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Performance Evaluation of Crop Insurance Schemes in India (2011-23): Analysis

Koshy C J[1], Dr. M.P. Mahesh[2]

[1]Ph.D. Research Scholar, Department of Commerce, Annamalai University, India
[2]Professor of Commerce, Annamalai University, India

An attempt is made to understand and present a crop insurance schemes in India on the basis of the total application, insured area, sum insured, total claim, claims paid and claims outstanding. Through analysis, the researcher also tried to understand the trend in growth and its magnitude of variability during the period 2011-2012 to 2022-2023. 5 prominent national level crop insurance schemes have been selected for the study. It includes National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS), Weather Based Crop Insurance Scheme (WBCIS), Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS). The results from the study indicates that number of insured farmers has grown significantly. While the insured area initially grew, it showed a declining trend in recent years. The sum insured and claims paid have both risen substantially. Delays in settling claims remain a challenge, as evidenced by the outstanding claims. To address the declining insured area, the government should investigate underlying causes and enhance incentives for wider coverage, such as revising premium structures and expanding crop eligibility. Faster claim settlement can be ensured by leveraging technology like satellite-based assessments and enforcing stricter timelines for processing claims. Additionally, resolving outstanding claims requires streamlining administrative procedures and implementing penalty clauses for delays to improve efficiency and farmer trust.

Keywords: Crop Insurance Schemes, Trends, Growth, Performance.

1. Introduction

Majority of the population in India, directly or indirectly depends on agricultural activities as their primary source of income. Though there is gradual shift in agrarian to service/industrial based economy, agricultural activities contribute employment opportunities to vast majority of population India. But farming communities are still prone to many crises. One of the major risks faced by them is climate variability and extreme weather events. Unpredictable rainfall, droughts, floods, cyclones and other drastic weather events has severely impact crop yields. Other significant risks include pest infestations, fluctuating market prices and inadequate access to credit and technology. These threats have led to financial instability for farmers affecting their livelihoods. In order to support farmers government has launched various crop insurance schemes. The main aim of these schemes is to provide financial protection against

crop losses due to natural calamities, pests, and diseases. Crop insurance schemes are risks management tool. Farmers has to pay premium for getting insurance coverage and if crops are damaged due to risks covered in insurance schemes, then they have the right to make claim and get compensation. This helps farmers to recover from losses and continue farming without falling into debt. Thus, crop insurance provided financial stability at time of crisis.

CROP INSURANCE SCHEMES IN INDIA

The concept of crop insurance in India was first suggested by S. Chakravarti in 1920 and he suggested designing a weather-based crop insurance scheme. In 1947, In Central Legislature, crop insurance benefits were discussed. In 1950, pilot crop insurance schemes were implemented but due to resource constraints it was not successful. In 1972, the general insurance division of LIC introduced a crop insurance scheme in the state of Gujarat for H4 cotton crop. In 1979, GIC has launched pilot crop insurance scheme (PCIS) in selected states in India. In 1985, Comprehensive Crop Insurance Scheme was launched and it was the first nationwide crop insurance scheme. In 1997, an Experimental Crop Insurance Scheme (ECIS) is a crop insurance scheme was launched to provide financial coverage marginal and small farmers. The Pilot Scheme on Seed Crop Insurance (PSSCI) was introduced in India during the year 1999. During the Rabi season of 1999-2000, National Agricultural Insurance Scheme (NAIS) was launched by Government of India. In 2003, Farm Income Insurance Scheme (FIIS) was introduced as a pilot project. Weather Based Crop Insurance Scheme (WBCIS) was launched in India starting from the Kharif season of 2007. In 2010, government has modified National Agricultural Insurance Scheme and launched Modified National Agricultural Insurance Scheme (MNAIS). In 2016, Government of India has launched two crop insurance schemes such as Restructured Weather Based Crop Insurance Scheme (RWBCIS) and Pradhan Mantri Fasal Bima Yojana (PMFBY).

STATEMENT OF THE PROBLEM

In Kerala, major problems with crop insurance schemes are low farmer participation, uneven coverage across the state, delays in claim payouts, lack of awareness about the schemes, complex claim procedures, inaccurate weather data due to limited weather stations, and concerns about premium rates not being aligned with local agro-climatic conditions which can deter farmers from enrolling in the schemes; leading to many farmers not receiving adequate compensation when needed. Compared to other states, a significantly lower percentage of farmers in Kerala opt for crop insurance, potentially due to a lack of understanding about the benefits or a perception of bureaucratic hurdles involved.

2. REVIEW OF LITERATURE

Farmers in India faces various risks associated with farming activities and it has led to decline in farming output and fluctuation in agricultural incomes. (Gulati et al., 2018). Every year farmers in India suffers from adverse weather conditions, natural disasters, pests and diseases (Cariappa et al., 2021).Bhattacharya and Biswas (2018) has pointed out that Crop insurance will help to reduce the risk faced by the farmers, and though not all it can solve some of the problems faced by the farmers. The Government of India and Agricultural insurance company have introduced various crop insurance schemes and are taking measures to improve the

popularity of crop insurance among the farmers. But in the context of climate change and rising agricultural risks, insurance products must be redesigned not just as risk transfer mechanisms but as powerful tools to minimize risk and crop loss (Swain, 2014).

