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Perceived Constraints in the Cultivation of Cotton by the Growers in Nalgonda District of Telangana

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ABSTRACT: Cotton is the major commercial and fibre crop of India. It is considered as 'White gold' and 'King of the fibre'. India is the largest producer (6.05 million metric tons) of cotton in the world with the area of 13.48 million hectares but India's productivity (487 kg/ha) is found to be low compared to many cotton growing countries in the world. There are various reasons for this low productivity like vagaries of monsoon, non-adoption of recommended technologies, new technological dearth, heavy infestation of pests, etc. Therefore, the present study has been taken up to analyse the constraints from the farmers perspective. The study was conducted in Nalgonda district of Telangana state and the obtained data were analysed by using Garrett ranking technique. The study revealed that the major constraints perceived by the farmers among all listed constraints were scarcity of agricultural labour which increases cost of production (64.15), failure of crop due to unfavourable weather conditions (68.5), low price of farm produce at the time of harvesting (61.27), high rate of interest by the money lenders (64.08) and insufficient training programmes (68.00) under input, production, marketing, finance and technical constraints respectively.

Keywords: Growers, Constraints, Mean score, Bt cotton, Telangana.

INTRODUCTION

Cotton, one of the most important commercial and fibre crops of global significance. It contributes nearly 60 per cent of raw material needs of Indian textile mills and also plays a significant role in the sustainable livelihood of the Indian cotton farming community (Annual report, Ministry of textile, 2020-2021). India is the only country in the world that grows all four cultivated species of cotton along with their intra and inter specific hybrids (Chockalingam, 2016). Since the time immemorial, cotton has been used as a natural fabric in India. There were evidence showing that cotton has been cultivated in the Indus Valley for more than 5000 years ago. India is also known for its exceptional spinning and weaving skills (Ramesh *et al.*, 2020).

World cotton production in 2021-22 is estimated at 26.58 million tons, with the area of 32.91 million hectares. India ranks first in cotton production and area, with 6.05 million metric tons and 13.48 million hectares respectively. Which nearly accounts 26 per cent and 41 per cent of global cotton production and area respectively (cotcorp.gov.in). The major cotton producing states in India are Gujarat (90 lakh bales), Maharashtra (84 lakh bales), Telangana (51 lakh bales), Rajasthan (32 lakh bales), Haryana (22.5 lakh bales), Karnataka (22 lakh bales), Madhya Pradesh (18 lakh bales), Andhra Pradesh (17 lakh bales), Punjab (11 lakh bales) and Tamil Nadu (6 lakh bales) (indiastat.com). Besides these major states cotton cultivation can be seen in some of the non-traditional areas like Orissa, West Bengal, Bihar, Assam, Manipur and Tripura (Beeraladinni *et al.*, 2016).

Since independence government of India initiated many schemes, institutions and research programmes like all India coordinated cotton improvement scheme in 1967, central institute for cotton research in 1976 and intensive cotton development programme in 1979-80 to improve the production and productivity of the cotton in India (More *et al.*, 2020). The introduction of technology mission on cotton in 2000 played an

important role in improving productivity and quality of cotton. It was further boosted by introduction of Bt cotton in 2002 for commercial cultivation (Beeraladinni *et al.,* 2016). With adoption of Bt cotton, there must be a change in package of practices of cotton as Bt cotton requires more crop management than the non Bt cotton and reduced pesticides application as it is resistance to bollworm attack (Yadav *et al.,* 2018). Even though cotton growers have obtained the benefit of Bt cotton in terms of increased yield and reduced cost due to reduction in the pesticidal sprays. In the recent years farmers are reporting bollworm attack in Bt cotton also and continuing a greater number of pesticidal applications, along with this conventional problem, many other constraints are confronting the cotton growers. Therefore, the present study was conducted with an objective of identifying the major constraints from the farmers perspective.

MATERIALS AND METHODS

The present study was conducted in the year 2021-22 with the objective to analyze the major constraints perceived by the cotton growers. The study was carried out in Nalgonda district of Telangana as it is largest producer of the cotton in the state. Multistage sampling technique was employed in the selection of district, mandals, villages and ultimately cotton farmers. Two mandals, one with highest production and another with lowest production were selected under the district. Two villages were also selected in the same manner under each mandal. Fifteen farmers were selected randomly from selected villages. Which totally constitutes a sample size of 60 farmers. Respondents were asked to rank the listed constraints related to the inputs, production, marketing, finance and technical aspects. Rank one meant most important and last rank meant least important constraint.

