

Crop Insurance: Industry update

9th seminar on current issues in general insurance

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TATA AIG GIC LTD | October 2026

AGENDA

1. Evolution of Crop Insurance Scheme
2. PMFBY journey over years
3. Risk-sharing Models
4. Burning cost based 80-110 and 60-130 model
5. Key challenges in Crop Insurance
6. Tech Intervention over years
7. Key design elements for tech intervention
8. Market size and pricing over years



EVOLUTION OF CROP INSURANCE

Period	What changed
FY2000-07	Formation of AIC and NAIS launched; area approach; Govt shares claims beyond 100%
FY2008-15	WBCIS and MNAIS; private insurers entry; premium-based subsidy
FY2016-20	PMFBY: one nation one scheme; area and individual approach; actuarial premium
FY2021-23	Revamped guidelines: voluntary for loanee farmers, tech-based yield disputes, multi-year tenders; ARTM pilots
FY2024-26	ARTM in over 50% of major states; IRDAI EoM guidelines increased competition in Govt schemes including PMFBY

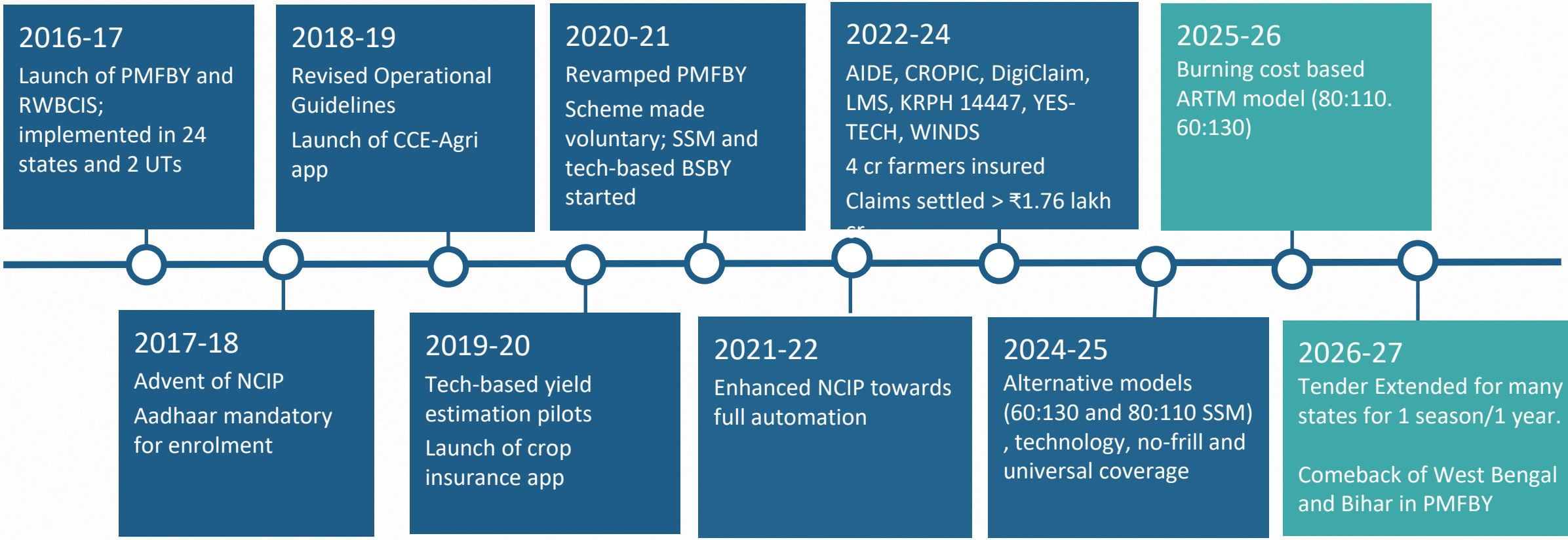
PMFBY is the largest crop insurance scheme globally by applications, and third largest by premium.

Reach- 410 lakh farmers and 617 lakh ha insured in 2024-25 across 23 States/UTs.

Payout- ₹1.76 lakh crore claims settled on ₹20 lakh crore sum insured.

