

## **Evaluating the Performance of Pradhan Mantri Fasal Bima Yojana (PMFBY) In India**

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**ABSTRACT:** Crop insurance is a critical tool for mitigating agricultural risks, providing financial protection to farmers against losses due to natural disasters, pests, and other unforeseen events. In India, the government has implemented various crop insurance schemes over the years, with the Pradhan Mantri Fasal Bima Yojana (PMFBY) being one of the most prominent initiatives. This research article evaluates the performance of PMFBY from 2016 to 2024, focusing on a state-wise and season-wise analysis. The study examines key parameters such as the number of loanee and non-loanee farmers covered, the area insured, the sum insured, premium collection, claims paid, and the number of farmers benefiting from the scheme. Using simple descriptive statistics, the analysis reveals that states like Madhya Pradesh, Rajasthan, Maharashtra, and Uttar Pradesh have reaped significant benefits from the scheme. Despite not fully meeting its original objectives, the study finds that participation in the scheme has steadily increased over time. The paper concludes by suggesting that more efforts are needed to maximize the scheme's potential and expand its reach to more farmers across the country.

**KEYWORDS:** Crop insurance, agricultural risks, compensation, MSP, PMFBYs

### **1. INTRODUCTION**

Farming is one of the oldest professions, dating back to the dawn of civilization, but it has always been a risky endeavor. The farming community faces numerous challenges, particularly from natural disasters that are beyond their control. Those involved in farming and related businesses must contend with various risks, including personal, health, price, and credit risks. For over a century, insurance has been offered to the agricultural sector to help manage these risks. Between 1915 and 1920, J.S. Chakravarthi from Mysore wrote several articles advocating for crop insurance for farmers. He introduced the concept of "Rainfall Index Insurance" as a means to protect farmers from the devastating impacts of droughts, which often led to poor crop yields and significant financial losses. (Mishra, 1995; Vyas and Singh, 2006) The first crop insurance scheme in India was launched in 1972 by the General Insurance Corporation of India.

(Singh, 2010) The total numbers of farmers covered were 3110 and the premium collected was 4.54 lakh against the claim of 37.88 lakh (Bhise et. al., 2007) The PCIS had many limitations, such as the reality that it was only available to loanee farmers, the unit of insurance was large, there was little awareness among farmers, and crops such as cotton and sugarcane were excluded from the scheme. In the entire period of this scheme total number of farmers covered was 7.63 crores and the amount of premium paid by the farmers was 403.56 crores and the claim amount was 230.45 crores. However, CCIS had some limitations, such as only covering notified crops (food crops and oilseeds), with no scope for horticulture or commercial crops. The scheme was not adaptable. Because the CCIS was only available to loanee farmers, non-loanee farmers were completely ignored. The Experimental Crop Insurance Scheme was introduced in 1997 on demand of State Governments because the State Governments were demanding for modifying the comprehensive crop insurance scheme from time to time. Due to administrative and financial troubles, the scheme was withdrawn after one season, and the Central Government introduced a new crop insurance scheme, the National Agricultural Insurance Scheme, in 1999, based on its experience (NAIS). It has covered 454555 farmers and the sum insured was 168.11 crores at the premium 2.84 crores claim against having paid 37.80 crores. The Comprehensive Crop Insurance Scheme was replaced by the National Agriculture Insurance Scheme. National Agriculture Insurance Scheme (NAIS) had introduced in the Rabi season 1999-2000 (Bhende, 2005; Vyas and Singh, 2006; Raju and Chand, 2008) It was introduced in 2003 by the government of India because previous initiatives taken by the government are considered to yield fluctuation due to natural disasters and income fluctuation due to declines in the market price. Weather Based Crop Insurance Scheme protects the farmers from losses due to the adverse condition of weather parameters like rainfall, temperature, humidity, etc. (Barnett and Mahul, 2007; Nair, 2010)

The issue with the National Agriculture Insurance Scheme and previous schemes was that they only protected farmers from yield fluctuations. However, farmers also faced revenue losses due to declines in the market prices of agricultural commodities. To address both yield and market price variability, the government introduced the Farm Income Insurance Scheme on a pilot basis during the Rabi season of 2003-04. This scheme was implemented using the homogeneous area approach, focusing on wheat and rice crops. It covered 4.15 lakh farmers, collecting a premium of 28.5 crores, with claims amounting to 28.75 crores. The scheme successfully protected farmers from yield fluctuations and was incorporated as part of the National Agriculture

Insurance Scheme. Starting in the Rabi season of 2010-2011, the scheme was launched on a pilot basis in 50 districts, covering 2.29 lakh farmers, with a premium collection of 824.38 crores and claims of 234.27 crores.

