

Evolution of Crop Insurance Schemes in India

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Abstract

It is true that the share of agriculture in GDP of India decline over the past few decades but still the agriculture sector occupies a significant place in the Indian economy. In the employment generation agriculture sector remains prime place in India. Approximately half of the total workforce of India still engaged in the agricultural activities. Agriculture sector always works under risks and uncertainty because agriculture depends upon the weather and climate conditions that is always unpredictable. Due to the variability in weather and climate, farmers face a lot of risks. Natural calamities also a big issue in India that affects the farmers a lot and destroy the crops of farmers time to time. So, it become necessary to protect the farmers by adopting the appropriate instruments like crop diversification, crop insurance etc. In this paper, we examined the various crop insurance schemes introduced in India on time to time. For this study, secondary data was used. The results of the study indicate that numbers of crop insurance schemes were introduced in India and every previous scheme is replaced by new schemes with some new technology or improvements to make more beneficial for farmers. Currently, in India only four crop insurance schemes are in operation namely UPIS, CPIS, RWBCIS and PMFBY.

Keywords: Agriculture, Risks, Uncertainty, Crop Insurance, Natural Calamities, PMFBY.

1. Introduction

Agriculture is a crucial sector of Indian economy and considered complementary for the industrial sector. So, both are interrelated to each other. Hence, it is necessary to give more attention on the agriculture sector. Agriculture always faces various types of natural perils such as drought, flood, cyclone, hailstorm, hurricane etc. Therefore, crop insurance is a significant instrument to provide the security to the farmers against the natural calamities. It helps the farmers in managing the risk related to the agricultural activities. It covers the physical loss of the crops due to the natural disasters and price fluctuations in the market. In developed economy, crop insurance arrangements are provided by the public organizations to cover all types of risks faced by agriculture sector. Yet, in non-industrial nations particularly in India such type of instrument does not exist on the grounds that the farmers have the least capacity of bearing these risks.

In spite of the fact that in an agriculture-based nation like India, the farmers still utilized the conventional techniques to moderate the dangers but it is not adequate. These techniques are failed to

give the insurance to little and medium sized farmers from hazard. Crop insurance is a more systematic, productive and organized instrument for managing the agricultural risks. Crop insurance significantly reinforces the monetary security of farmers and diminishes the immediate and detracts the direct and indirect costs on the national economy.

In recent years, crop insurance is used as a risk management tool that has been used by the farmers to mitigate their agricultural risks. Crop insurance works as a guard for the farmers against different natural disasters. It motivates the planted acres of land and furthermore urges the producers to utilize a lot of chemical composts, pesticides and herbicides. The crop insurance subsidies make significant problem, which expands the risk of production loss (moral hazards). Due to the presence of moral hazards, the insured farmers lessen input use and normal yields. Once more, numerous preservationists contend that if rural substance input use expands, it gets harmful to creature and human abundance. Quggin (1993) suggests that “moral hazard problem incentives to increase the use of inputs that raises the expected yields as well as the variance of yields”. Horowitz and Lichtenberg (2004) suggest that “the farmer who purchases crop insurance use more chemical inputs than the farmers who do not purchase crop insurance”.

Crop insurance is a significant device that is utilized by farmers for moderating the monetary losses because of different sorts of normal catastrophes. It helps the farmers in stabilizing their income against partial or complete crop failure because of unfavourable climate conditions i.e., debacles, flood, hail, dry spell and so forth which are uncontrollable in nature. “Crop insurance is a way of protecting the farmers against uncertainties of crop yields arising due to natural factors beyond the farmers’ control (Rao 2002)”.

