial institutions and other private organizations like e-choupal, Mahindra Shubhlabh, Mahindra Samriddhi, Chambal Uttam Bandhan and Tata Kisan Kendra are involving the transfer of technical information with market support [19]. These agribusiness companies give services exclusively for highly remunerative crops. They also establish systems to provide a continuous and regular supply of inputs to the farmers in the desired quality required quantity at low prices.

Table 5 Cross tabulation on the method of selling cotton in the Warangal, Adilabad and Mahabubnagar districts markets

Demographic description		Sample	Direct market	Pre agent	Retailers	Chi-Square
Experience	Up to 5 years	50	50	0	0	
		-11.11%	100.00%	0.00%	0.00%	
	6- 10 years	85	85	0	0	$\chi^2 = 432.88$
		-18.88%	100.00%	0.00%	0.00%	df = 8
	11 - 15 years	170	46	117	7	$\rho = 0.000$
		-37.77%	27.10%	68.80%	4.10%	
	16-25 years	78	0	58	20	
		-17.33%	0.00%	74.40%	25.60%	
	26 years and above	67	9	12	46	
		-14.88%	13.40%	17.90%	68.70%	
Investment	up to 1 lakh	139	138	1	0	
		-30.88%	-99.30%	-0.70%	0.00%	
	2-4 lakh	117	48	62	7	$\chi^2 = 426.44$
		-26%	-41.00%	-53.00%	-6.00%	df = 8
	5-7 lakh	95	0	84	11	$\rho = 0.000$
		-21.11%	0.00%	-88.40%	-11.60%	
	8-10 lakh	58	0	30	28	
		-12.88%	0.00%	-51.70%	-48.30%	
	above 10 lakh	41	4	10	27	
		-9.11%	-9.80%	-24.40%	-65.90%	
Cultivated area	below 2 acres	30	30	0	0	
		-6.66%	100.00%	0.00%	0.00%	$\chi^2 = 444.85$
	2 to 5 acres	125	111	14	0	df = 10
		-27.77%	88.80%	11.20%	0.00%	$\rho = 0.000$
	5 to 7 acres	177	30	142	5	
		-39.33%	16.90%	80.20%	2.80%	
	7 to 10 acres	73	8	31	34	
		-16.22%	11.00%	42.50%	46.60%	
	10 to 20 acres	25	4	0	21	
		-5.55%	16.00%	0.00%	84.00%	
	Above 20 acres	20	7	0	13	
		-4.44%	35.00%	0.00%	65.00%	

From the above Cross-tabulation (Table 5) show the farmers' response on 'how the method of selling raw cotton in the markets' influences the demographic variables viz., districts, educational qualifications, age of the farmers, experience, investment and area of the land against direct marketing, pre-agent and retailer.

The cross-tabulation between the experience of the farmers in cultivating the cotton crop and the method of selling raw cotton in the markets showed the respondents' percentages as follows: up to 5 years 50 (11.11%), 6-10 years 85 (18.88%), 11-15 years 170 (37.77%), 16-25 years 78 (17.33%) and 26 years above 67 (14.88%). The results show that the farmers who started cultivating the cotton crop in the last five years and 6-10 years prefer to sell their cotton in the direct market only 50 (100%) and 85(100%), respectively. It implies that the farmers under this group have low market risk-bearing capacity and prefer to sell their produce immediately after harvest. The farmers with an experience of 11-15 years showed interest in selling their cotton to pre-agents 117 (68.8%), followed by direct market 46 (27.1%) and retailers 7 (4.1%). The farmers having experience of 16-25 years prefer to sell their product mostly to pre-agents 58 (74.4%), followed by retailers 20 (25.6%). It is also observed that farmers with more than 26 years of experience sell their cotton to retailers 46 (68.7%),

followed by 12 (17.9%) and 9 (13.4%) farmers selling their products in direct marketing. These results were in accordance with previous workers [20] who studied cotton marketing in the Guntur district of Andhra Pradesh, known for its nationwide cotton cultivation and marketing. They also opined that market players always influence purchasing decisions. They also studied factors that directly influence the purchasing patterns of various cotton mills in the district.