Since independence, the Government of India has launched various insurance programs, but in 1972, the first-ever crop insurance scheme was introduced, targeting specific areas and crops. This was followed by the introduction of a pilot crop insurance scheme, which later evolved into a comprehensive crop insurance program linked to agricultural credit. The National Agriculture Crop Insurance Scheme was then launched at the national level, but it had several limitations. As a result, a modified version, the National Crop Insurance Scheme, was introduced, followed by a weather-based and restructured version of the weather-based crop insurance program. Currently, the Pradhan Mantri Fasal Bima Yojana (PMFBY) operates nationwide.

The scheme was launched in the Kharif season of 2016 under the "One Nation-One Scheme" concept by the central government. Its operations began on April 1, 2016, with a budget allocation of ₹5500 crores for the 2016-17 fiscal years. PMFBY replaced both the National Agriculture Insurance Scheme (NAIS) and the Modified National Agriculture Insurance Scheme (MNAIS). The primary aim of the scheme is to safeguard farmers' income, stabilize their earnings, and encourage the adoption of modern farming techniques. It covers all crops for which past yield data is available and crop cutting experiments can be conducted. The premium rates are 2% for Kharif crops, 1.5% for Rabi crops, and 5% for annual commercial and horticultural crops. The difference between the premium paid by farmers and the insurer's rate is shared equally by the central and state governments. The scheme operates on an area-based approach and applies uniformly to both loanee and non-loanee farmers. Claims are directly credited to farmers' bank accounts electronically. Keeping the above facts, the present study made an attempt to review the evolution of various crop insurance schemes of India prior to PMFBY and the framework of PMFBY, to assess the state wise and season wise performance of PMFBY in India and to identify the challenges and recommendations in its effective implementation.

## **2. MATERIALS AND METHODS**

The present study is descriptive in nature and is based on secondary data which were collected from the Annual Report of AIC, Report of Planning Commission (2009), and Agriculture

Statistics as a Glance (2023), Farmer Situation Assessment Surveys, previous studies on this issue and related websites such as <http://agricoop.nic.in>, [www.ascofindia.org](http://www.ascofindia.org) etc. The collected data has been transcribed into tables and graphs with help of a simple percentage that has been calculated for each element of this scheme by using a formula such as:

*Percentage of Farmer*

$$= \text{farmers from state} / \text{total number of loanee Farmers in this scheme} \times 100$$

### 3. RESULTS AND DISCUSSION

**3.1. PMFBY: An overview of the Scheme:** The Pradhan Mantri Fasal Bima Yojana (PMFBY) is a comprehensive crop insurance scheme designed to protect farmers from unforeseen adversities, launched in 2016. This flagship initiative aligns with the concept of One Nation–One Scheme and replaces three previous programs—the Modified National Agricultural Insurance Scheme (MNAIS), the Weather-based Crop Insurance Scheme, and the National Agricultural Insurance Scheme (NAIS). By integrating the best features of these older schemes and addressing their shortcomings, PMFBY aims to enhance the insurance services available to farmers. Administered by the Department of Agriculture, Cooperation and Farmers' Welfare under the Ministry of Agriculture, in collaboration with selected general insurance companies, the scheme provides coverage for the entire cropping cycle, from pre-sowing to post-harvest, as well as protection against midseason risks. It safeguards farmers against financial losses caused by unpredictable events such as crop failure, localised risks, post-harvest losses, natural disasters, unseasonal rainfall, crop diseases, and pest infestations. The primary objective of PMFBY is to ease the financial burden of insurance premiums on farmers while ensuring the timely settlement of claims.

#### **Aims of PMFBY**

The Pradhan Mantri Fasal Bima Yojana (PMFBY) operates under the principle of 'One Nation, One Crop, One Premium' and seeks to accomplish the following objectives:

- Provide affordable and comprehensive insurance coverage to protect farmers from crop failure, damage, and losses.
- Increase the reach and coverage of crop insurance, focusing on ensuring that the entire sown area is included.

- Stabilize farmer incomes and promote long-term sustainability in agricultural production.
- Facilitate the flow of credit to the agricultural sector, ensuring financial support for farmers.
- Encourage the adoption of innovative and modern farming practices among farmers.
- Foster competition within the agricultural sector to drive improvements and efficiency.
- Shield farmers from production-related risks, offering financial security against unpredictable events.
- Provide tax exemptions under the Goods and Services Tax (GST) to benefit farmers directly.

