International Journal of Agricultural Sciences
Volume 14 | Issue 2 | June, 2018 | 399-406 ■ e ISSN-0976-5670
DOI:10.15740/HAS/IJAS/14.2/399-406
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RESEARCH PAPER

Analysis of weather based crop insurance scheme claim payouts in Karnataka

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Abstract : Weather being the major risk in agriculture, Weather Based Crop Insurance Scheme (WBCIS) was introduced in India to address this specific risk. Since weather index is an proxy for yield loss, there are chances that the index may not adequately reflect actual field loss and result in no and inadequate compensation when there is huge loss in field and higher outgo during normal agriculture production season. So, this study was done with the main objective of evaluating the performance of the scheme in terms of its ability to compensate the loss. The analyses of frequency of claims and claim ratio reveals good performance of WBCIS in paying claims. But severity and distribution of payouts reveals that claim paid were inadequate and very less and claim distribution is highly skewed towards lower claim per hectare. It suggests that redesigning WBCIS product in such a way that it is beneficial during bad years can help to improve the performance of the scheme in future.

Key Words : Crop insurance, Claim ratio

View Point Article : Jeyanthi, H. (2018). Analysis of weather based crop insurance scheme claim payouts in Karnataka. *Internat. J. agric. Sci.*, **14** (2) : 399-406, **DOI:10.15740/HAS/IJAS/14.2/399-406.**

Article History : Received : 29.03.2018**; Revised :** 08.05.2018**; Accepted :** 23.05.2018

INTRODUCTION

Weather Based Crop Insurance Scheme (WBCIS) is implemented in India with the aim of mitigating the hardship of the insured farmers against the risk of crop loss due to adverse weather conditions relating to rainfall, temperature, wind, humidity etc. In Karnataka, till 2014, 9.92 lakh farmers were insured under WBCIS scheme and 8.04 lakh farmers were benefitted with claim payment. The main challenge of WBCIS is that, farmer receiving no or inadequate claim payment despite having experienced a severe crop loss, known as basis risk (Clarke, 2011). This can act as a major barrier for its performance and scaling upto large scale. Farmers in Karnataka have experienced huge basis risk problem in WBCIS which was the reason behind withdrawal of the scheme during 2015 and bringing the entire commercial and horticultural crops which were earlier covered under WBCIS to new yield based insurance scheme launched during 2016 namely Prime Minister Fasal Bima Yojana (PMFBY). So, this study was done with the objective of understanding the product structure,risk insured andevaluate the performance of the scheme in terms of its ability to compensate the loss. This study was done for major crops covered under WBCIS scheme for major districts of Karnataka since inception of the scheme.

MATERIAL AND METHODS

WBCIS was introduced in the state of Karnataka

during 2007 and food and oil seed crops were covered initially. Later, cotton, horticultural crops such as onion, chillies, potato and fruit crops such as banana, mango were covered under the scheme. During 2014, other than cotton, horticultural and fruit crops, field crops were moved to yield based scheme. Now under restructured WBCIS scheme which was introduced during 2016, only fruit crops and green chilli are covered. For cotton and horticultural crops which involves multi picking and where multiple crop cutting experiments are difficult to conduct, WBCIS is best suited to provide insurance cover for crop loss. In WBCIS scheme, gross premium was fixed at 12 per cent and farmer premium was fixed as 6 per cent of sum insured. Sum insured was also fixed crop wise in the state. The only variable which decides the performance of the scheme is the claim payout. So an effort was made here to study the claim payouts made under WBCIS scheme during *Kharif* season for three major crops *viz.,* cotton, onion, and chillies in two different growing conditions *viz.*, irrigated and rainfed for major districts of Karnataka *viz.,* Dharwad, Gadag and Haveri for a period of 6 years from 2009 to 2014. These crops were covered under WBCIS scheme in Dharwad district from 2009 onwards and so for uniformity the study period starts from 2009. During 2015, WBCIS scheme was withdrawn; later these crops were covered under PMFBY from 2016 onwards. During 2014, notification of WBCIS scheme was delayed and cutoff dates were extended for enrollment. So termsheets were modified for those farmers who enrolled during extended period by cutting the exposed risk periods, reducing the premium and sum insured. So for the year 2014 analysis was carried out separately for normal coverage period and extended coverage period.

