



Agricultural crop insurance trends in India

P Surya Kumar

Department of Econometrics, SVU College of Arts, Sri Venkateswara University, Tirupati, Andhra Pradesh, India

Abstract

Agriculture plays a significant role in the Indian economy, and almost 70 per cent of the populace is subject to agriculture and its partnered sectors. The share of farming and unified sectors in GVA of the country has declined from 18.2 per cent in 2014-15 to 17.8 per cent in 2019-20, an inescapable result of a development interaction in which the overall presentation of non-agricultural areas turns out to be more prevailing. Inside the agriculture sector, the portion of harvests has falloff from 11.2 per cent in 2014-15 to 9.4 per cent in 2018-19. The agriculture production food-grains expanded from 2515.7 lakh tonnes during 2015-16 to 3086 lakh tonnes during 2020-21. The absolute commercial crop production noted 19921.9 lakh tonnes during 2015-16, these creations were rose to 21115.4 lakh tonnes during 2020-21. From the different information base perception during the ninth plan time frame (1997-2002) the complete agriculture insurance protection consumption were noted just Rs.811.49 crore and after the presenting the Pradhan Mantri Fasal Bima Yojana (PMFBY) conspire the protection use were expanded, as indicated by The Ministry of Agriculture and Farmers Welfare the absolute agriculture protection use reserve touched Rs.12638.32 crore during 2019-20.

Keywords: agriculture, crop insurance, India

Introduction

Agriculture plays an imperative part on the Indian economy. Over 70 per cent of the country rural families rely upon farming is a significant sector of the Indian economy as it contributes around 17 per cent of the total GDP and gives work to around 58 per cent of the populace. In India no less than two-third of the functioning populace acquire their living through agribusiness works. Any developing economy, there is general agreement on the need capital formation. Science agriculture happens be the largest industry in developing country like India, it can and must play an important role in pushing up the rate of capital formation. If it fails to do so, the whole process of economic development will suffer a setback. The agriculture shares in GDP increased from 17.8 per cent during the year 2019-20 to 19.9 per cent in 2020-21.

India's agriculture production registered 2nd rank in the world. India's service and industry sectors positions in the world recorded are 9th and 5th respectively. Indian agricultural production has rose from 87 \$ USD billions to 459 \$ USD billions in the last 15 years. Agriculture plays a vital role in India's economy. 54.6 per cent of the total workforce is engaged in agricultural and allied sector activities.

Crop insurance is a means of "protecting the farmers against uncertainties of crop yields, arising out of practically all natural factors beyond their control". It is a financial mechanism in which the uncertainty of loss in crop yields, is minimized by pooling most uncertainties that impact crop yields, so that the burden of loss can be distributed. Crop production involves numerous risks - natural, social, economic and personal. However, the principal characteristic, which distinguishes crop production from any other activity, is its great dependence on nature. Crop production unlike almost any other activity, has to be carried on in the face of continual uncertainties arising out of diverse natural and social elements. Normally, the greatest impact of all these elements falls on crops, which remain under the open skies for weeks and months. Uncertainty of crop yield, is thus one of the basic risks, which every farmer has to face, more or less, in all countries, whether developed, or developing. These risks are particularly high, in developing countries particularly in the tropics as in most of these countries, the overwhelming majority of farmers are poor, with extremely limited means and resources. They cannot bear the risks of crop failure of a disastrous nature. It is true that much of the present uncertainty of crop production in developing countries like India, could be removed by technical measures and by improvements in the social and institutional set-up. That a complete set of initiatives is needed in this regard, goes without saying. Still, a good deal of uncertainty will always be there, as no imaginable measure could make crop production completely independent of natural factors. Also, the physical measures envisioned, need to be justified by their cost-benefit ratio. There may be many places, for example, where flood is preventable, but the cost of prevention measures, would be far out of proportion to their benefit.

A serious crop failure has a cascading affect leading to serious repercussions, for the entire community. Various methods have been adopted for helping to compensate farmers, at least partially, for loss of their crops through

natural calamities. Reduction or suspension of land rent, taxes, cancellation of accumulated agricultural debts and relief from the Calamity Relief Fund are amongst the method applied so far. Given the importance of the agriculture sector, Government of India has taken numerous steps for its development in a sustainable manner. Steps have been taken to improve the income of farmers. Further, to alleviate risk in the agriculture sector, a scheme “Pradhan Mantri Fasal Bima Yojana” (PMFBY) was also launched in 2016. Schemes such as Formation & promotion of 10,000 FPOs & the Agriculture Infrastructure Fund have also been launched recently to benefit the sector.