Mahajan (2012) also indicated the importance of crop insurance, to safeguard against production risk in agriculture. For fulfilling this need Government of India has made experiments & efforts by introducing various schemes of crop insurance. Despite decades of sustained efforts done by government to increase the adoption of crop insurance among farmers in India, a low adoption rate is continuously reported (Biswal & Bahinipati, 2022). Garde et al., (2023) mentioned that challenges persist in crop insurance schemes in India, which needs coverage expansion, premium subsidies, improved claims settlement, and administrative efficiency for successful crop insurance implementation. Punia et al., (2021) found that problems generally faced by farmers on crop insurance are delay in claim settlement, inadequate implementation, and inaccurate yield estimation and lack of awareness about the scheme and exclusion of malicious damages etc. Rao (2012) indicated that the farmers are sensitive to premium rate and compensation in time. The service providers have to concentrate on both and they should provide compensation on time, which ensures maximum participation among farmers in crop insurance.

Mishra and Verma (2023) mentioned that Crop insurance plays a key role in Indian agriculture by providing financial protection, stabilizing food production and managing market risks. They found that sufficient measures should be taken to enhance the effectiveness, efficiency and the reach of crop insurance schemes in India. Raju and Chand (2007) mentioned that there exists an enormous insurance potential for addressing the needs of the farming community and enhancing the overall efficiencies as also the competitiveness of the agriculture sector. There is a tremendous potential of agriculture insurance in the country, which helps to mitigate the adverse impacts that such uncertainties would have on the individual farmers. A regulatory framework that harmonises the yield and price risk insurance system will guarantee greater participation and stability among farmers on crop insurance (Parthiban & Anjugam, 2023).

RESEARCH GAP

Crop insurance schemes are financial programs the offers protection to farmers from loss occurred in farming activities. In India, Government has launched various crop insurance schemes to support farmers. These schemes are offered at a subsidized rate in order to ensure maximum participation. This study aims to understand various crop insurance schemes in India based on the total application, insured area, sum insured, total claim, claims paid and claims outstanding. The study will also analyze the trend in growth and its magnitude of variability during the period 2011-2012 to 2022-2023.

SCOPE AND PERIOD OF STUDY

This study aims to analyze the various crop insurance schemes implemented in India between 2011 and 2023. The study analyzes the key metrics, including the total number of applications, insured area, sum insured, total claims, claims paid and outstanding claims. By evaluating these parameters, the study aims to assess the effectiveness of five prominent crop insurance schemes launched by Government of India, such as the National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS),

Weather Based Crop Insurance Scheme (WBCIS), Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS). It focuses on understanding the trends, growth patterns and overall performance of these schemes. The research also identifies challenges in claim settlement, farmer participation and coverage efficiency and offers valuable insights for policy improvements and future reforms in the agricultural insurance sector. The research covers a 13-year period from 2011 to 2023. By examining this period, the study provides insights into the overall trajectory of crop insurance in India, highlighting significant developments and their implications for the future.

OBJECTIVE OF THE STUDY

The objective of the study is to analyse the Trends, Growth, and Performance Evaluation of Crop Insurance Schemes in India.

CROP INSURANCE SCHEMES COVERED IN THE STUDY

The researcher has identified 5 prominent crop insurance schemes in India from the year 1999. This includes National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS), Weather Based Crop Insurance Scheme (WBCIS), Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS). National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS) and Weather Based Crop Insurance Scheme (WBCIS) was offered to farmers during 2011-2016. These schemes was available till 2016 and it was discontinued. In 2016 government launched Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS).

3. RESULTS AND DISCUSSIONS

YEAR WISE DATA OF CROP INSURANCE SCHEMES

The data of 5 crop insurance schemes selected for the study from 2011-2012 to 2022-2023 in India on the basis of the total application, insured area, sum insured, total claim, claims paid and claims outstanding are given in Table 1.

TABLE 1 CROP INSURANCE SCHEMES IN INDIA FROM 2011-12 TO 2022-23

Year	Farmers Insured (Rs. in Lakhs)	Area Insured (In Lakh Hectares)	Sum Insured (Rs. in Crores)	Total Claims (Rs. in Crores)	Claims Paid (Rs. in Crores)	Claims Outstanding (Rs. in Crores)
2011-12	296.95	403.92	58336.48	3566.54	3479.11	87.43
2012-13	334.02	444.78	73409.27	7495.31	7139.61	355.7
2013-14	332.35	427.49	79313.76	7772.44	7665.15	107.29
2014-15	370.78	440.53	82032.29	7855.13	7799.16	55.97
2015-16	485.54	442.45	115672.65	21680.73	21125.57	555.16
2016-17	583.71	565.65	202881.77	16809.24	16809.24	0
2017-18	532.67	508.14	202642.01	22193.76	22186.57	7.19

2018-19	581.95	534.98	235765.07	29542.37	29443.07	99.3
2019-20	617.71	572.50	221539.41	27997.20	27745.66	251.54
2020-21	622.79	483.22	199564.69	21420.88	21226.29	194.59
2021-22	829.93	451.90	180434.85	20857.87	20588.69	269.18
2022-23	1121.92	500.26	213336.96	17637.77	17315.01	322.76
Total	6710.32	5775.82	1864929.21	204829.24	202523.13	2306.11

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

The table 1 covers data from the financial year 2011-12 to 2022-23, providing a comprehensive analysis of trends related to crop insurance over 12 years. This time frame reflects changes in policies, awareness and farmer participation in crop insurance schemes.

