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Performance analysis of crop insurance schemes in India

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ABSTRACT

Development of agriculture sector in India is not possible without providing sufficient income support to the farming communities since long back though it is a traditional occupation and livelihood of the more than 50 per cent of the people in the country. The multiple problems are found in the sector; the number of policies, schemes and programmes have been implemented both at the centre and state levels in India. To overcome from the risks in agriculture, crop insurance programmes have been implemented to support the farmers' income. After independent India so many crop insurance schemes have been implemented. Performance of some of the crop insurance schemes has been satisfactory and some have not performed well due lack of knowledge, awareness, problems in the implementation level etc. This paper is focussed on the analyses of the scheme-wise, nation-wise, state-wise and zone-wise crop insurance progress particularly on the MNAIS, WBCIS and PMFBY.

Keywords: Crop insurance schemes; MNAIS; WBCIS; PMFBY; risk in agriculture

INTRODUCTION

Agriculture is the backbone of the Indians providing 50 per cent of employment directly and indirectly supplying raw materials, food and fodder for various industries, human beings and cattle respectively. The climate change impact led to consequences on the farmers' income. More than 5 lakh small and marginal farmers depend much on the agriculture as livelihood. The rainfall in India is uneven and scanty and adversely affects the income of most of the farmers. The farmers in India are also facing marketing problems due to price fluctuations of agricultural commodities which leads to low standard of living of the farmers. The risks in agriculture have been changing in the country which lead to pave the way to introduce different kinds of crop insurance schemes. Over the last two decades there was a paradigm shift in the crop insurance schemes both in food and non-food crops. Crop insurance may be weather-based, yield-based and area-based covered by both public and private sector insurers in India. The purpose of the crop insurance is to protect the farmers against the yield fluctuations and the income also gets affected on account of fluctuations in market prices. Some crop insurance schemes have become failures due to many reasons. The farmers lack in knowledge on the crop insurance which is a reason for the low coverage of crop insurance in the country. Therefore it needs to improve the crop insurance awareness of the farmers. Measurement of yield/output has changed from the traditional methods to the modern remote sensing method. The crop insurance reduces the farmers' risk; this is a weapon to the farming communities. The present paper is mainly based on the secondary data using simple statistical tools. It focuses on the analysis of crop insurance schemes in India and their performance.

The various studies carried out in the past on the crop insurance have been confined to the performance of the various schemes. Some of the studies focussed more on the PMFBY regulations, operational guidelines, scope, importance, coverage etc. The very little attention has been given to the micro-level problems. Challenges of the schemes at the implementation level are not properly identified. It is also observed that least number of studies have been made on the reinsurance in Indian agriculture/crop insurance companies.

Chand and Raju (2008) studied the performance of the existing and earlier national agricultural insurance schemes, problems and

prospects in India. The crop-wise risk was analysed. The homogenous area approach was used to understand the progress. The crop insurance is based on area approach or individual approach. The performance of the agricultural insurance schemes like first individual approach scheme, pilot crop insurance scheme, comprehensive crop insurance scheme, NAIS, their coverage, claims settlement and WBCI have been analysed. As per the authors farmers output and income were vibrated over the years due to the differences in the distribution, fluctuation in rainfall and climatic factors, expected price, availability of specific crops etc. Growth performance of agriculture insurance has become failure to cover the risks in Indian agriculture sector. Banerjee and Bhattacharya (2011) conducted a study on the innovations in agricultural insurance. The crop insurance schemes were introduced to protect farmers against the yield fluctuations; the farmers' income was affected due to fluctuations in market prices. The NAIS was failed to its coverage of the entire risks in agriculture and majority of the beneficiaries belonged to few states and with limited income. Prabhu and Ramachandran (1986) focussed on the several experimental crop insurance schemes in India. Golait and Pradhan (2008) revealed that the government sponsored crop insurance schemes had become loss on account of low insurance coverage and lot of competition. The private crop insurance schemes covered specific risks except incidental risks.

According to Raju and Chand (2007, 2008, 2009), the private insurer helps to boost the insurance coverage and inconsistent insurance schemes over the time. The private players have a lot of curiosity to invest in general insurance business. The general insurance companies cover the agriculture insurance which becomes costlier without any financial support.