To analyze the claim payouts and better understand the loss paying capacity of WBCIS, simple analytical tools and percentile ranking techniques, and standard insurance analytical tools such as frequency of claims, severity of claims, claim ratiowere employed in this study. The paper is organized as follows. The following sectionexplains the product structure and the way the scheme is implemented in the state. The next section presents the results of claim payout analysis using standard insurance analytical tools. Last section discusses the distribution of claim payouts.

Detailed background about the WBCIS insurance product is explained and discussed in World Bank (2011) discussion paper, Skees *et al.* (2009) and working papers of Gine *et al*. (2007). Gine *et al*. (2007) also studied the determinants of household insurance purchase decisions based on a 2004 household survey in Andra Pradesh and in another paper they analyzed the payouts from WBCIS product sold by ICICI Lombard during *Kharif* 2006 season in Andra Pradesh. The insurance's risk reduction potential was evaluated by Heimfarth and Musshoff (2011) by measuring changes in the SD and the VaR of revenues with and without insurance. Leblois *et al*. (2011) considered different indices that could be used in weather index insurance from the simplest to more complex ones. Kapphan *et al.* (2012) analyzed the potential for weather insurance in light of climate change. They considered different weather indices -single as well as multi-perilindicesthat offer risk protection against various weather phenomena and found that potential for hedging yield risk with weather-based insurance products improves. Deng *et al.* (2006) evaluated the efficiency of various index insurance products to reduce farm yield loss. They tested the effectiveness of sophisticated index insurance product from crop production model and simple products based on area yields or weather variables.Fuchs and Wolff (2011) found that not only the minimum amount of cumulative rain in each period but also its variance within that periodis important and suggested additional index which takes care of this. Filler *et al*. (2009) modeled and estimated the losses of a weather related insurance and concentrated on the tail behaviour of the joint loss distribution as the probability of large losses is crucial for insurer and decides the premium. Berg *et al.* (2009) insisted that index insurance benefit to the farmers should account the loss in input costs due to yield loss otherwise it will be an underestimate. Similar works on weather index evaluation were done by Bokusheva and Breustedt (2008); Odening *et al*. (2007); Chung (2011); Miranda *et al.* (2010); Rao (2011) and Xu *et al*. (2010).

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Product structure and implementation :

In WBCIS, term sheets which defines the insurance contract terms are prepared and notified for each location (sub taluk/Gram Panchayat) and crop. Each notified location is called Reference Unit Area (RUA). For each RUA, a Telemetric Rain Gauge station (TRG) which

provides rainfall data and Automatic Weather Station (AWS) which provides temperature, humidity and windspeed data will be notified as Reference Weather Stations (RWS). Alternative Weather Stations are also notified as back up stations. The data from these RWS will be used for the calculation of claim payouts based on the termsheet notified for the RUA. All the insured farmers in a RUA will be settled claims based on the payouts generated based on the termsheet using the RWS data. There were 72 notified hoblies during 2009 where farmers insured for the three crops in the three districts. Likewise during 2013, business was procured from 129 hoblies and in 134 hoblies during normal coverage period in 2014 (Table 1).

For almost all the crops rainfall was the major risk covered under WBCIS and some crops additionally temperature and humidity covers were also provided. Under rainfall insurance cover deficit rainfall and excess rainfall covers will be there. The deficit rainfall cover may be given in two types; one for deficit volume and another for consecutive dry days. These covers are provided for throughout the crop growth stage divided into different phases (growth phase, vegetative phase, flowering phase) in terms of months. Each index will have triggers, exit points and rates for breaching triggers. As per these terms, once the triggers are breached based on the RWS data for a RUA, claim payouts will be started and full payout will be provided for touching the exit triggers. To better compensate the farmers for weather risk, claim payout from the termsheet have to closely match incurred losses. Goodwin and Mahul (2004) point out that the design of an efficient insurance contract depends on the relationship between the individual yield and the underlying weather index, and Vedenov and Barnett (2004) specifically emphasize the importance of the weather insurance parameters (tick size, strike, and limit) with respect to achieving hedging effectiveness, *i.e.* the degree to which weather risk is being reduced by an insurance product.