### **Insurance Coverage under the PMFBY Scheme**

The Pradhan Mantri Fasal Bima Yojana (PMFBY) offers insurance coverage for specific crops and agricultural risks associated with crop yield. The scheme includes a range of notified crops, such as food crops (cereals, millets, and pulses), oilseeds, annual commercial crops, and annual horticultural crops. The coverage extends across all stages of the crop production cycle, with specific inclusions and exclusions as outlined below:

- **Initial Stage – Risk of Sowing, Planting, and Germination Failure:** This covers situations where the insured area is unable to complete successful sowing, planting, or germination due to adverse weather conditions, such as insufficient rainfall.
- **Growth Stage – Risk of Standing Crop Failure:** Insurance coverage is provided for crops damaged during the growing phase due to non-preventable risks, including droughts, dry spells, floods, inundation, pest infestations, crop diseases, landslides, natural fires, lightning, hailstorms, and cyclones.
- **Harvest Stage – Risk of Post-Harvest Losses:** This applies to crops that require drying in cut-and-spread or small bundles after harvesting. Coverage is provided for losses occurring within two weeks of harvest, including losses due to hailstorms, cyclones, cyclonic rains, and unseasonal rainfall.
- **Protection against Calamities:** The scheme also covers losses or damage to notified insured crops caused by localized risks such as hailstorms, landslides, cloudbursts, and natural fires.
- **Exclusions:** The insurance does not cover losses or damage due to preventable risks, including war, nuclear risks, malicious damage, and other such occurrences.

The insurance claim amount is determined based on the shortfall from the threshold yield, multiplied by the sum insured. The sum insured is calculated based on the scale of finance provided to farmers, while the threshold crop yield is derived from seven years of data and indemnity levels.

#### **Premiums under the PMFBY Scheme**

To participate in the PMFBY, farmers must pay a nominal share of the actuarial premiums. The premium rates are as follows: Kharif crops: 2%, Rabi crops: 1.5%, Commercial crops: 5% and Horticultural crops: 5%. The remaining actuarial premium, typically ranging from 95% to 98.5%, is borne by the central and state governments in equal shares. For instance, if a farmer insures one hectare of land with a sum insured of Rs. 35,000 (US\$ 477) and the actuarial premium is Rs. 4,000 (US\$ 54.5), the farmer would only pay 2% (Rs. 800/US\$ 10.9) of the premium for Kharif crops. The central and state governments would each contribute Rs. 1,600 (US\$ 21.8) toward the premium.

#### **Beneficiaries of the PMFBY Scheme**

The scheme is available to all farmers (including sharecroppers and tenant farmers) growing notified crops in the designated areas, provided they have an insurable interest in the crops.

Farmers eligible for coverage can be categorized as follows:

- **Loanee Farmers:** These are farmers who have received loans for seasonal agricultural operations (SAO) from financial institutions. Insurance premiums are deducted directly from their SAO crop loans. However, crops secured by loans against other collateral (such as fixed deposits or gold) that do not involve insurable interest are not covered. All loanee farmers must enroll under the PMFBY.
- **Non-Loanee Farmers:** This category includes farmers who have opted for non-standard Kisan Credit Card (KCC)-linked crop loans or those who have not taken any crop loans. While non-loanee farmers are not automatically enrolled, they may voluntarily participate in the scheme to mitigate risks and access insurance benefits.

All loanee farmers are required to be enrolled in the scheme, while non-loanee farmers have the option to voluntarily join.

#### **Insurance Companies Participating in the PMFBY Scheme**

The Pradhan Mantri Fasal Bima Yojana (PMFBY) is implemented through the involvement of 18 insurance companies that were selected as empanelled partners and responsible for providing insurance coverage to farmers under the PMFBY scheme.

**Comparison of Pradhan Mantri Fasal Bima Yojana with Other Crop Insurance:** Table 1 highlights the key differences between three major crop insurance schemes in India: The National Agricultural Insurance Scheme (NAIS) (1999), the Modified National Agricultural Insurance Scheme (MNAIS) (2010), and PMFBY (2016). The NAIS offered low premiums but provided full insurance coverage and did not address localized risks or post-harvest losses. In contrast, the MNAIS had higher premiums, capped insurance coverage, and introduced coverage for localized risks like hailstorms and landslides, but lacked post-harvest coverage outside coastal areas. The PMFBY improves on both schemes by offering lower premiums with significant government subsidies, full insurance coverage, and expanded protections, including coverage for prevented sowing, post-harvest losses, and localized risks like inundation. Additionally, PMFBY mandates the use of technology for better implementation and has an increased focus on awareness to expand coverage to 50% of farmers. Unlike the NAIS, which only involved government insurers, both the MNAIS and PMFBY included private insurance companies, fostering competition. Overall, PMFBY represents a more comprehensive, farmer-friendly evolution of crop insurance in India, addressing previous gaps in coverage and enhancing efficiency through technology and broader participation.

**Table-1: Comparison of PMFBY with other crop insurance**

<b>Feature</b>	<b>NAIS(1999)</b>	<b>MNAIS(2010)</b>	<b>PMFBY(2016)</b>
Premium rate	Low	High (9-15%)	Low (Govt to contribute five times that of farmer)
One Season –One Premium	Yes	No	Yes
Insurance Amount Covered	Full	Capped	Full
On Account Payment	No	Yes	Yes
Localized Risk Coverage	No	Hailstorm, Landslide	Hailstorm, landslide, Inundation
Post Harvest Losses Coverage	No	Coastal areas	All India
Prevented sowing coverage	No	Yes	Yes
Use of Technology	No	Intended	Mandatory
Awareness	No	No	Yes (target to double coverage to 50%)
Insurance Companies	Only Government	Govt and private Companies	Govt and private companies

Source: PIB, Ministry of Agriculture and farmers Welfare, January 2016

### 3.2. State and Region wise performance and farmers benefitted from PMFBY

The following Table 2 depicts the position of state-wise beneficiaries under the PMFBY from the year 2016-2024.