When we analyse the number of farmers who applied for crop insurance annually, we can see that number of farmers insured has grown steadily over the years, indicating increasing awareness and adoption of crop insurance. Starting at 296.95 lakh farmers in 2011-12, it witnessed a sharp rise after 2016-17, coinciding with the introduction of the Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS). By 2022-23, the figure reached an impressive 1121.92 lakh farmers, almost four times the initial value. This consistent growth underscores the increasing reliance of farmers on crop insurance to mitigate risks. The insured area reflects the agricultural land covered under crop insurance each year. It began at 403.92 lakh hectares in 2011-12 and peaked at 572.50 lakh hectares in 2019-20, demonstrating expanded coverage. However, the insured area declined to 500.26 lakh hectares in 2022-23, suggesting that despite the growing number of insured farmers, the total land insured has not kept pace. This could be due to shifts in cropping patterns, policy changes, or administrative challenges.

The sum insured, which represents the monetary value of insured crops, shows significant growth over the years. Starting at Rs. 58,336.48 crores in 2011-12, it reached its highest value of Rs. 2,35,765.07 crores in 2018-19, reflecting improved crop valuation and expanded participation in insurance schemes. By 2022-23, it stood at Rs. 2,13,336.96 crores, indicating sustained high-value coverage despite minor fluctuations in recent years. Claims made by farmers for crop losses reflects the impact of adverse climatic events or risks they faced in farming. Total claims started at Rs. 3,566.54 crores in 2011-12 and peaked at Rs. 29,542.37 crores in 2018-19, a year marked by significant crop losses. In 2022-23, total claims reduced to Rs. 17,637.77 crores, suggesting relatively lower crop losses or more stringent claim assessments. These variations underline the vulnerability of agriculture to climatic and market conditions. Claims paid represent the compensation disbursed to farmers for their losses. In 2011-12, Rs. 3,479.11 crores were paid, rising significantly to Rs. 29,443.07 crores in 2018-19, matching the peak in claims made that year. By 2022-23, the amount paid was Rs. 17,315.01 crores, slightly less than the total claims made. The steady rise in paid claims over the years reflects improvements in claim settlement processes, though delays persist in some cases.

Outstanding claims represent the unpaid or pending claims by farmers. Starting at Rs. 87.43

crores in 2011-12, this figure fluctuated over the years, reaching Rs. 555.16 crores in 2015-16, and ending at Rs. 322.76 crores in 2022-23. The persistence of pending claims highlights administrative bottlenecks or challenges in verifying claims. Efficient processing and timely settlement mechanisms are crucial to reducing these delays and improving farmer satisfaction. From the above analysis it can be inferred that the number of insured farmers has grown significantly, suggesting increased trust and awareness of crop insurance policies. While the insured area initially grew, it showed a declining trend in recent years, indicating room for improvement in extending coverage. The sum insured and claims paid have both risen substantially, highlighting the economic importance of crop insurance. Delays in settling claims remain a challenge, as evidenced by the outstanding claims.

TRENDS AND DETERMINANTS OF CROP INSURANCE APPLICATIONS IN INDIA (2011-12 TO 2022-23)

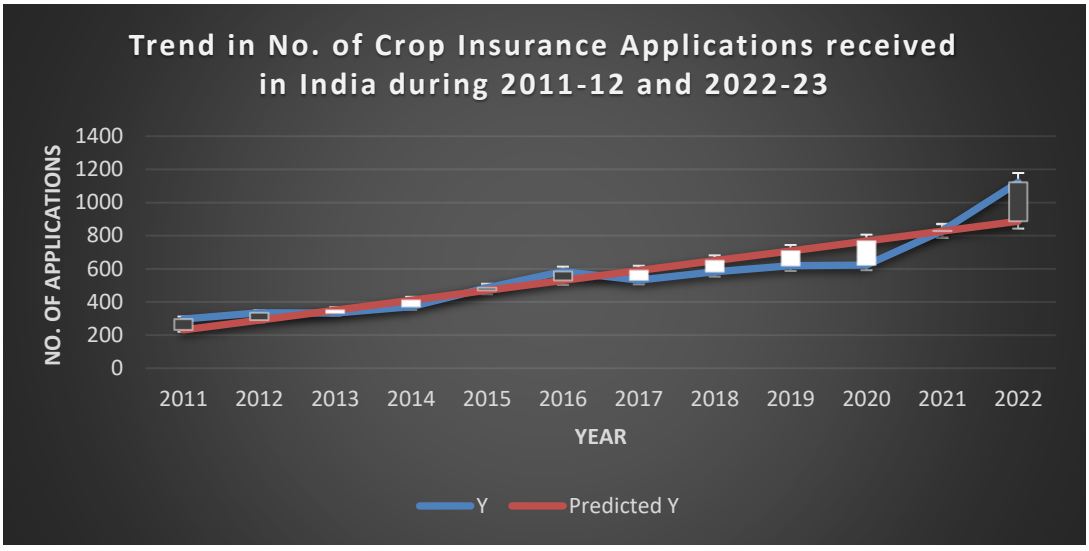
The number of crop insurance applications received each year depends on several factors, including government policies, premium rates, awareness among farmers and climatic conditions. However, high premium rates, hidden charges, Past experiences with claim settlements and a lack of proper awareness often discourage farmers from enrolling. During the years of or increased risks, the number of applications tends to rise as farmers seek security against potential losses. The details of crop insurance application received in India during 2011-12 to 2022-23, the absolute as well as percentage increase or decrease of applications over the previous year and trend values are presented in Table 2.

