



Adoption behaviour of cotton growers towards PMFBY in Nagpur District

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Abstract

The present study was conducted to examine the status, awareness, and factors influencing the adoption of crop insurance among cotton growers in Nagpur district of Maharashtra during 2025–26. The study covered 120 farmers from nine villages in Kuhi, Mouda, and Parseoni talukas. Primary data were collected through personal interviews, while secondary data were obtained from government and official sources. Percentage analysis, CAGR, coefficient of variation, and multiple regression analysis were used. The findings showed that crop insurance coverage in Nagpur district fluctuated considerably during 2018–2025. Farmers' awareness was generally high, as all respondents had heard about crop insurance and were currently availing insurance. However, some farmers had limited knowledge about claim procedures and loss assessment. Regression results showed that cotton area, farm income, and cropping intensity significantly influenced crop insurance adoption, while age, education, total landholding, credit access, and insurance experience were not significant. The study suggests that timely claim settlement, simple procedures, and better farmer awareness can improve the effective adoption of crop insurance among cotton growers.

Keywords: Crop insurance, PMFBY, cotton growers, awareness, adoption, Nagpur District

Introduction

Agriculture is one of the major sources of livelihood for the rural population in India. However, farming is associated with several uncertainties because crop production depends heavily on weather conditions and other natural factors. Drought, excessive rainfall, floods, pest attacks, diseases and other calamities can cause serious crop losses and reduce farmers' income. Such losses can also make it difficult for farmers to repay loans and arrange funds for the next cropping season. In this situation, crop insurance provides financial protection and helps farmers manage the risks associated with agriculture.

The Government of India has introduced different crop insurance programmes from time to time to reduce the financial burden on farmers. Among these, the Pradhan Mantri Fasal Bima Yojana (PMFBY) was introduced in 2016 [6] with the aim of providing affordable insurance coverage and financial support to farmers against crop losses. The scheme is designed to reduce the risk faced by farmers and provide compensation for eligible crop losses caused by specified natural risks. Crop insurance is important not only for protecting farmers' income but also for supporting the continuity of agricultural activities. Timely compensation can help farmers recover from crop losses, repay agricultural loans and invest in the next season. It may also increase farmers' confidence in adopting improved production practices and technologies.

Although crop insurance has expanded across the country, its effective implementation still depends on farmers' awareness, easy access to the scheme, simple documentation, accurate assessment of crop losses and timely settlement of claims. Therefore, strengthening

awareness and improving the delivery of crop insurance services are essential for making the scheme more useful and accessible to farmers.

The various crop insurance schemes in India are Pradhan Mantri Fasal Bima Yojana, Weather Based Crop Insurance Scheme, Unified Package insurance Scheme, Coconut Palm Insurance Scheme. Hence the major objectives of the study were status and progress on PMFBY in Nagpur district however the awareness level of crop insurance scheme and factor determining the farmers in adoption of crop insurance scheme.

Methodology

Area and Period of Study

The study was conducted in Nagpur district of Maharashtra, covering three talukas Kuhi, Mouda and Parseoni — with three villages selected in each taluka. Data pertains to the year 2025/26. Primary data were collected from 120 cotton farmers (40 per taluka) through personal interviews using a structured schedule.

Source of Data

The Secondary data was collected from review of Government reports, State and District agriculture offices, PMFBY, IBEF reports, PIB reports and AIC websites.

The data used in the present study was primarily based on primary sources, collected through personal interviews with farmers using a structured and pre-tested interview schedule. The schedule was carefully designed in alignment with the specific objectives of the research and covered several key aspects such as the socio-economic profile of farmers, insurance enrolment details, factor influence to

adopt, awareness of the insurance, and the constraints faced during its implementation.

Analytical Tool

To accomplish the objectives of the study simple tabular analysis is used along with the percentage analysis, graphical representation etc.

Regression Coefficient

Multiple Linear Regression: The multiple linear regression model was used to analyze the factors influencing the farmer to adopt the Crop Insurance Scheme in Nagpur district.

$$Y = a + b_1 + b_2X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8$$

Where,

Y = Area under adoption of PMFBY (ha) a = Constant n = Factors influence

b_1 to b_n = Coefficient of regression

X_1 to X_n = Independent variables

X_1 = Total landholding (in ha)

X_2 = Cotton land holding (in ha)

X_3 = Age (in year)

X_4 = Education (in year)

X_5 = Income (Rs in lakhs)

X_6 = Credit accessibility (dummy, 0 and 1)

X_7 = Cropping intensity (%)

X_8 = Crop insurance experience (in year) e = error

Results and discussion

The results of the present study are perented as below. The result, are arranged as per the objectives taken.