**Table-2: State Wise Performances of PMFBY from 2016 to 2023-24(Kharif)**

	Farmers (%)	Area Insured (%)	Sum Insured (%)	Farmers Shared (%)	Gross Premium (%)	Paid Claims (%)
<b>North Zone</b>						
Himachal Pradesh	0.37	5.26	0.34	0.69	0.34	0.25
Uttarakhand	0.28	2.60	0.45	0.83	0.52	0.43
Uttar Pradesh	6.71	7.52	9.04	8.64	4.73	3.24
Haryana	3.15	3.35	5.52	6.37	3.18	5.31
Jammu& Kashmir	0.12	0.11	0.18	0.17	0.13	0.06
<b>East Zone</b>						
Bihar	0.80	1.10	1.27	1.19	1.06	0.47
Odisha	8.10	2.57	4.03	3.53	4.43	4.21
Jharkhand	0.71	0.46	0.63	0.23	0.54	0.55
West Bengal	2.16	1.33	2.18	0.95	0.91	0.76
<b>West Zone</b>						
Rajasthan	25.17	19.34	16.52	17.86	16.32	16.48
Gujarat	1.34	2.68	3.14	4.65	5.24	3.43
Goa	0.00	0.00	0.00	0.00	0.00	0.00
Maharashtra	17.38	15.46	15.43	16.44	21.65	19.83
<b>South Zone</b>						
Andhra Pradesh	4.76	3.37	6.06	2.41	4.00	3.35
Karnataka	2.89	0.04	4.55	6.48	7.53	7.82
Kerala	0.12	0.10	0.19	0.19	0.26	0.35
Tamil Nadu	5.25	2.75	4.16	3.79	7.00	8.78
Telangana	0.62	0.96	1.58	2.16	1.04	1.19
<b>Central Zone</b>						
Madhya Pradesh	13.35	21.79	19.20	18.98	16.76	18.77
Chhattisgarh	5.66	4.49	4.12	4.34	3.92	4.34
<b>North Eastern zone</b>						
Assam	0.82	0.73	1.30	0.07	0.41	0.38
Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
Meghalaya	0.01	0.00	0.01	0.00	0.01	0.00
Manipur	0.01	0.01	0.01	0.01	0.01	0.00
Tripura	0.22	0.06	0.10	0.01	0.02	0.00

Source: Authors calculation based on the data of DA & Fw.



According to Table-2 and Figure-1, the majority of farmers were from Rajasthan (25.17%), followed by Maharashtra (17.38%), Madhya Pradesh (13.35%), and Odisha (5.34%). Farmers under the PMFBY scheme are most prevalent in the West zone. Uttar Pradesh has shown a higher percentage of farmers in the northern zone. In the eastern zone, Odisha holds a higher share. Tamil Nadu (5.25%) and Andhra Pradesh (4.76%) are the two states that dominate the south zone. When it comes to covering farmers in the Northeast, Assam has done well. In this area, Goa and Sikkim continue to be the least productive states. After Uttar Pradesh (7.52%), Maharashtra (15.46%), and Rajasthan (19.34%), Madhya Pradesh (21.79%) leads the way in obtaining area insurance from farmers. The findings showed that Maharashtra farmers paid the highest percentage of premiums (21.65%), followed by Madhya Pradesh (16.76%) and Rajasthan (16.32%). Once more, Madhya Pradesh (18.77%) and Rajasthan (16.48%) are the states with the highest number of claims, followed by Maharashtra (19.83%). In terms of farmers covered, the area covered, the quantity insured, the premium, and claims, the performance of this specific scheme was woefully inadequate, especially when considering the Northeast region, Jammu & Kashmir as well as Goa.