Enrolment- 78 cr farmer applications insured over 18 crop seasons, with 20 insurers (5 PSU, 15 private)

PMFBY JOURNEY OVER LAST 10 YEARS



RISK-SHARING MODELS

	Cup & cap 80-110	Cup & cap 60-130	Profit & loss sharing
Risk Sharing	• ICs – up to loss ratios of 110% • State Govt. – loss ratio > 110%	• ICs – up to loss ratios of 130% • Governments (State & Centre) – loss ratio > 130%	• ICs – up to loss ratios of 100% • ICs & Governments (State & Centre) – Risk sharing beyond 100% as per proposed structure
Surplus Sharing	• Loss ratio between 0%-80% - ICs retains 20% & State Govt. remaining (80% - Actual LR)	• Loss ratio between 0%-60% - ICs retains 40% & Governments (State & Centre) get remaining (60% - Actual LR)	Loss ratio between 0%-100%, IC & Governments (State & Centre) get surplus as per proposed structure
Risk horizon	• Small	• Medium	• Largest

ISSUES in ARTM model :

Lowering of APR by ICs due to liability cushioning → Increase in Govt Liability → Inadequate risk protection

RESOLUTION:

Burning Cost Based RSM

P&L SHARING MODEL

Layers of Profit /loss %		Insurer	States	Sharing of
0%	50%	15%	85%	Profit
50%	65%	60%	40%	
65%	100%	95%	5%	
100%	130%	95%	5%	Loss
130%	220%	60%	40%	
220%	350%	15%	85%	

Profit Sharing @ Loss Ratio of 0%

Profit = 100%- LR = 100%

Insurer Profit = (layer (0%- 50%) =50%) *(15% share of Profit) + layer (65%-50% =15%)* (60% share of Profit) + Layer (100%- 65% = 35%)*(95% share of Profit)

= 7.5% + 9% + 33.25% = **49.75% of the Premium**

State share of Profit = 100% - 49.75% = **50.25% of the premium**

Loss Sharing @ Loss Ratio of 350%

Loss = 100%- LR = -250%

Insurer Loss = (layer (220%- 350%) = - 130%) * (15% share of loss + layer (130%-220% = -90%) * (60% share of Loss) + Layer (100%- 130% = 30%) * (95% share of Loss)

= (-19.5%) + (-54%) + (-28.5%) = **- 102% of the premium**

State Share of Loss = (-250%) - (-102%) = **- 148% of the Loss**

BURNING COST RISK SHARING MODELS

Feature / Parameter	Stakeholder	Cup & Cap (80–110) BC Model	Cup & Cap (60–130) BC Model
Risk Sharing	IC	LR up to 110% of the BC or 110% of APR, (whichever is higher)	LR up to 130% of the BC or APR, (whichever is higher)
	State/Centre Government	LR > 110% of BC or APR (whichever is higher), borne equally by State & Centre Govt.	LR > 130% of BC or APR (whichever is higher), borne equally by State & Centre Govt.
Surplus Sharing	IC	LR- 0%-80% - ICs retains 20%	LR- 0%-60% - ICs retains 40%
	State/Centre Government	State Govt. and Govt of India receive refund equally for the LR < 80%. (80% - Actual LR)	State Govt. and Govt of India receive refund equally for the LR < 60%. (60% - Actual LR)
Adoption	State Government	Implemented in Maharashtra	Implemented in Odisha

KEY CHALLENGES & TECH INTERVENTION IN CROP INSURANCE

	Challenges	Tech Interventions
Manual CCEs	• High administrative effort and longer turnaround time • Limited scalability and monitoring	**CCE App(CROPIC) & YES TECH**
Manual declaration basis booking	• Dependence on insurer declarations • Increased risk of errors and delays • Delay in Claim settlement	**NCIP** **Digi claim system & DBT.**
Multiple Information Sources	• Disparate and non-standardized information sources • Challenges in data consolidation and validation	**NCIP**
Land Record Verification	• Time-consuming quality checks of land records • Delays in policy issuance and claim processing	**Land record integration**

TECH INTERVENTIONS OVER YEARS

Need for tech interventions

- Hardening premium rates
- Crop loss assessment mechanism
- Low farmer participation

Data deficiencies, data asymmetry, manual measurements and moral hazards in crop loss assessments

2016
Road map for technology solutions
Smartphones in CCE system

2017
SOP for yield dispute resolution
R&D for smart sampling

2018
CCE-Agri app
SST in Odisha
R&D on CCE optimisation

2019
Nationwide SST roll-out
R&D on tech-based yield estimation

2020
Revamped PMFBY
Scaled-up tech-based yield estimates

2021
Tech-based yield pilots extended to non-cereal crops

2022
Tech-based yield estimation introduced

2023-24
YES-TECH, WINDS, CROPIC, AIDE, KRPH, SARTHI, LMS

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ICT SYSTEMS STACK IN PMFBY

YES-TECH
Satellite-based remote sensing for wide-area yield forecasting, reducing manual surveys

WINDS
Real-time and historical weather data for risk assessment and damage evaluation

CROPIC
Real-time crop condition data for accurate, efficient claims and damage assessment

