



Averting Agricultural Risks through Crop Insurance: Financial Protection and Sustainability for Farmers

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Abstract

Agriculture is susceptible to several risks, such as natural catastrophes, pests and market fluctuations, which jeopardise farmers' livelihoods and the stability of agricultural output in terms of productivity. Crop insurance plays an important role in alleviating these hazards. This article analyses the function of crop insurance in safeguarding farmers from the economic repercussions of crop failures resulting from severe weather events, pests and other uncertainties. The Pradhan Mantri Fasal Bima Yojana (PMFBY) in India illustrates how crop insurance stabilises farmers' income, promotes sustainable agricultural methods and reduces dependence on governmental assistance. Crop insurance guarantees farmers' resilience and fosters long-term agricultural sustainability by offering financial assistance amid unfavourable situations. Its efficacy depends on prompt claim resolutions and precise risk evaluations. Ultimately, crop insurance functions as an essential protection for individual farmers and the wider agricultural industry.

Keywords: Crop insurance, risk and farmers, financial protection and sustainable agricultural.

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1. Introduction

Agriculture, an essential element of most economies, is particularly vulnerable to various dangers that might impede crop production and threaten farmers' livelihoods. Natural disasters, like droughts, floods and insect infestations, along with market volatility, can result in substantial financial losses.

Due to their social, environmental and economic context, farmers today face several issues, some of which contradict one another. From a societal and economic perspective, a farm's primary objective is to provide a respectable profit for its proprietors while simultaneously ensuring the survival of the firm and its growth. To achieve sustainable agricultural development from an environmental perspective, one must adopt resilient agricultural practices that promote a symbiotic relationship between growing crops and preserving ecosystems that can supply valuable services (Abdulai *et al.* 2017) ^[1]. Farmers prefer crop insurance and other risk management tactics to lessen the impact of climate change and its associated risks (Fleckenstein, 2020) ^[3].

One of the primary forces causing fundamental shifts in the agricultural sector is crop insurance, which has been around for a while. By taking calculated risks in the field, crop insurance helps farmers improve and stabilise their production results (Sporri *et al.* 2012) ^[5].

Crop insurance has emerged as a vital instrument for farmers, providing a safeguard to mitigate risks. This article examines the significance of crop insurance in risk

management and its role in assisting farmers in mitigating financial risks linked to crop failure.

2. Crop Insurance Helps the Farmers in Averting Risk in the Following Way:

1) Protection against Natural/Weather Calamities

Extreme weather occurrences, including cyclones, hail, floods and droughts can wreak havoc on farmers' livelihoods. Crop insurance provides financial support to farmers in the event that their harvest is negatively affected by natural disasters. In 2016, the Indian government introduced the Pradhan Mantri Fasal Bima Yojana (PMFBY) to help farmers who have lost their crops due to natural calamities. Farmers will have a safety net through this insurance program in the event that their crops fail due to natural disasters (Ministry of Agriculture and Farmers Welfare, 2023).

2) Financial Security

Crop insurance assists in stabilising farmers' income, which is a major benefit. Factors such as market pricing and crop yields cause agricultural revenue to fluctuate, which is an inherent instability. Many farmers find themselves in precarious financial straits after a poor crop. Crop insurance compensates farmers in the event that their yields are lowered as a result of pests or bad weather, thereby reducing this uncertainty. In order to stabilise agricultural revenues and provide farmers financial stability when times are tough, crop insurance is crucial, according to studies.

Crop insurance for income stabilisation Crop insurance helps farmers maintain a steady income by covering losses caused by things like bad weather or insect infestations. The United States Department of Agriculture (2022) states that crop insurance protects farmers financially so that they may recover from losses and keep their income stable. For farmers to be able to prepare for future crops and stay out of debt, this consistency is vital in lowering the revenue volatility in agriculture (USDA, 2022).

3) Promoting the Use of Riskier Agricultural Methods

Farmers are incentivised to embrace novel agricultural techniques *via* crop insurance, which acts as a tool to mitigate risk. The financial risk of crop failure discourages many farmers from trying novel methods or growing crops with a high degree of inherent risk. Farmers are more inclined to try out new agricultural techniques, better seeds and crop diversification when they have crop insurance. Those farmers would normally stay away from trying out new, unproven methods because of the hazards involved. Farmers with insurance policies are more inclined to take risks, which might lead to higher yields.