In India, the first ever crop insurance scheme was launched in Gujrat in 1972 implemented based on an individual approach. The scheme had some drawbacks and impractical in the real situation so that the scheme was discontinued in 1978. V. M. Dandekar known as the father of crop insurance recommended Pilot Crop Insurance Scheme on an experimental basis in 1979. The scheme was implemented on the area approach. After that various schemes are launched by the Indian government from time to time i.e. Experimental Crop Insurance Scheme (ECIS), Comprehensive Crop Insurance Scheme (CCIS), Pilot Scheme on Seed Crop Insurance (PSSCI), Farm Income Insurance Scheme (FIIS), National Agricultural Insurance Scheme (NAIS), Modified National Agriculture Insurance Scheme (MNAIS), Weather Based Crop Insurance Scheme (WBCIS), Restructured Weather Based Crop Insurance Scheme (RWBCIS) and Pradhan Mantri Fasal Bima Yojana (PMFBY).

2. Empirical Literature

There is an adequate amount of literature available on crop insurance schemes. But out of these most of the studied are conducted with reference to specific/ individual crop insurance schemes. The present study focuses on the several crop insurance schemes implementing in India on time to time.

Bisnoi et al. (2020) studied “the evaluation of various crop insurance schemes in India”. The study was based on secondary data which has been taken from journals, annual reports of ministry of agriculture. They found that previous schemes launched by government, has some drawbacks and limitations. **Rathore et al. (2011)** studied “the performance of crop insurance scheme” in Udaipur locale of Rajasthan. The insurance scheme had found positive performance with the help of compound and liners growth rate other than claim passed to the number of farmers and amount of

sum insured where the performance was found negative. The results did explain the beneficiary farmer's income more than the non-beneficiary farmers. The beneficiary farmers spent more money to hire input for agriculture and non-beneficiary did not spend more money for hiring inputs for agriculture. **Raju and Chand (2008)** observed that crop insurance is the only way to protect against the risk. This study also has explained features of National Agriculture Insurance Scheme and given some suggestion like reduction of insurance unit to village level, guaranteed yield should be provided on the basis of best 5 years out of the proceeding 10 years yield, amount of premium should be shared by the financial institution, on account settlement of claim, non-loanee farmers should be considered and coverage of post-harvest losses. The agriculture insurance company should be assigned some target for agricultural insurance.

Kumar and Phougat (2021) examined "the performance of the various crop insurance schemes implemented in Haryana state". The study was based on the secondary data that has been taken from the various annual reports of government and agricultural insurance company limited (AIC) and used the descriptive statistics tools. The results of the study indicated that only few schemes implemented in Haryana in comparison to other states. Among the schemes only "Pradhan Mantri Fasal Bima Yojana" performs better than the all previous schemes. **Vyas and Singh (2006)** reviewed "the National Agriculture Insurance Scheme and recommended changes to make more powerful". The paper was based on a detailed investigation of data for 11 crops. The paper has three sections: first described the evaluation of crop insurance scheme in India. In the second sections, the coverage of crop insurance scheme has discussed. They found that Madhya Pradesh and Uttar Pradesh have consistency in coverage than comparison of other state. Maharashtra and Andhra Pradesh had the more share in total coverage of crop insurance scheme. In third section, premium and claim related aspects have studied and found the claim premium ratio for non-loanee farmers was significantly high. **Chhikara and Kodan (2012)** analysed "the performance of national agriculture insurance scheme and has examined the impact of farmer's education level on crop insurance". The study was based on the secondary data and data has been taken from the economic survey (2010), annual report of agricultural insurance company limited and farmers situation assessment survey (2008). The statistical techniques like; multiple regression, average compounded growth rate and chi-square test were used in the study. The results showed that low coverage of farmers, lack of awareness among farmers about crop insurance, low participation rate of volunteer, low access of farmers to institutional credit; banks were continuously failed to achieving the target of agriculture credit.

Mahajan (2012) has examined "the National Agriculture Insurance Scheme in India". The period for the study was taken from 1999-2008. The study reveals that Maharashtra, Andhra Pradesh, Gujarat, Uttar Pradesh and Rajasthan are dominating in implementing the NAIS compared to other states.