A better WBCIS product with no/less basis risk should pay claims when the crops are affected *i.e.* during bad years and there should not be huge payout during normal years. A normal or bad year can be identified using the yield data for the crop in the area. Every year state government also does survey in all taluks and declares whether the taluks are affected by calamity or not. This data gives idea about whether that year is normal or bad year. This can be used to cross verify the yield data and also WBCIS payouts in a year. Table 2 details the taluks declared as calamity affected by state government during 2009 to 2014 in Dharwad, Gadag and Haveri districts. It can be interpreted that 2009, 2010 and 2014 can be considered as normal/good years and 2011, 2012 and 2013 can be considered as bad years. These details will be used while interpreting the results of other analyses.

Frequency of claims-crop wise analysis :

In insurance average frequency of claim is reported as a ratio of total number of claims incurred to total number of exposure. In case of crop insurance, total number of claims incurred is the total number of farmers benefitted and total number of exposure is the number of farmers insured. So, frequency of claims is the total number of farmers benefitted with claim payouts expressed as a percentage of total number of farmers insured. In simple terms it is the percentage of farmers benefitted. Crop wise average frequency of claims along with number of farmers insured is presented in Table 3. Number of farmers insured increased every year from 2009 to 2014. During the normal years 2009, 2010 and 2014, frequency of claims was about 44%, 51% and

Table 1 : Number of reference unit areas (RUAs) under WBCIS

Crop/Year	2009	2010	2011	2012	2013	2014 N	2014 ED
Cotton (irrigated)		17	17	18	17	16	16
Cotton (rainfed)	26	38	42	46	42	42	40
Onion (irrigated)		16	12	15	16	13	16
Onion (rainfed)	20	24	23	26	26	29	27
Chillies (irrigated)	6	5	5	6	6	10	9
Chillies (rainfed)	20	23	21	24	22	24	23
Grand Total	72	123	120	135	129	134	131

N-Normal cutoff date, ED-Extended Cutoff date

Note: The number of RUAs here are the one where farmers enrolled. Total RUAs notified are more than or equal to this number of business RUAs.

Source: Crop Insurance Cell, Department of Agriculture, Government of Karnataka

Table 2 : Taluks declared as calamity affected

Year	Taluks affected by calamity
2009	Only Mundargi and Shirahatti taluks in Gadag district
2010	None affected
2011	All taluks affected except Kalgatagi in Dharwad district
2012	All taluks affected
2013	All taluks affected except Ranebennur in Haveri district
2014	None affected

Source: Crop insurance notification of GOK for various years

above 60%, respectively. During calamity affected years 2011 to 2013, frequency of claims was very high in all the crops except chilli irrigated during 2011. Average frequency was about 84%, 100%, and 97%, respectively in these years. This analysis reveals that WBCIS is able to provide better benefit to farmers during bad years than good years.

Crop wise analysis of claim ratio :