1. Present status and progress of crop insurance scheme in Nagpur

The year-wise data indicate considerable fluctuations in the coverage and financial performance of the crop insurance scheme during 2018–2025 in Nagpur district under the PMFBY. The data on crop insurance performance during 2018–2025^[11] indicate considerable year-to-year variation in farmer enrolment, insured area, premium collection and claims paid. Farmer enrolment declined from 36,906 in 2018 to 13,495 in 2021. Accordingly, the year-on-year (YoY) growth remained negative during 2019 (-4.33%), 2020 (-12.98%) and 2021 (-56.07%). A major improvement was observed in 2022, when enrolment increased by 47.69%, followed by an exceptional rise of 708.43% in 2023. Enrolment continued to grow by 14.08% in 2024, but again declined sharply by 73.92% in 2025. The insured area followed a broadly similar trend, increasing substantially during 2023 and 2024 before falling in 2025.

Premium collection also showed substantial fluctuations, increasing from ₹720.35 crore in 2018 to ₹751.01 crore in 2019, but declining during 2020 and 2021. It recovered in 2022, while claims paid increased considerably, reaching ₹14,141 crore in 2023. The overall CAGR of farmers enrolled was 20.18%, while insured area and claims paid recorded positive CAGRs of 23.04% and 26.53%, respectively. In contrast, premium collection recorded a negative CAGR of 40.54%. The high coefficient of variation for farmers enrolled (99.14%), insured area (90.97%) and premium (131.76%) indicates substantial instability over the study period. Overall, the findings highlight that although crop insurance coverage expanded significantly in certain years, its performance remained uneven, with particularly sharp fluctuations in farmer participation, premium collection and claims paid.

Table 1: Status and progress of crop insurance scheme in Nagpur district

Year	Farmers Enrolled Number	Area insured (Thousand hectare)	Premium Collected (₹Crore)	Claims Paid (₹Crore)	YoY Growth in Enrolled Farmers (%)
2018	36906	58.82	720.35	975	-
2019	35305	56.62	751.01	449	-4.33
2020	30720	31.14	391.05	1115	-12.98
2021	13495	19.91	227.62	872	-56.07
2022	19932	27.65	425.63	1328	47.69
2023	161138	268.95	2.84	14141	708.43
2024	183832	324.09	3.25	6803	14.08
2025	47934	77.11	517.69	747	-73.92
CGR	20.18	23.04	-40.54*	26.53	-
CV	99.14	90.97	131.76	68.17	-

2. Awareness of Crop Insurance among Cotton growers

Awareness is the perception of an individual is conscious about crop insurance scheme. The awareness taken more, as a cognitive behaviour has been operational as the farmers consciousness.

The findings indicate that the 120 selected cotton growers had a high level of awareness regarding crop insurance. All respondents (100.00%) had heard about crop insurance and reported that they were currently availing some form of crop insurance. Further, 87.50 per cent of farmers knew that their crops could be insured, while 85.00 per cent were aware of the premium rates. About 75.00 per cent of respondents had knowledge about different crop insurance schemes. A very high proportion of farmers (94.16%) had also availed crop

insurance in the past, indicating that crop insurance was a familiar risk-management practice among the cotton growers.

Awareness was also relatively high regarding the processing, approval and payment of claims, as reported by 86.67 per cent of farmers. However, only 76.67 per cent were aware of the time limit for loss intimation, loss assessment procedures and claim payment mechanisms. This indicates that although farmers were generally aware of crop insurance and its importance, some gaps remained in their understanding of the claim-related procedures and operational aspects of the scheme. Therefore, greater emphasis on farmer-oriented awareness programmes, extension services and simple communication about claim procedures could help improve their understanding and effective use of crop insurance.

Table 2: Detail response of respondents according to their awareness regarding crop insurance scheme

Sr. no.	Indicators	Aware	Not aware
1.	Heard about crop insurance	120 (100.00)	0 (0.00)
2.	Knowledge your crops could be insured	105 (87.50)	15 (12.50)
3.	Knowledge about premium rate	102 (85.00)	18 (15.00)
4.	Knowledge about crop insurance schemes	90 (75.00)	30 (25.00)
5.	Availed crop insurance in past	113 (94.16)	07 (5.84)
6.	Availing any type of crop insurance at present	120 (100.00)	0 (0.00)
7.	Processing, approval and payment of final claims	104 (86.67)	16 (13.33)
8.	Intimation time frame, loss assessment process, claim payout mechanisms.	92 (76.67)	28 (23.33)

(Figures in parentheses indicate percentages to the total)

3. Factors influence the farmers to adopt the Crop Insurance Scheme

The correlation coefficient of adoption with personal, socio-economic and psychological characteristics of respondents are depicted in the table 4.