Bhalla (2006) stated that more than 10 per cent of the farmer households have never insured their crops in geographically large states of Gujarat and Maharashtra due to farmers ignorance about the tradition of crop insurance. Providing education, adverting of crop insurance through the social media, television, internet and other electronic and print media was needed. The risks insured under public insurance programmes are essentially uninsurable and are expensive to insure. The financial performance of most of the public crop insurance has been ruinous in both developed and developing countries (Hazell 1992).

Mishra (1994) studied the impact of a credit-linked comprehensive crop insurance scheme (CCIS) on crop loans to small farmers. The collateral effect was reflected through the increased loan amount per borrower and reduction in the proportion of non-borrowers among small farmers. The credit expansion increased availability of credit which enhanced input use and output and employment increased the share of small farmers in the total loan which had the desirable effects on equity and efficiency considerations. The NCF (Anon 2006) recommended for the farmers protection on credit and insurance and reduction in rate of interest for crop loans to four per cent with government support to establish an agricultural risk fund to offer relief to farmers in the event of successive natural calamities. Expansion of crop insurance cover to the entire country and all other crops with reduced premiums and creating a rural insurance development fund to take up development work for spreading rural insurance were needed. In the report of the committee on doubling farmers income X volume, Anon (2018) discussed various strategies to overcome from the risks faced by the agriculture sector related to monsoon and the market. It also identified the causes for the failure of the earlier schemes (http://agricoop.nic.in/doubling-farmers). The new scheme PMFBY replaced all the earlier schemes along with restructured weather index-based insurance scheme (RWBCIS) and unified package insurance scheme (UPIS). It highlighted the importance of the schemes in terms of claim settlements and their coverage.

India is an agricultural country which is tantamount with risk and uncertainty because the agriculture in India depends upon the natural input factors viz adverse weather conditions, flood, draught, peril etc. Uncertainties of nature have lead to various problems to farmers as well as Indian agriculture. These problems can be reduced by providing various kinds of securities and assurance to them. Crop insurance is one and very important of them. It helps in providing stability to farm production and increases the income of the farmers. Crop insurance helps in stabilization of farm production and income of the farming community. It helps in optimal allocation of resources in the production process. In 1965, the government introduced a crop insurance bill and circulated a model scheme of crop insurance on a compulsory basis to state governments for their views. However none of the states favoured the scheme because of the financial obligations involved in it

(Dandekar 1985). Mukesh and Pandey (2019) dealt with government policy intervention on agriculture and minimisation of risk of crop failure, coverage, premium paid for particular crops, financial loss of the crop failure and compensation of the crop loss of timeliness.

Golait and Pradhan (2008) made a comparative study between government vs private sponsored crop insurance coverage in India. They found that majority of the government sponsored crop insurance schemes had gone in loss on account of several factors including low coverage as compared to private insurance schemes.

Taranikanti (2016) focussed on the various issues in crop insurance. Accordingly out of the 130 million farmers, the 28 per cent of the farmers subscribed the crop insurance and 25 per cent of the cropped area came under the crop insurance in terms of less than 10 per cent output. The sum assured accounted for 1/10 of the loan borrowed from the farm sector. Hence it was much lesser than the value of output and or factor cost.

Poddar (2018) analysed the care taken by PMFBY against risk associated with extensive calamities and distinctive losses arising from localised calamities. It was found that sometimes farmers were also indemnified in case of they were not able to sow plant or transplant the crop due to early season adverse weather conditions. Lalan (2018) stated that crop insurance was developed to make good the financial losses incurred by the farmers in India.

The risk facing capacity of the farmers is inadequate in agriculture sector due to some fiscal limitations. The government intervention in agriculture sector is urgently needed to redesign the existing system. The crop insurance is one monetary utensil to alleviate the unavoidable hazard in agriculture. The government policy intervention in agriculture sector for minimisation of risk of crop failure, increase in insurance coverage, premium paid for particular crops, financial loss of the crop failure and compensation of the crop loss of timeliness were needed (Mukesh and Pandey 2019). The management of risk and uncertainty in agriculture is the central responsibility of insurance companies and the government. There are many public and private insurance companies controlled by the IRDA which are operating for agriculture insurance in India. The government of India has made a remarkable work in developing and implementing number of crop insurance schemes on a large scale since 1973. Under the number of flagship programmes, crop insurance schemes like NAIS, MNAIS, WBCIS, PCIS, CCIS, ECIS, Varsha Bima, CPIS, NCIP and PMFBY have been implemented to protect the farmers in the country. The crop insurance schemes are available for both loanee and non-loanee farmers.

