



REVOLUTIONIZING CROP INSURANCE IN INDIA THROUGH THE PRISM OF PRADHAN MANTRI FASAL BIMA YOJANA (PMFBY)

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KEYWORDS :

Crop insurance serves as a collective safety net, drawing contributions from numerous individuals to shield a select few from the harsh blows dealt by nature, including fire, weather extremes, floods, pests, and diseases. This financial sanctuary is designed to rescue farmers from the precipice of economic ruin when their crops succumb to anticipated failure. The insured amount, a flexible parameter, could encompass the entire expenditure, a multiple thereof, or a portion of the projected crop income. The litmus test for claims lies in the deficit between the actual yield and the promised threshold yield. The genesis of India's foray into crop insurance traces back to the aftermath of independence in 1947. A critical deliberation unfolded, oscillating between an individualistic approach, compensating farmers for their personal losses, and a communal strategy treating entire villages as cohesive units based on shared crop production characteristics. The latter garnered preference, yet when presented to state governments, it encountered resolute rejection. In the annals of 1965, the Central Government floated a mandatory Crop Insurance Bill, a proposition met with unanimous disapproval from the states owing to the burdensome financial commitments it entailed. In response, an Expert Committee was convened to scrutinize the economic, administrative, and financial implications. The seeds of limited experiments in crop insurance were sown in 1972-73. Despite the imperfect iterations of various schemes, India has maintained a publicly administered crop insurance initiative since 1972. Nevertheless, both developed and developing nations have grappled with challenges intrinsic to such schemes, contending with losses and operational inefficiencies. Publicly managed crop insurance systems are often criticized for being expensive, susceptible to moral hazards, and lacking inherent profitability.

The management of crop risks through the implementation of crop insurance in the country began in 1985 with the initiation of the Comprehensive Crop Insurance Scheme (CCIS). Subsequently, the National Agricultural Insurance Scheme (NAIS) operated from 1999-2000 to 2012-13. NAIS, a more liberalized version, aimed to cover non-loanee farmers and expand the scope and coverage of risks. Concurrently, several Pilot Projects (PPs) were launched to explore the feasibility of improved and more comprehensive crop insurance products. The culmination of these efforts resulted in the National Crop Insurance Programme (NCIP), introduced in 2013-14. It consisted of three component schemes: Modified NAIS (MNAIS), Weather Based Crop Insurance Scheme (WBCIS), and Coconut Palm Insurance Scheme (CPIS). Shortly thereafter, NCIP underwent further restructuring and was relaunched as the Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS) in 2016.

PMFBY was conceptualized as a significant initiative to offer farmers across the country a comprehensive risk solution with a simplified and minimal premium structure. The scheme aimed for early settlement of crop assurance claims for the full-insured sum, providing a comprehensive insurance cover against crop failure. The premium rates were set at 2 per cent for Kharif crops, 1.5 per cent for Rabi crops, and 5 per cent for annual commercial and horticultural crops. The scheme leveraged digital technology, including mobile-based applications and other technologies like remote sensing/satellite imagery for loss assessment. PMFBY also facilitated stakeholder collaboration through the National Crop Insurance Portal (NCI-Portal), covering all non-preventable natural risks from pre-sowing to post-harvest. Emphasis was placed on ensuring adequate claim amounts and timely settlement of claims. The premium cost beyond

the farmers' share, compared to the market-discovered rate, was shared equally by the union and state governments. However, in the case of the northeastern states, the union government bore a higher obligation at 90 per cent (Ashok Dalwai, 2022).

Objectives of the Study and Methodology

The study has examined the farmers applications insured, areas insured and farmer applications benefitted at the national and state level. The study is based on secondary data. Secondary data is collected from official website of the PMFBY, Government of India.

Comparison of PMFBY (2016) with NAIS (1999) and MNAIS (2010)

The comparative analysis of three prominent crop insurance schemes—NAIS (1999), MNAIS (2010), and PMFBY (2016)—reveals key differences and similarities in various features aimed at safeguarding farmers against agricultural risks. In terms of premium rates, NAIS (1999) offered low rates ranging from 1.5 to 3.5 per cent, with no premium subsidy for horticulture or commercial crops. In contrast, MNAIS (2010) featured higher premium rates, reaching up to 15 per cent, and provided premium subsidies for all crops. PMFBY (2016) adopted a middle ground, with premium rates almost equal to NAIS, ranging from 1.5 to 5 per cent, and extending premium subsidies to all crops.

