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Address for correspondence:
Dr. Yogita Bhilore
Depatment of Economics, Shri Sadguru Gangagir Maharaj Science, Gautam Arts and Sanjeevani Commerce College, Kopargaon
Email: yogitabhilore@gmail.com

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Study of Agriculture Crop Insurance Challenges & Opportunities

Dr. Yogita Bhilore
Depatment of Economics, Shri Sadguru Gangagir Maharaj Science, Gautam Arts and Sanjeevani Commerce College, Kopargaon

Abstract

Agriculture is inherently subject to risks and uncertainties, primarily due to its reliance on natural conditions. A wide range of factors influence agricultural income, many of which are beyond the control of farmers. Events such as droughts, floods, unseasonal rainfall, and hailstorms are just a few examples that directly impact farming outcomes. The growing frequency of such extreme weather events has made farming even more challenging, leaving farmers increasingly vulnerable. This trend has been exacerbated in recent years by global climate change. India, in particular, is highly susceptible to the effects of climate change due to several reasons—heavy reliance on agriculture, limited irrigation coverage, insufficient resources at individual farms, and lack of access to advanced technology. Additionally, the predominance of small and medium-sized farms, coupled with systemic issues such as reluctance to adopt new technologies, inadequate post-harvest practices, and disorganized marketing systems, further heighten the risks associated with agriculture in the country. To shield farmers from both production-related and price-related risks, various measures have been explored. Farmers themselves have been compelled to adopt both proactive (ex-ante) and reactive (ex-post) adaptation strategies. These include crop and livelihood diversification, staggered planting, self-managed contingency funds, and contract farming as ex-ante methods. On the other hand, ex-post strategies may involve selling assets, migrating, taking out loans (both formal and informal), or relying on consumption credit. Despite these efforts, the level of protection these strategies offer often falls short, particularly depending on the type and magnitude of the risk involved. In such contexts, crop insurance is increasingly seen as a crucial risk management tool.

Keywords: *Insurance, farmers, Government, Scheme, diversification, vegetation*

Introduction

Crop insurance acts as a proactive risk management tool, transferring the burden of potential losses from insured farmers to insurance providers. By paying a modest premium, farmers become eligible for significant financial support in the event of unforeseen agricultural setbacks. This safety net not only helps them recover and prepare for the next planting season after a difficult year, but also reduces the pressure on government disaster relief resources. In an agriculture-dependent country like India, crop insurance is a vital component of agricultural policy. Similar to other insurance models, these schemes function by promising compensation upon the occurrence of specified risks, provided the farmer has paid the designated premium. The system operates under the 'law of large numbers,' which implies that even rare events can be reliably accounted for when risks are spread across a sufficiently large and diverse group. Payouts are made to those affected by adverse events, supported by the premiums of those who did not experience losses or by reserves built up during favorable seasons.

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For such programs to be truly effective, it is essential to diversify risk across regions and over time, ensuring a more stable and sustainable insurance model.

Objectives of Study

1. To study the significant role of General Insurance Corporation in Agricultural Sector.
2. To understand the Crop insurance Scheme challenges and prospects.

Research Methodology

Overall study is based on the reports and the statistics there the research is totally on secondary data collection methods.

Evolution of Crop Insurance in India

Recognizing the importance of publicly funded insurance in agriculture, the Government of India formed an expert committee led by Dharam Narain to assess the feasibility of introducing crop insurance schemes. However, the committee did not recommend implementing the scheme at that time. In contrast, Professor Dandekar advocated for the introduction of an insurance program specifically for agricultural laborers.

Following these recommendations, the Indian government established the General Insurance Corporation (GIC) in 1973. That same year, GIC launched a pilot crop insurance program in Gujarat, later extending it to states like West Bengal, Tamil Nadu, and Andhra Pradesh. In 1985, the Comprehensive Crop Insurance Scheme (CCIS) was introduced across most Indian states, aiming to protect farmers who availed agricultural loans. The scheme offered a coverage limit of ₹10,000 per farmer, irrespective of the loan size. Premium rates were set at 2% for cereals and 1% for pulses and oilseeds. Despite these efforts, the scheme fell short due to limited crop coverage, a cap on insured amounts, and restricted access for non-loan farmers.

Subsequently, in 1999, the government launched the National Agricultural Insurance Scheme (NAIS)**.** This broader initiative covered both loanee and non-loanee farmers across the country, with mandatory enrollment for the former. For effective implementation, agricultural insurance companies were established in 2002. This led to the development of the Weather-Based Crop Insurance Scheme (WBCIS), piloted across India starting from the Kharif season of 2007. WBCIS uses weather parameters—monitored through automated stations—to simulate crop loss and offer payouts if parameters exceed or fall below regional norms. However, the scheme is constrained by the availability of weather stations and the fact that it only covers specific parametric weather risks. NAIS was later modified into the Modified National Agricultural Insurance Scheme (MNAIS), which was implemented selectively across states. Unlike NAIS, MNAIS followed actuarial premium pricing and allowed for broader risk definitions, including cyclone and sowing risks. In 2013, NAIS, WBCIS, and other schemes like the Coconut Palm Insurance Programme (CPIS, 2009) were merged into the National Crop Insurance Programme (NCIP)**,** implemented nationwide from the Kharif 2014 season.