Modified national agricultural insurance scheme (MNAIS)

The data given in Table 1 show that the growth rate of the farmers increased by 173.17 and 148.82 during kharif season over the previous year in 2012 and 2013 respectively; area insured increased by 216.56, 206.63 and 115.16 ha in the kharif season during 2012, 2013 and 2014 respectively. Sum insured, gross premium, claims reported and farmers benefitted are the other most important indicators of the crop insurance which also positively increased during the same period over the previous year. However there was a negative growth in the rabi season.

The trend in terms of ratio with regards to both kharif and rabi season was improving except in 2015. During the kharif season most of the indicators in terms of per cent increased from 2011 to 2014-15 except in terms of claims reported and farmers benefitted. During rabi season 2013-14 and 2014-15 there was headway when compared to previous and subsequent period. It is evident that the farmers insured were 11.74 and 12.56 per cent; area insured in terms of hectare was 11.25 and 12.29 per cent during 2013-14 and 2014-15 respectively (Table 2). Sum insured was 11.30, 16.07 and 12.45 per cent during 2013-14, 2014-15 and 2015-16 respectively. Similarly the gross premium was 8.83 and 10.19 per cent; claims reported were 14.07 and 23.12 per cent and farmers benefitted were 14.04 and 24.35 per cent more during rabi season in 2013-14 and 2014-15 respectively.

Weather-based crop insurance scheme (WBCIS)

Weather-based crop insurance scheme is another important scheme. The growth trend of WBCIS is examined in both the rabi and kharif season with farmers insured, sum insured and claims reported in selected years.

The scheme provides insurance protection to farmers against adverse weather incidences such as deficit and excess rainfall, high or low temperature,

Table 1. Modified national agricultural insurance scheme (all companies combined growth rate over previous year)

Season	Farmers insured	Area insured (ha)	Sum insured	Gross premium	Claims reported	Farmers benefitted
Kharif 2011	27.83	105.62	94.03	157.38	495.05	113.76
Rabi 2011-12	64.79	6.27	49.35	35.64	-12.30	22.57
Kharif 2012	173.17	216.56	143.62	241.63	639.75	393.10
Rabi 2012-13	-53.99	-66.88	-57.58	-66.46	-91.42	-81.35
Kharif 2013	148.82	206.63	180.47	238.21	1502.38	752.54
Rabi 2013-14	26.94	43.04	9.97	-32.15	-37.80	-15.80
Kharif 2014	96.72	115.16	54.24	116.55	16.31	93.83
Rabi 2014-15	-45.63	-49.24	-7.82	-46.69	41.27	-10.50
Kharif 2015	50.01	78.65	-14.57	64.53	-96.76	-97.48
Rabi 2015-16	-65.03	-71.50	-9.34	-40.36	0.00	0.00

Source: IRDA annual reports

humidity etc. WBCIS is devised as a complete component of NCIP from rabi 2013-14. The trend in growth rate was negative in some years in terms of farmers insured, sum insured and claims reported in rabi season. Whereas the kharif season was positive in terms of farmers insured and sum insured. Therefore the growth rate in rabi and claims reported in some years were negative and not so satisfactory when compared to two other indicators (Tables 3, 4; Fig 1).

The coverage of farmers was minimum of 1.54 per cent in rabi 2014-15 to the maximum at the 23.64 per cent in kharif 2013 (Table 4). The corresponding trend in 2014-15 was 1.31 and 1.89 per cent in sum insured and claims reported respectively. The overall performance was not consistent but fluctuated over the years. However compound annual growth rate of WBCIS was negative in case of all the parameters. Hence the overall scheme performance was not so good. The least performance was found in rabi season in 2014-15. Hence there is a need to strengthen the weather-based crop insurance in the country by introducing new WBCIS.