Sinha (2004) studied "the development and performance of agriculture insurance and examined the scope for private insurers' participation". He found that India's crop insurance scheme covers only about 10 percent of the sown area and has a high premium ratio. **Kumar and Phougat (2021)** analyzed "the trends of the various crop insurance schemes in Haryana state". The study was based on the secondary data that has been taken from the economic survey of Haryana and various annual reports of government and agricultural insurance company limited (AIC). They found that all the schemes implemented in Haryana showed fluctuating trends in their implemented time period. It was also found that currently only one scheme of crop insurance named PMFBY are in operation in Haryana state and it performs better from the all previous schemes.

Although, there has been ample literature available, we focused mainly those studies which discuss the various crop insurance schemes implemented in India. From the empirical work discussed above, we can conclude that most of the studies are conducted with reference to specific/ individual crop insurance schemes. The present study attempts to discuss the several crop insurance schemes implemented in India time to time for the farmers.

3. Data and Methodology

The present study employs secondary data to assess the current scenario of crop insurance schemes in India. The data of the crop insurance scheme has been retrieved from the Agricultural Insurance Company (www.aicofindia.com).

4. Result and Discussion

This part of the study is divided into two parts i.e., background of crop insurance in India and evolution of crop insurance in India as follows:

4.1 Background of Crop Insurance in India

The concept of crop insurance has arisen in India since the turn of the twentieth century as an idea for the management of farming risks. From concept to implementation, it has grown irregularly yet consistently during that time as yet creating as far as extension, procedures and practices. India is an agrarian country, where most of the populace actually relies upon farming straightforwardly or indirectly for their livelihood. Farming in India is still intensely subject to the climate and is seriously affected by its caprices like flood, substantial downpour, tremor and so on and furthermore by assault of vermin and illnesses. These eccentric and wild incidental risks render Indian agrarian and amazingly unsafe enterprises. Here, emerges a need of legitimate component through which farmers can relieve their happened because of regular disasters. Crop insurance is one of the ways by which farmers can lessen their dangers dependent upon some degree. Crop insurance assumes an essential part in mooring a steady development of the area.

4.1.1 Pre-Independence

A rain insurance scheme had been proposed by J.S.Chakravarty of Mysore State in 1915 for the farmers with view to protecting them against droughts. The scheme which is proposed by him was based on the area approach. In 1920, Chakravarty published a book titled "Agricultural Insurance: Practical Scheme suited to Indian Conditions". Aside from this, some others state like Madras, Dewas and Baroda, likewise made endeavours to present crop insurance alleviation in different forms, but get little achievement.

4.1.2 Post-Independence

In 1947, crop insurance continuously began to disclose attention all the more frequently. Dr. Rajendra Prasad who was the Minister of Food and Agriculture, talked about the issue in 1947 and then gave a confirmation that the public authority would look at the chance of crop and dairy cattle insurance and appointed a separate official committee for this. The principal angle with respect to the methods of crop insurance considered was whether the equivalent ought to be on an individual methodology or on homogenous region approach. The prior desire to compensate the farmer to the full amount of the losses and the premium paid by him is fixed with reference to his own past yield and loss experience. The individual approach requires reliable and precise data of crop yields of each farmer for an

adequately long period, for fixation of premium on actuarially sound basis. The area approach started to overcome the deficiencies like “absence of reliable data of individual farmers and moralhazards” occurred in the individual approach. Under area approaches villages are considered as a unit for the assessment of the crop losses and paid the indemnity to the farmers of their losses on the basis of area assessment. In this approach every farmer of the given area pays the equal amount of premium and gets the same advantage regardless of their individual destiny. The Ministry of Agriculture circulated the scheme, for response by the State governments, however the states did not acknowledge this.

In October 1965, the Government of India obvious to introduce a “Crop Insurance Bill” and “Model Scheme of Crop Insurance” in order to enable the States to introduce crop insurance. In 1970, an Expert Committee was appointed which was headed by Dr. Dharm Narain to draft Bill and the Model Scheme of crop insurance.

