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# The Economics Behind A Safer Harvest: Understanding the Role of Pradhan Mantri Fasal Bima Yojana in Crop Risk Management and Farmer Income Security

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Agriculture remains central to India's economy and rural livelihoods, yet farm production is exposed to recurring risk from weather, pests and disease. The Pradhan Mantri Fasal Bima Yojana (PMFBY), launched in 2016, addresses this vulnerability by offering farmers a low, uniform premium while the Central and State Governments jointly absorb most of the actuarial cost. This article examines PMFBY through a Commerce and Agricultural Extension lens, treating crop insurance as a financial risk-management instrument rather than only a welfare measure. It discusses how indemnity payments can stabilise farm income, support loan repayment capacity, and sustain rural consumption and credit cycles, while tracing the scheme's institutional architecture involving banks, insurers and the National Crop Insurance Portal. The extension dimension is examined through farmer awareness, enrolment assistance, digital advisory, and the role of Krishi Vigyan Kendras and Farmer Producer Organisations in narrowing the gap between policy design and field-level adoption. Drawing on recent official data and peer-reviewed evidence, the article highlights persistent challenges of awareness, claim delay and uneven adoption across farmer categories, and closes with commerce- and extension-based recommendations for strengthening the scheme's contribution to farmer income security and rural economic resilience.

**Keywords:** PMFBY; Crop Insurance; Agricultural Finance; Risk Management; Farmer Income Security; Agricultural Extension; Rural Economy

## Introduction

Agriculture provides livelihood to a large number of people in India and has an important role in the rural economy. However, farming involves many risks and uncertainties. A considerable part of cultivated land depends on the monsoon, while pests, diseases and extreme weather conditions can cause serious crop losses. Such problems can affect farmers even after they have invested considerable time and money in cultivation (Kaur et al., 2021). Since farm income mainly depends on the crop harvest, a major crop loss in one season can create financial difficulties for a farming household. It may also force farmers to borrow money or sell their assets to meet their immediate needs. Because of these risks, some farmers may also hesitate to invest in costly but productive agricultural inputs. Crop insurance can help farmers manage some of these risks. By covering a large number of farmers from different areas, insurance companies can spread the financial impact of crop losses. A loss that may be difficult for an individual farmer to bear can therefore be partly covered through insurance. PMFBY was introduced as a simpler and subsidised crop insurance scheme with the use of technology in its implementation. According to the Ministry of Agriculture and Farmers Welfare, it has become the largest crop insurance scheme in the world in terms of the number of farmer applications insured (Ministry of Agriculture & Farmers Welfare, 2025). Therefore, PMFBY is important not only from the agricultural policy point of view but also from the Commerce perspective. The scheme involves the sharing of financial risk, government expenditure on premium subsidy and the participation of banks and insurance companies. These aspects make crop insurance an important part of the financial system supporting farmers and the rural economy.

## PMFBY: An Overview

The Pradhan Mantri Fasal Bima Yojana (PMFBY) provides insurance coverage for different stages of the crop cycle, including risks before sowing and certain post-harvest losses within the specified period. The scheme is implemented through empanelled general insurance companies in coordination with State Governments and financial institutions (Ministry of Agriculture & Farmers Welfare, 2025). It follows the principle of “One Nation, One Crop, One Premium”. Under this system, farmers pay a maximum of 2 percent of the sum insured for Kharif food and oilseed crops, 1.5 percent for Rabi crops and 5 percent for annual commercial and horticultural crops. The remaining actuarial premium is shared by the Central and State Governments. Normally, this sharing is 50:50, while it is 90:10 for the North-Eastern and Himalayan States (Ministry of Agriculture & Farmers Welfare, 2024, 2025). For this reason, enrolment is compulsory for farmers who have taken a seasonal agricultural loan unless they explicitly opt out, and voluntary for non-loanee farmers, who may enrol through banks, Common Service Centres, or the scheme portal (Ministry of Agriculture & Farmers Welfare, 2025). For loanee farmers, the premium is typically deducted by the lending bank at the time of loan disbursal, linking the insurance transaction closely to the agricultural credit cycle. Recent reforms target transparency and timeliness. The National Crop Insurance Portal (NCIP) supports end-to-end administration, and a Digi-Claim module, operational from Kharif 2022, links the NCIP with the Public Finance Management System and insurer databases for direct transfer of claims to farmers' accounts (Ministry of Agriculture & Farmers Welfare, 2025). From Kharif 2024 a 12 percent penalty applies automatically on delayed claims, and from Kharif 2025 States must maintain an escrow account for their premium share to reduce State-level fund-release delays (Ministry of Agriculture & Farmers Welfare, 2025).