Pradhan Mantri Fasal Bima Yojana

The recent new agriculture crop insurance scheme, the Pradhan Mantri Fasal Bima Yojana was launched by Prime Minister of India Narendra Modi on 18 February 2016. It envisages a uniform premium of only 2 per cent to be paid by farmers for kharif crops and 1.5 per cent for rabi crops. The premium for annual commercial and horticultural crops is 5 per cent per annum.

From Fig 2 that shows state-wise farmers insured under PMFBY from 2014-15 to 2017-18 it is evidenced that in Andaman and Nicobar Islands, Assam, Goa, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Kerala, Manipur, Meghalaya, Mizoram, Pondicherry, Sikkim, Tripura and Uttarakhand performance in terms of sum insured showed less progress and was less than 1 per cent during the study period.

The highest performance in sum insured was 22 per cent in Madhya Pradesh in 2014-15 and 2017-18 however in between it was 18 and 17 per cent during 2015-16 to 2016-17 respectively. The states like Chhattisgarh and Tripura also showed better performance in sum insured during the study period.

In Andhra Pradesh, Karnataka and Tamil Nadu sum insured was low and it was in between 2 to 5 per cent. Therefore it is evident that north Indian states insured lowest, Madhya Pradesh insured highest and south Indian states like Karnataka and Andhra Pradesh insured moderately low in terms of sum insured over the study period.

The PMFBY scheme is central flagship programme; it is the large chunk of the crop insurance business in the country. During rabi season 2019-20 it accounted for 93 per cent of the total sum insured in the country along with 83 per cent of claims reported. The sum insured in crop insurance was based upon the cost of cultivation and equivalent to loans disbursed. The government decides the amount of sum insured for different crops across

Table 2. Modified National Agricultural Insurance Scheme (all companies combined) (%)

Season	Farmers insured	Area insured	Sum insured	Gross premium	Claims reported	Farmers benefitted
Kharif 2011	1.79	2.30	2.37	2.47	2.54	1.73
Kharif 2012	8.08	7.74	8.64	11.47	16.46	10.49
Kharif 2013	9.25	7.87	10.28	13.01	22.62	16.67
Kharif 2014	23.09	24.21	17.43	19.11	16.37	27.21
Kharif 2015	18.83	21.95	13.73	16.76	0.75	0.61
Rabi 2010-11	1.40	1.12	1.22	0.96	0.43	0.81
Rabi 2011-12	2.96	2.45	3.55	3.36	2.23	2.13
Rabi 2012-13	3.72	2.57	3.66	3.85	1.41	1.96
Rabi 2013-14	11.74	11.25	11.30	8.83	14.07	14.04
Rabi 2014-15	12.56	12.29	16.07	10.19	23.12	24.35
Rabi 2015-16	6.59	6.26	12.45	10.00	0.00	0.00

Source: IRDA annual reports

Table 3. Weather-based crop insurance scheme (% growth per year)

Season	Number of farmers insured	Sum insured	Claims reported
Kharif 2012	11.91	8.13	-6.04
Kharif 2013	34.90	37.83	-14.21
Kharif 2014	90.65	92.85	84.88
Kharif 2015	407.51	777.98	509.35
Rabi 2012-13	4.49	-10.69	42.13
Rabi 2013-14	-74.24	-65.04	-55.32
Rabi 2014-15	-86.72	-90.38	-86.44
CAGR	-20.32	-17.19	-14.86

Source: IRDA annual reports

Table 4. Weather-based crop insurance scheme (%)

Season	Number of farmers insured	Sum insured	Claims reported
Rabi 2011-12	14.99	15.19	14.73
Kharif 2012	16.77	16.42	13.84
Rabi 2012-13	17.53	14.66	19.67
Kharif 2013	23.64	20.21	16.87
Rabi 2013-14	6.09	7.07	7.54
Kharif 2014	11.61	13.63	13.94
Rabi 2014-15	1.54	1.31	1.89
Kharif 2015	7.83	11.51	11.52
CAGR	-20.32	-17.19	-14.86

