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Crop insurance in India

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Abstract
Agriculture in India is varied, diversified and prone to a variety of risks. Most farmers are shall and marginal ones. In most areas, agriculture is rain fed, leading to a greater degree of yield variability and risk. Crop Insurance, which aims at addressing yield risk – though necessary for a vast majority of farmers – is subject to structural design and financial problems. Problems of asymmetry of information – moral hazard and adverse selection – and co-variability are more pronounced in crop insurance than in other forms of insurance. The present paper tries to depict the picture of crop insurance in India.

Keywords: agrarian economy, crop insurance, national agricultural insurance scheme, Prime Minister Fasal bima yojana

Introduction
India an agrarian economy with one third population depending on the agriculture sector directly or indirectly has 116 million farm holdings covering an area of 163 million hectares of which small and marginal farmers (with holdings of 2 hectares or less) make up 80 percent of the producer population. Farming is an inherently risky business and farmers face many types of risks. About 60 per cent of net shown area of the country is rain-fed and 65 per cent of Indian farmers depend on rain-fed irrigation. The growth of crops and realization of output are determined by the quantum of rainfall and its distribution during the Monsoon Season which at times is uncertain. Rainfall pattern affects the irrigated crops also. Nearly two third of the cropped acreage in India is vulnerable to drought in different degrees. This leads to operating risk in cultivation of different crops. On an average 12 million hectares of crop area is affected annually by these calamities severely impacting the yields and total agricultural production.
Agricultural production and farm incomes in India are frequently affected by natural disaster such as droughts, floods, cyclones, storms, landslides and earthquakes. Susceptibility of agriculture to these disasters is compounded by the outbreak of epidemics and man-made disasters such as fire, sale of spurious seeds, fertilizers and pesticides, price crashes, etc. All these events severely affect farmers through loss in production and farm income, and are beyond the control of farmers. With growing commercialization of agriculture, the magnitude of loss due to unfavourable eventualities is increasing. In recent times, mechanisms like contract farming and futures trading have been established which are expected to provide some insurance against price fluctuations directly or indirectly. But, agricultural insurance is considered an important mechanism to effectively address the risks to output and income resulting from various natural and manmade events.

Crop Insurance in India: An overview
The idea of crop insurance in India in existence for more than a century, took decades to solidify into concrete, workable schemes. Only after independence in 1947, crop insurance received concrete attention. It was discussed in 1947 by the Central Legislature and in 1950, two pilot schemes were circulated among States for adoption. But states were unwilling to operate the schemes because of resource constraints. Crop insurance again received attention at the time of formation of Third Five Year Plan (1961-1966), but the Working Group on Agriculture was not in favour of its inclusion in the Plan. In October 1965, the Government of India decided to draw up a crop Insurance Bill and model scheme of crop insurance. In March 1970, the Government referred the Bill and the Model Scheme to an Expert Committee under the Chairmanship of Dr. Dharm Narayan. But the Committee concluded against the introduction of crop insurance because of the financial burden. Prof. V.M. Dnadekar, a prominent economist, examined the expert committee report and advocate strongly for introduction of crop insurance based on an area approach.
The major initiatives in the domain of crop insurance in India from First individual approach launched in 1972 to 1999 are as under:

Table 1: Major Initiatives in Crop Insurance (1972 to 1999)

Scheme (Duration)	Background and Salient Features	Key Statistics
Programme based on Indiavidual approach (1972-78)	• Experiments on crop insurance on a limited, ad-hoc and scattered scale. • In 1972-73, the General Insurance Department of Crop Insurance Scheme for H-4 cotton • Based on "Individual Approach" & later included new crops such as Groundnut, Potato etc. and new states. • In 1972, general insurance business was nationalized and by an Act of Parliament, the General Insurance	• Farmers Insured: 3.110 • Premiums: Rs. 4.54 lakh • Claims: Rs. 37.9 lakh

