Original Research Article

ADOPTION EXTENTOF RECOMMENDED PRACTICES OF COTTON CULTIVATION BY THE COTTON FARMER

ABSTRACT

Aims: To know the adoption level of recommended cultivation practices of cotton crop.

Study Design: The research design used for this study was an Ex-post Facto.

Place and Duration of Study: The study was conducted in Khandwa district of Madhya Pradesh and duration 2020-2022

Methodology: The study was conducted in Khandwa district of Madhya Pradesh(repetition, delete) a total of 200 farmers selected by following the proportionate random sampling technique. An interview schedule was prepared for collection data relating to the adoption of recommended practices by the respondents.

Results: The study,concludes that, with respect to the adoption, majority of the farmers (69.00%) had a medium level of adoption of recommended improved practices of cotton cultivation while, an equal number (15.50%) of the respondents had low and high level of adoptionof the same practices. Among the socio-economic and personal, communication and psychological characteristics of the respondents,age, education, family size, family type, land holding, annual income, farm mechanization, extension participation, information seeking behaviour, cosmopoliteness, economic motivation, scientific orientation and risk orientation indicated significant association with the extent of adoption of the recommended practices of cotton.

Conclusion: The study concluded that majority of the cotton growers were low adopted recommended cotton practices.

Key words: *Adoption level, Cotton, Growers, Production technology, Respondents*

INTRODUCTION

Cotton (*Gossypium spp.*) is one of India's most significant cash crops and sources of fibre, and it is vital to the nation's industrial and agricultural economics (Jaglan et al. 2012). The total area planted with cotton in the world in 2020–2021 was 31.66 million hectares, and the crop produced 113.11 million bales, or 778 kg/hectare, on that area. In terms of both total area and production, India has overtaken other countries to become the world's top cotton producer. India ranked first among the top exporters of cotton in the world. India occupied with 5.5 million bales, Canada ranks third after the United States (16.25 million bales) and Brazil (10.70 million bales) (USDA, 2020-21). In Madhya Pradesh, cotton occupies an area of about 0.6 million hectare with a production of 19 lakh bales and

with a productivity of 527 kg/ha (2020-21) (Deshpande 2020). The productivity of cotton started to decline in the year 2017-18 and continues to decline and is prone to disease and pest infestation.This marks the essentiality of modern agricultural technologies to improve yields and increase climate as well as disease resistance(Reddy 2013).ThePresent study aims to determine the adoption ofimproved cotton producing technologies amongthecotton growers and alsofind association between selected socio-economic & personal, communication and psychological characteristics of cotton growers and their adoption of improved cotton production technology.

MATERIALS AND METHODOLOGY

The research study was conducted during 2021-2022inPandhana and Khandwa block of Khandwa district in Madhya Pradesh. In the present investigation, descriptive type of ex-post-facto research design was employed. This design was appropriate because the phenomenon had previously happened. Ex-post-facto research is the most logical empirical enquiry as the researcher does not have any control over independent variables; their appearance has already occurred or they are inherent and cannot be manipulated.Thus, inferences about relations among variables were made without direct intervention from concomitant variation of independent and dependent variables (Kerlinger, 1972). Khandwa district comprises of 7 blocks namely Khandwa, Punasa, Pandhana, Harsud, Chhaigaon, Baldi and Khalwa. Out of these two blocks namely; Pandhana and Khandwa blocks were purposively selected, because of thehighest area under cotton crop. The Pandhana block comprises of 124 villages and Khandwa block comprises of 97 villages. Out of which ten villages were selected on the basis of larger area under cotton crop. From the ten selected villages, 200 cotton growers were selected from all selected villages by using proportionate random sampling method to make the total sample size for the present study.An interview schedule was prepared to collect data relating to adopting scientific cotton production technology.

The adoption level of cotton growers with respect to improved cultivation practices of cotton was studied by computing adoption score(Roy et al. 2018). Concerning adoption, the responses were rated on three-point continuum namely complete adoption, partial adoption and no adoption. A numerical score of 2 was assigned for complete adoption, a score 1 was assigned for partial adoption and a zero was assigned for no adoption. The score of all identified practices was then summed up. This sum total indicates the adoption score of that particular individual respondent. The raw score then was converted into adoption index(Sarker 2016) as mentioned below.

$$\text{Adoption Index} = \frac{\text{Total adoption score obtained}}{\text{Maximum obtainable adoption score}} \times 100$$

On the basis of adoption index, the respondents were categorized in to low, medium and high groups based on mean ± Standard Deviation.

The primary data were collected personally by the researcher by interviewing the selected respondents with the help of semi structured interview schedule.