## The Commerce and Economic Perspective

### Crop Insurance as Financial Risk Management

From the Commerce point of view, PMFBY helps farmers manage the financial risk associated with crop failure. Instead of facing a large and uncertain loss after a crop failure, a farmer pays a relatively small and fixed premium for insurance coverage. An individual farmer cannot easily absorb the loss of an entire season's crop, but an insurer underwriting many farmers across regions can spread that risk over a larger, more diversified pool. Because agricultural losses are correlated with local weather events, an insurer's exposure still concentrates in a bad season, which is one reason government premium subsidy is built into the scheme rather than left to market pricing (Kaur et al., 2021). In some cases, farmers receiving PMFBY claims have received amounts several times higher than the premium they paid. This shows the financial support that crop insurance can provide to farmers during a year of crop loss (Ministry of Agriculture & Farmers Welfare, 2025).

### Farmer Income Security

PMFBY claim payments are linked to crop yield or weather-related losses. In a year when farmers suffer crop losses, the claim amount can partly compensate for the income they would have earned from the crop. A survey conducted in Haryana found that insured farmers had lower variation in their annual income compared with uninsured farmers. This suggests that participation in PMFBY may help reduce fluctuations in farm income, although it cannot remove the financial risk completely (Neeki and Bimla, 2025). Another study based on agricultural households at the national level found a positive relationship between access to crop insurance and household well-being, when considered along with employment-support measures. The findings indicate that crop insurance can play a role in supporting household income and well-being, in addition to providing compensation after crop losses (Bharne et al., 2025). A study using nationally representative household data also examined the relationship between crop-insurance participation, landholding size and other household characteristics. This is important because the level of protection received may differ among different categories of farmers (Biswal and Bahinipati, 2025).

**Agricultural Credit and Financial Inclusion**

PMFBY is closely connected with institutional agricultural credit. In the case of loanee farmers, insurance enrolment is generally done at the time of loan disbursal, and the premium is deducted from the crop loan (Ministry of Agriculture & Farmers Welfare, 2025). This connection is important from the financial inclusion point of view. Insurance coverage can provide some protection to borrowers when they face crop losses and may also give lenders greater confidence in providing agricultural credit. It also brings insurance protection to small and marginal farmers who may not purchase crop insurance on their own. Other institutions and programmes can also support financial awareness among farmers. Self-Help Groups linked with banks and Farmer Producer Organisations supported by NABARD can provide useful platforms for sharing information about insurance and other financial services (NABARD, 2024). However, simply enrolling farmers does not necessarily mean that they understand the insurance cover. For meaningful financial inclusion, farmers need to know the benefits of the scheme, the conditions of coverage and the process for making a claim.

**Government Subsidy and Economic Cost**

The premium subsidy is a major financial commitment of the government under PMFBY. The Government generally bears about 95 to 98.5 percent of the actuarial premium, while farmers pay only their prescribed share (Ministry of Agriculture & Farmers Welfare, 2025). The Union Cabinet approved the continuation of PMFBY and the Restructured Weather-Based Crop Insurance Scheme up to 2025-26. A combined outlay of ₹69,515.71 crore was approved for these schemes, showing the significant amount of public money allocated for crop insurance (Ministry of Agriculture & Farmers Welfare, 2025).

This government support can be considered a form of social insurance expenditure. It may reduce the need for separate government assistance after crop losses because insurance claims are paid according to the rules and conditions of the scheme. PMFBY is different from many conventional general insurance products because its premium is heavily supported by the government. This makes crop insurance more affordable for farmers, particularly because agricultural risks can be difficult to cover through fully market-based insurance products (IRDAI, 2024).

**Rural Economy and Multiplier Effects**

When farmers receive their insurance claim soon after a crop loss, the payment can help them repay agricultural loans, buy inputs for the next crop season and meet their regular household expenses. Farmers and rural households also spend a considerable part of their income in local markets. Therefore, timely insurance payments can help maintain local economic activity after a crop loss. Farmers may use the money for household needs as well as for agricultural activities. On the other hand, delayed or inadequate claim payments can create dissatisfaction among farmers. If compensation reaches farmers several months after the crop loss, it may not be very helpful in meeting their immediate financial needs (Neeki and Bimla, 2025). For this reason, the contribution of PMFBY to the rural economy should not be assessed only on the basis of the total amount insured or the claims paid. The time taken to settle claims and the reliability of payments are also important for providing effective financial support to farmers.

