

# **Evaluation of 'Revamped' Crop Insurance Pradhan Mantri Fasal Bima Yojana (PMFBY) among Paddy Farmers in Tamil Nadu, India**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Author APP designed the study, performed the statistical analysis, wrote the protocol and wrote the manuscript. Author NE helped in data collection and analysis. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

Agricultural sector in India employs more than 50% of the workforce, making crop insurance essential. Crop Insurance in India has continuously evolved for nearly half a decade with various names. With the past knowledge, Pradhan Mantri Fasal Bima Yojana (PMFBY) was implemented during 2016 in a mission to overcome the lacunas in its predecessors. The scheme was revamped during 2020. In this context, a study was conducted to analyse the performance of the scheme among Paddy farmers in the state of Tamil Nadu during 2019 prior to revamping. Thus, this paper has attempted to evaluate the proposed changes in revamping with relevance to the issues faced by various stakeholders of crop insurance. Among the insured farmers, claim not triggered and delay in settlement were the major problems faced in the scheme. Among un-insured farmers, credibility was the major issued for non-enrolment. The study also has collected the response of Agricultural Officials towards the operation of the scheme in the study area. From the results, it was

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found that the recent revamping is grounded and well planned to make an impact in the crop insurance arena. However, the increase in awareness activities is highly necessary to increase the cover of farmers and to stabilise the numbers.

*Keywords: PMFBY; crop insurance; revamping; premium subsidy; RIICE satellite; smart sampling.*

## 1. INTRODUCTION

In agriculture, there are five major risks such as, production risk (weather or pest induced), market (price) risk, institutional risk, personal risk, and financial risk [1]. The risk outcomes can have cascading effects where one type contributes to another type occurring for example, excessive rainfall during harvest is an event that can engender another set of risks such as financial risks associated with being unable to repay loans [2]. In many developed and developing countries crop yield insurance has been implemented publicly as a general multiple peril or all risk programs [3]. Crop Insurance being an important tool used by the Government of India, it supports farmers in many fronts viz., doubling farmers income, climate resilient agriculture, crop diversification, rainfed agriculture, etc. [4]. In this context, Rai [5] has put forth three reasons for crop insurance in India: i) small farm size, ii) commercialisation of agriculture and iii) climate change. Above all, agricultural sector employs more than 50% of the workforce and contributes around 17-18 percent to the country's GDP. Thus, crop insurance is inevitable and highly required.

The crop insurance in India has evolved nearly for half a century based on the recommendations from pilot studies and review committees. The first nationwide crop insurance scheme in India was Comprehensive Crop Insurance Scheme (CCIS) implemented in the year 1985-86. It was replaced by National Agricultural Insurance Scheme (NAIS) in 1999-2000. The Weather Based Crop Insurance Scheme (WBCIS) was implemented in 2007-08 and later, the Modified National Agricultural Insurance Scheme (MNAIS) was introduced in 2010-11. All the schemes were based on 'indemnity' except for WBCIS which was the only index based insurance being operated in India. All the crop insurance schemes has been following area approach rather than individual approach. Other than these some specific crop oriented schemes were also implemented.

The year 2016 has seen the genesis of a new insurance scheme called Pradhan Mantri Fasal

Bima Yojana (PMFBY). Pooling in the important learning from all the earlier schemes and taking into consideration the access to technology in the recent days, Pradhan Mantri Fasal Bima Yojana promises to take care of the loopholes of earlier schemes [6]. PMFBY had many new or improved features than its predecessors. Some of the improved features of this scheme are: Removal of capping on premium rates leading to higher amount of Sum Insured, fixing premium rates at 2 percent in Kharif season and 1.5 percent in Rabi season for farmers, leading to substantial increase in premium subsidy by the government. Under this scheme, premiums were furthered subsidized and there was no cap on Sum Insured. PMFBY is based on actuarial calculations and rates are based on risk perception. Thus, premiums differ, based on crops and regions. However, a farmer pays only a flat two per cent premium; the rest is provided by the central and state governments. On an average, the premium comes to around 12 per cent, with the state and central governments bearing five per cent each apart from farmers' premium. PMFBY is a heavily subsidised scheme [6]. The amounts shelled out for PMFBY which also includes the subsidy were 24.84%, 21.28% and 16.42% of total expenditure on major schemes by the Ministry of Agriculture and Farmers welfare [7]. Agricultural Insurance products around the world irrespective of development status of countries are heavily subsidised which also seem inevitable for increasing the number of insurers [8].