Recent development in Agriculture Sector in India

According to Economic survey 2020-21, The agriculture and allied sectors were the sole bright spot amid the slide in performance of other sectors, clocking a growth rate of 3.4 per cent at constant prices during 2020-21. Against all adversities due to COVID-19, continuous supply of agriculture commodities, especially staples like rice, wheat, pulses and vegetables, has been maintained thereby enabling food security. In order to further strengthen and support the agricultural sector, several initiatives have been taken by the Government of India under the Atma Nirbhar Bharat Abhiyan.

Capital Formation in Agriculture and Allied Sectors:

Gross Capital Formation (GCF) is an indicator of level of investment activity in the sector. With respect to Gross Value Added in the sector, Gross Capital Formation in the sector has been fluctuating during the last 5 years with a major fall experienced in 2015-16 to 14.7 per cent from 17.7 per cent in 2013-14. The indicator has since recovered and has improved to 16.4 per cent in 2018-19.

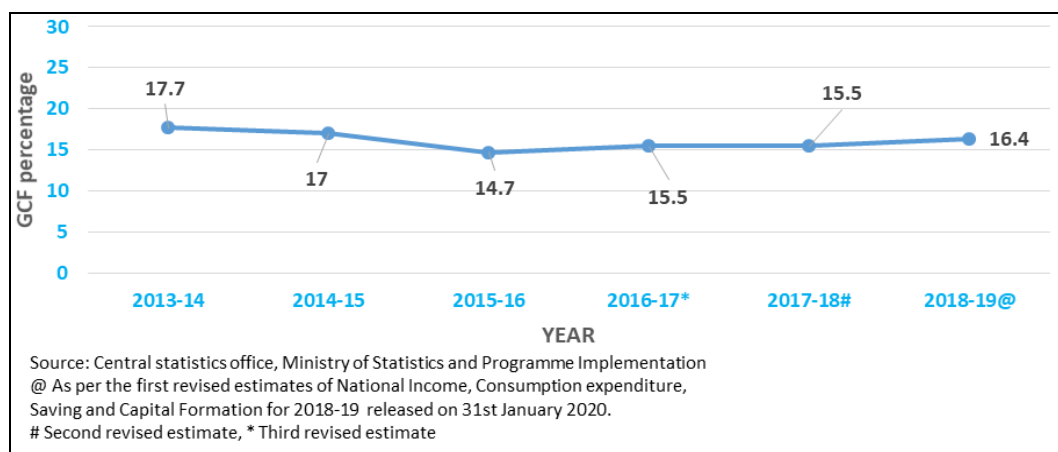


Fig 1: GCF of Agriculture A & Allied Sector as percentage of GVA of Agriculture & Allied Sector (In percentage)

Gross Value Added in Agriculture

According to the CSO on 29th May, 2020, the share of agriculture and allied sectors in Gross Value Added (GVA) of the country at current prices is 17.8 per cent for the year 2019-20. The share of agriculture and allied sectors in GVA of the country has declined from 18.2 per cent in 2014-15 to 17.8 per cent in 2019-20, an inevitable outcome of a development process in which the relative performance of non-agricultural sectors becomes more dominant. Within the agriculture sector, the share of crops has decline from 11.2 per cent in 2014-15 to 9.4 per cent in 2018-19. The fallen in the share of crops has been made up by an increase in the share of livestock and fisheries sectors.