RESULTS AND DISCUSSION

Adoption level of the cotton growers about recommended cotton production technology:

Adoption level of the cotton growers regarding different practices of cotton cultivation is presented in Table 1. The perusal of data clearly indicated that the majority of the cotton growershad adopted recommended land preparation practice (Complete 24.50% and Partially 67.00%), method of sowing (Complete28.50% and Partially 45.50%), recommended dose of fertilizer (Complete 18.00% and Partially 58.50%), application of FYM/compost(Complete 23.00% and Partially 42.50%), use of improved varieties of cotton (Complete19.00% and Partially 44.50%), insect management and seed treatment (Complete 20.00 and Partially 40.50%),whereas, nearly more than half of the respondents were fully or partially adopted recommended seed rate (Complete 17.00% and Partially 26.50%),intercropping(Complete 23.50% and Partially 32.00%) and time of irrigation(Complete19.00% and Partially 29.50%). Furthermore, the data indicated thatrecommended practices likestriking trap (74.50%), topping operation (62.50%),intercultural operations (61.50%), and disease management(54.50%)were not adopted by majority of the respondents. The findings are in line with the findings ofJat*et al.* (2022) andBondarwad*et al.* (2010).

Table 1: Practice wise adoption level of the cotton growers about recommended cotton production technology

(n = 200)

S. No.	Practices	Adoption Level				
		Complete Adoption	Partial Adoption	No Adoption	Mean	Rank
1	Preparation of land	49 (24.50)	134 (67.00)	17 (8.50)	116	I
2	Use of Improved Varieties of cotton	38 (19.00)	89 (44.50)	73 (36.50)	82.50	V
3	Method of sowing	57 (28.50)	91 (45.50)	52 (26.00)	102.50	II
4	Seed rate	34 (17.00)	53 (26.50)	113 (56.50)	60.50	XI

5	Seed treatment	28 (14.00)	93 (46.50)	79 (39.50)	74.50	VIII
6	Application of FYM/Compost	46 (23.00)	85 (42.50)	69 (34.50)	88.50	IV
7	Time of Irrigation	38 (19.00)	59 (29.50)	103 (51.50)	67.50	X
8	Recommended dose of fertilizer	36 (18.00)	117 (58.50)	47 (23.50)	94.50	III
9	Application of weedicide	42 (21.00)	59 (29.50)	89 (49.50)	71.50	IX
10	Intercultural operations	33 (16.50)	44 (22.00)	123 (61.50)	55.00	XIII
11	Insect management	40 (20.00)	81 (40.50)	79 (39.50)	80.50	VI
12	Disease management	22 (11.00)	69 (34.50)	109 (54.50)	56.50	XII
13	Intercropping	47 (23.50)	64 (32.00)	89 (44.50)	79.00	VII
14	Topping operation	24 (12.00)	51 (25.50)	125 (62.50)	49.50	XIV
15	Striking trap	24 (12.00)	27 (13.50)	149 (74.50)	37.50	XV

Figures in parenthesis indicate percentage

Overall adoption level of the cotton growers:

It is evident from the data reported in Table 2 that, nearly two third of the respondents (69.00%) had a medium level of adoption of recommended improved practices of cotton cultivation while, an equal percentage (15.50%) of the respondents had low and high level of adoption of recommended cotton cultivation practices.Thus, it may be inferred from the data that the majority of cotton growers had medium level of adoption regarding recommended improved practices of cotton cultivation. The probable reason might be that the majority of the respondents had medium level of knowledge that motivated them to adopt the technologies fully or partially. Besides medium risk orientation, scientific orientation, extension participation and information seeking behaviourof the respondent also influenced adoption of the latest recommended technologies to some extent. The findings are in line

with the findings of Rajput and Chinchmalatpure (2016), Kumar *et al.* (2017) and Mahendrakar*et al.* (2018).

Table 2: Distribution of cotton growers according to their adoption level

S. No.	Categories	Frequency	Percentage
1.	Low (Up to 39 Score)	31	15.50
2.	Medium (40 to 64 Score)	138	69.00
3.	High (Above 64 Score)	31	15.50
Total		200	100.00

(Mean = 51.31, S.D=12.20)

Association between Socio-economic personal, communication and psychological characteristics of cotton growers and their adoption level:

It is apparent from the Table 3 that out of fourteen independent variables sevenvariables namely age, education, farm mechanization, economic motivation, family size, scientific orientation and risk orientation had shown significant association at 0.01 level of probabilitywhile othersixvariables namely type of family,annual income,land holding, extension participationcosmopoliteness and information seekingbehaviour had significant associationat 0.05 level of probability withthe dependent variableadoption level of the cotton growers.

Therefore, the null hypotheses were rejected and original propositions that there would be association between age, education, farm mechanization, economic motivation, scientific orientation, risk orientation, family size, type of family, annual income, land holding, extension participation,information seekingbehaviour and cosmopolitenessof cotton growers and their adoptionlevel were accepted. The findings are in line with the findings of Singh *et al.* (2019), and Bishnoi*et al.* (2016).