PMFBY has three levels of indemnity 70 per cent, 80 per cent and 90 per cent corresponding to high-, moderate-and low-risk area for all notified crops by respective state governments. This means that farmers are themselves to bear the loss of 30 per cent, 20 per cent or 10 per cent respectively [9].

It is common in many countries to tie insurance with an agricultural development bank but only in some countries, the insurance is compulsory for all farmers growing the insured crops or borrowing from the agricultural development bank [3]. [10] states that compulsory insurance as found in low and middle income countries.

**Table 1. Revamping of crop insurance**

<b>Stakeholders</b>	<b>Modified features</b>
Insurance Agency	Allocation of business to Insurance Companies to be done for three years Check to State Government for release premium subsidy in favour of IA
States/UTs	Choice in valuation of Sum Insured Choice of risk covers
Central Governments	Limits for Central Subsidy Share in Premium Subsidy to be increased to 90% for North Eastern States
Technology	Two-Step Estimation of Crop Losses Smart Sampling Technique Dependency on technology alone for yield data in special cases
Farmers	Voluntary for all farmers Additional scheme for drought and water stressed areas

Source: [15]

Even the Indian Government has first implemented PMFBY as a compulsory scheme for loanee farmer obtaining Crop Loan / Kisan Credit Card (KCC) account for notified crops. However, voluntary for other/non loanee farmers who have insurable interest in the insured crop(s). The scheme provides for the coverage of post-harvest losses and localized crop losses such as hailstorm, landslide and inundation [11]. State Disaster Management Authority [12] of Tamil Nadu states that Horticulture farmers could avail the claim in case of damages from high temperature which could probably reduce yield by five percent [13].

PMFBY is even more digitalised scheme than MNAIS and WBCIS as it also uses the prudence of android mobiles to take pictures of the crop, Drones, Low Earth Orbits (LEO) and satellites. Overall, PMFBY is causing a digital revolution in agricultural insurance [14]. Meanwhile, the scheme was revamped in February, 2020.

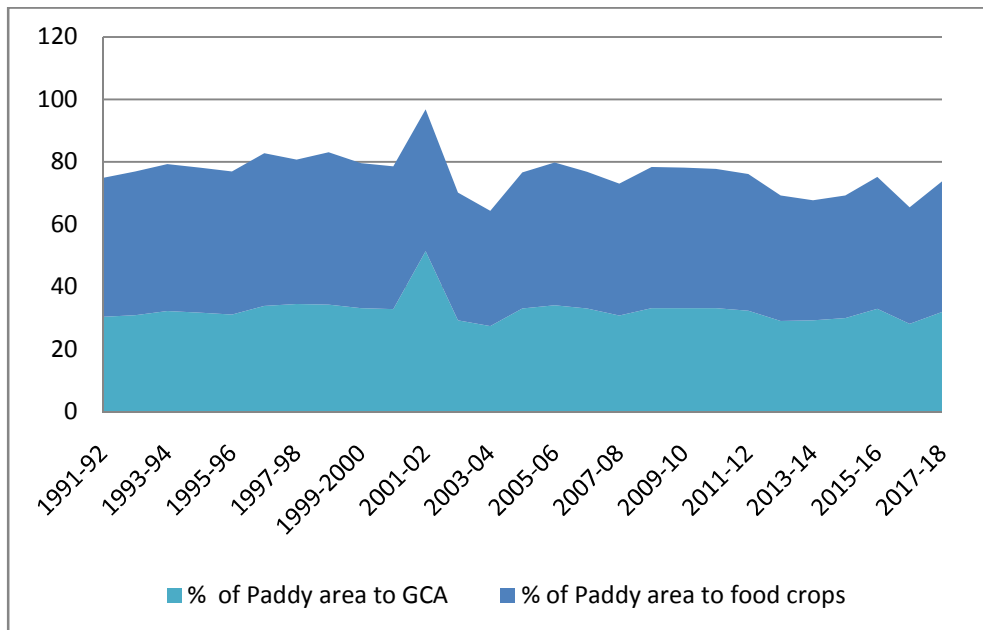
The Union Cabinet, chaired by the Prime Minister has approved the revamping of "Pradhan Mantri Fasal Bima Yojana (PMFBY)" and "Restructured Weather Based Crop Insurance Scheme (RWBCIS)" to address the existing challenges in implementation of Crop Insurance Schemes [15]. The Table 1 has classified the modified features under respective stakeholders. In this context, the study has attempted to analyse the problems faced by different stakeholders of PMFBY and with a special reference to relevancy of Scheme's revamping.