4.2 Evolution of Crop Insurance in India

The following discussion explains the evolution of crop insurance schemes in India over the years.

4.2.1 First Ever Crop Insurance Scheme (FECIS)

The “first crop insurance scheme” of India was launched in 1972. The scheme was introduced by the General Insurance Corporation (GIC) of India. In the initial stage, the scheme was implemented only for H4 Cotton insurance in Gujarat state. After that the scheme has extended to other states also like Tamil Nadu, Maharashtra, West Bengal, Andhra Pradesh and Karnataka. Wheat, potato and groundnut were the crops which offered for the insurance under this scheme. The scheme was based on individual approach. In individual approach, indemnity and losses were calculated separately for each farmer. The scheme was discontinued from 1978-79. At that time total numbers of farmers covered under the scheme were 3110 and premium collected was 4.54 lakh against claim of 37.88 lakh.

4.2.2 Pilot Crop Insurance Scheme (PCIS)

“Pilot Crop Insurance Scheme” was another scheme that has been introduced by General Insurance Corporation (GIC) of India in 1979. This scheme followed the area approach. In the area approach, the indemnity payment and losses have determined for whole area. The father of crop insurance in India, V.M. Dandekar suggested the homogeneous area approach. In this scheme, the participation of state government was voluntary. The scheme has covered millets, oilseed, potato, cereals, cotton, barley and gram. The premium was ranged from 5 to 10 percent of the sum insured. In the pilot crop insurance scheme, 13 states had participated. The total number of farmers covered under this scheme were 6.17 lakh and the premium collected from participants was 1.97 crore against claim of 1.57 crore. This scheme has discontinued from 1984-85.

4.2.3 Comprehensive Crop Insurance Scheme (CCIS)

“Comprehensive Crop Insurance Scheme” was introduced in 1985 for kharif season. The scheme was launched on voluntary basis for the state governments. Any state government could have participated in this scheme. Like pilot crop insurance scheme, this scheme was also based on the homogeneous area approach and was linked to the short term agricultural credit. This scheme was compulsory to the all farmers who have taken loan from financial institutions within the notified area. In this scheme, 15 states and 2 union territories had participated. This scheme was replaced the National Agriculture Insurance Scheme (NAIS) in 1999. The scheme covered 763 lakh farmers including premium of Rs. 402.81 crore lakh against compensation amounting of Rs. 2305.04 crores. It was also compulsory to

borrowers of crop loan from regional rural banks, commercial banks and co-operative credit societies.

4.2.4 Experimental Crop Insurance Scheme (ECIS)

In 1997, the “Experimental Crop Insurance Scheme” was introduced on the demand of state governments because the state governments were demanding for amend the comprehensive crop insurance scheme time to time. The 14 districts of 5 states had participated in experimental crop insurance scheme. It was similar to the Comprehensive Crop Insurance Scheme except that the amount of subsidy for small and marginal farmers 100 percent of premium which were paid by the farmers. The premium subsidy and claims were shared in ratio 4:1 between central and state governments. The scheme was closed only after one session. It has covered 454555 farmers and sum insured was 168.11 crore at the premium 2.84 crore claim against has paid 37.80 crore.