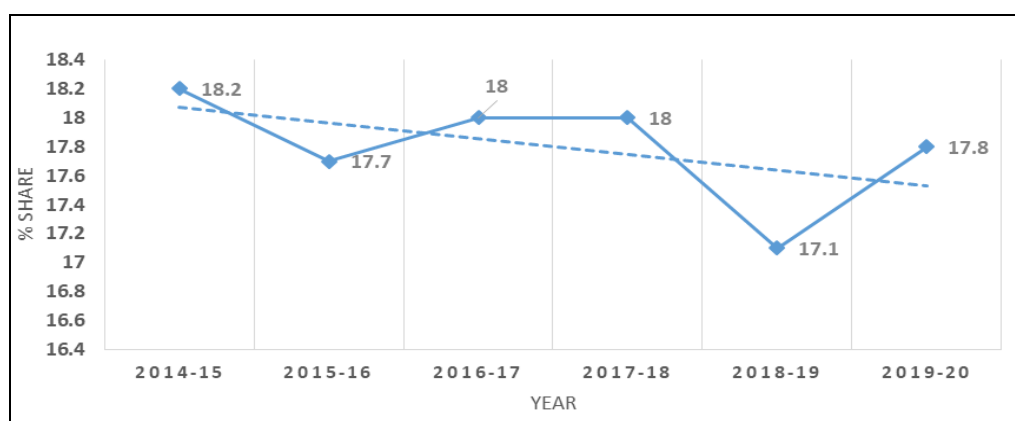


Fig 2: Share of Agriculture and allied Sector in Total GVA

Agriculture Production in India

In India, after 1965, special emphasis was placed on the development of the agricultural sector. Since then, a huge amount of fund was allocated for the development and modernization of this agricultural sector every year.

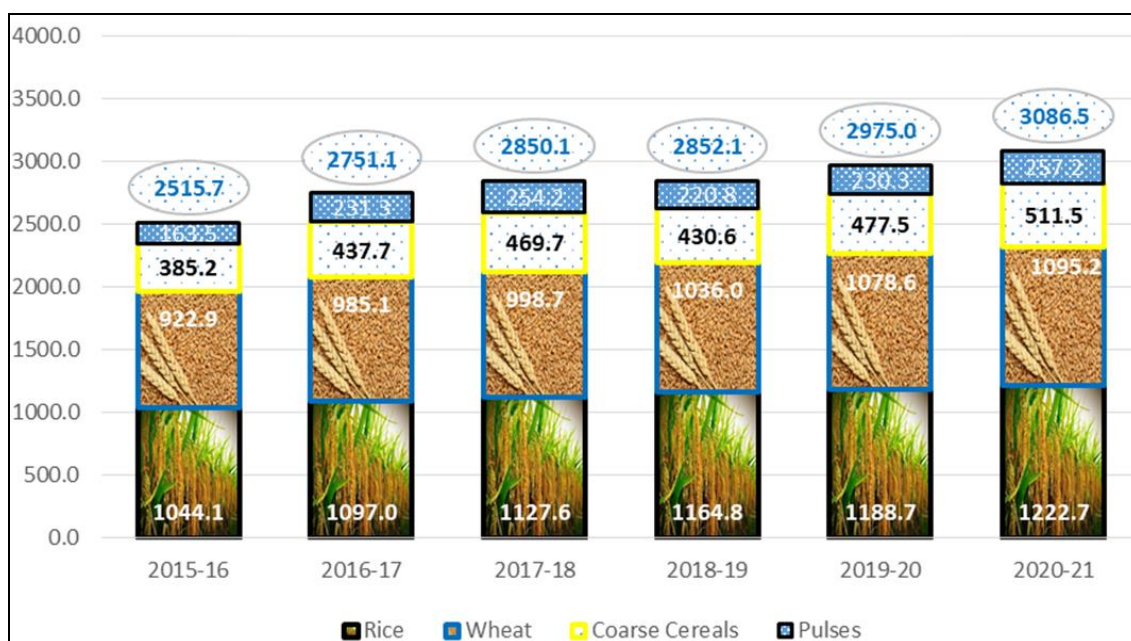


Fig 3: Agriculture Production-Foodgrains

The growth in gross area under all crops has increased from 122 million hectares in 1949-50 to 151 million hectares in 1964-65 and then it increased to 168.4 million hectares in 2008-09. Agricultural production in India can be broadly classified into food crops and commercial crops. The food crops include rice, wheat, pulses, coarse cereals etc. Similarly, the commercial crops or non-food crops include raw cotton, tea, coffee, raw jute, sugarcane, oil seeds etc. the total agricultural production has been increasing with the combined effect of growth in total cultivated areas and increases in the average yield per hectare of the various crops. The gross area under all food grains has increased from 99 million hectares in 1949-50 to 118 million hectares in 1964-65 and then to 123.2 million hectares in 2008-09. Similarly, the gross area under all non-food-grains has also increased from 23 million hectares in 1949-50 to 33 million hectares in 1964-65 and then to 45.2 million hectares in 2008-09.

