Crop Insurance Underwriting

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Flow of the Presentation

- Evolution of Crop Insurance
- Market Information
- India vs Global Crop Insurance
- Salient features of Crop Insurance Underwriting
- Underwriting -Insurance Pricing
- Actuarial / Financial Aspects
- General Issues
- Best Underwriting Practices
- Way Forward

Indian Agriculture: Salient Features

Population
1.3 billion

Farm Holdings
138 million

85% farmers own <2 ha

Net Sown Area
142 m ha

Av. land size
1.15 ha

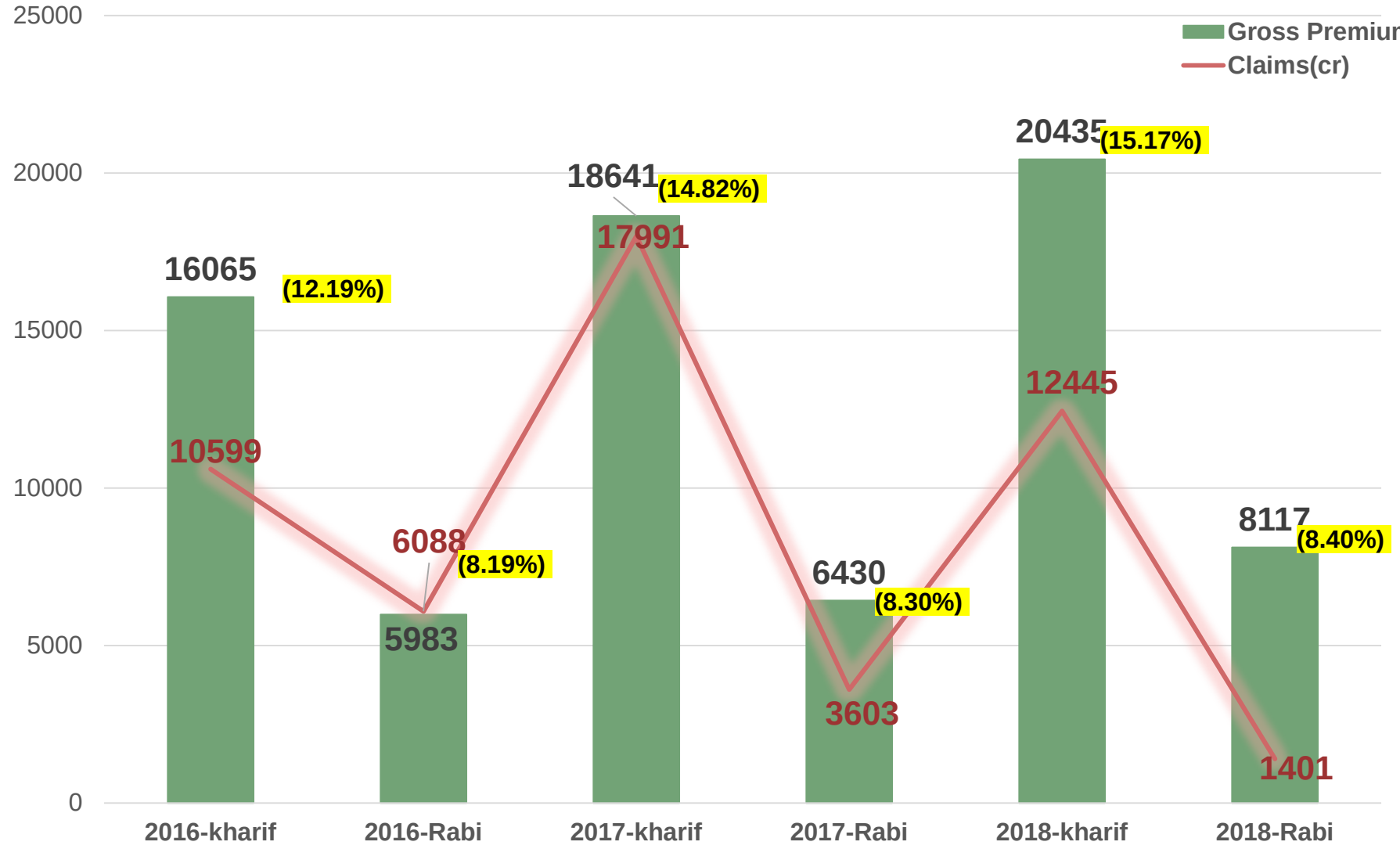
50% Area under Cereals & Millets

69% Population dependent on Agriculture

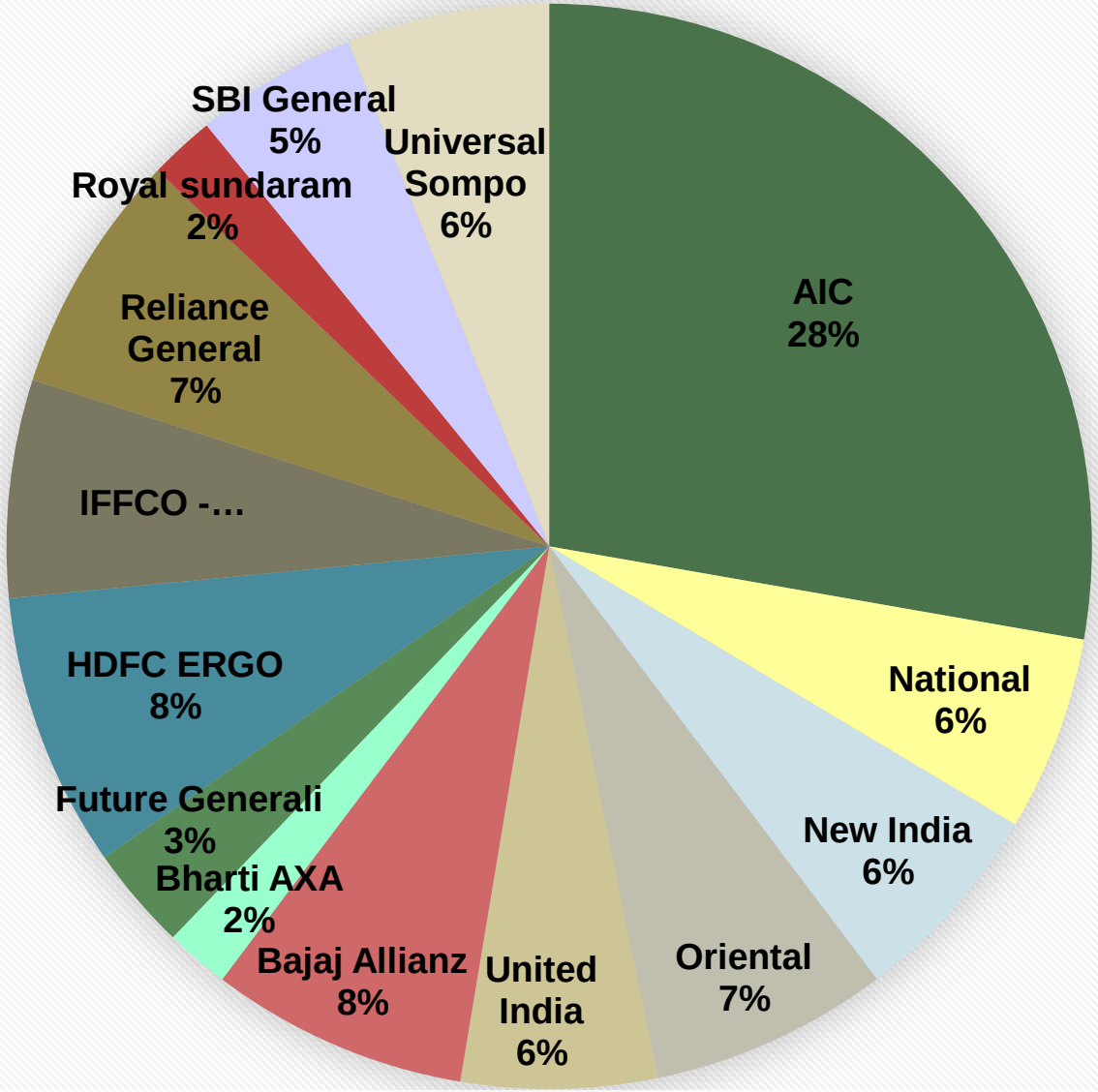
Evolution of Crop Insurance in India

1972	• First ever crop insurance started for H-4 cotton **(Individual farm based)**
1979	• Pilot Crop Insurance Scheme – PCIS **(Area Yield Index)**
1985	• Comprehensive Crop Insurance Scheme – CCIS **(Area Yield Index)**
1999	• National Agricultural Insurance Scheme – NAIS **(Area Yield Index)**
2007	• Pilot Weather Based Crop Insurance Scheme –WBCIS **(Area Weather Index)**
2010	• Pilot Modified National Agricultural Insurance Scheme – MNAIS **(Area Yield Index)**
2013	• National Crop Insurance Programme – NCIP "MNAIS, WBCIS & CPIS"
2016	• Pradhan Mantri Fasal Bima Yojana – PMFBY (**Area Yield Index)**

PMFBY & RWBCIS – Journey So far…(2016-2018)



Crop Insurance –Market distribution (2019)



Crop Insurance – India vs Global

GLOBAL AGRICULTURE PREMIUM (USD Million)	26300		
Premium (USD Million)	**USA**	**CHINA**	**INDIA**
Gross Premium	**12000**	**7900**	**3600**