4.2.5 National Agriculture Insurance Scheme (NAIS)

The “Comprehensive Crop Insurance Scheme” was replaced by the “National Agriculture Insurance Scheme”. National Agriculture Insurance Scheme had introduced in rabi season 1999-2000 and the Agriculture Insurance of India limited which was incorporated in 2002 and started the work as an implementing agency in 2003 so the NAIS was implemented under Agriculture Insurance Company of India Limited. NAIS covered both loanee and non-loanee farmers. Under this scheme, all those crops were covered for which past yield information was accessible for satisfactory number of years. It could be foods grain, oilseeds and commercial crops. The rate of premium was 3.5 percent for oilseeds & bajra and for other kharif crops it was 2.5 percent, 1.5 percent for wheat and for other rabi crops it was 2 percent, for the annual commercial crops premium rate was divided on the basis of actuarial rate. In the case of small and marginal farmers the premium amount was subsidized 50 percent by State and Central Governments equally. For protecting crops of farmers and stabilized the income of farmer government provided insurance and financial support to the farmers through National Agriculture Insurance Scheme or Rastriya Krishi Bima Yojana. It was multi-peril crop insurance scheme and covered all foods grain, oilseeds and commercial crops for which past yield data was available for adequate number of years the all crops were covered. Under this, the loanee farmer had to purchase crop insurance for their crop but it was voluntary for non-loanee farmer. In this scheme, the amount of indemnity and losses were determined on the basis of area approach and individual approach.

4.2.6 Farm Income Insurance Scheme (FIIS)

The problem in National Agriculture Insurance Scheme was only provided to protect the farmers against the yield fluctuation. The farmers have to face to revenue loss due to decline in the market price of the agricultural commodities. To protect the farmers from variability in yield and market price government had introduced the “Farm Income Insurance Scheme” on pilot basis during rabi season 2003-04. It was grounded on the homogeneous area approach in respect of wheat and rice crop only. The basic purpose of this scheme was to protect the income of farmers as well as reduce the expenditure of government on procurement at minimum support price. The scheme was optional for non-loanee farmers and compulsory for loanee farmers the amount of premium was charged on actuarial rates which were determined for each state at district level and were subsidized by the Central Government. The scheme was only implemented during 2 seasons for rabi season it was implemented in 18 districts of 11 states and in kharif season it was implemented in 19 districts of 4

states. The number of farmers covered were 4.15 lakh and the premium was collected 28.5 crore against the claim of 28.75 crore.

4.2.7 Modified National Agriculture Insurance Scheme (MNAIS)

The scheme was also protected the farmers from loss due to fluctuation in crop yield. Basically, it had worked as a component of National Agriculture Insurance Scheme. It was started from rabi season 2010-2011 on pilot basis. The scheme was implemented in the 50 districts during this season. The private insurance companies were allowed to work as an insurer and the whole amount of claim had paid by the implementation agency. The notified area and notified crop were covered under this scheme for crops which past data were available covered under this scheme.

The actuarial rates for paying premium were charged and amount of subsidy up to 75 percent which was shared by the equally between central and state government. In the scheme, 25 percent amount of loss was received by farmers as claim. The scheme was also compulsory for loanee farmers and voluntary for non-loanee farmers. Farmers covered were 2.29 lakh and premium collection was 824.38 crores against claim 234.27 crore. In this scheme, the amount of indemnity was determined on the basis of crop cutting experiments and previous yield data was available. The amount of claim was released to bank after that the banks credited the amount of claim to farmer accounts and display to particular beneficiary farmer on their notice board.

4.2.8 Weather Based Crop Insurance Scheme (WBCIS)

It was introduced in 2003 by the government of India because previous all initiative taken by the government is considered the yield fluctuation due to natural disaster and income fluctuation due to declines the market price. Weather Based Crop Insurance Scheme protects the farmers from losses due to the adverse condition of weather parameters like rainfall, temperature, humidity etc. It is optional for non-loanee farmers and they can choose one scheme between Pradhan Mantri FasalBima Yojana and Weather Based Crop Insurance Scheme. All notified crop for notified area is covered under this scheme. The rates of premium of this scheme are similar to that of Pradhan Mantri FasalBima Yojana.