Table 1: Major Commercial Crop Production trends in India [lakh Tonnes]

Year	Groundnut	Rapeseed & Mustard	Soyabean	Coffee	Cotton	Jute	Sugarcane	Tea	Total Commercial Crops Production
2015-16	67.3	67.9	85.7	3480.0	300.0	105.2	3484.4	12331.4	19921.9
2016-17	74.6	79.2	131.6	3120.0	325.8	109.6	3060.7	12504.9	19406.4
2017-18	92.5	84.3	109.3	3160.0	328.1	100.3	3799.1	13250.5	20924.1
2018-19	67.3	92.6	132.7	3195.0	280.4	98.2	4054.2	13500.4	21420.8
2019-20	99.5	91.2	112.3	2980.0	360.7	98.8	3705.0	13608.1	21055.6
2020-21	102.1	101.1	129.0	3538.0	353.8	95.6	3992.5	12803.3	21115.4

Source: Ministry of Agriculture & Farmers Welfare, Government of India, Coffee Board of India, Tea Board of India.

The agriculture production of food-grains increased from 2515.7 lakh tonnes during 2015-16 to 3086 lakh tonnes in 2020-21. The rice produced 1044.1 lakh tonnes during 2015-16, these was increased 1222.7 lakh tonnes in 2020-21. In terms of wheat production noted 922.9 lakh tonnes during 2015-16, it was increased 1095.2 lakh tonnes during 2020-21. Contrary to staple food cultivation, cash crops are mainly produced for commercial purposes and sold in national and international markets. From the table-1 shows the total commercial crop production were noted 19921.9 lakh tonnes during 2015-16, these productions were rose to 21115.4 lakh tonnes during 2020-21. From the data the highest share of this total commercial crops is Tea followed by coffee and sugarcane crops during the period 2015-16 to 2020-21. In case of Tea crop maintained high consistency in terms of production levels.

Top Risks in Agriculture Sector

The agriculture is subject to a great many uncertainties. Most of the people in India earn their livelihood from this agriculture sector, compared to from all other economic sectors. Seventy five percent of all rural poor, are

dependent on agriculture, in some way or other. Agricultural risk is associated with negative outcomes that stem from imperfectly predictable biological, climatic, and price variables. These variables include natural adversities and climatic factors not within the control of the farmers. They also include adverse changes in both input and output prices. The stages for the discussion on how to deal with risk in agriculture, it's essential that the different sources of risk that affect agriculture are classified into production risk, price or market risk, financial and credit risk, institutional risk, technology risk, lastly and most important risk is climate. Risk management in agriculture is a complex proposition. Agriculture, particularly prone to systemic and co-variate risk, doesn't easily lend itself to insurance. The first concrete attempt could be made only in the 1970s. Agriculture Insurance trends in

India

Agricultural Crop Insurance is a step to help and protect farmers against either their loss of crops due to natural calamities such as Flood, Drought, Landslide, Hail, and Cyclone or due to the decline in the price of the Agricultural commodities. The capacity of the agriculture sector, to hedge itself from the vagaries and aberrations of nature, is considered critical to its development and growth. Many factors, including disasters, can slow the development process, by reducing domestic food supplies and raw materials in the short term. Natural disasters such as drought, floods and cyclones are a major source of risk in agriculture.

On an average, crops on 12 million hectares of land are damaged annually, by natural calamities and adverse seasonal conditions in the country, grossly impacting the level of agricultural productivity and production. The insurance need for agriculture cannot be over emphasized, as it is a highly risky economic activity, on account of its critical dependence on weather conditions. To design and implement an appropriate insurance program for agriculture, is therefore a very complex and challenging task. The idea of crop insurance emerged in India, during the early part of the twentieth century. Yet, it was not operated in a significant way till the nineties. It is still evolving in terms of scope, spread and structure. Crop insurance is a mechanism to protect farmers, against the uncertainties of crop production, due to natural factors, beyond farmer's control. It is also a financial mechanism, which minimizes the uncertainty of loss in crop production, by factoring in a large number of uncertainties, which impact crop yields distributing the loss burden. In a country like India, where crop production is subjected to the vagaries of weather and large-scale damage due to the attack of pests and diseases, crop insurance assumes a very vital role.