The remaining one variableviz; caste, had no significant association with adoption level of the cotton growers. Hence, the null hypothesis was accepted and original proposition that there would be association between caste, of cotton growers and their adoption level was rejected. The findings are in line with the findings ofVerma*et al.* (2019).

Table 3: Association between socio-economic personal, communication and psychological characteristics of cotton growers and their adoption level

S. No.	Independent variables	Chi square value (χ^2)
1.	Age	35.44**
2.	Education	64.29**
3.	Caste	7.33^{ns}

4.	Family size	13.79**
5.	Type of family	6.99*
6.	Annual income	19.76*
7.	Land holding	24.61*
8.	Farm mechanization	40.98**
9.	Extension participation	10.19*
10.	Information seekingbehaviour	10.97*
11.	Cosmopoliteness	17.13*
12.	Economic Motivation	44.39**
13.	Scientific Orientation	67.65**
14.	Risk orientation	39.93**

*Significant at 0.05 level of probability

** Significant at 0.01 level of probability

NS = Non-Significant

CONCLUSION

The study concluded that majority of the cotton growers had adopted recommended practices of landpreparation, sowing, fertilizer dose, FYM/compost application, use of improved varieties and insect management. A few adopted recommended seed treatment, weedicide application, timely irrigation, seed rate, disease management, intercultural operations, topping operation, striking trap and use of light trap. The study also indicated that the majority of cotton growers had medium level of adoption of the concernedpractices. The study also concluded that adoption level of cotton growers was significantly associated with their age, education, farm mechanization, economic motivation, scientific orientation risk orientation, family size, family type, annual income, land holding, extension participation, cosmopoliteness and information seeking behaviour. Hence, to increase the adoption level of cotton growers, various training programmes including method and result demonstrations should be organised on farmers' fields. Extension agencies may also use information communication technologies for motivation of cotton growers towards cotton production technologies and required inputs should make available in time.

REFERENCES

1. Bishnoi M, Sisodiya SS, Kumar V. Adoption of farmers about bt. cotton production technology in Bhilwara district of Rajasthan. Int. J. Agric. Sci.2016;8(60):3353-3356.

2. Bondarwad SP, Wangikar SD, Deshmukh ND. Present status of adoption of bt. cotton production technology by farmers. Indian J. Ext. Educ.2010;5(3&4):322-324.

3. Deshpande T. State of agriculture in India. PRS Legislative Research 2020;53(8);6-7.

4. Jaglan RS, Singh N, KANU P. Impact of climate change on cotton and its production in India. Silver Jubilee International Symposium, 2012; 271: 271.

5. Jat M, Jaiswal DK, Saharawat YS. Extent of knowledge and adoption of recommended wheat production practices among wheat growers in malwa region (M.P.). Indian J. Ext. Educ. 2022;58(1):40-43.

6. KerlingerFN. Draft report of the APA committee on ethical standards in psychological research: A critical reaction.Am. Psychol.1972;27(9):894–896.

7. Kumar P, Pavan R, Dhorey RK. Extent of adoption of farmers about bt. cotton practices in Warangal district of Telangana State, India. Int. J. Curr. Microbiol. Appl. Sci.2017;6(11):824-829.

8. Mahendrakar M, Syed J, Mazhar H. Knowledge and adoption level of respondents about bt. cotton production practices in Shahapur Taluk of Yadgir district Karnataka. Int. J. of Innov. Sci. Res. Technol.2018;3(6):9-12.

9. Rajput HD, Chinchmalatpure UR. Knowledge and adoption of bt. cotton cultivation practices. Indian J. Ext. Educ. 2016;52(1 & 2):121-123.

10. Reddy PP. Impact of climate change on insect pests, pathogens and nematodes. Pest Management in Horticultural Ecosystems, 2013;19(2):225-233.

11. Roy H, Mankar DM, Shelar R, KN R, Singh AK. Assessing the Extent of Adoption of Improved Bt. Cotton Cultivation Practices by the Bt. Cotton Growers in Akola District. Int. J. Pure App. Biosci, 2018;6(2):906-913.

12. Singh S, Yadav D, Hariyale V. Study on adoption of integrated pest management practices by cotton growers in Khandwa district. Int. J. Curr. Microbiol. Appl. Sci. 2019;8(10):430-435.

13. Verma AK, Doharey RK, Dubey SK, Bishnoi SS, Prakash O,Prashad K 2019. Extent of knowledge and adoption of cotton growers in Bharuch district of Gujarat. Indian J. Ext. Educ. 2019;55(4):87-91.

14. Vishnuvardhan KM, Reddy BV, Kalyani DL, Krishna MS, Reddy YR. A high yielding cotton variety with high fibre quality and sucking pest tolerance suitable for both Central and South zones of India. Electronic Journal of Plant Breeding, 2022;13(2):739-744.