The units for insurance implementation varied across the schemes. NAIS (1999) operated at the Village Panchayat, block, and taluka levels. MNAIS (2010) narrowed the focus to the village or village Panchayat for major crops, a trend continued by PMFBY (2016). Indemnity levels, indicating the percentage of coverage against losses, showed progression across the schemes. NAIS (1999) offered levels of 60, 80, and 90 per cent. MNAIS (2010) increased coverage to 80 and 90 per cent, and PMFBY (2016) set levels at 70, 80, and 90 per cent.

Sum insured, reflecting the amount covered in case of loss, exhibited changes in the calculation method. NAIS (1999) based it on the loan amount, value of the threshold yield, or 150 per cent of the average yield. MNAIS (2010) used the sanctioned credit limit, value of threshold yield, or 150 per cent of the average yield. PMFBY (2016) aligned with the scale of finance for this calculation. The introduction of the "One season-one premium" concept was a feature unique to NAIS (1999) and PMFBY (2016), as opposed to MNAIS (2010). PMFBY also maintained full insurance coverage amounts, differentiating from MNAIS, which capped coverage. On-account payments, designed to provide interim relief, were absent in NAIS (1999), present in MNAIS (2010), and continued in PMFBY (2016). The schemes also addressed localized risks, with PMFBY (2016) broadening coverage to include hailstorms, landslides, and inundation. Post-harvest cyclonic rain coverage expanded from coastal areas in MNAIS (2010) to nationwide in PMFBY (2016). Additionally, PMFBY introduced coverage for prevented sowing, a feature not present in either NAIS or MNAIS.

The integration of technology for quicker claim settlement became mandatory in PMFBY (2016), differentiating it from NAIS (1999), which had no such provision, and MNAIS (2010), which intended to use technology. Claim liability responsibility exhibited a shift from unlimited government underwriting in NAIS (1999) to 500 per cent of seasonal gross premium in MNAIS (2010) and further to 350 per cent in PMFBY (2016). The minimum sample size for Crop Cutting Experiments (CCE) remained unspecified in NAIS (1999), while

MNAIS (2010) and PMFBY (2016) aligned their sample size requirements. Changes in monitoring mechanisms were notable. MNAIS (2010) introduced provisions for social audits and beneficiary lists sent to Gram Panchayats, while PMFBY (2016) removed social audit provisions and altered the beneficiary cross-checking process. Lastly, the involvement of insurance companies evolved from solely government participation in NAIS (1999) to a mix of government and private entities in both MNAIS (2010) and PMFBY (2016), reflecting a shift towards a more inclusive risk management approach.

Thus, PMFBY (2016) amalgamates features from its predecessors, offering a balanced approach to crop insurance with competitive premiums, enhanced coverage, and the incorporation of technology. However, changes in monitoring and social audit provisions necessitate careful consideration of transparency and accountability in the scheme's implementation. The inclusion of private insurance companies in PMFBY reflects a broader, diversified strategy in mitigating risks for farmers (Sharma, Hari Om and Rath, Deepak, 2018).

Farmers Insured under PMFBY and RWBCIS at all India Level

Table – 1 shows the farmers insured under Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS) at all India level from 2016-17 to 2019-20. The number of farmers insured under both PMFBY and RWBCIS has shown a fluctuating trend over the years. It reached a peak of 612.9 lakh farmers in the year 2019-20, showcasing an overall increasing participation. The area insured, measured in lakh hectares, has seen variations as well. While the number of farmers insured increased in 2019-20, the area covered decreased, indicating a potential shift in the size of farms covered or changes in the agricultural landscape. The sum insured, representing the total value of crops covered by insurance, has shown an increasing trend, reaching 229,598 lakh crores in 2018-19. This suggests a growing commitment to provide comprehensive coverage to farmers. Gross premiums have also increased steadily, reflecting a higher financial commitment from both farmers and the government. The farmers' share in premiums has remained relatively stable over the years. Reported claims have shown an increasing trend, reaching 32,022 lakh crores in 2019-20. This could be attributed to various factors, including adverse weather conditions, pests, or diseases affecting crops.

Paid claims have generally followed the trend of reported claims, indicating a responsiveness of the insurance schemes to the actual losses incurred by farmers. However, the slight difference between reported and paid claims could be due to claim validation processes or other administrative factors. The number of farmers benefited from the insurance schemes, as indicated by the "Farmers Applications Benefitted," has generally increased, demonstrating the positive impact of these schemes in providing financial support to farmers during difficult times.