In pre-independence era; In 1915, Mr. J. S. Chakravarthi of state Mysore had proposed a scheme regarding the rain insurance for the farmers for drought. His scheme was based on an area approach. He published a number of research papers in the Mysore Economical Journal enlighten the concept of rainfall insurance. States like Madras, Dewas, and Baroda also made attempts to introduce crop insurance relief in various forms but get little success.

After independence in 1947, Crop Insurance gradually found mention in the media more often. Rajendra Prasad, Minister of Food and Agriculture gave assurance to the Government that it would re-examine its crop insurance. The Government of India decided to introduce a crop Insurance Bill in October 1965. In 1970, the draft Bill and the Model scheme were referred to an expert committee; leading by Dr. Dharm Narain.

Individual Approach Basis (1972-1984): The first crop Insurance program was introduced in 1972-73 by the 'General Insurance' Department of LIC. Later General Insurance Corporation of India took an experimental scheme known as "Individual Approach". It continued up to 1978-79 and covered only 3110 farmers. It was realized that the Crop Insurance program based on Farm Approach would not be viable and sustainable for the country. *Pilot Crop Insurance Scheme/PCIS (1979-1984):* Professor V.M. Dandekar as the 'father of crop insurance in India' suggested an alternate 'Homogenous Area approach' for crop insurance in mid-70's. Based on this approach General Insurance Corporation of India (GIC) introduced a Pilot Crop Insurance Scheme (PCIS) from 1979. The scheme covered cereals, millets, oilseeds, potato, gram, and barley. This insurance premium ranged from 5 to 10 percent of the sum insured. This ran till 1984-85 and a total of 13 states participated. It covered 6.27 farmers for a premium of 1.97 crores against Claims of 1.57 crore.

Comprehensive Crop Insurance Scheme-CCIS (1985-1999): CCIS was introduced on 1st April 1985 by the Government of India. The CCIS was implemented on Homogenous Area Approach was linked to short term crop credit. The scheme covered 7.63 crore farmers under an area of 12.76 crore hectares for a sum insured 24,949 crores at a premium of 403.56 crores. This was discontinued after Kharif 1999. This scheme was replaced by the 'National Agriculture Insurance Scheme' (NAIS).

National Agricultural Insurance Scheme- NAIS (1999...): NAIS was introduced in the country from the Rabi season of 1999-2000. The Agricultural Insurance Company of India was incorporated to implement the NAIS. The crops which are under this insurance were sugarcane, potato, cotton, ginger, onion, turmeric, chilies, coriander, jute, banana, and pineapple. *Pilot Scheme on Seed Crop Insurance – PSSCI (2000):* The scheme was introduced in 11 states in Kharif 2000. Its main aim is to provide the stabilization to the infrastructure that owned by seed corporations and seed farms. It provides financial security and income stability to the farmers in the event of failure of the seed crops. It was established by the State seed Corporation to give a boost to the modern seed industry by scientific method.

Pradhan Mantri Fasal Bima Yojana – PMFBY (2016 to Present): It was introduced by Pradhan Mantri Narendra Modi on 18th February 2016. It was a joint scheme by state and central Government. It gives a premium of 2 per cent for Kharif crops, 1.5 per cent for Rabi crops, and for annual commercial and Horticulture crops premium is 5 per cent. The Ministry of Agriculture & Farmers Welfare introduced a crop insurance scheme mainly in 1985

and thereafter brought enhancements in the erstwhile scheme(s) from time to time based on the experience added and views of the stakeholders, States, farmer's community etc. National Agricultural Insurance Scheme (NAIS) with enhanced coverage of farmers, crops and risk assurance was introduced in the country from Rabi 1999-2000 replacing the erstwhile Comprehensive Crop Insurance Scheme (CCIS). The main objective of the scheme is to protect the farmers against crop losses suffered on account of natural calamities, such as, drought, flood, hailstorm, cyclone, pests and diseases. Season-wise details of farmers and area covered, sum insured and insurance charges under NAIS during the last twenty-two crop seasons from Rabi 1999-2000 to Kharif 2010 as under. As per the report the total formers covered in rabi 1999-2000 is 579940 and area covered noted 780569 hectares, in Kharif 2000 season 8109374 total formers covered and 13219829 hectares covered, these trends present in the table-2.