## 2. SAMPLING AND METHODOLOGY

The study was conducted in the state of Tamil Nadu, India. NDMA [16] has reported that "Tamil Nadu is historically one of the most vulnerable

States to tropical cyclone. The State is multi-hazard prone, the major natural hazards being Cyclonic storms, Urban and Rural floods and periodic Droughts". The total geographical area of Tamil Nadu is 13 Million hectares and it has a coastline of 1,076 km which is about 15% of the coastline of India. Monsoon variations can cause havoc in the livelihood of farmers by either yield reduction or complete washout of the crop. In the state, PMFBY was introduced in the year 2016-17, by replacing MNAIS and NAIS. In Tamil Nadu, the Restructured WBCIS was not implemented, thus PMFBY is the only crop insurance in the state. Tamil Nadu is the 7<sup>th</sup> state with largest number of insurers and 6<sup>th</sup> state with largest claim amount credited pertaining to the year 2018-19. In Tamil Nadu, a satellite based rice crop monitoring and information system called RIICE programme (Remote sensing-based Information and Insurance for Crops in Emerging economies) has helped in cross verifying the conventional crop cutting experiment (CCE) data [17]. RIICE technology was initiated during 2012 in the State by the Tamil Nadu Agricultural University (TNAU, Tamil Nadu, India) in collaboration with International Rice Research Institute (IRRI), GIZ and Sarmap, Switzerland.

Paddy is the staple food in the state, hence, Paddy was the 'crop on focus' in the study. The percentage of paddy area to 'area under total food crops' and gross cropped area were around 43% and 33% for nearly two decades (Fig. 1). Among the seven agro-climatic zones of the state, based on the 2017-18TE, Cauvery Delta Zone constitutes around 45% of Gross Paddy Cropped Area followed by North Eastern Zone (36%). Paddy is the principal crop in the Cauvery Delta zone. Thus, the primary data on response of farmers were collected from the Cauvery Delta Zone. The study has collected the response of



**Fig. 1. Percentage of paddy area to GCA and area under food crops (1991 to 2017)**

Source: Author's estimation from various issues of Season and Crop Report of Tamil Nadu, Government of Tamil Nadu, India, Note: Season and Crop Report of 2017-18 data is the latest published data by the State Government

60 paddy farmers each from insured and un-insured category through direct interview method. The over-all State data on crop insurance (from 2011-12 to 2018-19) were collected from the Directorate of Agriculture, Chennai, Tamil Nadu.

The different stakeholders of PMFBY are farmers, Governments (Central and State), Insurance Agency, Co-operative Credit Society (CCS) and the officials from Implementing Department of the State. The Agricultural Department has implemented the scheme and enabled the bridge between the farmer and insurance agency. The department also provide trainings to the officials of CCS and create awareness among farmers. The issues encountered by these stakeholders in PMFBY over the implementing years of PMFBY was collected through pre-tested structured questionnaires and the relevance of recent revamping was verified with the ground truth using tabular and percentage analysis.

### 3. RESULTS AND DISCUSSION

The socio-economic conditions of respondent farmers are presented prior to results of the problems faced by different stake holders such as farmers, insurance agency, Agricultural

Department Officials, Government and un-insured farmers.