Claim ratio is an important indicator of performance of an insurance product. It also shows commercial viability of an insurance product. Claim ratio indicates the loss (claim) paid from the premium collected. It is the claim paid expressed as a percentage of gross premium. In general, insurance companies keep a target claim ratio of 80 per cent and above depending upon their capital adequacy and reinsurance support to run the business with normal profit. If claim ratio is below this, it is highly profitable for insurance companies and above this and upto 100 per cent is manageable and only above 100 per cent continuously is worrisome. Crop wise claim ratio for the three districts together is presented in Table 4. Crop wise analysis will also provide insight into defects of product design (termsheet). During normal years 2009 and 2010, claim ratiowas very less in all the crops except Chillies irrigated and during 2014, except cotton crop, it was less in all other crops. During 2011, a calamity year, claim ratio was very low in almost all the crops but frequency of claims washigh (Table 3). It means less amounts were paid to more number of farmers. Being a bad year, farmers were paid less indicating poor design of termsheet which was unable to capture the actual field loss. The state government realized this issue and made efforts to improve the term sheets during 2012. The termsheets were evaluated by Karnataka State Natural Disaster Monitoring Centre (KSNDMC) and best termsheets as decided by state government were notified for the season. So, claim ratio was improved during 2012, a calamity year. During 2013 another bad year, claim ratio was better except chillies, though claim outgo was within premium collected for almost all crops. Overall claim ratio was very less for onion crop except 2012 and 2013 which indicates poor design of WBCIS termsheet which was unable to capture the actual field loss.

Severity of claims-crop wise analysis :

In insurance average severity of claim is reported as a ratio of total amount of claims incurred to total number of claims incurred. In case of crop insurance, insurance premium is determined per hectare basis and claims are settled per hectare basis. *i.e.* unit of insurance

Table 3 : Frequency of claims under WBCIS scheme

Crop	2009	2010	2011	2012	2013	2014 ED	2014 N
Cotton (irrigated)		505	840	2,595	1,922	1,182	3,302
		(82.4)	(70.1)	(100.0)	(92.1)	(100.0)	(100.0)
Cotton (rainfed)	3,219	5,867	8,487	24,313	26,831	12,360	41,836
	(31.2)	(51.)	(75.6)	(100.0)	(92.3)	(99.1)	(99.0)
Onion (irrigated)		264	665	1,054	1,562	610	2,220
		(16.3)	(92.6)	(100.0)	(100.0)	(8.7)	(25.2)
Onion (rainfed)	1,784	3,161	4,581	14,832	17,300	6,747	26,095
	(61.9)	(27.6)	(83.9)	(100.0)	(100.0)	(7.3)	(44.6)
Chillies (irrigated)	164	174	517	669	1,142	439	1,445
	(100.0)	(100.0)	(9.9)	(88.5)	(91.1)	(89.5)	(90.1)
Chillies (rainfed)	3,169	4,738	6,905	19,939	20,630	7,769	27,163
	(42.7)	(63.4)	(99.8)	(100.0)	(99.6)	(45.0)	(36.3)
Total	8,336	14,709	21,995	63,402	69,387	29,107	102,061
	(43.5)	(51.0)	(83.7)	(99.9)	(96.6)	(61.4)	(66.7)

(Figures in bracket are frequency of claims in %)
N-Normal cutoff date, ED-Extended cutoff date
Source: Crop Insurance Cell, Department of Agriculture, Government of Karnataka

is land size. Hence severity of claims here is expressed as a ratio of total amount of claims paid to total area benefitted. In simple terms it is the average claim paid per hectare. Though previous analyses indicate that WBCIS works in a proper way and benefits farmers at aggregate level, analysis of benefit at individual farmer level can reveal more facts. In insurance sum insured is the total risk covered and it is the maximum claim possibility and premium and claims are expressed as a percentage of sum insured. For WBCIS, sum insured for each crop is fixed by state government every year. It was Rs. 20000 per hectare for cotton and onion irrigated crops, Rs. 12000 and Rs. 13500 for cotton and onion rainfed crops, respectively. It was Rs. 25000 and Rs. 15000 for red chillies irrigated and rainfed crops, respectively. Sum insured remained same for five years from 2009 to 2013 as above and during 2014 it was increased. Crop wise severity of claims (average claim paid per hectare) and average claim as a percentage of sum insured is presented in Table 5. Highest average claim paid as percentage of sum insured was 12.8% for cotton irrigated, 14% for cotton rainfed, 17.7% for onion irrigated,19.1% for onion rainfed, 26.6% for chillies irrigated and 15.9% for chillies rainfed crops. It shows that during calamity year too, per hectare claim paid was very less. Average claim paid as a percentage of sum insured is the average loss cost for the year. All most all the years except 2012, average loss cost was far below