Premiums, Sum Insured, and Claims Mechanism

Typically, crop insurance offers three levels of indemnity—90%, 80%, and 60%—corresponding to low-, medium-, and high-risk areas based on a 10-year coefficient of yield variation. The sum insured is usually the value of the threshold yield, although farmers can choose to insure a lower amount. The threshold yield is calculated as a moving average of the past three years for rice and wheat, and five years for other crops, multiplied by the indemnity level.

If a farmer wishes to insure a crop beyond the threshold value, they must pay an actuarial premium, as subsidies are not provided for the excess coverage. Premium rates vary by scheme, crop type, and covered risks. Compensation is calculated using the formula:

Compensation = (Shortfall in Yield / Threshold Yield) × Sum Insured

Here, shortfall in yield is the difference between the actual yield (determined through Crop Cutting Experiments or CCEs) and the threshold yield.

Challenges and Issues in Crop Insurance

Indian crop insurance generally follows an area-based approach, meaning yield loss is assessed at the regional level rather than the individual farm level. This approach only works effectively when individual yields strongly correlate with average yields from crop-cutting experiments—an alignment that is rare. This results in basis risk, where a farmer may suffer loss but not receive compensation.

Additionally, even when payouts are approved, they are often delayed due to procedural bottlenecks and shared responsibilities between

central and state governments. To expand coverage and ensure uptake, crop insurance is often bundled with agricultural credit. Loanee farmers are automatically insured, whereas non-loanee farmers must opt in voluntarily. For the latter group, banks act as intermediaries, but their lack of financial incentives (only 4% commission on premiums) and increased workload make them poor promoters of voluntary schemes.

Moreover, insurance is a risk management tool, not an income-generating investment. It involves complex concepts such as indemnity levels, sum insured, and threshold yields, which require adequate farmer education. Low awareness and insufficient training programs hinder informed participation. Finally, a lack of reliable data for pricing and indemnity determination remains a major hurdle for insurers and policymakers alike.

Opportunities

Challenges and Opportunities in Crop Insurance

Despite the challenges ahead, the focus should be on identifying opportunities. A significant opportunity lies in the large pool of uninsured farmers, many of whom continue farming across the country. This untapped group presents a tremendous potential for crop insurance schemes. In the future, as the risks associated with farming are expected to rise—partly due to the impacts of global climate change—these millions of farmers will likely be required to insure at least a portion of their crops. The varying climatic conditions across India could potentially mitigate some risks by introducing randomness into the otherwise systematic risks, especially if insurance schemes are implemented nationwide.

The government has recognized the level of distress that farmers face, which has led to strong policy support for crop insurance. Additionally, the extensive network of self-help groups and cooperatives across the country could be leveraged for micro-insurance, provided a well-designed model is developed through careful planning and research.

Pradhan Mantri Fasal Bima Yojana: A Silver Lining in Difficult Times

Launched on January 13, 2016, the Pradhan Mantri Fasal Bima Yojana (PMFBY) is an advanced crop insurance scheme introduced by the government. Administered by the Ministry of Agriculture and Farmers' Welfare, the scheme is being implemented with the cooperation of state governments across India. The primary goal is to offer better coverage for farmers through low-premium insurance plans. This new crop insurance scheme removes the previous cap on premium subsidies, which existed in earlier schemes. Furthermore, it covers risks such as post-harvest losses, preventive sowings, and localized disasters like cyclones, which were often excluded in earlier programs. A significant aspect of this new scheme is its focus on crop production and ensuring adequate coverage for farmers. Some of the major highlights include:

Comprehensive insurance coverage for all crops.

- **Uniform premium rates for all farmers**: 2% of the sum assured for Kharif crops and 1.5% for Rabi crops.
- Full claim settlements without any cap on the amount.
- Claims for up to 25% of the insured sum if sowing is not done due to adverse weather conditions.
- Individual farm-level assessments for losses caused by inundation, hailstorms, or landslides.
- The use of advanced technologies, such as remote sensing and drones, to speed up claim processing.

Crop insurance benefits both farmers and the government. For farmers, it offers financial relief in case of crop loss, while for the government, it reduces the financial burden of disaster relief to the agricultural sector. However, crop insurance schemes in India have faced challenges in gaining widespread acceptance among farmers. This is largely due to inherent flaws in the schemes themselves, coupled with a lack of awareness among farmers. To address these issues, the government has introduced PMFBY, an improved version of previous schemes. Despite existing challenges, if implemented effectively, this new initiative has the potential to greatly benefit the farming community.

Conclusion

Crop insurance brings value to both farmers and the government. It provides farmers with a means to manage risk through compensation for crop loss, while simultaneously easing the financial burden on the government by reducing reliance on disaster relief. However, despite its importance, crop insurance has not gained

significant popularity among farmers in India. The primary reasons for this include structural flaws in existing schemes and a general lack of awareness among the farming community. By introducing a more robust and accessible insurance program like PMFBY, the government has taken a significant step toward addressing these concerns. While there are still several challenges to overcome, the new scheme holds great promise if implemented properly.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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