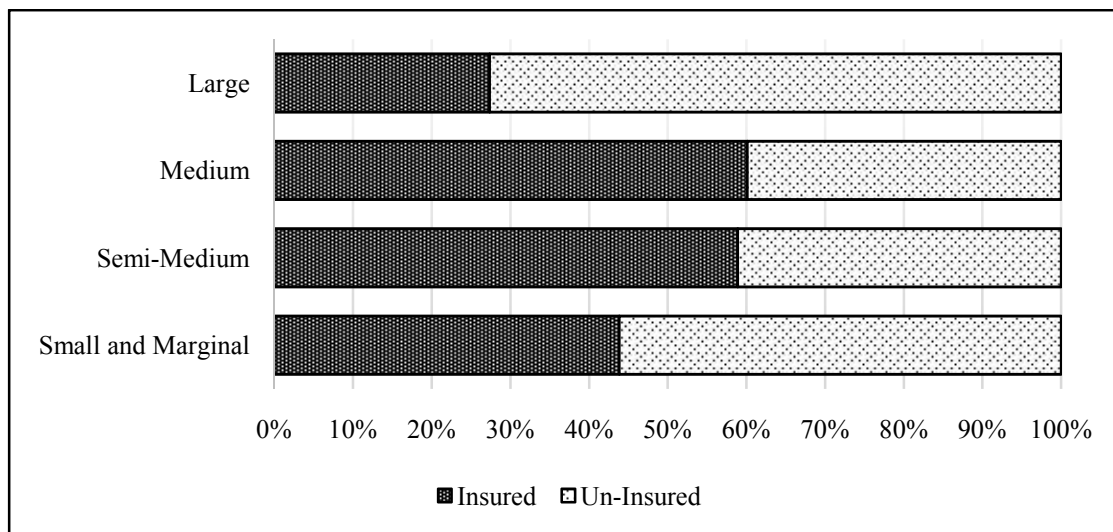
The Table 2 presents the age and education of respondent farmers in both the category (insured and un-insured). [18] has found that the probability was less with aged farmers (more than 65 years) in taking up crop insurance. However, among the respondents, more young people are in the category of un-insured farmers. The study by [19] also given the same result that older farmers (more than 50 years) have more preference for crop insurance.

In case of education, invariably all the studies has shown positive relation with crop insurance [20,18,21]. Comparatively, the un-insured farmers populated Diploma and Higher-secondary school education and insured farmers populated 'College' education. From the respondents, around 42% of insured farmers are non-loanee farmers. The share of non-loanee farmers was high in Tamil Nadu when compared to all-India data.

The size-wise land holding was classified based on the categorization of farmers given by Ministry of Agriculture and Farmer's Welfare [22]. The average land holding size of farmers in Tamil Nadu was 0.75 hectares.

**Table 2. Age and education of respondent farmers**

Particulars	Insured	Un-Insured
<b>Age (%)</b>		
≤ 40 Years	20.69	33.33
> 40 to ≤ 60 years	63.79	59.09
> 60 years	15.52	13.64
<b>Education (%)</b>		
Primary School	0.00	4.55
Secondary School	27.59	27.27
Higher-Secondary School	22.41	31.82
Diploma	12.07	22.73
College	37.93	13.64



**Fig. 2. Size-wise land holding among respondent farmers (in %)**

As per the response given by farmers in study area, among the small as well as large land holding size classification insured farmers are less than 50% (Fig. 2). In the medium and semi-medium land size categories un-insured farmers are lesser than insured farmers. In the study area, the average area in each land holding size were, 1.25 ha., 3.11 ha., 4.84 ha. and 11.80 ha., respectively for small and marginal, medium, semi-medium and large. The percentage of insured area to the average land holding area in Small & Marginal, Medium, Semi-Medium and Large Land Holding sizes were, 91.12, 70.45, 61.47 and 47.45%, respectively.

**3.1 Problems Faced by Insured Farmers**

This part of study discusses the problems faced by insured farmers in PMFBY. The questionnaire has listed, less claim amount, delay in claim settlement, claim not triggered, credibility, difficulty in enrolment and higher premium as problems faced by insured farmer. The response

of farmers is given in the Fig. 3. Interestingly, the enrolment procedure was not difficult for farmers, though the procedure has increased under PMFBY due to digitalisation. About 30% of the farmers responded that the claim was not triggered even when the calamities has caused loss. The triggering happens if and only, the observed yield index value falls below the notified trigger value, and then claims shall be calculated per unit area. If the damage caused by calamity is not up to the indemnity level then the claim will not be triggered. Similarly, if the level of damage varies within the insurance unit then, based on the sample Crop Cutting Experiment (CCE) data only claim will be triggered.

PMFBY was introduced with an assurance of quick claim repayment, but around 25% of the farmers had responded that the claim amount settlement took more time than expected. The major reason for the delay, was in the time taken by State Government transferring subsidy to the

insurance companies. State Governments' disburse 50% of subsidy only after receiving data on insured farmers and Sum Insured from companies. On the other hand companies depend on implementing banks and the banks are stressed due to infrastructural constraints. The Centre transfers subsidy only after states submit their transfer certificate, thereby causing the chain of delays. Furthermore, insurance companies raise objections when they are doubtful of CCE data and this also stalls the payment process. In many regions, syndicates are developing to ensure lower payout by companies [23]. The insurance companies have to settle the claims within 30 days of the receipt of estimated area sown provided by the States. During 2018, the Centre has tweaked the PMFBY, with provision of 12% interest rate per annum to be paid by the Insurance Companies to farmers for delay in claim settlements beyond 10 days of prescribed cut-off date for payment of claims [24]. Thus, the use of satellite data (RIICE in case of Tamil Nadu) and PMFBY portal for quicker as well as credible claim settlement has not paid off due to infrastructural constraints in PMFBY. Farmers in developing countries such as India often survive on season to season profits [25].