	Corporation of India (GIC) was set up.	
Pilot Crop Insurance Scheme (PCIS) (1979-84)	• Based on the above experiments, GIC entrusted a study to eminent agricultural economist, Prof. V.M. Dandekar. • According to the recommendations of Prof. Dandekar, PCIS was introduced by GIC from 1979. • PCIS was based on homogenous 'Area' approach. • Coverage restricted to loanee farmers and on a voluntary basis. Maximum sum insured was 100 percent of the crop loan, which was later increased to 150 percent. • Risk shared between GIC and State Governments in the ratio of 2:1 • 50 percent subsidy towards premiums for Small / Marginal farmers, contributed by State Governments & Central Government on 50:50 basis.	• Crops insured: Cereals, Millets, Oilseeds, Cotton, Potato and Gram. • Coverage: 13 States • Farmers Insured: 6.27 lakh • Premiums: Rs. 197 lakh • Claims: Rs. 157.1 lakh
Comprehensive Crop Insurance Scheme (CCIS) (1985-99)	• CCIS was an expansion of PCIS. • Coverage was made compulsory for farmers availing crop loans for growing food crops & oilseeds. • Maximum sum insured was restricted to 100 percent of crop loan subject to an upper limit of Rs. 10,000 per farmer, which was later increased to 150 percent. • Premium rates were 2 percent of the sum insured for cereals & millets and 1 percent of pulses & oilseeds. • 50 percent of the premium for Small / Marginal farmers was subsidized equally by Central and State Governments. • CCIS was a multi-agency effort, involving Central Government, State Governments, Banking Institutions and GIC.	• Coverage : 16 States & 2 UTs • Farmers Insured: 763 lakh • Premiums: Rs. 40356 lakh • Claims: Rs. 231900 lakh

Source: India, Ministry of Agriculture, Department of Agriculture and Cooperation, Report on Impact of Evaluation of Pilot Weather based crop insurance study, 2011

National Agricultural Insurance Scheme (NAIS)

The National Agricultural Insurance Scheme (NAIS), with the aim to increase coverage of farmers, crops and risk commitment, was introduced in the country from Rabi 1999-2000 replacing the erstwhile Comprehensive Crop Insurance Scheme (CCIS). The main objective of the scheme was to protect the farmers against the crop losses suffered on account of natural calamities, such as, drought, flood, hailstorm, cyclone, pests and diseases. The scheme was implemented by the Agriculture Insurance Company of India (AIC). NAIS was to be discontinued after implementation of National Crop Insurance Programme (NCIP) from *Rabi* 2013-14 but on representation of some states it has been continued during 2013-14 and 2014-15.

Modified National Agricultural Insurance Scheme (MNAIS)

To improve further and make the scheme easier and more farmer friendly, a proposal on Modified National Agricultural Insurance Scheme MNAIS) was prepared and was approved by Government of India for implementation on pilot basis in 50 districts from *Rabi* 2010-11 season. After evaluation of impact of pilot, the scheme is being implemented as a full-fledged component of NCIP from Rabi 2013-14.

Weather Based Crop Insurance Scheme (WBCIS)

With the objective to bring more farmers under the fold of Crop Insurance, a pilot Weather Based Crop Insurance Scheme (WBCIS) was launched in 20 States in 2007. The scheme provides insurance protection to farmers against adverse weather incidences, such as deficit and excess rainfall high or low temperature, humidity etc. WBCIS is implemented as a full-fledged component of NCIP from *Rabi* 2013-14.

Coconut Palm Insurance Scheme (CPIS)

The Coconut Palm Insurance Scheme (CPIS) was approved for implementation on pilot basis for the years 2009-10 onwards in the selected areas of Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu and West Bengal. Now the CPIS is being implemented as a full-fledged component scheme of NCIP from Rabi 2013-14 in all Coconut growing states. Fifty percent of the premium is contributed by Government of India, 25 percent by the concerned State Government and the remaining 25 percent by the farmer. The CPIS is administered and implemented by the Coconut Development Board (CDB).