The regression analysis was carried out to examine the factors affecting the adoption of crop insurance among the selected cotton growers. The estimated model explained 39.00 per cent of the variation in crop insurance adoption, while the adjusted R² value was 0.36, indicating a moderate explanatory power of the model. The results showed that cotton area, farm income and cropping intensity had a statistically significant relationship with crop insurance adoption, whereas total landholding, age, education, credit access and experience with crop insurance did not show a significant effect.

The area under cotton had a negative and highly significant influence on adoption (coefficient = -4.30), significant at the 1 per cent level. Income also showed a negative relationship with adoption (coefficient = -0.04) and was significant at the 10 per cent level. In contrast, cropping intensity had a positive and significant effect (coefficient = 0.14), indicating that farmers following more intensive cropping patterns tended to have greater adoption of crop insurance. The nonsignificant effect of age, education, credit access and insurance experience suggest that these factors did not independently influence adoption within the study sample. Overall, the findings indicate that farm-level characteristics and cropping practices were more important in explaining crop insurance adoption than the farmers' demographic and institutional characteristics.

Table 3: Factors influence the farmers to adopt the Crop Insurance Scheme.

Particular	Coefficients	Standard Error	t Stat
Intercept	85.63	18.02	4.75***
Total land (in ha)	0.39	0.35	1.12
Cotton land (in ha)	-4.30	0.74	-5.83***
Age (in years)	0.05	0.14	0.33
Education (in years)	-0.23	0.35	-0.64
Income (Rs in lakh)	-0.04	0.03	-1.61*
Credit access (Dumy)	4.92	5.04	0.98
Cropping intensity (%)	0.14	0.08	1.69*
Experience in crop insurance (in years)	-0.94	1.79	-0.53
R Square	0.39	-	-
Adjusted R Square	0.36	-	-

Note: *** = Significant at 1% level, ** = Significant at 5% level, * = Significant at 10% level

Conclusions

The study concludes that the crop insurance scheme in Nagpur district showed considerable fluctuations during 2018–2025^[11]. Farmer enrolment and insured area declined

during the initial years but increased sharply in 2022–2024, followed by a substantial decline in 2025. Despite these fluctuations, farmers enrolled, insured area and claims paid recorded positive growth over the study period, while premium collection showed a negative growth trend. The high variation in major indicators indicates that the implementation and coverage of crop insurance remained uneven. The study also found a high level of awareness among cotton growers. All 120 respondents had heard about crop insurance and were currently availing some form of crop insurance, while most farmers were aware of insurable crops, premium rates, insurance schemes and claim processing. However, some gaps were observed in awareness regarding loss reporting, assessment procedures and claim settlement mechanisms, indicating the need for more focused extension and awareness activities.

The regression results further show that crop insurance adoption was influenced mainly by farm and cropping characteristics. Cotton area had a significant negative influence on adoption, while farm income also showed a negative relationship at the 10 per cent significance level. In contrast, cropping intensity had a positive and significant influence on adoption, whereas total landholding, age, education, credit access and insurance experience were not statistically significant. Overall, the findings suggest that although awareness and participation in crop insurance among cotton growers are relatively high, fluctuations in scheme performance and gaps in procedural knowledge remain important concerns. Strengthening farmer-oriented awareness programmes, simplifying insurance procedures, improving claim assessment and ensuring timely settlement of claims can make crop insurance more reliable and beneficial to cotton growers in Nagpur district.

Policy Implications

The study indicates that crop insurance policies should give greater attention to timely claim settlement, simple documentation and transparent loss assessment. Although cotton growers have a high level of general awareness, some farmers still lack clear knowledge about claim procedures and the time required for reporting crop losses. Therefore, regular awareness programmes through agricultural extension services should be strengthened to provide farmers with simple and practical information about insurance terms, premium rates and claim processes. Better coordination among government agencies, insurance companies and farmers is also needed to reduce delays and improve transparency. Special attention should be given to farmers with different cropping patterns and farm conditions so that insurance services are more relevant to their needs. Such measures can improve farmers' confidence in crop

insurance and promote its effective, stable and sustained adoption among cotton growers in Nagpur district.

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