Table 4 : Average claim ratio (Claim to premium) under WBCIS **(Figures in %)**

Crop	2009	2010	2011	2012	2013	2014 N	2014 ED
Cotton (irrigated)		21.9	19.4	106.8	83.9	75.7	83.2
Cotton (rainfed)	39.2	18.1	17.7	111.5	81.4	84.3	79.6
Onion (irrigated)		8.5	18.7	147.5	99.4	6.6	0.6
Onion (rainfed)	37.2	10.6	18.4	152.8	109.6	34.4	14.5
Chillies (irrigated)	162.3	221.4	6.7	119.3	48.1	67.1	50.2
Chillies (rainfed)	46.3	14.2	51.8	125.8	54.6	45.3	30.5

N-Normal cutoff date, ED-Extended cutoff date
Source: Author's calculation based on data collected from Crop Insurance Cell, Department of Agriculture, Government of Karnataka

Table 5 : Average (Severity) and maximum claims paid under WBCIS

Crop	Item/Year	2009	2010	2011	2012	2013	2014 N	2014 ED
Cotton (irrigated)	Average claim paid (Rs./ha)		744	607	2562	2283	4540	3826
			(3.7)	(3.0)	(12.8)	(11.4)	(9.1)	(10.0)
	Max Claim paid (Rs./ha)		3,915	1,952	3,861	5,253	14,457	14,229
			(19.6)	(9.8)	(19.3)	(26.3)	(28.9)	(35.8)
Cotton (rainfed)	Average claim paid (Rs./ha)	1631	431	335	1679	1296	4144	3223
		(13.6)	(3.6)	(2.8)	(14.0)	(10.8)	(10.4)	(10.1)
	Max Claim paid (Rs./ha)	2,923	1,588	1,463	3,785	3,689	12,753	11,383
		(24.4)	(13.2)	(12.2)	(31.5)	(30.7)	(31.9)	(35.1)
Onion (irrigated)	Average claim paid (Rs./ha)		545	771	3539	2384	879	687
			(2.7)	(3.9)	(17.7)	(11.9)	(1.0)	(1.2)
	Max Claim paid (Rs./ha)		1,320	1,979	6,924	3,826	2,058	687
			(6.6)	(9.9)	(34.6)	(19.1)	(2.4)	(1.1)
Onion (rainfed)	Average claim paid (Rs./ha)	2007	412	489	2575	1775	3194	3139
		(14.9)	(3.0)	(3.6)	(19.1)	(13.1)	(5.7)	(6.7)
	Max Claim paid (Rs./ha)	3,130	2,450	1,491	4,982	3,696	11,863	7,833
		(23.2)	(18.1)	(11.0)	(36.9)	(27.4)	(21.2)	(16.8)
Red Chillies (irrigated)	Average claim paid (Rs./ha)	4868	6642	1000	5368	2886	8,773	5171
		(19.5)	(26.6)	(4.0)	(21.5)	(11.5)	(9.0)	(6.8)
	Max Claim paid (Rs./ha)	5,480	8,536	1,000	7,000	3,237	17,134	15,455
		(21.9)	(34.1)	(4.0)	(28.0)	(12.9)	(17.5)	(19.6)
Red Chillies (rainfed)	Average claim paid (Rs./ha)	2383	419	980	2264	1029	5824	3276
		(15.9)	(2.8)	(6.5)	(15.1)	(6.9)	(8.7)	(6.0)
	Max Claim paid (Rs./ha)	4,508	1,223	2,097	4,302	2,726	17,512	8,690
		(30.1)	(8.2)	(14.0)	(28.7)	(18.2)	(26.1)	(15.4)

(Figures in bracket are % to Sum Insured),N-Normal cutoff date, ED-Extended cutoff date
Source: Author's calculation based on data collected from Crop Insurance Cell, Department of Agriculture, Government of Karnataka

the premium rate of 12 % which means insurance companies benefitted largely by charging high premium.