Table 6 Showing the results of ANOVA values regarding the experience of the farmers

Source of variation	Sum of squares	*df*	Mean square	F	Level of significance
Between groups	139.088	4	34.772		
Within groups	93.492	445	0.210	165.507	0.000
Total	232.580	449			

The ANOVA table shows that the values between groups and within the groups were recorded as significant at 0.05 level

Table 7 Showing Least Square Difference (LSD) values regard to farmers' experience

Method of selling cotton *Experience	Up to 5 years	6- 10 years	11 - 15 years	16 - 25 years	26 years and above
Up to 5 years		0.00000	0.77059*	1.25641*	1.55224*
6- 10 years			0.77059*	1.25641*	1.55224*
11 - 15 years				0.48582*	0.78165*
16 - 25 years					0.29583*
26 years and above					

* = Significant at 0.01 level; ** = Significant at 0.05 level

From the data of LSD values, there is no significant difference in farmers' experience at 0.05 level between the group up to 5 years and 6-10 years of experience. At the same time, there is a significant difference between the groups up to 5 years and 11-15 years, and the groups up to 5 years and 16-25 years and also groups up to 5 years and 26 years and above.

There is also a significant difference between the groups 6 to 10 years and 11-15 years, and the groups 6-10 years and 16-25 years and also groups 6-10 years and 26 years and above.

The cross-tabulation between investment in cotton production and method of selling raw cotton in the markets showed the respondents percentages as follows: up to one lakh 139 (30.88%), 2-4 lakh 117 (26%), 5-7 lakh 95 (21.11%), 8-10 lakh 58 (12.88%) and above 10 lakh 41 (9.11%). The data shows that farmers who can invest up to one lakh sell their raw cotton in direct marketing 138 (99.3%), followed by 1 (0.7%). In contrast, most of the farmers who invest 2-4 lakhs for cotton cultivation prefer to sell their cotton to pre-agents 62 (53.0%), followed by direct market 48 (41.0%) and 7 (6.0%) to retailers. Farmers investing 8-10 lakhs preferred to sell their cotton to pre-agents 30 (51.7%) followed by 28 (48.3%). The farmers who are spending more than 10 lakh for the cultivation of cotton preferred to sell to retailers 27 (65.9%) followed by 10 (24.4%) pre-agents and 4 (9.8%) in direct markets. It is also observed that the farmers investing more money do not prefer to sell their cotton in direct markets; rather, they prefer to sell to pre-agents and retailers. Raw cotton Kapas is exposed to wet conditions and easily spoil or damage, which is a major reason buyers bid low prices. Cotton damage was majorly due to the need for more cotton storage facilities. Furthermore, the results are in association with earlier researchers [21]. Creating better infrastructure facilities for proper marketing was also emphasized [22]. Then, the investment of the cotton farmers was protected.

Table 8 Showing the results of ANOVA values concerning the investment of the farmers

Source of variation	Sum of squares	*df*	Mean square	F	Level of significance
Between groups	148.648	4	37.162		
Within groups	83.932	445	0.189	197.030	0.000
Total	232.580	449			

The ANOVA table shows that the values between groups and within the groups were recorded as significant at 0.05 level

Table 9 Showing Least Square Difference (LSD) values regard to farmers' investment

Method of selling cotton *Investment	Up to 1 lakh	2-4 lakh	5-7 lakh	8-10 lakh	Above 10 lakh
Up to 1 lakh		0.64238*	1.10860*	1.47556*	1.55378*
2-4 lakh			0.46622*	0.83319*	0.91140*
5-7 lakh				0.36697*	0.44519*
8-10 lakh					0.07822
Above 10 lakh					

* = Significant at 0.01 level; ** = Significant at 0.05 level

From the data of LSD values, the significance level between farmers' investments is observed. It is observed that up to 1 lakh and 2-4 lakh groups, up to one lakh and 5-7 lakhs groups, up to one lakh and 8-10 lakh and more than 10 lakh groups, there is a significant difference in farmers investment at 0.05 level. A significant difference is also observed between the 2-4 lakh and 5-7 lakh groups, 2-4 lakh and 8-10 lakh groups, and above 10 lakh groups. It is also observed that there is a significant difference between the 5-7 lakh group and the 8-10 lakh group, and also the 5-7 lakh group with above 10 lakh groups. The 8-10 lakh group also significantly differs from the 10 lakh investing farmers group.

The cross-tabulation between cultivated cotton area of the farmers and method of selling raw cotton in the markets

showed the respondents percentages as follows; below 2 acres 30 (6.66%), 2-5 acres 125 (27.77%), 5-7 acres 177 (39.33%), 7-10 acres 73 (16.22%), 10-20 acres 25 (5.55%), and above 20 years 20(4.44%). It is observed from the analyzed data that most of the farmers having below 2 acres and 2-5 acres of land prefer to sell their raw cotton in direct markets, 30 (100%) and 111 (88.8%), respectively. At the same time, farmers with 5-7 acres showed interest in selling pre-agent 142(80.2%), followed by direct market 30 (16.9%). The farmers with 7-10 acres of land preferred to sell raw cotton to retailers 34 (46.6%), followed by 31 (42.5%) and 8 (11.0%) to direct markets. Furthermore, the farmers with 10-20 acres and above 20 acres preferred to sell raw kapas to retailers 21 (84%) and 13 (65%), followed by 4 (16.0%) and 7 (35.0%), respectively. It is also observed that the farmers with more cotton-cultivated land preferred mostly retailers and few farmers interested in selling direct markets.