Re-Insurance -Driven

Gross Direct Premium (India)	All Line of Business (Non –Life) (A)	Crop Insurance (B)	Crop Insurance Share (C= A/B)
Crop	Rs 1.7 lakh crore	Rs 30000 crore	**18%**
Re insurance Premium	Rs 50000 crore	Rs 25000 crore	**50%**

Salient features Crop Insurance Underwriting

- Multi-stakeholders Scheme
- Socio-Political Scheme (Product vs Scheme)
- Credit Linked
- Tender based
- Area Approach vs Individual
- Systemic/Covariate /CAT risk
- Reinsurance driven Business
- Seasonal (Short) Risk
- Constantly Evolving

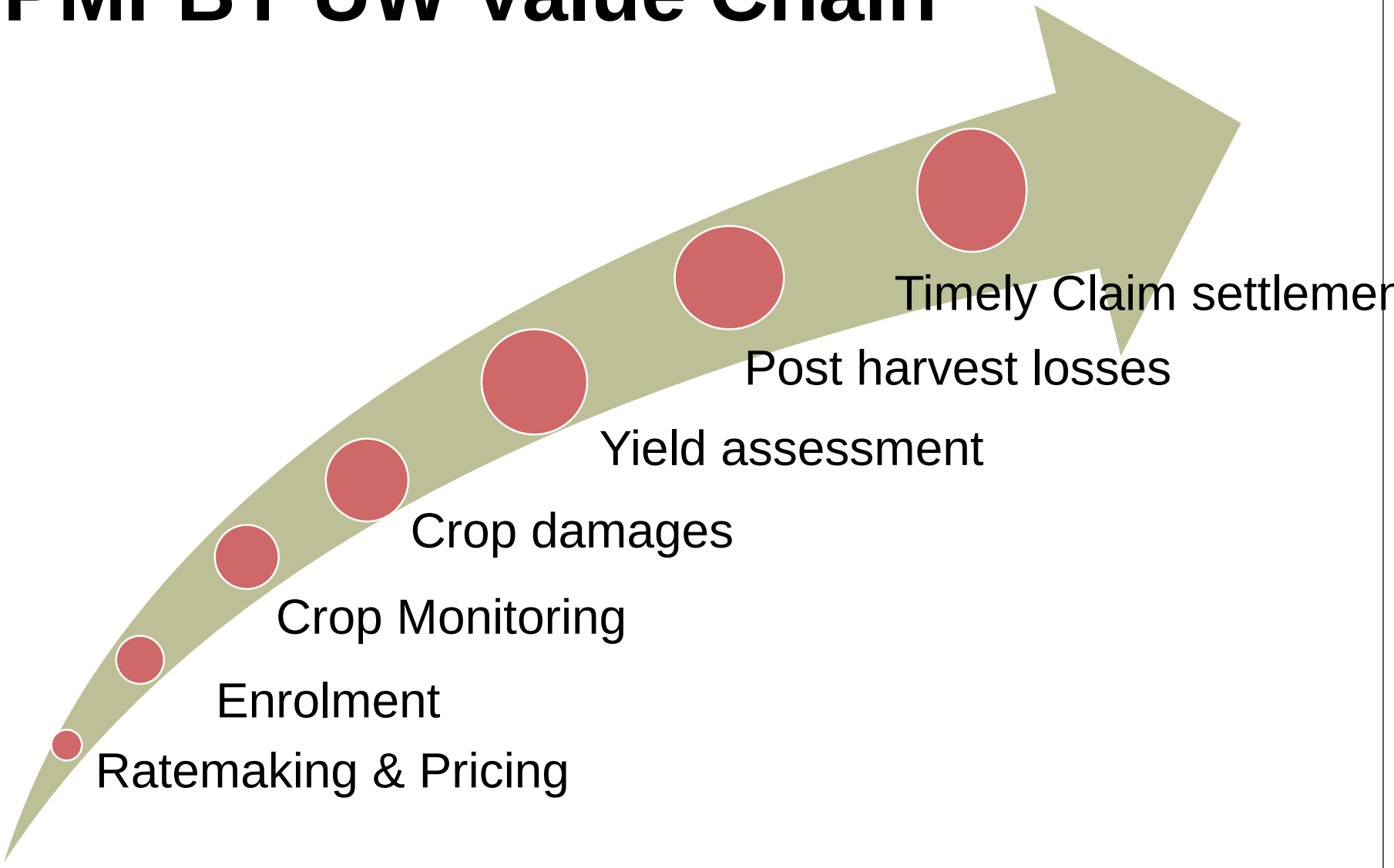
Why Area Based for Indian Crop Insurance?