Source: IRDA annual reports

the country and regions under different climatically zones. It is the maximum value in a particular year that the insurance players may pay the sum insured to the farmers. The trends on sum insured under north zone was more when compared to other zones in India. Uttar Pradesh, Rajasthan and Haryana had the major share in different zones. The performance of Jammu and Kashmir was nil. The crop insurance premium is shared between farmers and the state governments. Northern zone possessed maximum share but the remaining zones were moderately low during the period. The gross premium is another

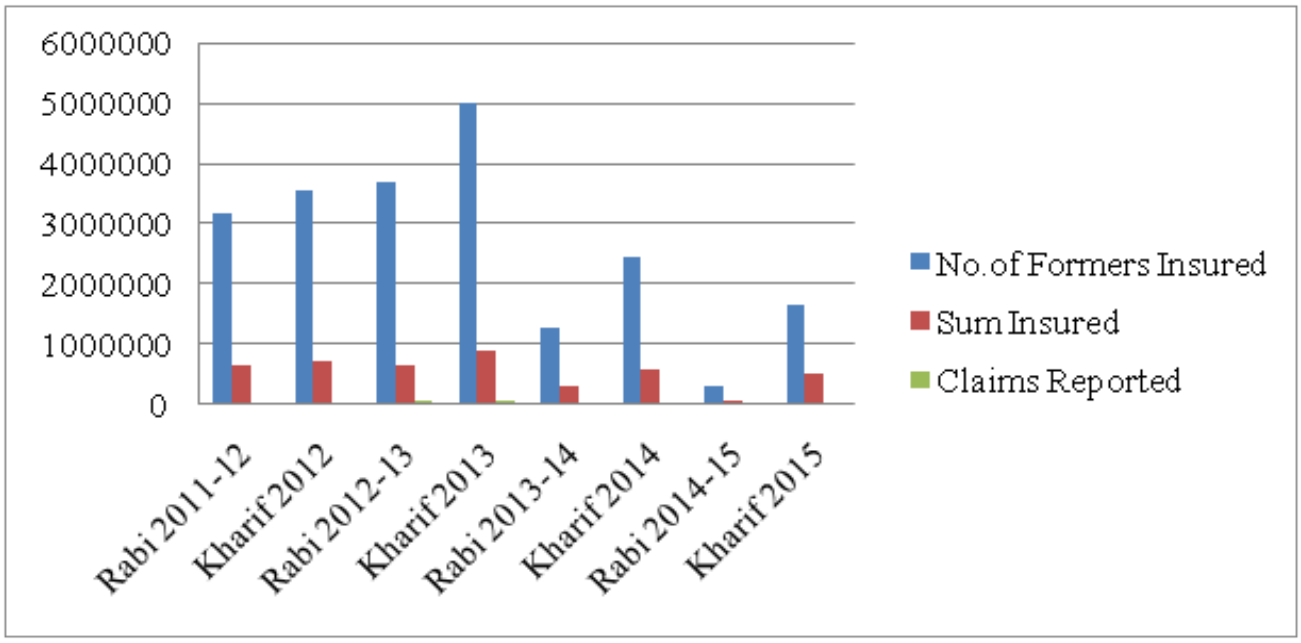
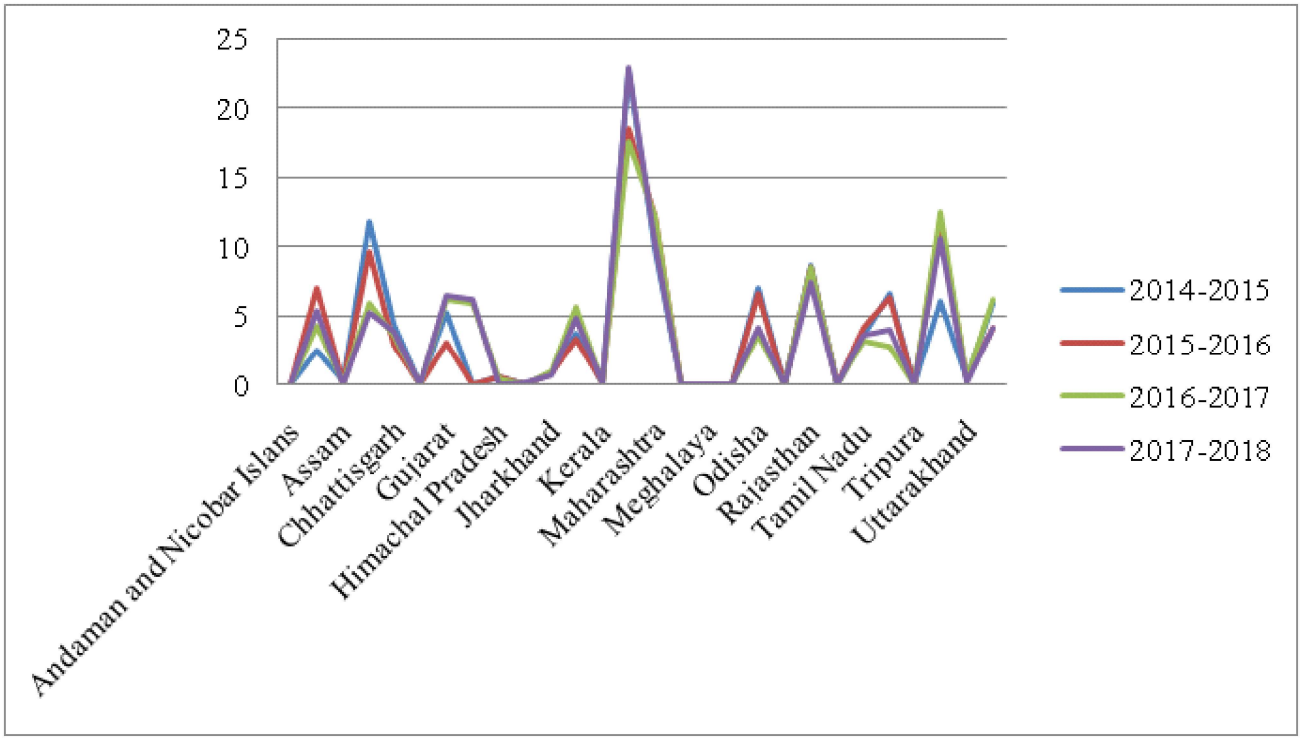