Table – 1 Farmers Insured Under Pradhan Mantri Fasal Bima Yojana (pmfby) And Restructured Weather Based Crop Insurance Scheme (rwbcis) At All India Level

Year	Farmers Applications Insured (Lakh)	Area Insured (Lakh ha)	Sum Insured	Farmers Share in Premium	Gross Premium	Reported Claims	Paid Claims	Farmers Applications Benefitted (Lakh)
2016-17	583.7	561.1	203,110	4,078	21,654	16,809	16,809	156.5
2017-18	532.7	507.7	202,282	4,204	24,670	22,127	22,118	176.8
2018-19	577.2	525.8	229,598	4,773	29,036	29,250	28,129	222.6
2019-20	612.9	501.0	219,040	4,502	32,022	26,893	25,822	223.6

Source: Government of India, Ministry of Agriculture and Farmers Welfare, New Delhi, accessed from the official website of the Pradhan Mantri Fasal Bima Yojana, <https://pmfby.gov.in/>

2. Farmers insured under PMFBY

The data from Table – 2 reveals insightful trends in the participation of farmers under the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS)

across different states in India for the years 2016-17 to 2019-20.

In the fiscal year 2016-17, the total number of insured farmers was 583.7 lakhs. Maharashtra, Rajasthan and Madhya Pradesh emerged as key contributors, with 118.8 lakhs, 93.6 lakhs and 74.6 lakhs, insured farmers, respectively. Other states, such as Bihar and Jammu & Kashmir, had relatively lower participation, and the latter reported zero insured farmers in this period. Moving to 2017-18, the overall participation slightly decreased to 532.7 lakhs farmers. While Maharashtra and Madhya Pradesh maintained their significant contribution, there were notable increases in the number of insured farmers in states like Andhra Pradesh and Odisha. Interestingly, Jammu & Kashmir reported 1.59 lakhs insured farmers, indicating a positive shift compared to the previous year. In Andhra Pradesh, farmers insured under these Schemes increased from 17.757 lakhs in 2016-17 to 27.884 lakhs in 2019-20.

The fiscal year 2018-19 witnessed a resurgence in farmer participation, with a total of 577.2 lakhs insured farmers. Maharashtra experienced a substantial increase, reaching 148.3 lakhs farmers, and states like Chhattisgarh and Odisha also demonstrated notable growth. However, Bihar's data is missing for this year, and Jammu & Kashmir's participation declined. In 2019-20, the total number of insured farmers reached 612.9 lakhs, reflecting a continuous upward trend. Maharashtra maintained a high level of participation, while Chhattisgarh experienced a significant increase to 40.2 lakhs insured farmers. These year-wise variations suggest dynamic patterns in the adoption of PMFBY and RWBCIS across states. While some states consistently show high participation, others exhibit fluctuations influenced by regional factors, agricultural practices, and policy implementation.

Table – 2 State Wise Farmers Insured Under Pradhan Mantri Fasal Bima Yojana (pmfby) And Restructured Weather Based Crop Insurance Scheme (rwbcis)

State / UT	2016-17	2017-18	2018-19	2019-20
A & N Islands	0.003	0.004	0.007	0.001
Andhra Pradesh	17.757	18.317	24.447	27.884
Assam	0.603	0.553	0.74	10.027
Bihar	27.142	23.031	-	-
Chhattisgarh	15.491	14.743	15.703	40.177
Goa	0.008	0.005	0.003	0.009
Gujarat	19.799	17.628	21.71	24.81
Haryana	13.362	13.417	14.425	17.111
Himachal Pradesh	3.799	3.817	2.69	2.84
Jammu & Kashmir	-	1.59	1.537	-
Jharkhand	8.793	11.955	12.935	10.921
Karnataka	29.465	20.855	19.882	21.316
Kerala	0.774	0.559	0.57	0.581
Madhya Pradesh	74.608	70.28	74.21	78.929
Maharashtra	118.838	102.746	148.343	145.642
Manipur	0.084	0.091	0.015	0.033
Meghalaya	0.001	0.031	0.009	0.006
Odisha	18.202	18.947	20.985	48.769
Puducherry	0.085	-	0.101	0.12
Rajasthan	93.557	91.093	71.793	85.26
Sikkim	0.006	0.015	0.002	0
Tamil Nadu	14.625	15.091	24.644	38.705
Telangana	9.741	10.966	7.991	10.335
Tripura	0.118	0.117	0.021	0.364
Uttar Pradesh	72.893	54.21	61.27	46.947
Uttarakhand	2.616	2.224	1.928	2.127
West Bengal	41.333	40.384	51.274	-
Grand Total	583.7	532.7	577.2	612.9