The study employed Garrett's ranking method to find out the major constraints faced by the respondents during the production and marketing of cotton. The rank assigned to each constraint by each individual farmer was converted into percent position by using the following formula.

$$\text{Percent position} = \frac{100 \times (R_{ij} - 0.50)}{N_j}$$

Where, R_{ij} stands for rank given for the i^{th} constraint (i= 1, 2……n) by the j^{th} individual (j = 1, 2 ….. n) and N_j stands for number of constraints ranked by j^{th} individual.

With the help of Garrett's table, given by Garett and Woodworth the estimated percent positions were converted into scores. The mean values of scores were estimated. The constraint having highest mean value is considered to be the most pressing problem for cotton growers (Hosmath *et al.,* 2012).

RESULT AND DISCUSSION

The constraints were studied under five categories like input related, production related, marketing related, finance related and technical aspect constraints. The results were discussed below under the following headings.

Input related constraints: The results presented in the Table 1 highlight that the scarcity of agricultural labour which increases cost of production found to be the first major problem with the mean score of 64.15 as the cotton crop is labour intensive, dearth of the labour during peak time of harvesting was a major constraint. Non-availability of quality seeds and other inputs at village level was ranked as second major constraint with the mean score of 52.15. Third and fourth ranks were given to constraints, high cost of seeds, fertilizers and pesticides and more number of spraying and risk involved in it with the mean score of 49.88 and 33.87 respectively. The above results were in conformity with the results obtained by Goud *et al.* (2020) reported high cost of chemical inputs and labour scarcity and high labour charges as the major problems during the cultivation of cotton.

Table 1: Input related constraints perceived by the farmers.

Sr. No.	Input related constraints	Mean score	Rank
1.	Scarcity of agricultural labour which increases cost of production.	64.15	I
2.	Non availability of quality seeds and other inputs at village level.	52.15	I I
3.	High cost of seeds, fertilizers and pesticides.	49.88	I I I
4.	More number of spraying and risk involved in it.	33.87	IV

Production related constraints: Majorly five constraints related to the production aspects were asked to rank by the farmers. Data in the Table 2 revealed that the two major production related constraints which were hindering the cotton cultivation were failure of crop due to unfavourable weather conditions and incidence of insect pests and diseases ranked as 1^{st} and 2^{nd} major constraints with the mean score of 68.50 and 66.50 respectively. Farmers reported that due to the vagaries of monsoon and pink bollworm attack, there were considerable yield reduction. The constraint, unsuitable soil was ranked as the 3^{rd} major constraint as majority of the respondents were growing cotton in the red soil which is not suitable for cotton cultivation as that of black soil. Remaining constraints like inadequate irrigation facilities and drainage problem in the soil were ranked 4^{th} and 5^{th} constraints respectively. Yadav *et al.* (2018); Hosmath *et al.* (2012) also obtained similar results and revealed that failure of crop due to unfavourable weather conditions and inadequate knowledge regarding the pest managements as the major constraints during the production of cotton. Sam *et al*. (2020) also confirmed that uneven rainfall is one the major constraints in the cultivation of cotton.

Table 2: Production related constraints faced by farmers.

Sr. No.	Production related constraints	Mean score	Rank
1.	Failure of crop due to unfavourable weather conditions.	68.50	I
2.	Incidence of insect pests and diseases.	66.50	I I
3.	Unsuitable soil (red/chalky).	47.6	I I I
4.	Inadequate irrigation facilities.	39.87	IV
5.	Drainage problem in the soil.	26.97	V

Marketing related constraints: Table 3 depicted various constraints perceived by the farmers at the time of marketing the produce. Among all the constraints, low price of farm produce at the time of harvesting was the first major problem with the means score of 61.27 followed by the lack of awareness about fair average quality (57.28) and lack of marketing information (55.57). Other constraints like lack of marketing infrastructures (51.20), loss of weight during storage (45.37) and delay in payment by the marketing agencies (29.48) found places in descending order. The results were on par with results obtained by Rani and Selvaraj (2015) reported lack of remunerative price for the produce and absence of suitable price policy as the major problems faced by the cotton growers.