National Crop Insurance Programme (NCIP)

To make the Crop Insurance Schemes more farmer friendly, a restructured Central Sector Scheme in the name of 'National Crop Insurance Programme' (NCIP) was introduced from Rabi 2013-14. The existing MNAIS, WBCIS and CPIS were merged under this programme with various improvements and changes for implementation throughout the country. However, on the basis of request received, some States have been allowed to implement NAIS during 2013-14 and 2014-15.

The coverage of NCIP in terms of farmers and area insured has been projected to the level of 50 percent each from the existing level of about 25 percent and 20 percent respectively by the terminal year 2016-17 of the Twelfth Plan. The coverage under CPIS is projected at 25 percent of coconut growers during 2013-14 with increase of 5 percent each year during remaining years of Twelfth Five Year Plan.

Unified Package Insurance Scheme

The Unified Package Insurance Scheme (UPIS) for farmers whose guidelines were introduced in March 2014will be implemented in 45 selected districts on pilot basis from

Kharif 2016. The scheme contains seven actions:

1. Crop insurance (Under Prime Minister Fasal Bima Yojana (PMFY)/ WBCIS)
2. Personal accident insurance (as per PMSBY)
3. Life insurance (as per PMJJBY)
4. Building and contents insurance (fire and allied perils)
5. Agriculture Pumpset Insurance (Up to 10 HP)
6. Student safety Insurance; and
7. Agricultural Tractor Insurance.

This package provides a comprehensive and holistic se of insurance cover to the farm households even as farm and farming get integrated with all other aspects of life of the farmers and their families as a compound of farm household / agricultural household.

Prime Minister Fasal Bima Yojana

Keeping in view the representations from States/UTs especially on account of increase in premium rates & farmers' share in premium, capping on premium rates and reduction in sum insured etc; NCIP/NAIS has recently been reviewed, and a new scheme namely, Pradhan Mantri Fasal Bima Yojana (PMFBY) has been approved in place of MNAIS/NAIS for implementation from Kharif 2016 season. Premium structure under Restructured WBCIS has also been rationalized and made at par with PFBY. CPIS component will also be continued. In addition, a Unified Package Insurance Scheme (UPIS) covering other risks of farmers including life, accident like house, tractor, pump set, student safety etc. besides crop insurance has also been approved for implementation on pilot basis in selected 45 districts.

Brief features of new schemes are as under:

- PMFBY will provide a comprehensive insurance cover against failure of the crop thus helping in stablising the income of the farmers and encourage them for adoption of innovative practices.
- The scheme covers all Food & Oilseeds crop and Annual Commercial/ Horticultural Crops.
- The scheme is compulsory for loanee farmers obtaining Crop Loan / KCC account for notified crops. However, it is voluntary for other/non loanee farmers who have insurable interest in the insured crops.
- The scheme provisions have been simplified for easy understanding and the Maximum Premium payable by the farmers will be 2% for all Kharif Food & Oilseeds crops, 1.5% for Rabi Food & Oilseeds crops and 5% for Annual Commercial/ Horticultural Crops.
- The difference between Premium and the rate of Insurance charges payable by farmers shall be shared equally by the Centre and State.
- The scheme will be implemented by AIC and other empanelled private general insurance companies. Selection of Implementing Agency (IA) will be done by the concerned State Government through bidding on premium rates.
- The existing State Level Co-ordination Committee on Crop Insurance (SLCCCI), Sub-Committee to SLCCCI, District Level Monitoring Committee (DLMC) shall be responsible for proper management of the scheme.
- The scheme shall be implemented on an 'Area Approach Basis'. The unit of insurance shall be Village/ Village Panchayat level for major crops and for other crops it may be a unit size above the level of Village / Village Panchayat.
- In case majority of farmers in a notified area are prevented from sowing/ planting the insured crops due to adverse weather conditions then insured farmers will be eligible for indemnity claims upto maximum of 25% of the sum-insured.
- Claims for wide spread calamities are being calculated on area approach. However, losses due to localized perils (Hailstorm, landslide & inundation) and Post-Harvest losses due to specified perils, (Cyclone/Cyclonic rain Unseasonal rains) shall be assessed at the affected insured field of the individual insured farmer.
- Three levels of indemnity, viz. 70%, 80% and 90% corresponding to crop Risk in the areas shall be available for all crops.
- The Threshold Yield (TY) shall be the benchmark yield level at which Insurance protection shall be given to all the insured farmers in an insurance Unit. Threshold Yield of the notified crop will be moving average of yield of last seven years excluding yield upto two notified calamity years multiplied by indemnity level.
- In case of smaller states, the whole state shall be assigned to one implementing agency (IA) (2-3 or more for comparatively big States). Selection of IA may be made for 3 years.
- The designated / empanelled companies participating in bidding have to bid the premium rates for all the crops notified/to be notified by the State Govt.
- Crop Cutting Experiments (CCE) shall be undertaken per unit area/ per crop, on a sliding scale, as prescribed under the scheme outline and operational guidelines. Improved Technology like Remote Sensing. Drone etc will be utilized for estimation of yield losses.
- State Governments should use Smart Phone Apps for video/image capturing CCEs process and transmission thereof with CCE data on a real time basis for timely, reliable and transparent estimation of yield data.
- There will be a provision of on account claims in case of adverse seasonal conditions during crop season viz., floods, prolonged dry spells, severe drought, and unseasonal rains.
- On account payment upto 25% of likely claims will be provided, if the expected yield during the season is likely to be less than 50% of normal yield.
- The claim amount will be credited electronically to the Bank Account of individual Insured farmers.
- Adequate publicity will be done in all the villages of the notified districts/areas.
- The cost of using technology etc. for conduct of CCEs etc will be shared between Central Government and State/U.T Governments on 50:50 basis.