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**Figure 1: Role of Commerce Students in Creating Awareness among Farmers about PMFBY** (*Source: Author's own illustration based on PMFBY guidelines and information from the Ministry of Agriculture & Farmers Welfare.*)

**Table 1. PMFBY: Key Features from a Commerce and Extension Perspective**

| Component | Commerce Perspective | Extension Perspective | Expected Benefit |
|---|---|---|---|
| Premium structure (2% / 1.5% / 5% farmer share) | Converts a variable production risk into a small, fixed budgeted cost | Requires farmer education on how premium and sum insured are calculated | Affordable, predictable risk cover for farmers |
| Loanee auto-enrolment at loan disbursal | Reduces credit-default risk for lending banks | Requires clear communication on enrolment and opt-out rights | Wider, near-automatic coverage of borrowing farmers |
| Digi-Claim module and National Crop Insurance Portal | Enables faster, traceable, direct-to-account fund transfer | Requires digital literacy support for farmers to track claims | Reduced payment delay and improved transparency |
| YES-TECH and WINDS-based yield estimation | Provides a more data-driven, verifiable basis for claim calculation | Requires local-language explanation of technology-based methodology | Greater claim accuracy and farmer trust in assessment |
| Fasal Bima Saptah and KrishiRakshak Helpline | Generates grievance and feedback data useful for scheme monitoring | Functions as a direct extension and awareness channel at village level | Improved farmer understanding and grievance redressal |

*Source: Compiled by the author based on Ministry of Agriculture & Farmers Welfare (2025).*