- Large number of Small sized Farm-holdings vs USA, Europe
- Non-availability of individual farm level record of Yields, risk management capabilities, etc., Asymmetric Information, Systemic nature of Agriculture risks
- Low value of output per unit
- Collection of small premiums from large number of farmers, which may be prohibitive in terms of cost of Manpower and Infrastructure

Coverage Procedure

Government of India	State Government	Insurance Companies	Financial Institutions and Intermediaries
Formulates the scheme	Issues Scheme Notification for the season	Sends notification to Bank (FI)/Intermediaries and other stake holders in the district	Receives proposals and premium from farmers
Issues Administrative Approval for FY	Allocate district to Insurance companies	Coordinates with GoI, SG and Banks	Insurance coverage starts
	Select area and crops to be insured		

PMFBY UW Value Chain



Pricing /Ratemaking

- Gathering Tender Information
- Data Cleaning and Tender data scrutiny
- Calculation of Threshold Yield
- Calculation of Pure Premium Rate (PPR)
- Calculation of Adjusted Pure Premium Rate (APPR)
- Calculation of Commercial Premium Rate (CPR)

Pricing Issues

- Non Availability of Robust Yield /Weather data sets
- Non Availability of Granular data for historic years
- Abnormally High & Low data
- Unknown Guarantee at time of tender (latest year data not available)
- Uncertainty in Long term tenders
- Inclusion of multi-picking & Perennial crops in yield Index
- Seasonality discipline not specified as per the crop risk
- Cut off dates Very Close to harvesting period which encourages adverse selection & moral hazard
- New Perils introduced but clarity required in risk definition

Actuarial / Financial Aspects

1. Risk Based Pricing vs Tender system
2. Solvency Margin- Relaxations
3. RUR: 50% 1/365 Kharif
4. IBNR Rabi No o/s
5. Cash-crunch (Delayed Subsidies), No float, No Investment Income
6. Risk Concentration
7. Risk Period: Dates?
8. Seasonal vs Financial Year Basis
9. Booking of Premium (Cash vs Due basis)

General Issues – Crop Insurance

1. Delay in Yield Data based on CCEs.
2. Conflict of Interest – State Govt. data-provider for premium & claims
3. Trust Deficit
4. Non- Availability of Experienced third party Loss Assessors
5. Short Marketing window business
6. Press /Media adverse publicity
7. State Govt. opting out of crop insurance (Bihar)
8. High Productivity States not opting for Crop Insurance (Punjab)
9. Climate change

Best Practices in Crop Insurance

- Digital revolution in crop Insurance
  - Enrolment and insurance data base
  - Loss reporting through mobile app
  - CCEs data transmission through mobile app
- Technology assisted loss assessment and acreage estimation through RST, Drones, etc.
- Establishment of TSU at central level.
- Enhanced witnessing of CCEs by companies, reducing the data discrepancy
- Emphasis on publicity and awareness (0.5% of premium)
- Enrolment through CSC, making the scheme available at farmers doorsteps.
- Presence of insurance companies at least at Block/Tehsil level

Pradhan Mantri Fasal Bima Yojana (PMFBY)

- Emphasises on the use of **Technology**

❑National Crop Insurance Portal

- **Single ICT platform for integration of all stakeholders**
- **Capturing details of individual farmers**
- **Common Service Centre (CSC) integration, Payment Gateway, CCE Agri App.**
- **UID/ Aadhar Integration and Land Record Integration for deduplication**
- **Auto calculation of claims**
- **Data repository**

❑CCE Agri App

- Mandatory use of smart phones
- Improve Yield data quality
- Transparency
- Timely transmission of data

PMFBY contd….

Use of Remote Sensing Technology/Satellite data, Drone etc.

- Acreage estimation for invoking Prevented/Failed Sowing
- Mid-season adversity or localized calamity or post-harvest losses for individual assessment
- Remove area discrepancy in coverage
- Yield data analysis
- Rationalization of no. of CCEs

Better Infrastructure for AWS/ ARGs

- Setting of AWSs/ARGs on PPP mode
- Central Government support to States

WAY FORWARD- TECHNOLOGY

- Creating Agriculture risk info maps like flood maps, drought maps, etc. for Ratemaking / Pricing
- High resolution satellite maps at the time of enrollment
- Acreage estimation: Sowing to Harvesting
- Crop health monitoring throughout the season using satellite images, weather data, etc.
- Mid-season adversity or localized calamity or post-harvest losses for individual assessment
- Smart sampling of Crop Cutting Experiments (CCE)- 7 Million CCEs
- Conduct and witnessing of CCEs

Points to Ponder!

- Alternate Risk Transfer Mechanism /Pool
- Voluntary participation of farmers
- Climate change versus Crop Insurance
- Profitability / Sustainability
- Alternate Schemes- PM Kisan, Rathu Bandhu, KALIA,NDRF etc.

Thank you