The lesser amount of claim was stated as an issue by 22% of insured respondent farmers. The claim amount per unit area is the same within an insurance unit (IU) even when the damage is high in one part of IU. It is because of CCE sampling. If the CCE sampling was done in the

highly damaged part of IU, then the claim amount can rise. Otherwise, the claim amount will be lesser. The same reason applies when the claim amount per unit area vary between neighbouring insurance units as it based on the CCE sampling data.

The insured farmers had responded for credibility issue in PMFBY (18%). The yield loss is calculated based on Actual yield (CCE and RIICE) and threshold yield. The Sum Insured itself was decided by the State level committee based on the cost of cultivation data provided by farmers for agricultural loans. Thus the claims expected by the farmers and claims payable after checking could be different. The mistrust can happen also due to activities of local authorities. Such activities derail the image of PMFBY among farmers. Overall, the surety of obtaining a claim settlement is more in PMFBY than its forerunners, especially because of the reduction of insurance unit to village level. Only 5% of the farmers had responded that the premium amount which they are paying was high.

The enrolment into PMFBY was proposed to be voluntary in revamping which could reduce number of enrolment. In a review meeting on PMFBY, the Finance Minister have also highlighted the need of carrying out awareness activities of the scheme [26] with due concern to optionalising enrolment. Except for few states including Tripura and Tamil Nadu, various studies conducted in different states of India have shown very meagre uptake of PMFBY

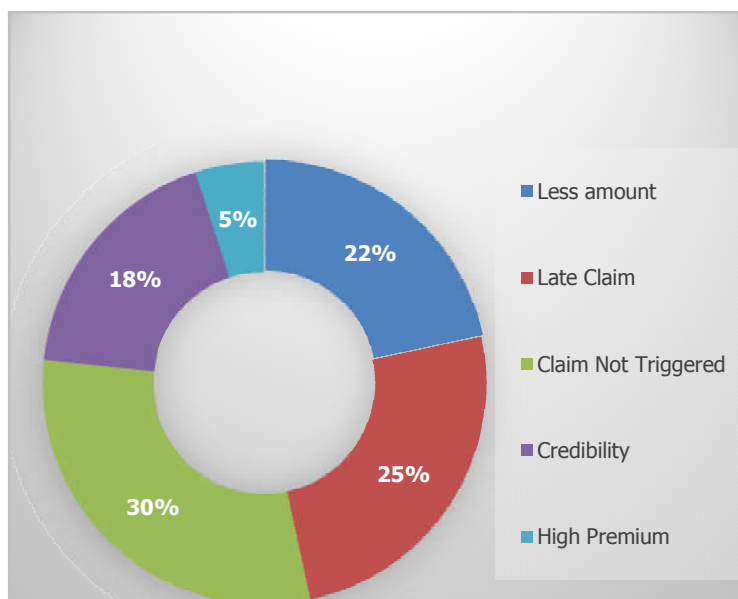


Fig. 3. Problems faced by insured farmers

insurance among non-loanee farmers [27,28]. In Tamil Nadu, there was a shift in the share of loanee farmers from 40% in 2014-15 to lesser than 20% in 2018-19.

In the study area, though the number of claim payment has increased, around 22% of respondent farmers had stated lesser amount of compensation as an issue in PMFBY. The Sum Insured was not capped causing the lower claim payment to farmers [29]. Before revamping, the Sum Insured of the notified crops in a district is equal to the Scale of Finance fixed by the District Level Technical Committee (DLTC)/State Level Technical Committee (SLTC), which in many instances, leads to over or under compensation/claim to farmers in comparison to value of crop damaged [30]. Under revamping, the Centre has given an option to States/UTs to choose either the Scale of Finance or the district level *Value of Notional Average Yield* (NAY). The Value of Notional Average Yield could be calculated by the product of NAY and Minimum Support Price (MSP). Farm gate price is to be considered for the other crops for which MSP is not declared. Thus, this price based provision could level up the Sum Insured and act as a cap to the same. It could also reflect the true value of crop in any region.