TABLE 2 TRENDS IN CROP INSURANCE APPLICATIONS IN INDIA

Year	Number of Applications (in Lakhs)	Increase/ Decrease	Percentage Increase/ Decrease	Trend value
2011	296.95	-	-	231.43
2012	334.02	37.07	12.48	291.02
2013	332.35	-1.67	-0.50	350.62
2014	370.78	38.43	11.56	410.21
2015	485.54	114.76	30.95	469.80
2016	583.71	98.17	20.22	529.40
2017	532.67	-51.04	-8.74	588.99
2018	581.95	49.28	9.25	648.58
2019	617.71	35.76	6.14	708.18
2020	622.79	5.08	0.82	767.77
2021	829.93	207.14	33.26	827.36
2022	1121.92	291.99	35.18	886.96

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

FIGURE 1 TRENDS IN CROP INSURANCE APPLICATIONS IN INDIA



It could be inferred from Table 2 that the number of crop insurance applications in India experienced a significant increase during the study period. The number of applications rose from 296.95 lakh in 2011 to 1121.92 lakh in 2022, indicating the growing awareness and adoption of crop insurance among farmers. A notable increase occurred in 2015, registering a remarkable growth of 30.95%. However, a decline was observed in 2017, with a decrease of 51.04 lakh applications. This reduction could be linked to factors such as challenges in claim settlements, lack of timely awareness programs, or issues in premium affordability. The trend value shows a consistent increase, rising from 231.43 lakh in 2011 to 886.96 lakh in 2022, reflecting a general upward trend in the adoption of crop insurance. Table 3 shows the trend, growth rate and magnitude of variability of crop insurance applications received in India for the period 2011-12 to 2022-23.

TABLE 3 TREND, GROWTH, AND MAGNITUDE OF VARIABILITY OF CROP INSURANCE APPLICATIONS RECEIVED IN INDIA

Category	Semi log		R^2	CGR (per cent/ annum)	CV (Per cent)
	Constant	Regression co-efficient			
Applications Received	5.566 (0.071)	0.106** (0.010)	0.924	27.64	12.17

Source: Computed from Table 2

Figures in parentheses denote standard errors

* Significant at five per cent level

** Significant at one per cent level

NS: Not Significant

The trend, growth, and variability of crop insurance applications in India indicate a significant increase over time. The semi-log model analysis shows a positive trend, with a constant value of 5.566 and a regression coefficient of 0.106, which is statistically significant at the 1% level, confirming a steady rise in applications. The compound growth rate (CGR) of 27.64% per annum highlights rapid growth, suggesting increased farmer participation due to government initiatives, rising climate risks, and improved awareness.

TRENDS AND DETERMINANTS OF AREA COVERED UNDER CROP INSURANCE IN INDIA (2011-12 TO 2022-23)

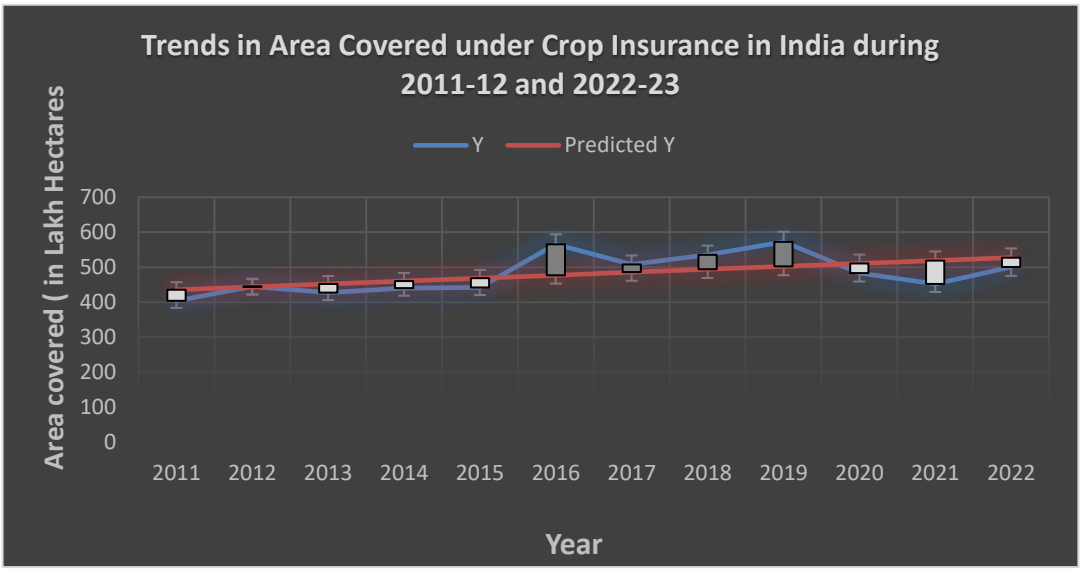
According to the Agriculture Census 2010-11, the total agricultural land in India during 2011 was approximately 159.59 million hectares as represented by the "total operated area" reported in the census data. According to the latest Land Use Statistics in India, the total agricultural land in India during 2022 was approximately 180.11 million hectares. The extent of coverage depends on factors such as premium rates, subsidies, claim settlement efficiency and farmer participation. The details of area covered under crop insurance in India during 2011-12 to 2022-23, the absolute as well as percentage increase or decrease of area coverage over the previous year and trend values are presented in Table 4.