PMFBY/WBCIS has been implemented by 23 States during Kharif 2016 season. As provisional data available 315.31 lakh farmers have been covered under the Crop Insurance Schemes during Kharif 2016 season, which is higher than the Kharif 2015 which was a drought year. Despite the good monsoon year and delay in issue of notifications by some States due to migration to building system, coverage under the scheme has increased as shown from the provisional data available.

Challenges in Crop Insurance

Agriculture in India is varied, diversified and prone to a variety of risks. Most farmers are shall and marginal ones.

In most areas, agriculture is rain fed, leading to a greater degree of yield variability and risk. Crop Insurance, which aims at addressing yield risk – though necessary for a vast majority of farmers – is subject to structural design and financial problems. Problems of asymmetry of information – moral hazard and adverse selection – and co-variability are more pronounced in crop insurance than in other forms of insurance.

Due to the vastness of the country, large number of small and marginal farmers, and adoption of area-based approaches, several agencies and organizations are involved in Crop Insurance Programmes. Hence, coordinated efforts are critical for effective implementation of crop insurance scheme.

A four members committee headed by Dr. P.K. Mishra, former Secretary, Department of Agriculutre and Cooperation was constituted in September 2013 to examine the loopholes in the implementation of the Crop Insurance Schemes.

The Committee examined the various issues related to Crop Insurance such as

- Discrpancy in area insured. (e.g., the area insured for a particular crop being more than the crop area sown).
- Delay in receiving crop-cutting data and quality and reliability of such data.
- Weather data, particularly from private automatic weather stations.
- Non-compliance with the provision of compulsory insurance for loanee farmers, multiple loan on the same land, lack of seasonality discipline.
- Affordability of crop insurance premium for farmers and transparency in determining premium rate.
- Delay in settlement of claims.
- Role of Banks and Agricultural Insurance Companies in the operation of Schemes and
- Awareness of farmers regarding various features of the schemes.