Fig 1. Weather-based crop insurance scheme



Source: IRDA annual reports

Fig 2. Trends in state-wise amount of sum insured under PMFBY in India

Table 5. Trends in zone-wise combined business performance of PMFBY and RWBCIS

Zone	2016-17			2017-18			2018-19		
	Sum insured	Farmers share in premium	Gross premium	Sum insured	Farmers share in premium	Gross premium	Sum insured	Farmers share in premium	Gross premium
North zone									
Total/%	30.1315	28.517	19.4388	28.6457	27.1953	18.8237	29.1713	28.1306	20.8812
Average	5.021917	4.752833	3.2398	4.774283	4.53255	3.137283	4.861883	4.688433	3.4802
Northeastern zone									
Total/%	0.1447	0.1488	0.0585	0.1707	0.1691	0.0619	0.1439	0.0478	0.0475
Average	0.02894	0.02976	0.0117	0.03414	0.03382	0.01238	0.02878	0.00956	0.0095
Central zone									
Total/%	21.548	20.1397	18.8234	24.2018	22.0904	20.2849	24.3127	22.6826	22.1391
Average	10.774	10.06985	9.4117	12.1009	11.0452	10.14245	12.15635	11.3413	11.06955
Eastern zone									
Total/%	16.4675	12.3661	13.5291	14.7686	10.2722	10.9107	11.4576	7.2696	7.6655
Average	4.116875	3.091525	3.382275	3.69215	2.56805	2.727675	2.8644	1.8174	1.916375
Western zone									
Total/%	17.908	22.8806	31.7191	15.5595	21.2936	29.8352	19.0966	24.443	31.6132
Average	5.969333	7.626867	10.57303	5.1865	7.097867	9.945067	6.365533	8.147667	10.53773
Southern zone									
Total/%	13.8004	15.9478	16.4312	16.6539	18.9792	20.0834	15.8178	17.4265	17.6536
Average	1.971486	2.278257	2.347314	2.379129	2.711314	2.869057	2.259686	2.4895	2.521943