Adding to these changes, a separate scheme has been proposed to be prepared for 151 districts, which are highly water stressed including 29 districts which are doubly stressed because of low income of farmers and drought. The objective of the yet to be un-veiled scheme is to provide financial support and effective risk mitigation tools through crop insurance. It is true that irrigated crops dominate the crop insurance, however, in drought ridden places, farmers were found to be depending more on traditional and safer methods of risk aversion like intercropping, crop diversification, drought-resistant varieties, than on insurance [31]. Nevertheless, the tenant farmers are not included [32] into PMFBY system for insurance.

### **3.2 Difficulties Handled by Insurance Agency**

Insurance company shall take all necessary steps to take appropriate reinsurance cover for their portfolio in order to safeguard insured's interest. According to the operational guidelines of PMFBY, when the premium to claims ratio exceeds 1:3.5 or percentage of claims to Sum Insured exceeds 35%, whichever is higher, at the

National Level in a crop season, Government will provide protection to Insurance Companies. The losses exceeding the above mentioned level in crop season, would be met by equal contribution of the Central Government and the concerned State Governments. In case, losses are below the above mentioned condition, insurers shall be responsible to settle the admissible claims.

Gross Incurred Claims Ratio is also called as the loss or claim ratio (claim/premium). The ideal claims ratio is 0.75 to 0.90. If the claim-premium ratio exceeds one, it suggests financial loss on the part of the insurer in the insurance business whereas, from the point of view of the farmer, it suggests more compensation than the premium paid. The Claims ratio under PMFBY was lesser than NAIS but not within the ideal range (Table 3). Higher claims ratio has shown that the farmers are receiving more indemnity than the premium amount paid by them. The high claims ratio can be attributed to the number of claims paid. In health or vehicle insurance and so, the number of claim settlement will be lesser than that of crop insurance.

Subsidy provided by the Government plays a major role in these benefits to farmers. Crop insurance subsidies encourage farmers to enrol for insurance and also to increase the area under insured crop [33]. Nevertheless, the high claims ratio has discouraged the insurance companies from bidding in high risk areas. Considering the issue faced by companies re-insurance companies have reduced the commission to 3-3.5 per cent from 7-20 per cent after 2018-19. Adding to this, the delay in fund transfer by the state government also affects the insurance companies. In the country four insurance companies has withdrawn from PMFBY during 2018-19. However, in Tamil Nadu, ICICI Lombard had withdrawn during 2018-19 but Chola MS has entered in for PMFBY.

High actuarial premium rates were cases, especially in rain-fed and remote areas. In these areas, there was lower competition among bidders which enabled the insurance companies to harness the huge profit that too from the subsidy [14]. Such instances where, the insurance agency can receive the super-normal profits' for which the 'cap-and-cup' approach was proposed by [23] where the insurers can cap the profit margins and plough back the surplus into a state managed Crop Insurance Fund as a backup against potential actuarial losses for the next year. Ghosh is the leader of the PMFBY

performance evaluation team from CMA, Ahmedabad, supported by Ministry of Agriculture and Farmers Welfare, Government of India.

The call for Insurance Agency (IA) bidding was given every year but the agreement has been extended to three years in revamping. Four private IAs' withdrew from PMFBY during 2019-20, stating claim induced losses. In the study area, around 25% of farmers had reported delay in payment as one of the problems faced in PMFBY. During 2018, the Centre has asked the IAs' to pay a provision of 12% to farmers for delay in payment beyond the deadline. However, the delay in settlement was stated as due to the non-release of premium subsidy by the State Government. This provision is an added burden to the agencies. The Government does make a note of the delay in fund release by States/UTs and has tweaked it in the revamping. States would not be allowed to implement the Scheme in subsequent Seasons in case of considerable delay by States in release of requisite Premium Subsidy to concerned Insurance Companies beyond a prescribed time limit. Cut-off dates for invoking this provision for Kharif and Rabi seasons will be 31 March and 30 September of successive years respectively. It should also be noted that the 12% provision for delay in payment has not been revoked. Thus, the Centre has made both IAs' as well as State Governments liable for delay in payment.

### 3.3 Difficulties Handled by Agricultural Officials

As part of the study, the Agricultural Department Officials who were also stakeholders in PMFBY were interviewed to find the problems faced by them. The issue is in the number of CCEs' that should be taken by Assistant Agricultural Officers (AAOs'). Prior to PMFBY, AAOs' have to conduct only four CCEs' for a firka. As the insurance unit has changed to village level in PMFBY, the

number of CCEs' had increased. There are four AAOs' in a block. With increase in CCE per village multiplied by crops notified, had increased the stress on AAOs. Moreover, the data from the CCEs' are uploaded then and there in 'CCE agri application', for which AAOs' require smartphones. The increase in quantity of work they do can reduce the quality of the data.