In insurance Probable Maximum Claim Liability (PML) is an important concept for premium calculation. Also, it gives idea about probable maximum claim liability to the insurer and receivable by farmer. In the 6 years period, maximum claim paid was about 36%, 37% and 34% respectively for cotton, onion and chilli crops. Maximum PML was 37 %and it means in WBCIS so far, no farmer received 100% claims even in bad years. In WBCIS termsheets were designed highly complicated in such a way that possibility of paying 100% claims upto full sum insured was never made possible in Karnataka.

Distribution of claim payouts :

The analysis of frequency of claims and claim ratio are indicating better performance of WBCIS scheme, but analysis of severity of claims and maximum claim paid pose a different picture. The real picture will be clearer when the distribution of claim paymentsis known. Annexure 1 details the results of that analysis for six years starting from 2009 to 2014. Farmers were grouped into eight categories based on claim paid per hectare starting from no claim to Rs. 5000 and above per hectare. Here number of farmers who received claims and total claims settled in each slab are presented as a percentage of total number of farmers insured and total claims paid for the four crops in the three selected districts. During the normal years 2009 and 2010, about half the farmers haven't received any claims. Claim numbers were also skewed towards lower claim per hectare side. But during 2010, about 22% of total claim amount was received by about one per cent of famers who received more than Rs. 5000 and above. During another normal year 2014, sum insured was revised and claims which are calculated as a percentage of sum insured was also proportionally high. That is the reason more farmers and more amounts are found in last bucket which can't be directly compared with other 5 years. During the calamity year 2011, claim number and amount distribution was highly skewed towards lower buckets which should bereverse. About 16 per cent of insured farmers received no claims, about 40 per cent received claims of less than Rs. 500 per hectare, and none of the farmer received Rs. 3000 and above per hectare. Due to the intervention of government at the time of term sheet finalization, during 2012 and 2013 which are calamity years claim distribution was somewhat symmetrical about the middle of the claim paid range, but claim paid at higher side was very meagre.

Evidence on the distribution of claim payouts is presented in Fig. 1-3 for normal and bad years separately. Since during 2014, sum insured was revised upwards, claim amounts are higher compared to previous years and so the graph is presented separately. The x-axis for the graph is claim payout rank which ranks claim payouts in increasing order of size, expressed on a scale from 0 to 1. In the graphs claim amount paid per hectare is plotted against claim payout rank. Here claim amount below Rs. 100 per hectare is assumed as no claim since they are very low tokens. The claim payout is zero upto the 57, 61 and 34th percentile during normal years *viz.*,

Annexure 1: Frequency distribution of beneficiary farmers and claim paid under WBCIS

Claim paid (Rs./ha)	2009		2010		2011		2012		2013		2014	
	Farmer benefited (%)	Claims (%)	Farmer benefited (%)	Claims (%)	Farmer benefited (%)	Claims (%)	Farmer benefited (%)	Claims (%)	Farmer benefited (%)	Claims (%)	Farmer benefited (%)	Claims (%)
Zero	56.5	0.0	49.0	0.0	16.3	0.0	0.1	0.0	3.4	0.0	34.4	0.0
0-500	0.0	0.0	36.8	22.6	33.4	10.2	2.3	0.1	15.3	2.0	11.9	1.0
501-1000	3.1	3.0	9.6	35.7	23.4	22.7	4.3	1.0	7.2	2.5	7.2	2.1
1001-2000	13.0	21.3	3.2	16.9	21.2	52.0	30.8	17.5	24.0	21.7	6.8	4.8
2001-3000	13.6	24.5	0.0	0.1	5.6	15.1	23.8	26.1	33.5	42.8	4.1	3.9
3001-4000	9.4	19.7	0.2	3.1	0.0	0.0	32.2	43.6	15.7	27.8	8.0	11.4
4001-5000	2.4	16.2	0.0	0.0	0.0	0.0	6.2	11.0	0.6	2.7	5.2	8.7
>5000	2.0	15.4	1.2	21.6	0.0	0.0	0.3	0.5	0.2	0.5	22.3	68.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total no. of farmers insured/Total Claims (Rs. Lakhs)	8,336	127.2	14,709	52.91	21,995	176.8	63,402	2,059.3	69,387	1,702.2	135,416	3,509.9