**Fig-1: State wise Performance of PMFBY**

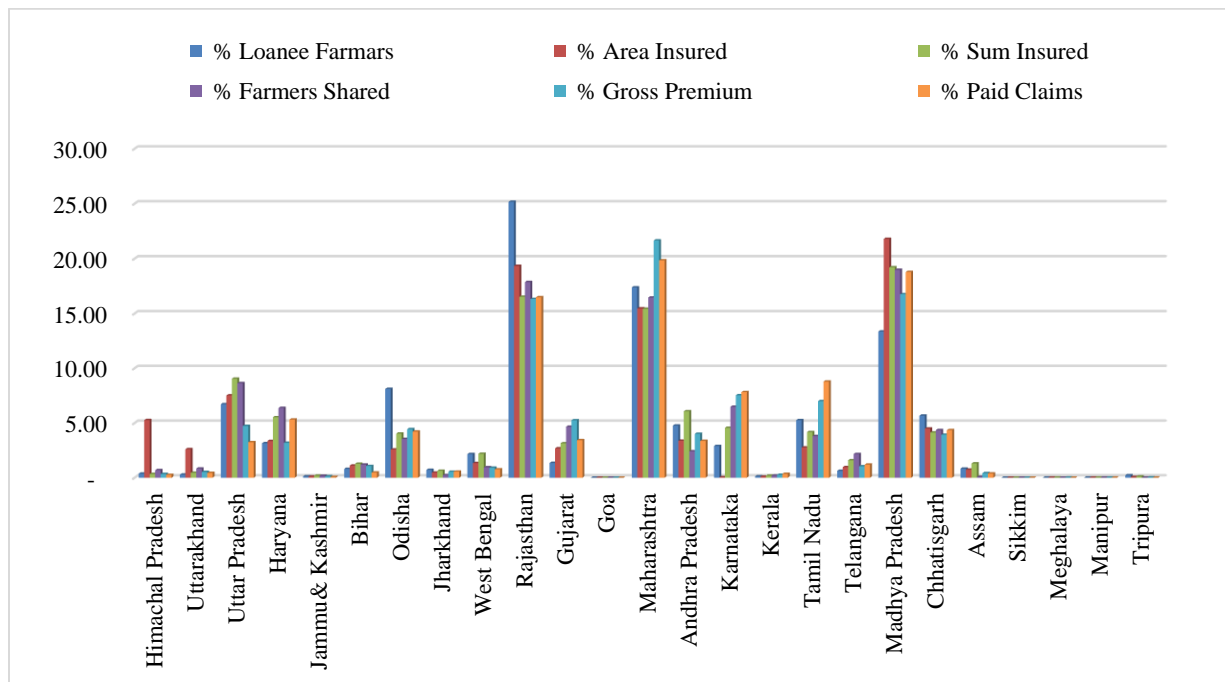


Table-3 shows that the gross premium to sum insured ratio is highest in the southern states (0.81%) and western states (0.56%), while it is lowest in the central zone and northeastern states. While North-eastern areas have received relatively little payment (0.13%), Southern and Western states have received the largest percentage of claims against sum insured. The biggest percentage of claims (3.92%) and more than the entire gross premium have been obtained by the Southern states. States in the North-East region, which got the second-highest claims (3.16%) relative to the total gross premium amount, came in second. Additionally, it is noted that claims against the gross premium have been lower in the eastern states (2.27%) and central zone (1.56%).

**Table-3: Cumulative Financial Performance of PMFBY from 2016-17 to 2023-24 in India (Rabi)**

Region	States	Gross Premium to Sum Insured Ratio	Claims Paid to Sum Insured	Claims Paid to Gross Premium Ratio
North Zone (NZ)	Himachal Pradesh	0.13	0.07	0.53
	Uttarakhand	0.16	0.09	0.58
	Uttar Pradesh	0.07	0.03	0.48
	Haryana	0.08	0.09	1.17
	Jammu& Kashmir	0.10	0.03	0.32
<b>Total (NZ)</b>		<b>0.53</b>	<b>0.32</b>	<b>3.08</b>
EAST ZONE (EZ)	Bihar	0.11	0.03	0.31
	Odisha	0.15	0.10	0.67
	Jharkhand	0.12	0.08	0.72
	West Bengal	0.06	0.03	0.58
<b>Total (EZ)</b>		<b>0.43</b>	<b>0.25</b>	<b>2.27</b>
West Zone (WZ)	Rajasthan	0.13	0.09	0.71
	Gujarat	0.22	0.10	0.46
	Goa	0.01	0.01	0.64
	Maharashtra	0.19	0.12	0.64
<b>Total (WZ)</b>		<b>0.56</b>	<b>0.33</b>	<b>2.44</b>
South Zone (SZ)	Andhra Pradesh	0.09	0.05	0.59
	Karnataka	0.22	0.16	0.73
	Kerala	0.19	0.18	0.93
	Tamil Nadu	0.23	0.20	0.88
	Telangana	0.09	0.07	0.80
<b>Total (SZ)</b>		<b>0.81</b>	<b>0.66</b>	<b>3.92</b>

Central Zone (CZ)	Madhya Pradesh	0.12	0.09	0.78
	Chhattisgarh	0.13	0.10	0.77
<b>Total (CZ)</b>		<b>0.24</b>	<b>0.19</b>	<b>1.56</b>
North Eastern Zone (NEZ)	Assam	0.04	0.03	0.64
	Sikkim	0.03	0.06	1.79
	Meghalaya	0.09	0.00	0.04
	Manipur	0.07	0.04	0.53
	Tripura	0.03	0.00	0.15
<b>Total (NEZ)</b>		<b>0.27</b>	<b>0.13</b>	<b>3.16</b>
<b>Grand Total</b>		<b>2.31</b>	<b>1.55</b>	<b>13.35</b>