Many factors influence the cultivation of cotton. Among them, the size of land (small, medium, large) is an important factor determining cotton cultivation. The monopoly of the cotton procurement scheme is in operation in Maharastra since 1972 [23], thereby, cotton producers are left officially with one option of selling their produce to the state. They also observed the illegal movement of cotton from Maharashtra to other states over the last three decades.

Table 10 Showing the results of ANOVA values about the area cultivated

Source of variation	Sum of squares	*df*	Mean square	F	Level of significance
Between groups	124.299	5	24.860		
Within groups	108.281	444	0.244	101.937	0.000
Total	232.580	449			

The ANOVA table shows that the values between groups and within the groups were recorded as significant at 0.05 level

Table 11 Showing Least Square Difference (LSD) values regard to farmers' area

Method of selling cotton *Area / Land	Below 2 acres	2 to 5 acres	5 to 7 acres	7 to 10 acres	10 to 20 acres	Above 20 acres
Below 2 acres		0.11200	0.85876*	1.35616*	1.68000*	1.30000*
2 to 5 acres			0.74676*	1.24416*	1.56800*	1.18800*
5 to 7 acres				0.49741*	0.82124*	0.44124*
7 to 10 acres					0.32384*	0.05616
10 to 20 acres						0.38000*
Above 20 acres						

* = Significant at 0.01 level; ** = Significant at 0.05 level

From the data of LSD values, the significance level between farmers' cultivation areas is observed. It is observed that the group below 2 acres and 2-5 acres group, below 2 acres and 5-7 acres group, below 2 acres and 7-10 acres, below 2 acres and 10-20 acres and above 20 acres groups there is a significant difference in the cotton cultivated area of cotton at 0.05 level. A significant difference is also observed between 2-5 acres and 5-7 acres group, 2-5 acres and 7-10 acres group, 2-5 acres and 10-20 acres group, 2-5 acres and above 20 acres group. It is also observed that there is a significant difference between the 5-7 acres group and the 7-10 acres group, and also the 5-7 acres group and 10-20 acres group, and 5-7 acres with above 20 acres group. The 7-10 acres group is also significantly different from the 10-20 acres group and the above 20 acres group. It is also observed that the 10-20 acres group is also significantly different from the above 20 acres group at 0.05 level.

Few researchers studied and opined that smallholders play an important role in food systems. Smallholder production is estimated to be about 50–70% of global food production. Small-holding farmers with lower income levels are mostly vulnerable to marketing vagaries when they opt to grow cash crops like cotton, as they cannot purchase basic inputs, which is an acute problem in developing countries like India [24]. Moreover, it needs to be addressed by the state and central governments.

It is also noted that the farmers' response on 'how the method of selling raw cotton in the markets' influences the demographic variables viz., districts, educational qualifications, age of the farmers, experience, investment and area of the land against direct marketing, pre-agent and retailer recorded p-value as significant at 0.05 level.

These results are in line with previous reports [24]. They also opined that there is a need for regionalized and eco-friendly agricultural production systems to better guard the small farm-holding farmers against the vagaries of globalized markets. There is an urgent need to strengthen the local and regional agricultural markets and their production systems.

CONCLUSION

From the current study, it is concluded that most of the cotton farmers have 11-15 years of experience followed by 6-10 years and 16-25 years. The less attraction of youth to the profession of agriculture is depicted by the cotton farmers with less than five years of experience in farming, accounting for 11.1%, depicting. Most farmers have invested in cotton crop production below rupee one lac followed by 2-4 lakhs. This section of cotton farmers is mostly confined to less than two acres of land, with poor social and economic backgrounds. These farmers need more basic amenities and credit to take up the crop in a large way. The state and central governments should provide them with basic inputs and some credit facilities through credit institutions, which will help them overcome many problems, especially borrowing money from money lenders. Most farmers cultivate cotton in less than two acres of land, followed by 2-5 acres of land holdings and 5-10 acres. Cotton-growing farmers with over 20 acres of land holdings are about 4%. It is also observed that newspapers ranked first among the three impersonal sources of cotton marketing information, followed by radio and television. In contrast, the market committee ranked first out of the six formal personal sources of information, followed by CCI and e-NAM. The data from the informal personal sources of information (nine sources) revealed that cooperative marketing occupied first rank, followed by progressive farmers, relatives, cotton grower associations, farmer's friends, neighbours, trading companies, and commission agents.

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