Just ahead of the introduction of the new scheme of PMFBY by Government of India, NABARD had conducted a study on Crop Insurance across different regions in the selected states of the country, covering relevant aspects such as performance, coverage benefits, limitations/constraints, challenges etc. through field survey out of stakeholders. Based on the findings some important idealized critical challenges are:

- Regional variation in spread of Crop Insurance Scheme (s) needs ot be addressed by reaching out of the hilly and interior areas. For instance, in J & K State, farmers are deprived of deserved benefits of Crop Insurance even as around 1-2% of total farmers/area per year were covered; Laddakh region was marked by total absence of penetration of Crop Insurance Services. Crop Insurance facility for apple/fruit growers and other farmers can significantly aid in soothing militant human aggression villagers/youths, by showing deep commitment by State Government to and Crop Insurance Schemes, for example by budgeting of State's share is subsidy on premium.
- Infrastructure is in the form of setting up of Automatic Weather Stations (AWSs) needs immediate attention, be financed under RIDF if state governments showed interest.
- There have been problems of coordinating among stakeholders. It may be ensured whether State Level Coordination Committee for Crop Insurance (SLCCCI) was appropriately/optimally functional in each state.
- Each State may set up a significant sized dedicated fund (Crop Insurance Fund) each year, since progress of farmers is at stake without crop insurance facilities adopted by them.
- Involvement of farmers by forming Crop Insurance associations of farmers at village level could be thought of so that farmers get a feel of voluntary participation in CI Schemes. Farmers' Clubs could take up the role of such CI associations at village level.
- Unit of claim settlement needed to be individual farmer in all cases of risks be it localized or non-localized, for which necessary modifications in schemes could be desired. Needless to emphasize, expeditious settlement of eligible claims of farmers still a major challenge.

Recommendations for Improvement

After examining the various existing schemes, the following measures are recommended for improvement in the field of Crop Insurance:

- A web portal should be developed for all States to make land record data be available to financial institutions.
- For the purpose of verification of the crop sown on a particular land, mobile phone technology may be used to capture and transmit photographs of standing crops once or twice during the season.
- Premium rates to be revised for MNAIS.
- Reserve Bank of India (RBI) and National Bank for Agriculture and Rural Development (NABARD) should effectively monitor the compliance of their circulars regarding compulsory crop insurance for loanee farmers.
- Insurance companies and banks should play a pro-active role in insuring effective implementation of crop insurance schemes.
- State Governments should insure the use of GPRS-enabled and camera fitted mobile phones etc. while conducting crop cutting experiments.
- A programme of creating awareness and insurance literacy among farmers should be prepared by insurance companies and banks, in collaboration with the concerned State Governments.
- An Atlas of critical weather elements for different agro-climatic regions and
- An Agricultural Insurance Act should be formulated to take care of specific needs of the crop insurance and agricultural insurance in general.

Conclusion

India being one of the most disaster prone countries and agriculture being the source of livelihood of the majority of its people, crop Insurance occupies an important place. Hence, an attempt has been made to understand and assess various crop insurance schemes and risk management approaches and purpose a suitable strategy for India.

The performance of the major crop insurance schemes, NAIS, MNAIS, WBCIS and PBFBY at the National level and state level were studied. It was observed that penetration rate of all the schemes was low and for NAIS, the claim premium ratio was more than 300 percent costing the government heavily. The performance of MP in terms of the number of farmers insured and area brought under insurance cover was better under NAIS as compared to other states. WBCIS has performed well only in Rajasthan and Bihar. MNAIS has been implemented only but few states. PMFBY launched during Kharif, 2016 has covered 366.64 lakh farmers accounting to 26.5% penetration in India and bringing 388 lakh hectares under insurance cover which is 15 percent more than the previous year. The sum insured under PBFBY has also increased by 104 percent. The coverage of non-loanee farmers has also increased by 6 times. The awareness levels have improved for PBFBY. Majority of the farmers are not very much interested in crop insurance due to issues such as improper loss assessments, inadequate and delayed claim payments and poor response from the banks. Farmers are more aware about the relief payments and prefer relief to crop insurance.

To protect from losses due to weather risk, we need to build an appropriate comprehensive risk mitigation strategy rather than just focusing on one strategy of crop insurance as silver a bullet to address the weather risk problem of farmers. Apart from crop insurance programmes, government needs to focus on other strategies such as developing resistant varieties, encouraging farmers to cultivate risk resistant crops and varieties, through policy measures such as variable interest rates for crop loans, variable premium rates and favourable MSPs for risk resistant crops. Rather than just relying on the banks selling insurance products, other outlets and micro insurance agents need to be developed in rural areas.

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