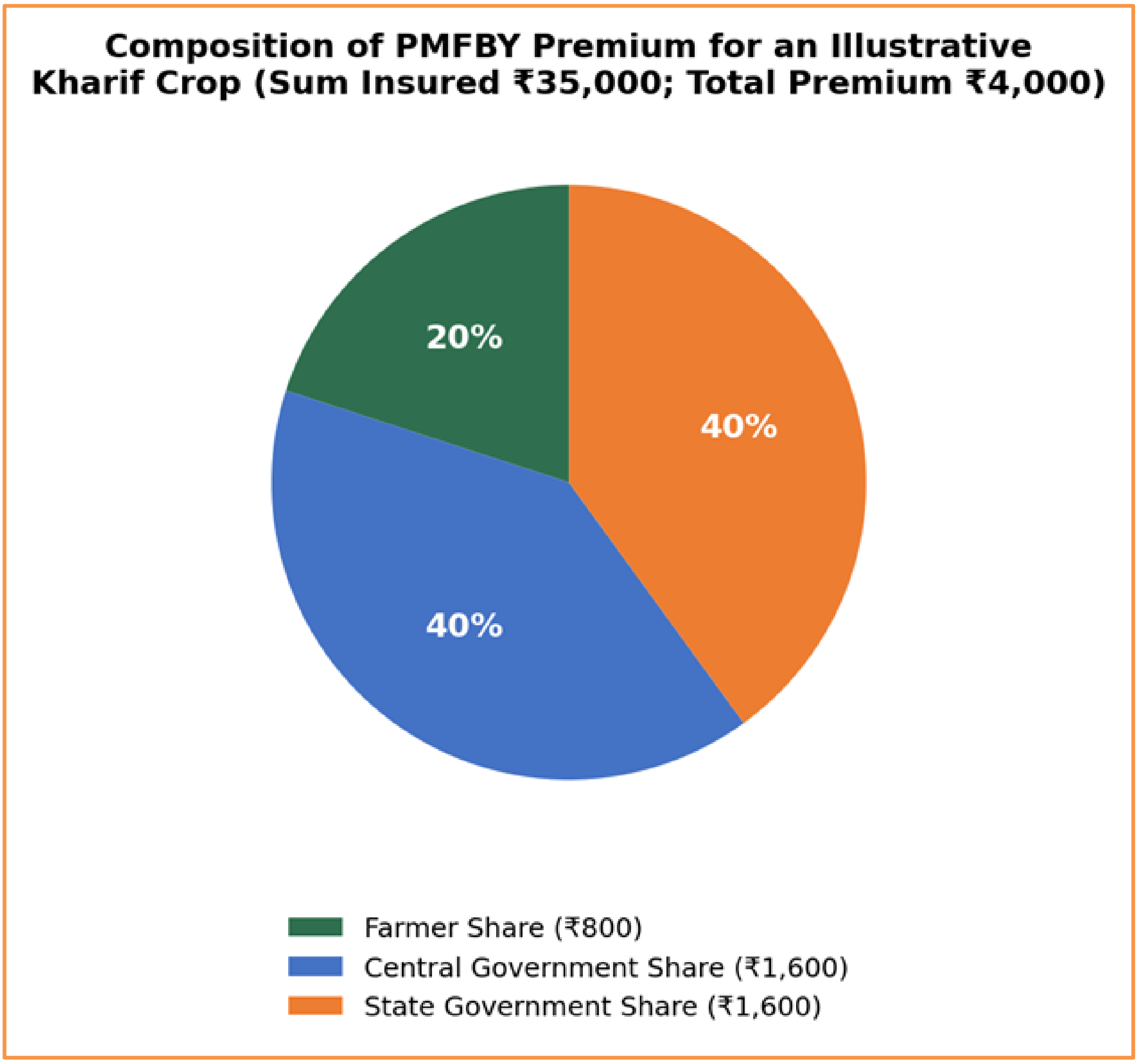


**Figure 2. Composition of PMFBY Premium Support for an Illustrative Kharif Crop**
*Year: 2025. Units: Indian Rupees (₹), illustrative sum insured of ₹35,000 per hectare with total premium of ₹4,000. Data source: Ministry of Agriculture & Farmers Welfare (2025), Press Information Bureau, Government of India. The chart shows the officially cited illustrative breakdown of a Kharif-season premium between the farmer's capped share and the jointly-borne Central and State Government subsidy; the same 50:50 subsidy-sharing principle applies to actual scheme-wide premium expenditure, though absolute amounts vary by crop, region and season.*

## Agricultural Extension Perspective

The financial architecture of PMFBY can protect only farmers who are enrolled, understand their coverage, and know how to file a valid claim; this is where Agricultural Extension becomes central. Survey evidence from Haryana found that while many farmers knew the scheme existed, considerably fewer understood provisions such as claim procedure or grievance redressal, and several respondents reported being enrolled automatically through a bank loan without a clear explanation (Neeki and Bimla, 2025). This gap between formal enrolment and functional understanding is precisely the space extension education is meant to fill. Krishi Vigyan Kendras, block-level extension functionaries, and Common Service Centres can support PMFBY through village-level demonstrations and information campaigns around enrolment cut-off dates and claim documentation. The Government's own outreach measures, including the biannual Fasal Bima Saptah (Crop Insurance Week) held since Kharif 2021, the **"Meri Policy Mere Haath"** campaign for distributing policy documents at Gram Panchayat level, and the KrishiRakshak Portal and Helpline, are essentially extension interventions built into the scheme's design (Ministry of Agriculture & Farmers Welfare, 2025). Farmer Producer Organisations and Self-Help Groups, already trusted local institutions for input supply and credit, offer a natural channel for embedding insurance literacy into existing farmer engagement (NABARD, 2024). Digital tools add a further extension dimension. Mobile applications used for Crop Cutting Experiments, along with satellite and weather-based technologies such as YES-TECH and WINDS, are gradually reducing subjectivity in yield assessment; but their acceptance among farmers depends on parallel efforts to explain, in local language, how such technology-based assessments determine the claim a farmer eventually receives (Ministry of Agriculture & Farmers Welfare, 2025). Bridging this communication gap between technical scheme design and field-level understanding remains a central task of agricultural extension in the current phase of PMFBY implementation.

## Data and Financial Analysis

Since its launch in 2016, PMFBY has seen a considerable increase in the number of farmers covered under the scheme. As of 30 June 2025, a total of 78.407 crore farmer applications had been insured. Out of these, 22.667 crore applications had received claims amounting to about ₹1.83 lakh crore (Ministry of Agriculture & Farmers Welfare, 2025). In 2024-25, about 4.19 crore farmers were enrolled, which was 32 percent higher than the 3.17 crore farmers enrolled in 2022-23. The scheme covered 6.2 crore hectares of cropped area during 2024-25 (Ministry of Agriculture & Farmers Welfare, 2025). The participation of non-loanee farmers has also increased over the years. Their number increased from 20 lakh applications in 2014-15 under the earlier crop insurance schemes to 522 lakh applications in 2024-25 (Ministry of Agriculture & Farmers Welfare, 2025). This increase indicates greater participation of farmers who are not linked to crop loans. However, the figures should be understood in the context of the different reporting periods and bases used in the official data. Overall, the available figures show that participation in PMFBY has increased over time. The large amount of claims paid in comparison with the farmer's premium contribution also reflects the strong role of government subsidy and risk pooling in the scheme.