Table 2: National Agricultural Insurance Scheme (NAIS) during Rabi 1999-2000 to Kharif 2010

Seasons	Farmers Covered	Area (In hect.)	Sum Insured (Rs.in crore)	Total Premium (Rs.in crore)	Subsidy (Rs.in crore)	Total Claims (Rs.in crore)
Rabi 1999-2000	579940	780569	356.41	5.42	1.66	7.69
Kharif 2000	8409374	13219829	6903.38	206.74	47.40	1222.48
Rabi 2000-01	2091733	3111423	1602.68	27.79	8.23	59.49
Kharif 2001	8696587	12887710	7502.46	261.62	47.62	493.53
Rabi 2001-02	1955431	3145873	1497.51	30.15	7.78	64.66
Kharif 2002	9768711	15532349	9431.69	325.47	44.86	1824.31
Rabi 2002-03	2326811	4037824	1837.55	38.5	6.73	188.55
Kharif 2003	7970830	12355514	8114.13	283.33	24.44	652.68
Rabi 2003-04	4421287	6468663	3049.49	64.06	6.24	497.06
Kharif 2004	12687104	24273394	13170.62	458.94	20.09	1038.16
Rabi 2004-05	3531045	5343244	3774.21	75.85	4.12	160.59
Kharif 2005	12673833	20531038	13519.1	449.95	20.43	1059.94
Rabi 2005-06	4048524	7218417	5071.66	104.82	5.23	338.30
Kharif 2006	12934050	19672930	14759.25	467.29	26.55	1774.91
Rabi 2006-07	4977980	7632882	6542.21	142.88	11.38	515.96
Kharif 2007	13398541	20754431	17007.45	524.31	26.65	913.37
Rabi 2007-08	5044016	7387156	7466.63	158.71	18.00	809.43
Kharif 2008	12988804	17633181	15662.38	511.84	33.71	2374.32
Rabi 2008-09	6210648	8857836	11148.71	295.72	72.40	1489.11
Kharif 2009	18274720	25829883	27616.72	862.85	57.15	2961.53
Rabi 2009-10**	5641184	7903351	10927.27	1151.28	72.79	31.67
Kharif 2010	11443443	17803556	20453.56	629.7	33.88	--

** As on 31.01.2011

The insurance schemes currently under implementation are the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS). The total funds released by the Government of India under various schemes for crop insurance are as under.