**Source:** Authors calculation based on the data of DA & Fw.

### 3.3 Seasonwise Assessment and farmers benefitted from PMFBY (2016-2024)

The following Table depicts the position of state-wise beneficiaries under the PMFBY from the year 2016-2024:

**Table-4: Kharif Seasons Performance of PMFBY During 2016-17 to 2023-24 in(%)**

Financial Year	Total Farmers	Area Insured	Sum Insured	Paid claims
2016-17	6.51	8.99	7.62	6.59
2017-18	5.71	7.86	7.26	11.30
2018-19	5.56	7.59	8.16	12.39
2019-20	6.80	8.04	8.48	13.57
2020-21	6.78	6.81	6.78	9.19
2021-22	8.05	5.99	5.95	9.28
2022-23	11.05	6.36	7.40	7.48
2023-24	13.37	7.53	9.22	3.34

Source: Author calculations based on data collected from DA & fw, Data as on 31 May 2024

**Fig-2: PMFBY-Kharif Seasons**

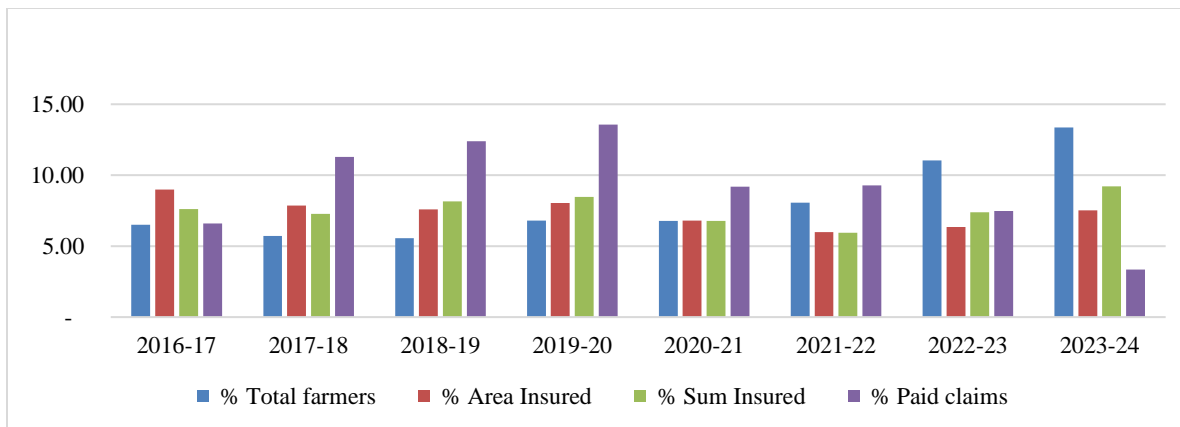


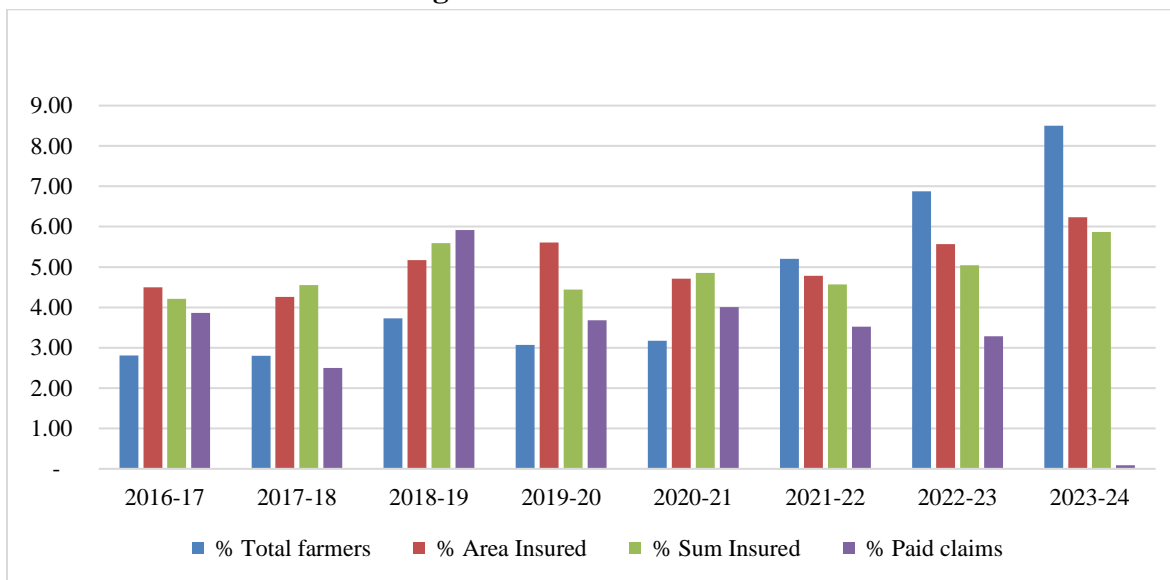
Table-4 and figure-2 displays PMFBY's performance regarding the total number of farmers' applications, area insured, sum insured, and total number of farmers benefitted by claim payment. Kharif 2023–24 has the largest share of farmers (13.37%), followed by 2022–23 (11.05%) and 2021–22 (8.05%), and 2018–19 has the lowest percentage (5.56%). Season 2016–17 has the highest proportion of total area insured (8.99%), followed by 2019–20 (8.04%) and 2021–22 (5.99%). The season with the largest sum insured was 2023–2024 (9.22%), followed by 2019–20 (8.48%), and 2021–2022 (5.95%). The Kharif season of 2019–20 showed the greatest number of farmers benefit (13.57%), followed by 2018–19 (12.39%), and 2023–24 saw the lowest number (3.34%). From the above findings, we can reveal that the season 2021-22 has the lowest performance among all seasons.