4.2.9 Pradhan Mantri Fasal Bima Yojana (PMFBY)

The scheme has introduced in 2016 with the slogan of one nation one scheme. The main purpose of this scheme is to protect the income of farmers for stabilize the income of farmers and motivate them to adopt new innovative technique in farming. The Central Government launched Pradhan Mantri FasalBima Yojana. This scheme covers all the crops for which past yield data is available and the crop cutting experiment can be conducted. The premium rates are 2 percent for Kharif crops, 1.5 percent for Rabi crops and 5 percent for annual commercial and horticulture crops. The difference between premium paid by the farmers and insurer rate of premium is shared by the Central and State governments equally. The scheme was also implemented on the area approach basis. It has the similar discipline for loanee and non-loanee farmers. The amount of claim is directly credited electronically to the farmers in their bank accounts. In 2020, the scheme was amended and made it completely voluntary for all the farmers whether they are loanee or non-loanee.

In 2021, PMFBY has completed its five years in order to become “self-reliant farmers”. On this occasion Union Agriculture Ministry said that claims worth Rs. 90,000 crores have so far been disbursed to farmers since the launch of the scheme on January 13, 2016.

**Table 1. Progress of PMFBY
Kharif Season**

Year	Total Application Under PMFBY	Loanee farmers Application	Non-Loanee farmers Application	Area Insured (Thousand Ha)	Sum Insured (in Lac.)	Gross Premium (in Lac.)
2018	3,07,23,597	2,04,54,324	1,15,34,568	27,788.5	1,23,94,048	17,22,043
2019	3,83,06,919	2,38,09,066	1,68,44,339	29,303.25	1,34,25,099	19,96,696
2020	4,08,28,322	2,68,93,916	1,42,75,288	26,979.53	1,09,53,115	1879,711
2021	4,95,92,580	3,74,66,389	1,23,95,342	23,931.34	96,30,950	17,16,934

Rabi Season

Year	Total Application Under PMFBY	Loanee farmers Application	Non-Loanee farmers Application	Area Insured (Thousand Ha)	Sum Insured (in Lac.)	Gross Premium (in Lac.)
2018	2,20,45,652	1,33,68,396	94,09,334	19,797.14	92,61,841	8,15,420
2019	1,76,66,853	1,31,33,661	52,74,461	15,420.93	71,86,621	7,77,282
2020	1,98,08,103	1,23,64,746	78,36,116	15712.49	84,42,276	11,09,706
2021	1,69,128	53,514	1,20,196	53.49	47,154	14,245

Source: <https://pmfby.gov.in>

Table 1. represents the progress of PMFBY for the kharif and rabi season. Total application under PMFBY in kharif season is continuously rising but in rabi season its decline.

Table 2. Comparison of Crop Insurance Schemes in India

Name	FECIS	PCIS	CCIS	NAIS	WBCIS	MNAIS	PMFBY
Time Period	1972-79	1979-85	1985-99	1999-2013	2004-05	2010-11	2016
No. of State & UT covered	7	13	15 State & 2 UTs	26 States & 2 UTs	21 States	50 districts on pilot basis	All States and 4 UTs
Crops Covered	Cotton, Groundnut, Wheat, Potato	Millets, Oilseed, Potato, Cereals, Cotton, Barley & Gram	Rice, Wheat, Millets, Pulses and Oilseeds	All Food Grains, Oilseeds and Commercial Crops	All Notified Crops for Notified Area	All Notified Crop for Notified Area.	All Food Grains, Oilseeds & Commercial Crops
Implementing Agency	GIC	GIC	GIC with Central-State Govt. & Fin. Institutions	AIC	AIC and Private Insurer	Govt. of India and Private Insurer	AIC with Govt.
Premium Rates	—	Range 5- 10%	Cereals and Millets: 2% & Pulses and Oilseeds: 1%	Kharif: 2.5- 3.5% Rabi: 1.5-2% Comm. Crops: Actuarial Rate	Kharif: 2% Rabi: 1.5% Commercial Crops: 5%	Actuarial rates	Kharif: 2% Rabi: 1.5% Commercial Crops: 5%
Farmer Covered	3110	6.23 lakh	7.63 crore	27.12 crore	3.65 crore	2.29 lakh	2.42 crore
Based on	Individual approach	Area approach	Area Approach	Both approach	Area Approach	Area approach	Both Approach