The Agricultural Department Officials also provide trainings to the officials of Co-operative Credit Society (CCS) and create awareness among farmers. CCS is the main source of agricultural credit and before revamping, the premium were automatically debited from the loanee farmers. As the scheme is digitalised, the officials of CCS have to enter the application details of farmers to the scheme portal. There are issues in entering details into the portal and the Agricultural Officials are responsible to clarify the same.

For estimation of crop losses/admissible claims, two-Step Process to be adopted based on defined "Deviation matrix" using specific triggers like weather indicators, satellite indicators, etc. for each area along with normal ranges and deviation ranges. Only, areas with deviations, will be subject to Crop Cutting Experiments (CCEs) for assessment of yield loss. Technology solutions like Smart Sampling Technique (SST) and optimization of number of CCEs to be adopted in conducting CCEs (PMFBY). During 2019, the Government has rolled out pilot studies by Mahalanobis National Crop Forecast Centre (MNCFC) on the Smart Sampling Techniques (CCE location selection using satellite data) and optimization of CCEs, in 96 districts of 9 States, for rice crop [34]. As soon as a statistically sound methodology for yield estimation through technology is established for the crop, the same may be adopted. Once adopted, these methodologies are expected to minimize the total CCEs needed by about 30-40% [30].

**Table 3. Gross incurred claims ratio**

	Farmer	Central	State	Gross premium	Claims paid	Ratio
NAIS*	339.21	310.77	22.91	672.89	3506.34	5.21
WBCIS*	11.52	10.51	10.51	32.55	23.34	0.72
MNAIS*	57.09	41.66	41.66	140.41	266.78	1.90
PMFBY 2016-17	106.73	497.34	497.34	1101.40	3630.79	3.30
2017-18	119.75	525.53	525.53	1170.81	2014.86	1.72
2018-19	156.29	742.09	742.09	1640.47	2440.77	1.49

Note: \* cumulative data over the years the insurance was implemented



### 3.4 Barriers for Enrolment among Un-Insured Farmers

The un-insured farmers were also asked the question of issues faced by them towards enrolling into PMFBY. It is to say that, the perception of some of the farmers was due to their experience with other crop insurances such NAIS, MNAIS, WBCIS and not very specific with PMFBY alone. PMFBY has evolved over from all its predecessors. The barriers for enrolment in the perception of un-insured farmers are presented in Fig. 4. The credibility issue of PMFBY was mentioned as the main barrier faced by farmers in the study area. The number of claims had increased in PMFBY than NAIS and MNAIS. It should to be noted that even 18% of insured farmers also had mentioned the credibility issue in PMFBY (Fig. 3). As said earlier, the subject of credibility among un-insured has aroused because of past experiences. Though awareness was quoted as the major issue for non-enrolment in various studies, the impact of awareness (12%) was less among farmers in the study area.

The delay in claim settlement (late claim) and claim not triggered were also found as barriers

for enrolment in PMFBY. These issues had caused a certain percentage of farmers to discontinue PMFBY. The claims will be triggered based on the yield index in the insurance unit (village). There can be variation in the damage level within the village itself. Understanding the issue, it is given in the operation guidelines of PMFBY itself about modifying the insurance unit. In due course, the Unit of Insurance can be a Geo-Fenced/Geo-mapped region having homogenous Risk Profile for the notified crop. Another important clause in the guidelines of PMFBY was that for Risks of Localised calamities and Post-Harvest losses on account of defined peril, the Unit of Insurance for loss assessment shall be the affected insured field of the individual farmer.

The revamping of PMFBY in February, 2020 has focused on rectifying the issues of late claims and claims not triggered which were found by this study as the major barriers of enrolment. If the changes proposed in revamping have overcome these two issues, it would encourage the farmers to enrol into PMFBY. However, awareness programs on the changes in revamping need to be conducted.