Source: IRDA annual reports

Table 6. Trends in zone-wise combined business performance of PMFBY and RWBCIS

Zone	2016-17			2017-18			2018-19		
	Claims reported	Claims paid	Farmers benefitted	Claims reported	Claims paid	Farmers benefitted	Claims reported	Claims paid	Farmers benefitted
North zone									
%	17.065	17.093	28.742	16.339	16.346	21.555	16.6973	18.205	15.366
Average	2.8441	2.8488	4.7902	2.7231	2.7243	3.5925	2.7828	3.0341	2.5609
Northeastern zone									
%	0.0487	0.0487	0.2260	0.0131	0.0131	0.0498	0.0007	0.0006	0.0005
Average	0.0097	0.0097	0.0452	0.0026	0.0026	0.0099	0.0001	0.0001	0.0001
Central zone									
%	13.141	13.075	9.6793	32.93	32.938	18.435	16.535	14.441	9.988
Average	6.5704	6.5373	4.8396	16.4648	16.4689	9.21765	8.26735	7.2206	4.9938
Eastern zone									
%	7.3531	7.3652	10.468	11.427	11.418	9.7434	7.6972	6.7427	9.3656
Average	1.8382	1.8413	2.6170	2.8567	2.8545	2.4358	1.9243	1.6856	2.3414
Western zone									
%	21.371	21.406	22.947	19.735	19.728	33.907	31.226	34.783	44.995
Average	7.1237	7.1354	7.6492	6.5785	6.5758	11.302	10.4087	11.594	14.998
Southern zone				Zone					
%	41.021	41.012	27.937	19.556	19.557	16.309	27.844	25.828	20.285
Average	5.8601	5.8589	3.9910	2.7937	2.7938	2.3298	3.9777	3.6896	2.8979

Source: IRDA annual reports

indicator which is known after the completion of enrolment of the farmers. The western zone, southern zone and northern zone share was the maximum compared to other zones in the country. The Maharashtra, Gujarat and AP share was more among other states in the country. Therefore it is inferred that northeastern zone comprising Assam, Manipur, Meghalaya, Tripura and Sikkim states, the

business performance under PMFBY and RWBCIS was very low. Hence there is a need to spread more awareness amongst the farmers and coverage of crop insurance in these areas.

The claims reported, claims paid and benefitted out of it are the key success indicators of the insurers in the country. The claims reported show the demand for claims (Table 5). The government has to pay the money through the banks/other financial institutions. Table 6 demonstrates all the three other parameters. The claims paid were around 20 per cent in most of the regions except northeastern zone that showed very poor performance. It has been found that 20 per cent of the farmers have been paid their reported crop insurance claims during rabi season 2020 in India and the remaining are yet to be paid. In absolute figure the total claims reported under both the central schemes, PMFBY and RWBCIS, out of amount of Rs 3,750 crores only 775 crores has been paid during the month of august 2020. It is also evident that farmers benefitted were more than that of claims reported. However the performance of northeastern zone was negligible in this regard. Claims settlement to the farmers immediately after harvesting has to be done but it is very difficult for the government and insurance companies due to technical issues for processing everything in the stipulated period.

CONCLUSION

The farmers in India are facing number of problems due to price fluctuations of agricultural commodities, uncertainty in the rainfall and lack of knowledge on the government policies and the programmes. Over the last two decades there was a paradigm shift in the crop insurance schemes both in food and non-food crops. Crop insurance may be covered by both public sector and private sector insurers in India. It has protected the farmers against the fluctuations in yield and the income. Some crop insurance schemes have become failure due to many reasons. Only loanee farmers were covered earlier under the crop insurance and hence low coverage was in the country. The crop insurance schemes like NAIS, MNAIS, WBCIS, PCIS, CCIS, ECIS, Varsha Bima, CPIS, NCIP and PMFBY have been implemented to protect the farmers in the country. The schemes have been implemented for both loanee and non-loanee farmers. As earlier schemes had become failure in one or the other way, the alternative scheme of PMFBY was introduced. It is inferred that increase in sum insured is the index of development of crop insurance which needs to be improved.

There is no uniformity found in the insurance coverage in all the schemes. The PMFBY shows a lot of inequality in covering the insurance in different states of the country. Insurance is generally recognised as one of the drivers for economic growth. The new crop insurance needs to be strengthened to drive the tempo of agriculture development in India.

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