Agricultural insurance has several benefits, including lowering pollutants and encouraging farmers to use more efficient and sustainable agricultural practices. A statistical analysis of fifty US states found a statistically significant

correlation between the overall output of environmentally friendly agricultural inputs, air pollution and agricultural insurance. A rise in the production of organic goods may be achieved via the extension of agricultural insurance (Ahmed *et al.* 2022)^[2].

There are several elements that influence the efficiency of production in agricultural production, animal production and aquaculture as well. The buildup of heavy metals in aquatic sediments, for instance, is one stress factor that influences aquatic eco-system.

4) Lessens the Economic Effect of Crop Failures on both Farmers and the Government

Before crop insurance became common place, farmers would often seek out government subsidies and assistance programs in the event of a failed harvest. Having said that, these applications aren't always up to snuff and never quick enough. The need for governmental aid may be alleviated with crop insurance, which is both efficient and effective. Crop insurance allows farmers to recover quickly from crop disasters and makes government resources more manageable. By providing early financial support, crop insurance lessens the economic effect of crop failures on both farmers and the government.

5) Assisting with Agricultural Sustainability

For agricultural systems to be healthy in the long run, especially with climate change on the horizon, sustainable farming techniques are crucial. By lowering the financial risks, crop insurance may promote the use of sustainable methods. Farmers are more inclined to put money into initiatives that benefit soil health, decrease pesticide usage and save water resources if they have insurance. Crop insurance, for instance, may ease the financial burden of switching to organic agricultural practices, which are more expensive initially but pay off in the end.

One way to make agricultural growth more sustainable is to employ renewable energy sources more often, such as biofuels. Less reliance on oil and gas firms over the long run will help dampen the effects of unpredictable global markets and fuel price swings. In order to optimise the crop selection and cultivation process, one research study examines several methods for oilseed crop production (Zhichkin *et al.* 2022)^[7].

3. Frameworks for Crop Insurance Policies

Various crop insurance plans have been established and adjusted in India to provide coverage and provide farmers with financial security. In 2016, the Pradhan Mantri Fasal Bima Yojana (PMFBY) was started, which is the most recent. Our goal at PMFBY is to make sure that farmers are fully covered when it comes to insurance for crop output losses caused by things like pests and diseases (Ministry of Agriculture and Farmers Welfare, 2023). According to the Ministry of Agriculture and Farmers Welfare (2023), it provides coverage for all types of crops,

including food crops, oilseeds and commercial crops. The premium prices may be adjusted according to the risk levels in various locations.

4. Public and Private Organisations' Roles in Crop Insurance

Crop insurance has changed hands between the public and commercial sectors over the years. In the beginning, government organisations like the Agricultural Insurance Company of India (AIC) were in charge of administering crop insurance plans. The commercial sector, however, has been more active in offering crop insurance in the last several years.

5. Case Studies

Agricultural insurance has several advantages, such as reducing pollutants and promoting the adoption of more efficient and sustainable farming techniques among farmers. A statistical investigation of fifty US states identified a statistically significant association among the total production of ecologically sustainable agricultural inputs, air pollution and agricultural insurance. The increase in organic commodities output may be facilitated by the expansion of agricultural insurance (Ahmed *et al.* 2022) [2].

6. Summary

Agricultural insurance is a crucial tool for ensuring the smooth operation of agricultural production by mitigating potential hazards. Research like this is necessary to back up claims that state-subsidized agricultural crop insurance policies should take variety specifics into consideration. In this situation, you need to figure out how to: -define the biological traits of the different types of agricultural crops; -categorize emergencies based on the types of impacts they have on plants; -prove, with spring barley as an example, that the current method for concluding crop insurance contracts with state assistance is flawed. Insurance regulations must take advantage of the use of immunity genetics' skills, which enable its reasonable and intentional application in breeding programs to produce resistance to compensate and non-compensated biotic and abiotic stresses. There is no guarantee that cultivating a variety will result in its inclusion in the State Register of Breeding Achievements, as shown by the above calculation. As a result, every crop grown for food must exhibit a unique set of characteristics that render it resistant to the specific microregion in question.

7. Conclusion

Protecting farmers' finances and revenue against uncertainties like natural calamities is the primary function of crop insurance. Farmers in India are able to recover from losses and keep farming because of programs like Pradhan Mantri Fasal Bima Yojana (PMFBY). The adoption of sustainable techniques is encouraged by crop insurance, which reduces financial uncertainty. But it only works if people are aware of it and if rewards are made on time and

risk assessments are correct. As a whole, crop insurance helps protect people's livelihoods and strengthens agriculture's ability to withstand the long haul.

8. References

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