Source: Government of India, Ministry of Agriculture and Farmers Welfare, New Delhi, accessed from the official website of the Pradhan Mantri Fasal Bima Yojana, <https://pmfby.gov.in/>

3. Area insured

Table – 3 shows the State wise area insured under Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS). At the national level, area insured is increased from 561.1 lakh ha in 2016-17 to 504 lakh ha in 2019-20. In

Andhra Pradesh, area insured is increased from 15.599 lakh ha in 2016-17 to 19.873 lakh ha in 2019-20. The data on State-wise area insurance under Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS) presents significant insights into the diverse landscape of agricultural risk mitigation across India over the years 2016-17 to 2019-20. Notable trends include substantial variability in insured areas among states, with Madhya Pradesh (112.682 lakh ha), Maharashtra (79.223lakh ha), and Rajasthan (96.935 lakh ha) consistently exhibiting high coverage in 2019-20. Dynamic fluctuations in insured areas over the four-year period suggest potential shifts in the adoption or efficacy of these insurance schemes. Regional disparities are evident, as certain states witness continuous increases in insured areas, such as Chhattisgarh (21.621-24.346 lakh ha) and Jharkhand (3.718-6.451 lakh ha), while others experience fluctuations or declines, for instance, Uttar Pradesh (65.115-35.572 lakh ha) from 2016-17 to 2019-20.

Table – 3 State Wise Area Insured Under Pradhan Mantri Fasal Bima Yojana (pmfby) And Restructured Weather Based Crop Insurance Scheme (rwbcis) (Lakh ha)

State / UT	2016-17	2017-18	2018-19	2019-20
A & N Islands	0.003	0.002	0.006	0.001
Andhra Pradesh	15.599	20.666	18.891	19.873
Assam	0.418	0.412	0.491	5.615
Bihar	24.841	21.247	-	-
Chhattisgarh	21.621	21.22	22.746	24.346
Goa	0.005	0.004	0.003	0.001
Gujarat	30.206	25.479	26.112	29.438
Haryana	20.852	19.074	20.549	22.505
Himachal Pradesh	1.294	1.107	0.9	0.941
Jammu & Kashmir	-	1.493	1.106	-
Jharkhand	3.718	2.902	6.295	6.451
Karnataka	24.781	18.062	22.38	21.668
Kerala	0.531	0.479	0.432	0.372
Madhya Pradesh	120.928	118.171	129.302	112.682
Maharashtra	71.322	57.761	90.65	79.223
Manipur	0.091	0.187	0.008	0.026
Meghalaya	0	0.013	0.009	0.003
Odisha	13.187	13.536	14.854	18.688
Puducherry	0.074	-	0.081	0.092
Rajasthan	104.847	100.389	77.568	96.935
Sikkim	0.001	0.003	0.001	0
Tamil Nadu	12.098	10.912	13.394	14.072
Telangana	8.24	10.526	9.92	11.347
Tripura	0.028	0.03	0.003	0.061
Uttar Pradesh	65.115	46.136	51.343	35.572
Uttarakhand	1.324	1.176	1.089	1.135
West Bengal	19.955	16.72	17.678	-
Grand Total	561.1	507.7	525.8	501

Source: Government of India, Ministry of Agriculture and Farmers Welfare, New Delhi, accessed from the official website of the Pradhan Mantri Fasal Bima Yojana, <https://pmfby.gov.in/>

4. Farmers benefitted under the Scheme

Table – 4 shows the State-wise data on farmers benefitted under the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS) from 2016-17 to 2019-20. Notable disparities emerge, with states like Maharashtra, Madhya Pradesh, and Rajasthan consistently reporting higher numbers, suggesting successful implementation or heightened agricultural insurance needs in these regions. However, challenges are evident in states with minimal numbers, indicating potential gaps in awareness or implementation. The data reveals a positive overall trend, with the total number of farmers benefitted steadily increasing from 156.5 lakhs in 2016-17 to 223.6 lakhs in 2019-20. Maharashtra emerges as a success story, showcasing a significant rise in beneficiaries. These findings suggest a growing acceptance and utilization of agricultural insurance among farmers. In Andhra Pradesh, total number of farmers benefitted increased from 8.987 lakhs in 2016-17 to 13.533 lakhs in 2019-20.