**Table 2. Recent PMFBY Performance Indicators**

| Year / Period | Farmers Covered | Area Covered | Claims Paid | Source |
|---|---|---|---|---|
| 2022-23 | 3.17 crore farmers enrolled | Not separately reported | Not separately reported | Ministry of Agriculture & Farmers Welfare (2025) |
| 2024-25 | 4.19 crore farmers enrolled (highest since launch); 522 lakh non-loanee applications | 6.2 crore hectares | Not separately reported | Ministry of Agriculture & Farmers Welfare (2025) |
| 2016 to 2024-25 (cumulative, as on 30.06.2025) | 78.407 crore farmer applications insured; 22.667 crore applications received claims | Not separately reported | ₹1.83 lakh crore | Ministry of Agriculture & Farmers Welfare (2025) |
| 2014-15 (erstwhile schemes, for comparison) | 371 lakh farmer applications; 20 lakh non-loanee applications | Not separately reported | Not separately reported | Ministry of Agriculture & Farmers Welfare (2025) |

*Note: Figures are as reported in the cited source and are not fully comparable across rows since they reflect different reporting bases (annual versus cumulative). Only years and periods for which official comparable data are available have been included.*

## Challenges

Despite the increase in coverage, PMFBY still faces some challenges in its implementation. One major issue is the lack of awareness among farmers. A study conducted in Haryana found that while many farmers knew about the scheme, only a smaller number were aware of the claim procedure and grievance redressal process. The study also reported a decline in enrolment in some districts, which was partly related to dissatisfaction with low payouts and delays in claim settlement (Neeki and Bimla, 2025). For farmers, timely payment is important because compensation received long after a crop loss may not help them meet their immediate financial requirements. Participation in crop insurance also differs among farmers and across regions. A national-level study based on household survey data found differences in crop-insurance participation according to landholding size and other household characteristics. This suggests that smaller and more vulnerable farmers may not always receive the same level of protection as larger farmers (Biswal and Bahinipati, 2025). Another study from Haryana reported differences in awareness of PMFBY provisions between insured and uninsured farmers (Sheoran et al., 2024). Thus, the availability of the scheme does not always mean that farmers are fully aware of its benefits and procedures. The use of technology in crop-yield assessment also has some challenges. Technologies such as YES-TECH depend on reliable remote-sensing and weather data. Farmers may also have questions about how these data are used to calculate their claim amount (Ministry of Agriculture & Farmers Welfare, 2025). Clear communication can help improve farmers' understanding and confidence in the process. In addition, coordination between State Governments, insurance companies, banks and extension agencies is important for resolving issues related to yield estimates and farmer eligibility. In areas where local data systems are still developing, such coordination may take more time.

## Recommendations

From the Commerce point of view, the Digi-Claim system and escrow arrangements should be strengthened to reduce delays in claim payments. Regular monitoring of the time taken to settle claims can also help make the payment process faster and more reliable (Ministry of Agriculture & Farmers Welfare, 2025). Better coordination between banks and insurance companies is needed to reduce errors in farmer and premium-related data. Providing simple and clear information about claim status through the National Crop Insurance Portal can also improve farmers' confidence in the system. Since participation varies with landholding size, special efforts should be made to reach small and marginal farmers so that the benefits of the scheme are not limited to better-informed or larger farmers (Biswal and Bahinipati, 2025).

From the Agricultural Extension point of view, more village-level awareness programmes can be organised before the enrolment period. Krishi Vigyan Kendras, Farmer Producer Organisations and Self-Help Groups can be involved in these activities to help farmers understand the scheme and the claim process (Neeki and Bimla, 2025; NABARD, 2024). Extension workers should also be given basic training about the technologies used for crop-yield assessment so that they can explain YES-TECH and WINDS to farmers in a simple manner. Information about grievance redressal through the KrishiRakshak Helpline should be provided in local languages. Distribution of policy documents at the Gram Panchayat level should also continue because it can help farmers keep a record of their insurance coverage.

## Conclusion

PMFBY is not only a welfare scheme; it is also an important part of agricultural finance. It helps farmers manage the financial risk associated with crop losses through an insurance system supported by the Central and State Governments. The scheme can also support agricultural credit, household spending and the financial stability of small and marginal farmers. However, its benefits depend to a large extent on whether farmers understand the scheme and are able to enrol and use its services properly. Agricultural Extension can play an important role in this regard. The available evidence shows that PMFBY has expanded considerably since its launch. At the same time, problems related to farmer awareness, delays in claim settlement and differences in participation among farmer groups continue to remain. Better coordination among government departments, banks, insurance companies and extension institutions can help improve the implementation of the scheme. Continued improvements in technology and administration are also needed to make crop insurance more useful and accessible to farmers.

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