TABLE 4 TRENDS IN AREA COVERED UNDER CROP INSURANCE IN INDIA

Year	Area covered (in Lakh Hectares)	Increase/ Decrease	Percentage Increase/ Decrease	Trend value
2011	403.92			435.28
2012	444.78	40.86	10.12	443.65
2013	427.49	-17.29	-3.89	452.02
2014	440.53	13.04	3.05	460.39
2015	442.45	1.92	0.44	468.76
2016	565.65	123.2	27.84	477.13
2017	508.14	-57.51	-10.17	485.50
2018	534.98	26.84	5.28	493.87
2019	572.5	37.52	7.01	502.24
2020	483.22	-89.28	-15.59	510.61
2021	451.9	-31.32	-6.48	518.98
2022	500.26	48.36	10.70	527.35

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

FIGURE 2 TRENDS IN AREA COVERED UNDER CROP INSURANCE IN INDIA



It could be inferred from the data that the area covered under crop insurance in India showed fluctuations during the study period, with both periods of growth and decline. The area covered increased from 403.92 lakh hectares in 2011 to 500.26 lakh hectares in 2022, reflecting a general upward trend over the years. A significant increase in area covered was observed in 2016, marking a remarkable rise of 27.84%. On the other hand, a sharp decline was recorded in 2020, a decrease of 15.59%. The trend value for the area covered under crop insurance increased consistently from 435.28 lakh hectares in 2011 to 527.35 lakh hectares in 2022, reflecting an overall positive growth in the adoption of crop insurance. The analysis highlights a significant expansion in crop insurance coverage over the years. Table 5 shows the trend, growth rate and magnitude of variability of area covered under crop insurance in India for the period 2011-12 to 2022-23.

TABLE 5 TREND, GROWTH, AND MAGNITUDE OF VARIABILITY IN CROP INSURANCE COVERAGE IN INDIA

Category	Semi log		R^2	CGR (per cent/annum)	CV (Per cent)
	Constant	Regression co-efficient			
Area Insured	6.054 (0.060)	0.018* (0.008)	0.325	4.23	3.32

Source: Computed from Table 4

Figures in parentheses denote standard errors

* Significant at five per cent level

** Significant at one per cent level

NS: Not Significant

The semi-log model indicates that the area insured under crop insurance has shown a positive growth trend over time. The constant value of 6.054 represents the base level of insured area, while the regression coefficient of 0.018, which is statistically significant at the 5% level, suggests a gradual increase in the coverage of agricultural land under insurance. However, the R^2 value of 0.325 indicates that only 32.5% of the variation in the insured area is explained by the model, suggesting that other external factors significantly influence the insured area. The compound growth rate (CGR) of 4.23% per annum shows a modest but consistent expansion in the insured area, which could be attributed to government initiatives, increased risk perception among farmers, and policy reforms.

TRENDS AND DETERMINANTS OF SUM INSURED UNDER CROP INSURANCE IN INDIA (2011-12 TO 2022-23)

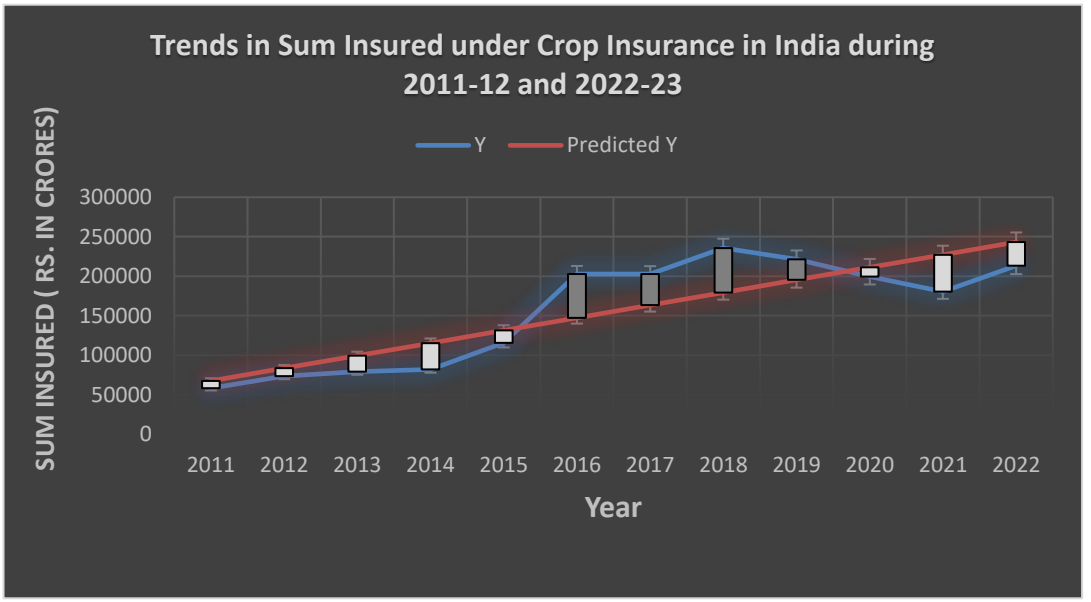
The sum insured under crop insurance represents the total financial coverage provided to farmers at the time of potential losses due to natural disasters, pest infestations, and other risks affecting agricultural production. In India, the government have played an important role in increasing the total sum insured by offering subsidies and it made crop insurance more accessible to farmers. The gap between the actual financial losses suffered by farmers and the insured amount often leads to dissatisfaction, discouraging wider participation. Strengthening policy frameworks, ensuring fair premium calculations, and improving claim settlement efficiency can help enhance the effectiveness of crop insurance in securing farmers' livelihoods. The details of total sum insured under crop insurance in India during 2011-12 to 2022-23, the absolute as well as percentage increase or decrease of sum insured over the previous year and trend values are presented in Table 6.