Table – 4 State-wise Farmers Benefitted Under Pradhan Mantri

Fasal Bima Yojana (pmfby) And Restructured Weather Based Crop Insurance Scheme (rwbcis) (In Lakhs)

State/ UT	2016-17	2017-18	2018-19	2019-20
A & N Islands	0.003	-	0	-
Andhra Pradesh	8.987	7.149	16.167	13.533
Assam	0.236	0.022	0.08	-
Bihar	2.161	2.184	-	-
Chhattisgarh	1.377	6.587	6.564	15.025
Goa	0.001	0	0	0.001
Gujarat	6.8	3.898	13.925	0.927
Haryana	2.245	3.248	4.223	5.552
Himachal Pradesh	1.004	1.47	1.272	1.505
Jammu & Kashmir	-	0.189	0.197	-
Jharkhand	0.598	1.392	0.577	-
Karnataka	19.013	6.193	13.834	6.869
Kerala	0.551	0.381	0.402	0.457
Madhya Pradesh	13.82	24.721	22.63	30.546
Maharashtra	29.294	53.815	81.534	87.895
Manipur	0.084	0.036	0	0.032
Meghalaya	0	0	0.004	0.005
Odisha	1.688	7.533	6.579	12.078
Puducherry	0.043	-	0.005	-
Rajasthan	29.01	31.429	20.929	25.574
Sikkim	0.002	0.001	0	-
Tamil Nadu	12.922	10.109	18.938	13.213
Telangana	2.25	4.402	0.588	-
Tripura	0.037	0.027	0.002	0.077
Uttar Pradesh	11.879	5.848	6.255	9.343
Uttarakhand	0.618	0.703	0.849	0.949
West Bengal	11.903	5.505	7.088	-
Grand Total	156.5	176.8	222.6	223.6

Source: Government of India, Ministry of Agriculture and Farmers Welfare, New Delhi, accessed from the official website of the Pradhan Mantri Fasal Bima Yojana, <https://pmfby.gov.in/>

CONCLUSION

The study reflects the government's efforts to enhance crop insurance coverage and support farmers in mitigating risks associated with agricultural activities. The increasing trend in the number of farmers insured, sum insured, and premiums indicates a growing awareness and acceptance of these insurance schemes among the farming community. The challenges lie in ensuring that the coverage aligns with the actual risks faced by farmers and that the claims process is efficient and transparent. Regular evaluations and adjustments to the schemes based on feedback and changing agricultural dynamics will be crucial for the sustained success of PMFBY and RWBCIS. The data analysis spanning from 2016-17 to 2019-20 on the Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS) in India reveals intriguing trends in farmer participation, insured areas, and benefits. Initially, the total number of insured farmers stood at 583.7 lakhs in 2016-17, with Maharashtra, Rajasthan, and Madhya Pradesh being key contributors. Over the subsequent years, there were fluctuations in overall participation, with notable increases observed in states like Andhra Pradesh and Odisha. The resurgence in 2018-19 and continuous upward trends in 2019-20 reflected dynamic patterns in the adoption of these schemes across states. Maharashtra consistently maintained high participation, while Chhattisgarh experienced a significant increase in insured farmers. The data emphasizes the influence of regional factors, agricultural practices, and policy implementation on the adoption and efficacy of PMFBY and RWBCIS.

Further, the state-wise analysis of insured areas and the number of farmers benefitted provides further insights into the diverse landscape of agricultural risk mitigation. Despite a national increase in the insured area from 561.1 lakh ha in 2016-17 to 504 lakh ha in 2019-20, significant variability among states was evident. Madhya Pradesh, Maharashtra, and Rajasthan consistently exhibited high coverage, while dynamic fluctuations were observed in states like Chhattisgarh and Jharkhand. The disparities in the number of farmers benefitted highlight successful implementation or heightened agricultural insurance needs in states like Maharashtra, Madhya Pradesh, and

Rajasthan. However, challenges were apparent in states with minimal numbers, pointing to potential gaps in awareness or implementation. Overall, the positive trend in the total number of farmers benefited, reaching 223.6 lakhs in 2019-20, suggests a growing acceptance and utilization of agricultural insurance among farmers across the analyzed period.

To enhance the effectiveness of the Pradhan Mantri Fasal Bima Yojana (PMFBY), prioritizing awareness campaigns is essential, using diverse channels and local influencers. Streamlining administrative processes, implementing user-friendly technology, and ensuring transparency in record maintenance and claims settlement are critical steps. Customizing strategies based on regional variations and establishing efficient mechanisms for timely compensation will bolster farmer confidence. Collaboration among stakeholders and the integration of technology can revolutionize data management and communication, making PMFBY a more accessible and responsive financial safety net for farmers across India.

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