**Table-5: Rabi Seasons Performance of PMFBY During 2016-17 to 2023-24 (in %)**

Financial Year	Total Farmers	Area Insured	Sum Insured	Paid claims
2016-17	2.81	4.50	4.21	3.86
2017-18	2.80	4.26	4.55	2.50
2018-19	3.73	5.17	5.59	5.91
2019-20	3.07	5.61	4.44	3.68
2020-21	3.17	4.71	4.86	4.01
2021-22	5.20	4.78	4.57	3.52
2022-23	6.87	5.57	5.04	3.29
2023-24	8.50	6.23	5.87	0.09

Source: Author calculations based on data collected from DA & fw, Data as on 31 May 2024

**Fig-3: PMFBY-Rabi Season**



PMFY's performance is displayed in Table-5 and Figure-3 regarding the quantity of farmers' applications, area insured, sum insured, and the total number of farmers who benefited from claim payment during the Rabi season. The maximum percentage of farmers applying was 8.50 percent in 2023–2024, while the lowest percentage was 2.80 percent in 2017–2018. Seasons with the largest percentage of total area insured under Rabi are 2023–2024 (6.23%), 2019–20 (5.61%), and 2017–18 (4.26%). Season 2023–24 (5.87%) is the best season when the performance is evaluated in terms of the sum insured. Ultimately, the performance is evaluated by counting the number of farmers who received payment for their claims, and the highest percentage is 5.91 percent for the 2018–19 season, followed by 4.01% for the 2020–21 season. According to the table, farmers receive the fewest claims in the 2020 season because only 0.09% of farmers were benefitted.

### 3.4. Issues in implementation of PMFBY

- A primary challenge in the implementation of PMFBY is the low level of awareness, particularly among small and marginal farmers, about the scheme's benefits, terms, and the claims process. Awareness levels vary significantly across states, with rural areas often lagging behind.
- Although enrollment has been increasing year on year, it has not reached its full potential. In 2021-22, only 5.7 crore farmers enrolled for crop insurance out of the total eligible farming population, leaving many uncovered. Factors contributing to low enrollment

include lack of understanding, non-availability of resources, and trust issues in the system.

- One of the most reported problems with PMFBY is the delay in claim settlements, especially during the Kharif season, which faces the brunt of unpredictable weather patterns like floods and droughts. For instance, during the 2019-20 season, around ₹16,000 crore worth of claims were disbursed, but delays were rampant in several states.
- Farmers often feel they are not adequately compensated for their crop losses. According to the Comptroller and Auditor General (CAG) report, only about 48% of farmers received their rightful claims after natural calamities, especially in areas with improper damage assessments.
- The scheme has a complex premium structure that varies according to the crop, region, and insurance company. This has led to confusion and difficulties for farmers to fully understand the costs associated with enrollment. For instance, premium rates can range from 2% for cereal crops to 5% for horticultural crops, which can be unaffordable for many.
- While the government subsidizes a large part of the premium, the remaining portion is still a burden for small farmers. In states with higher agricultural risks like Maharashtra, Bihar, and Uttar Pradesh, the premiums often end up being a financial strain for farmers, discouraging them from enrolling.
- The process of assessing the extent of crop damage, which determines the claim amount, has been criticized for being subjective and inconsistent. In some states, local agents or ground-level assessors are not always able to accurately determine crop loss, leading to discrepancies in claim disbursement.
- The use of satellite technology, drones, and other high-tech solutions for assessing damage has not been uniformly implemented. In many areas, technical infrastructure is lacking, which leads to delays in damage assessment and inaccurate loss estimates.
- States like Punjab, Maharashtra, and Telangana have better access to technology and have seen improvements in the damage assessment process. However, states like Uttar Pradesh, Bihar, and Odisha still face significant challenges due to limited access to modern technology.