AIDE
Insurance intermediary mobile app that simplifies farmer enrolment

SARTHI
Wider access to retail insurance products through the PMFBY platform, beyond crop insurance

Krishi Rakshak (14447)
Single nationwide contact point for farmers to manage complaints and crop loss reports

NCIP
Centralised portal integrating claims, yield data, land records, insurers and stakeholder databases

DigiClaim
Direct claim payments, SMS alerts, status tracking and automatic penalties on insurers for delays

CCE-Agri app
Captures CCE data in the field with geo-tagged photos, from field selection to weighing

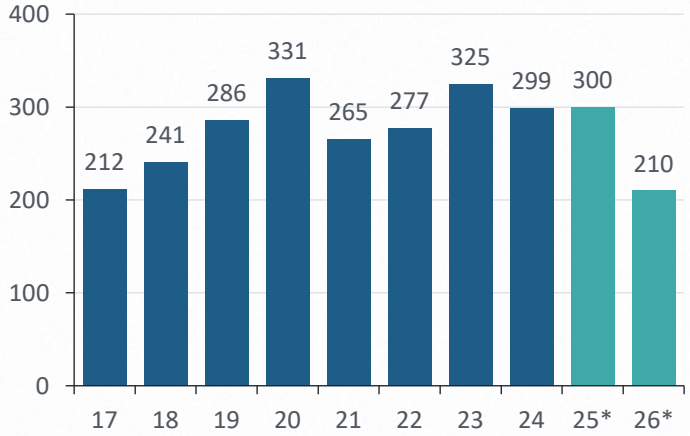
API integration
NCIP capability to link external portals for data validation and process re-engineering

LMS
Learning module for insurance and credit schemes: resource library, courses, progress tracking

PMFBY chatbot
Vernacular-language chatbot that engages stakeholders and answers scheme queries

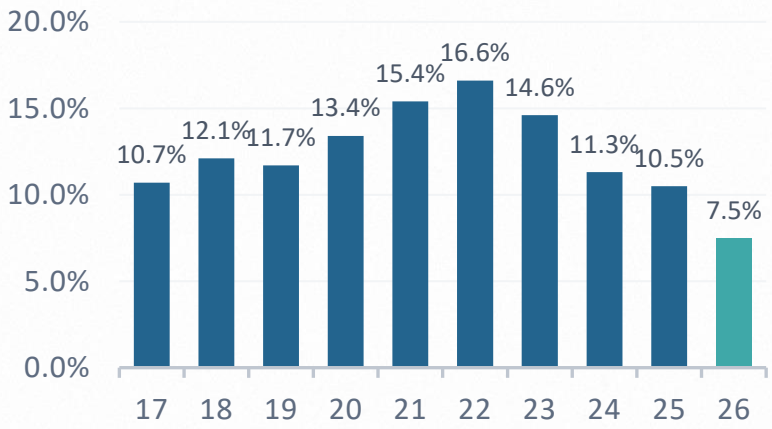
MARKET SIZE AND PRICING

Crop insurance GWP, ₹ bn



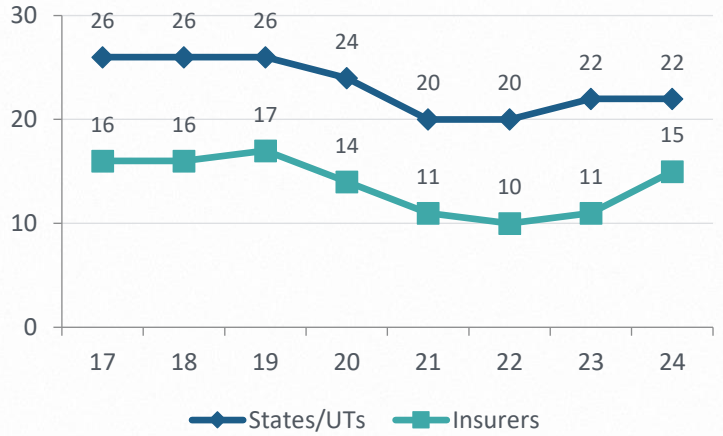
- Peak of ₹331 bn in FY20
- FY26 near ₹210 bn, about 30% below FY25

Average Premium Rates



- Peaked at 16.6% in 2021-22
- Fell to 7.5% in 2025-26, down 55%
- ARTM and competition drove the fall

States/UTs and insurers



- Insurers: 17 in FY19 to 10 in FY22, back to 15 in FY24
- States/UTs: 26 to 20 by FY21

Years are financial years (17 = FY2016-17); premium rates are by underwriting year. *FY25 and FY26 approximate (~₹30,000 cr, ~₹21,000 cr

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Thank You

Questions and discussion

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