TABLE 6 TRENDS IN SUM INSURED UNDER CROP INSURANCE IN INDIA

Year	Sum Insured (Rs. in Crores)	Increase/ Decrease	Percentage Increase/Decrease	Trend value
2011	58336.48			67572.98
2012	73409.27	15072.79	25.84	83543.48
2013	79313.76	5904.49	8.04	99513.99
2014	82032.29	2718.53	3.43	115484.50
2015	115672.65	33640.36	41.01	131455.01
2016	202881.77	87209.12	75.39	147425.51
2017	202642.01	-239.76	-0.12	163396.02
2018	235765.07	33123.06	16.35	179366.53
2019	221539.41	-14225.66	-6.03	195337.04
2020	199564.69	-21974.72	-9.92	211307.54
2021	180434.85	-19129.84	-9.59	227278.05
2022	213336.96	32902.11	18.23	243248.56

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

FIGURE 3 TRENDS IN SUM INSURED UNDER CROP INSURANCE IN INDIA



It could be inferred from the data that the sum insured under crop insurance in India witnessed a substantial increase over the study period, rising from Rs. 58,336.48 crores in 2011 to Rs. 2,13,336.96 crores in 2022. This growth indicates an increasing awareness and acceptance of crop insurance as a vital risk management tool among farmers. A notable increase was observed in 2016, registering a remarkable growth of 75.39%. Conversely, a decline was recorded in 2020, showing a reduction of 9.92%. The trend value of the sum insured consistently increased over the years, rising from Rs. 67,572.98 crores in 2011 to Rs. 2,43,248.56 crores in 2022. This reflects the overall positive trajectory in the adoption and importance of crop insurance in India. Table 7 shows the trend, growth rate and magnitude of variability of total sum insured under crop insurance in India for the period 2011-12 to 2022-23.

TABLE 7 TREND, GROWTH, AND MAGNITUDE OF VARIABILITY OF SUM INSURED UNDER CROP INSURANCE IN INDIA

Category	Semi log		R^2	CGR (per cent/ annum)	CV (Per cent)
	Constant	Regression co-efficient			
Sum Insured	11.028 (0.162)	0.126** (0.022)	0.764	33.66	12.54

Source: Computed from Table 6

Figures in parentheses denote standard errors

* Significant at five per cent level

** Significant at one per cent level

NS: Not Significant

The semi-log model indicates that the sum insured under crop insurance has shown a positive growth trend over time. The constant value of 11.028 represents the base level of the sum insured, while the regression coefficient of 0.126, which is statistically significant at the 1% level, suggests a rapid increase in the insured sum. However, the R^2 value of 0.764 indicates that 76.4% of the variation in the sum insured is explained by the model, implying that some external factors still influence the insured sum. The compound growth rate (CGR) of 33.66% per annum highlights a substantial and consistent expansion in the sum insured. This could be attributed to government initiatives, increased risk perception among farmers, better insurance products and policy reforms.

TRENDS AND DETERMINANTS OF TOTAL CLAIMS UNDER CROP INSURANCE IN INDIA (2011-12 TO 2022-23)

Total claims under crop insurance means the financial compensation provided to farmers who suffer crop losses due to insured risks mentioned in the scheme. The magnitude of claims depends on several factors, including weather conditions, insurance coverage and the efficiency of claim settlement processes. The efficiency of claim settlement is an important factor considered by farmers and delays or discrepancies in assessments will discourage them from opting for crop insurance. Ensuring a smooth and timely claims process is essential for maintaining farmer confidence in crop insurance and encouraging broader participation in these risk mitigation schemes.

The details of total claims under crop insurance in India during 2011-12 to 2022-23, the absolute as well as percentage increase or decrease of claims over the previous year and trend values are presented in Table 8.