Table 3: Constraints faced by the farmers related to Marketing of the produce.

Sr. No.	Marketing related constraints	Mean score	Rank
1.	Low price of farm produce at the time of harvesting.	61.27	I
2.	Lack of awareness about fair average quality.	57.28	II
3.	Lack of marketing information.	55.57	III
4.	Lack of marketing infrastructures	51.20	IV
5.	Loss of weight during storage.	45.37	V
6.	Delay in payment by the marketing agencies.	29.48	VI

Finance related constraints: The results related to the financial constraints faced by the farmers are reproduced in the Table 4. It can be noticed that high rate of interest by the money lenders was ranked as top most constraint with the mean score of 64.08 followed by the cumbersome procedure for taking the loan with the mean score of 61.60. Lack of knowledge about loan processing system of bank was ranked as third major problem with the mean score of 51.18. Non availability of timely credit (41.38) and inaccessibility of financial institutions (31.10) were perceived as lower order constraints. The above results were in collaboration with results of Rai and Singh (2010); Yadav *et al.* (2018) reported high rate of interest charged by the money lenders and lack of knowledge about loan processing system of the bank were the major financial constraints.

Table 4: Finance related constraints perceived by the farmers.

Sr. No.	Finance related constraints	Mean score	Rank
1.	High rate of interest by the money lenders.	64.08	I
2.	Cumbersome procedure for taking loan.	61.60	II
3.	Lack of knowledge about loan processing system of bank.	51.18	III
4.	Non availability of timely credit.	41.38	IV
5.	Inaccessibility of financial institutions.	31.10	V

Technical Constraints: It is evident from the Table 5 among the listed technical constraints insufficient training programme was found in first place with the mean score of 68.00 as the majority of the training programmes were selective in nature and restricted to few farmers. Lack of proper knowledge about the package of practices and lack of knowledge about improved scientific practices were found in 2nd and 3rd positions with the mean score of 62.17 and 47.37 respectively. Constraints like inaccessibility to the concerned institutions (KVK, University) and no extension contacts were found places in descending order. Bondarwad *et al.* (2010) reported lack of sufficient knowledge about Bt cotton production technology as the constraint faced by the farmers while adopting Bt cotton.

Table 5: Technical Constraints faced by the farmers.

Sr. No.	Technical Constraints	Mean score	Rank
1.	Insufficient training programme.	68.00	I
2.	Lack of proper knowledge about the package of practices.	62.17	II
3.	Lack of knowledge about improved scientific practice.	47.37	III
4.	Inaccessibility to the concerned institutions (KVK, University).	43.80	IV
5.	No extension contacts.	27.83	V

CONCLUSION

On the basis of study, it can be concluded that the most serious constraints faced by the farmers were scarcity of agricultural labour which increases cost of production, failure of crop due to unfavourable weather conditions, incidence of insect pests and diseases, low price of farm produce at the time of harvesting, high rate of interest by the money lenders, and insufficient training programmes. Based on the result obtained in the study it would be recommended to encourage mechanization of cotton picking as manual harvesting is laborious task and it requires a greater number of labours which in turn increases the labour charges. Forecasting of weather and pests and diseases attack should reach the farmers at the right time. Suitable storage facilities need to be created at the nearby cities so that farmers can store the produce until they get fair price. Extension system need to be equipped to created awareness among the farmers about fair average quality norms and encourage the farmers to take up integrated pest and disease management. Training facilities should be extended to the larger section of the farmers specially covering the marginal and small farmers as they need it the most.

FUTURE SCOPE

After the introduction of the Bt cotton in India in the year 2002, the productivity of cotton increased significantly as Bt cotton is resistance to the bollworm infestation. But in the recent years farmers reported the bollworm attack in the Bt fields. This again led to exorbitant use of pesticides by farmers to save their crops, increased usage of the chemical pesticides has a detrimental effect on the environment, biodiversity and fertility and productivity of the soil. Therefore, suitable measures need to be taken up by the government and other stakeholders to address this issue along with the other problems which are confronting the farmers and it is also the time to take steps towards sustainable cultivation of cotton.

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Conflict of Interest. None.

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