Source: www.aicofindia.com

5. Conclusion & Suggestions

To sum up, we can say that numbers of schemes were introduced time to time in India. Every previous scheme was replaced by with new scheme with some modification over the previous schemes so that the farmers' risks may managed well. In 2016, PMFBY was launched with a slogan "One Nation One Scheme". The scheme is continuously performing better in coverage of farmers as well as in the number of benefited farmers. Currently, in India only four schemes are in operation i.e., Pradhan Mantri FasalBima Yojana(PMFBY), Restructured Weather Based Crop Insurance Scheme (RWBCIS), Unified Package Insurance Scheme(UPIS), Coconut Palm Insurance Scheme(CPIS). It is suggested that there is a need to encourage more farmers towards the crop insurance schemes. For this, government have to organize the training programs to aware the farmers about the benefits of crop insurance schemes and expand the coverage of more crops under crop insurance schemes.

References:

1. Chhikara, K. S., &Kodan, A. S. (2012). National Agricultural Insurance Scheme (NAIS) in India: An Assessment. *Management and Labour Studies*, 37(2), 143–162.
2. Horowitz, J. K., & Lichtenberg, E. (1993). Insurance, Moral Hazards and Chemical Use in Agriculture. *American Journal of Agricultural Economics*, 75(4), 926-935.
3. Kumar, D., &Phougat, S. (2021). An Analysis of Crop Insurance Scheme in Haryana. *Journal of Global Economics, Management and Business Research*, 13(2), 1-8.
4. Kumar, D., &Phougat, S. (2021). Performance Evaluation of Crop Insurance Schemes in Haryana. *Journal of Economics and Trade*, 6(1), 34-39.
5. Mahajan S.S. (2012) 'Growth of NAIS: A Study of Crop Insurance in India' *Bauddhik*, 3(1).
6. Mahajan, S. S. (2014). Growth of NAIS: A Study of Crop Insurance in India. *Bauddhik*, 3(1), 1–15.
7. Quiggin, J. C., Karagiannis, G., & Stanton, J. (1993). Crop Insurance and Crop Production: An Empirical Study of Moral Hazard and Adverse Selection. *Australian Journal of Agricultural and Resource Economics*, 37(2), 95–113.
8. Raju, S. S. & Chand, R. (2008). Agricultural Insurance in India: Problems and Prospects. *National Centre for Agricultural Economics and Policy Research*, 8, 2–87.
9. Raju, S. S., & Chand, R. (2008). A Study on the Performance of National Agricultural Insurance Scheme and Suggestions to Make it More Effective. *Agricultural Economics Research Review*, 21(January-June), 11–19.
10. Rao, K. N. (2002). Crop Insurance in India – Past, Present & Future. *Vision: The Journal of Business Perspective*, 6(2), 29–39.
11. Rao, K. N. (2002). Crop Insurance in India– Past, Present & Future. *Vision: The Journal of Business Perspective*, 6(2), 29–39.
12. Rathore, V.S.;Burark, S.S.,& Jain, H.K. (2011). Performance of Crop Insurance Scheme in Udaipur District of Rajasthan. *Agricultural Economics Research Review*, 24: 25-35.
13. Sadati, S. A.,& et. al. (2010). Survey of Effective Factors on Adoption of Crop Insurance among Farmers: A Case Study of Behbahan Country. *African Journal of Agricultural Research*, 5(16), 2237–2242.
14. Sinha, S. (2004). Agriculture Insurance in India: Scope for Participation of Private Insurers. *Economic and Political Weekly*, 39(25), 2605–2612.
15. V. M. Dandekar (1985). Crop Insurance Scheme in India: A Review, 1976-77 to 1984-85. *Economic and Political Weekly*, 20(25/26), 46-59.
16. Vyas, V. S., & Singh, S. (2006). Crop Insurance in India: Scope for Improvement. *Economic and Political Weekly*, 41(43), 4585–4594.