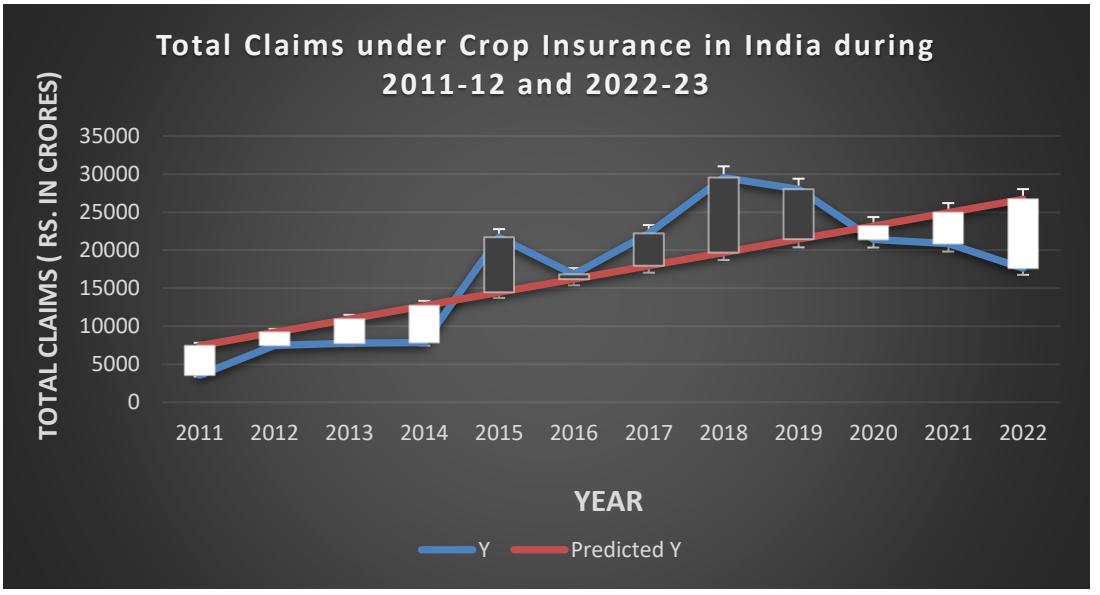
TABLE 8 TRENDS IN TOTAL CLAIMS UNDER CROP INSURANCE IN INDIA

Year	Total Claims (Rs. in Crores)	Increase/ Decrease	Percentage Increase/ Decrease	Trend value
2011	3566.54			7448.61
2012	7495.31	3928.77	110.16	9197.79
2013	7772.44	277.13	3.70	10946.97
2014	7855.13	82.69	1.06	12696.15
2015	21680.73	13825.6	176.01	14445.33
2016	16809.24	-4871.49	-22.47	16194.51
2017	22193.76	5384.52	32.03	17943.69
2018	29542.37	7348.61	33.11	19692.87
2019	27997.20	-1545.17	-5.23	21442.05
2020	21420.88	-6576.32	-23.49	23191.23
2021	20857.87	-563.01	-2.63	24940.41

2022	17637.77	-3220.1	-15.44	26689.59

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

FIGURE 4 TRENDS IN TOTAL CLAIMS UNDER CROP INSURANCE IN INDIA



The total claims under crop insurance in India exhibited considerable fluctuations during the study period, increasing from Rs. 3,566.54 crores in 2011 to Rs. 17,637.77 crores in 2022. While there was a general upward trend in total claims, certain years witnessed significant increases or declines due to varying factors like climatic conditions, policy changes, and the extent of crop damage. A remarkable increase in total claims was observed in 2015, marking an impressive growth of 176.01%. Conversely, a significant decline was recorded in 2020, registering a reduction of 23.49%. The trend value of total claims showed consistent growth, rising from Rs. 7,448.61 crores in 2011 to Rs. 26,689.59 crores in 2022. This indicates a long-term increase in the value of claims paid under crop insurance, reflecting the growing scale and importance of the scheme in mitigating risks faced by farmers. Table 9 shows the trend, growth rate and magnitude of variability of total claims made under crop insurance in India for the period 2011-12 to 2022-23.

TABLE 9 TREND, GROWTH, AND MAGNITUDE OF VARIABILITY OF CLAIMS MADE UNDER CROP INSURANCE IN INDIA

Category	Semi log		R^2	CGR (per cent/ annum)	CV (Per cent)
	Constant	Regression co-efficient			
Claims Made	8.640 (0.260	0.145** (0.035)	0.627	39.64	14.44

Source: Computed from Table 8

Figures in parentheses denote standard errors

* Significant at five per cent level

** Significant at one per cent level

NS: Not Significant

The semi-log model indicates that the number of claims made under crop insurance has shown a positive growth trend over time. The constant value of 8.640 represents the base level of claims, while the regression coefficient of 0.145, which is statistically significant at the 1% level, suggests a steady increase in claims made. However, the R^2 value of 0.627 indicates that 62.7% of the variation in claims is explained by the model, suggesting that some external factors also influence claim trends. The compound growth rate (CGR) of 39.64% per annum reflects a substantial increase in claims over time. This surge can be attributed to climate-related risks, crop failures and increased farmer participation in insurance schemes.

TRENDS AND DETERMINANTS OF CLAIMS PAID UNDER CROP INSURANCE IN INDIA (2011-12 TO 2022-23)

The payment of claims under crop insurance is very important because it determines the effectiveness and reliability of insurance schemes in providing financial relief to farmers. The efficiency of claim payments depends on various factors such as accuracy of damage assessment, policy provisions, administrative efficiency and government support. Government-backed crop insurance schemes have attempted to streamline the claim settlement process by incorporating technology-driven solutions such as remote sensing, satellite imagery and automated processing to ensure faster and more accurate assessments. However, challenges like claim disputes, data discrepancies and inadequate financial support affects the execution of claim payments. The details of total claims paid under crop insurance in India during 2011-12 to 2022-23, the absolute as well as percentage increase or decrease of claims over the previous year and trend values are presented in table 10.