- The implementation of PMFBY across India has shown significant variability due to differences in state infrastructure, awareness, and government support. Maharashtra, a leader in coverage and enrollment, continues to face challenges like delays in claims and low awareness among rural farmers, despite high payouts in 2020-21 for crop losses due to unseasonal rains. Bihar and Uttar Pradesh struggle with poor implementation, low enrollment, and delayed claims, with Uttar Pradesh having only 22.2% farmer enrollment in 2021-22, compounded by infrastructure issues. Telangana, one of the more successful states, achieved over 60% enrollment in 2020 and reduced payout delays, though weather and loss estimation challenges persist. Tamil Nadu, while showing good participation, faced difficulties in 2021-22, especially in claim settlements and loss assessment accuracy following floods and unseasonal rains.
- The challenges in implementing PMFBY vary across agricultural seasons. The Kharif season (June-October), which includes major crops like rice, cotton, and maize, is particularly vulnerable to erratic weather, such as floods and droughts. In 2019, over ₹10,000 crore in claims were disbursed due to such events, with states like Andhra Pradesh, Bihar, and West Bengal facing frequent floods, while Gujarat and Maharashtra struggle with droughts. The Rabi season (November-March), though less prone to extreme weather, still experiences risks from late cold spells and unseasonal rainfall, creating challenges in timely claims, particularly in states like Punjab, Haryana, and Uttar Pradesh. The Zaid season (March-June), which covers crops like watermelon and summer rice, faces limited insurance coverage and losses due to unseasonal heat and pest attacks, especially in states like Rajasthan, highlighting gaps in the broader PMFBY framework.
- The decentralized nature of PMFBY leads to administrative bottlenecks, where claims processing can be delayed due to slow coordination between local agencies, insurers, and the government. This has been particularly prevalent in states with weak administrative infrastructure. Poor coordination between the **central and state governments, insurance companies, and local agricultural departments** often results in **inconsistent claim settlements** and procedural delays, further complicating the scheme's implementation.

### 3.4. Suggestion for effective implementation of PMFBY in India

Effective implementation of the Pradhan Mantri Fasal Bima Yojana (PMFBY) can be further enhanced through several strategic measures. First, capacity building of officials is crucial to ensure the accurate and timely uploading of Crop Cutting Experiment (CCE) data and farmers' information on the Crop Insurance Portal (CIP). Regular updates on the CCE App and CIP should be prioritized. Village Level Entrepreneurs (VLEs) in Common Service Centres (CSCs) and AapKe Sarkar Seva Kendras (in Maharashtra) play a vital role in assisting farmers with application submissions and documentation. To streamline the process, banks should establish more counters and help desks to assist farmers in completing documentation before the cut-off date, as seen in crowd, where police deployment helped manage rushes during critical times. The opening of zero-balance accounts in cooperative banks can facilitate quicker premium collection and distribution of claims for both loanee and non-loanee farmers. Additionally, Primary Agriculture Credit Societies (PACS) should be involved as they have strong local connectivity and can serve as effective agents for insurance companies. District-level interventions, such as extending banking hours or keeping banks open on holidays, are also essential to meet farmers' needs. Regular monitoring by District Level Monitoring Committees (DLMCs) ensures continuous oversight and progress evaluation. Technological innovations, such as Crop Signatures from Remote Sensing-based information and satellite technology (RIICE), can help accurately assess claims, as demonstrated in Sivaganga. Furthermore, Aadhaar authentication, linking of Jan Dhan accounts, and Direct Benefit Transfer (DBT) mechanisms ensure seamless claim transfer to beneficiaries. To promote transparency, the presence of Village Level Workers (VLWs) alongside insurance company representatives during the application and crop damage assessment processes is essential. Lastly, a robust grievance redressal mechanism should be established, allowing farmers to resolve issues through platforms like WhatsApp groups, call centers, toll-free numbers, and regular stakeholder meetings. These measures will enhance the effectiveness and efficiency of PMFBY, ensuring better service and timely assistance to farmers.

#### **4. CONCLUSION**

PMFBY has shown significant promise, especially in states like Rajasthan, Maharashtra, and Madhya Pradesh, but issues such as geographical disparities, inconsistent claims processing, and lack of awareness remain significant hurdles. The Southern and Northeast zones show better efficiency in terms of claims, but underperformance in areas like Goa, Sikkim, and parts of Northeast India continue to undermine its effectiveness. Regional and seasonal variations,



operational challenges, and limited infrastructure highlight the need for policy reforms and technological advancements to ensure better implementation and farmer satisfaction under the PMFBY scheme.

### **Author's Contribution**

This manuscript has been the original work of Nandita Debnath and Prof Giribabu M. Nandita participated in conceptualization, methodology, data curation, writing – original draft. Prof.Giribabu M. participated and contributed to the instrumentation, validation, formal analysis, writing- review and editing.

### **Conflict of Interest**

The authors declares that there is no conflict of interest with respect to research, authorships and publications of the case.

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