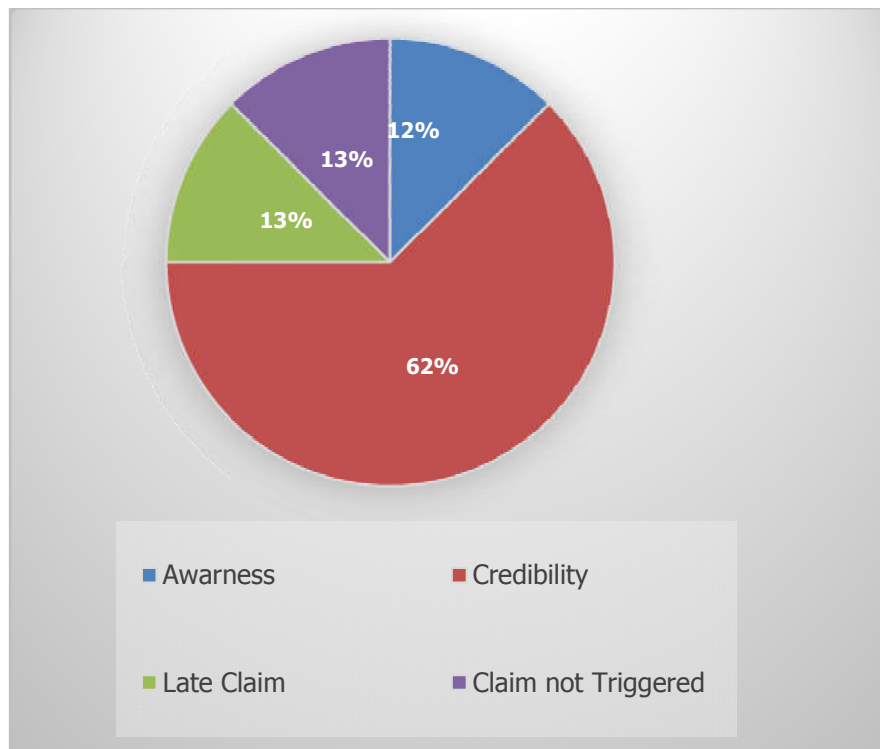


Fig. 4. Barriers for enrolment

### 3.5 Impact of Revamping on State and Central Government

Flexibility to States and Union Territories to implement the Scheme with option to select any or many of additional risk covers/features like prevented sowing, localised calamity, mid-season adversity and post-harvest losses. Further, States/UT can offer specific single peril risk/insurance covers, like hailstorm etc., under PMFBY even with or without opting for base cover. Destruction by wild animals and storage losses [32] can also be added to the risk covers.

Central Government Subsidy under PMFBY/RWBCIS is to be limited for premium rates up to 30% for unirrigated crops and 25% for irrigated crops in the revamping. Districts having 50% or more irrigated area will be considered as irrigated area/district. The irrigated crops dominate in the crop insurance schemes. The setting of limit by Central Government could reduce the subsidy burden. As well as prompt the State Government to enrol more farmers cultivating un-irrigated crops. This limit could also check the premium rates beyond the rate. Another measure is to increase the Central Share in Premium Subsidy to 90% for North Eastern States from the existing sharing pattern of 50:50. It is expected to increase the coverage in north eastern region.

### 4. CONCLUSION

The objectives of the PMFBY scheme are to provide insurance coverage and financial support in the event of crop failure to stabilise the income of farmers is highly commendable. To achieve such a goal in a huge mass of low land holding size is difficult. However, the scheme itself is a successor of various schemes implemented in the past. The guidelines of the scheme does have the impact of the past reviews and present objectives. The issues and problems faced by farmers and other stakeholders are decelerators to the inevitable coverage by the scheme. Credibility is the significant issue for both un-insured as well insured farmers. Apart from which, claim not triggered, delay in settlement and lesser claim amount were also quoted as important decelerators by insured farmers.

The revamping was proposed based on the problems aroused over the three years of PMFBY implementation. Besides the above mentioned features of revamping, it is also

proposed to settle the based on yield arrived through use of Technology solution in case of non-provision of yield data beyond cut-off date by the States to implementing Insurance Companies. The technology based Yield Modelling data would increase the farmers' satisfaction, reduce the claims ratio and does not increase the subsidy burden [35]. For areas having high rate of premium, the State Governments in consultation with other stakeholders are to develop State specific, alternative risk mitigation programmes. The determination to use technology for data collection in PMFBY has been made stronger and focused through revamping. The scheme has successfully crossed the stage of implementation. The revamping measures to rectify the lesser and delayed claim settlement can pave way for the scheme to march towards the expansion stage especially in the state of Tamil Nadu. Thus, from the study it is concluded that the revamping of the scheme is grounded.

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### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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