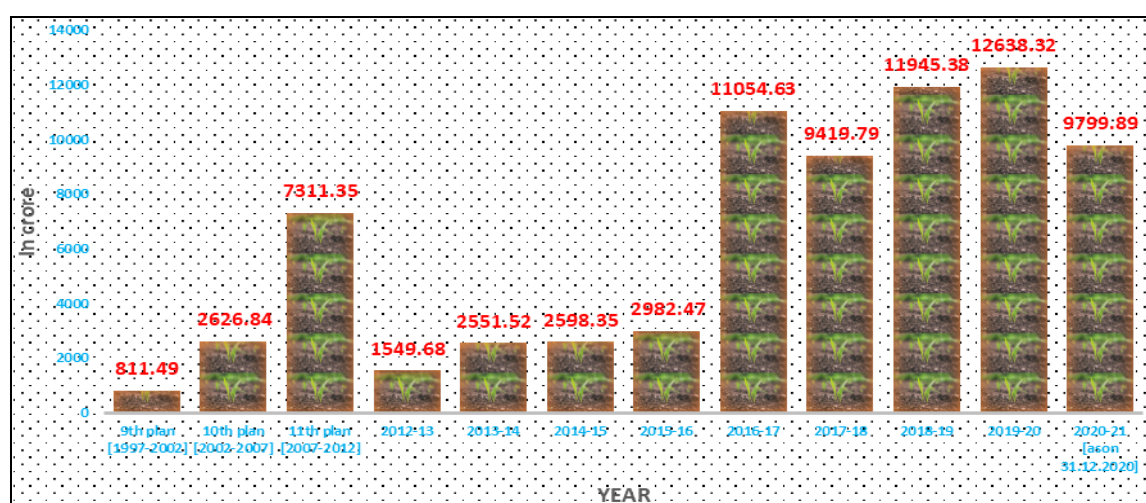


Fig 4: Total Agriculture Insurance Expenditure Trends in India

The above figure-4, shows, the total agricultural insurance expenditure trends in India during from 1997 to (as on 31.12.2020) 2020-21. From the observation during the 9th plan period (1997-2002) the total agriculture insurance

expenditure were noted only Rs.811.49 crore and this expenditure was steeply increased Rs.7311.35 crore during the 11th (2007-2012) plan period. After the introducing the Pradhan Mantri Fasal Bima Yojana (PMFBY) scheme the insurance expenditure were increased, according to The Ministry of Agriculture & Farmers Welfare the total agriculture insurance expenditure fund recorded Rs.12638.32 crore during 2019-20.

Conclusion

Agricultural Crop Insurance is a step to help and protect farmers against either their loss of crops due to natural calamities such as Flood, Drought, Landslide, Hail, and Cyclone or due to the decline in the price of the Agricultural commodities. Crop insurance is a mechanism to protect farmers, against the uncertainties of crop production, due to natural factors, beyond farmer's control. It is also a financial mechanism, which minimizes the uncertainty of loss in crop production, by factoring in a large number of uncertainties, which impact crop yields distributing the loss burden. In a country like India, where crop production is subjected to the vagaries of weather and large-scale damage due to the attack of pests and diseases, crop insurance assumes a very vital role. The Ministry of Agriculture & Farmers Welfare introduced a crop insurance scheme mainly in 1985 and thereafter brought enhancements in the erstwhile scheme(s) from time to time based on the experience added and views of the stakeholders, States, farmer's community etc. The total funds released by the Government of India under various schemes for crop insurance. During the 9th plan period (1997-2002) the total agriculture insurance expenditure were noted only Rs.811.49 crore and this expenditure was steeply increased Rs.12638.32 crore during 2019-20.

References

1. Aayush Chowdhury, The Historical Background of Crop Insurance - Before and After Independence, 2020. <https://krishijagran.com/historical-background-of-crop-insurance-before-and-after-independence, 2020>.
2. Agriculture Insurance, <https://agricoop.nic.in/sites/default/files/agriculture%20insurance-Credits.pdf>.
3. Agarwal Bina "Rethinking Collectivities: Institutional Innovations in Group farming, Community Forestry and Strategic Alliances", B.N. Ganguli Memorial lecture delivered at the Centre for the Study of Developing Societies on 11th April, 2008.
4. Annual Reports, Ministry of Agriculture & Farmers' Welfare, Govt. of India, <https://agricoop.nic.in/en/annual-report>.
5. Bhende MJ, Agricultural Insurance in India: Problems and Prospects, NABARD, 2005.
6. Economic survey, www.indiabudget.nic.in.
7. Handbook of Statistics on Indian Economy, <https://www.rbi.org.in/Scripts/AnnualPublications.aspx?head=Handbook%20of%20Statistics%20on%20Indian%20Economy>.
8. Indian council of food and Agriculture, Crop Insurance in India, <https://www.icfa.org.in/assets/doc/reports/crop-insurance-in-india.pdf>.
9. Insurance Regulatory Development Authority of India, Handbook on Crop Insurance, <https://www.policyholder.gov.in/uploads/CEDocuments/Crop%20Insurance.pdf>.
10. Nilabja Ghosh and S.S. Yadav, Problems and Prospects of Crop Insurance: Reviewing Agricultural Risk and NAIS in India, Final Report, Institute of Economic Growth University of Delhi Enclave North Campus, Delhi 30th September, 2008.
11. Ranjan Kumar Ghosh, Shweta Gupta, Vartika Singh, Patrick S. Ward, Demand for Crop Insurance in Developing Countries: New Evidence from India, 29 September 2020., <https://doi.org/10.1111/1477-9552.12403>, 2020.