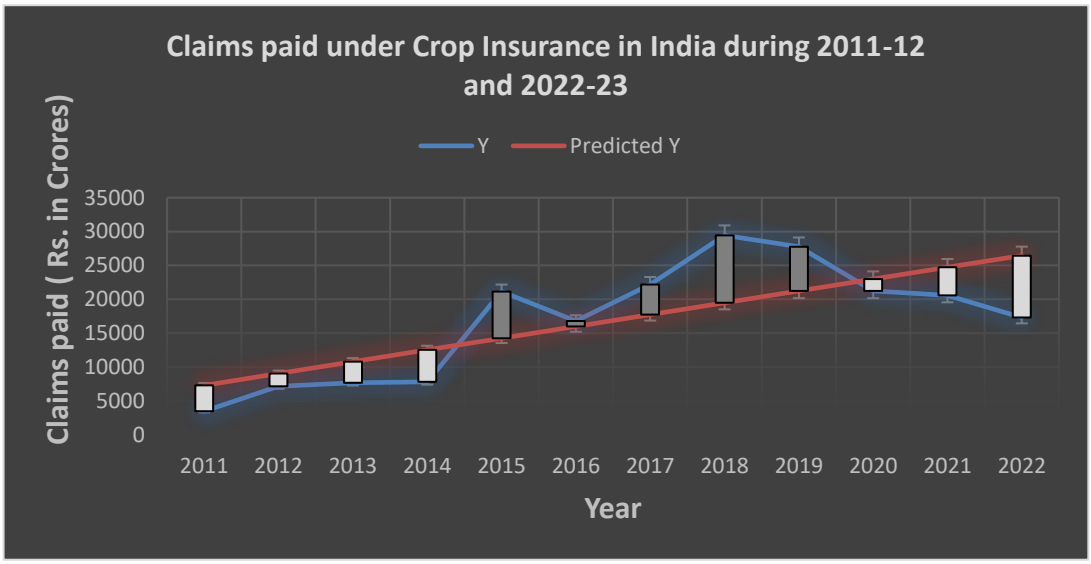
TABLE 10 TRENDS IN CLAIMS PAID UNDER CROP INSURANCE IN INDIA (2011-12 TO 2022-23)

Year	Claims Paid (Rs. in Crores)	Increase/Decrease	Percentage Increase/Decrease	Trend value
2011	3479.11			7295.64
2012	7139.61	3660.5	105.21	9037.69
2013	7665.15	525.54	7.36	10779.74
2014	7799.16	134.01	1.75	12521.80
2015	21125.57	13326.41	170.87	14263.85
2016	16809.24	-4316.33	-20.43	16005.90
2017	22186.57	5377.33	31.99	17747.95
2018	29443.07	7256.5	32.71	19490.01
2019	27745.66	-1697.41	-5.77	21232.06
2020	21226.29	-6519.37	-23.50	22974.11

2021	20588.69	-637.6	-3.00	24716.16
2022	17315.01	-3273.68	-15.90	26458.21

Source: Agricultural Statistics Report - 2022 & 2023, Department of Agriculture and Family Welfare

FIGURE 5 TRENDS IN CLAIMS PAID UNDER CROP INSURANCE IN INDIA



The total claims paid under crop insurance in India experienced significant variations during the study period, increasing from Rs. 3,479.11 crores in 2011 to Rs. 17,315.01 crores in 2022. Despite fluctuations, there was an overall upward trend in claims paid, reflecting the expanding scope of the crop insurance scheme and the increasing financial support provided to farmers. A notable increase in claims paid occurred in 2015, marking an extraordinary growth of 170.87%. In contrast, a sharp decline was observed in 2020, representing a reduction of 23.50%. The trend value for claims paid steadily increased, rising from Rs. 7,295.64 crores in 2011 to Rs. 26,458.21 crores in 2022. This indicates a long-term positive trajectory in claims paid, highlighting the growing role of crop insurance in providing financial risk management to farmers. Table 11 shows the trend, growth rate and magnitude of variability of total claims paid under crop insurance in India for the period 2011-12 to 2022-23.

TABLE 11 TREND, GROWTH, AND MAGNITUDE OF VARIABILITY OF CLAIMS PAID UNDER CROP INSURANCE IN INDIA

Category	Semi log		R^2	CGR (per cent/ annum)	CV (Per cent)
	Constant	Regression co-efficient			
Claims Paid	8.614 (0.263)	0.147** (0.036)	0.628	40.03	14.56

Source: Computed from Table 10

Figures in parentheses denote standard errors

* Significant at five per cent level

** Significant at one per cent level

NS: Not Significant

The semi-log model indicates that the number of claims paid under crop insurance has shown a positive growth trend over time. The constant value of 8.614 represents the base level of claims, while the regression coefficient of 0.147, which is statistically significant at the 1% level, suggests a steady increase in claims paid. The R^2 value of 0.628 indicates that 62.8% of the variation in claims is explained by the model, implying that while the trend is strong, some external factors also influence claim patterns.

The compound growth rate (CGR) of 40.03% per annum reflects a substantial increase in claims over time. This sharp rise could be attributed to climate-related risks, crop failures, and increased farmer participation in crop insurance schemes.

4. CONCLUSION

The analysis of crop insurance data from 2011-12 to 2022-23 indicates that there is a significant increase in the number of farmers insured, the area covered and the sum insured under various schemes. It is also visible that there exist an efficient claim settlement process, with most claims being disbursed in a timely manner. However, the variation in claim amounts over the years suggests fluctuations in agricultural risks due to factors such as weather conditions, crop failures and policy changes. While the overall growth in the crop insurance sector is evident but certain trends, such as fluctuations in insured area and the sum insured, require further investigation. The decline in insured area in recent years, despite an increase in the number of insured farmers, suggests that there might exist potential challenges such as policyholder dropouts or changes in crop insurance scheme structures. Government should ensure timely disbursal of pending claims and it is very crucial to maintain farmers confidence on the insurance system. Going forward, the continued expansion of insurance coverage, improved claim settlement efficiency and policy refinements will be essential for strengthening the financial security of farmers and enhancing the resilience of the agricultural sector in India.

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