Source: Author's calculation based on data collected from Crop Insurance Cell, Department of Agriculture, Government of Karnataka

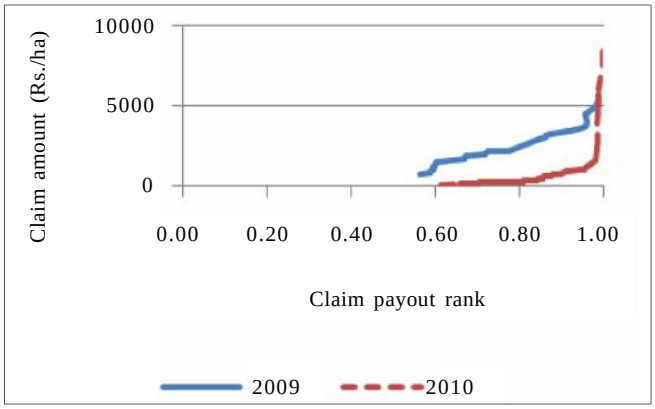

Fig. 1 : Distribution of insurance claim amounts-normal years

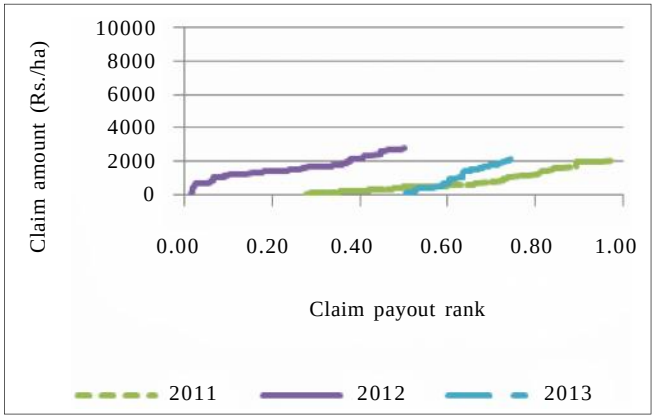

Fig. 2 : Distribution of insurance claim amounts-bad years

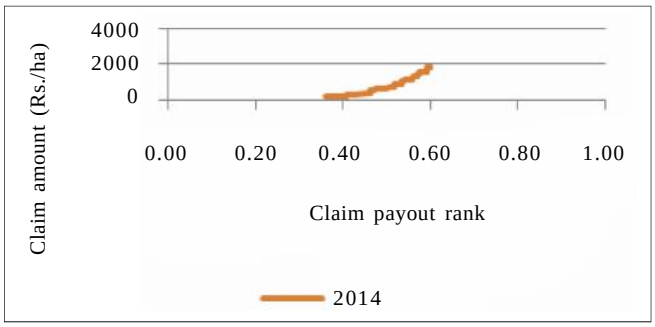

Fig. 3 : Distribution of insurance claim amounts-normal years

2009, 2010 and 2014, respectively indicating that claim is paid in 43, 39 and 64 per cent of cases. It is 28, 2 and 51st percentile during bad years *viz.*, 2011, 2012, and 2013 respectively indicating that claim is paid in 72, 98, and 49 per cent of cases. Normal years claim distribution seems fine for 2009 and 2010 but 2014 it seems too much of lower claim payment amounts. Claim distribution of 2011 seems fine except amount per hectare. Government efforts to improve the termsheet design during 2012 should have targeted to lift the graph upwards means increase claim per hectare but it effected to make too much of claim payouts at lower side and too less higher claims per hectare. But overall claim payments per hectare improved during 2012. Again during 2013, a bad year, distribution curve moved downwards indicating lower payments compared to 2012. The figures suggest that WBCIS primarily insure farmers against lower tail events of the rainfall distribution instead of extreme tail events. Gine *et al.* (2007) in the similar study in Andra Pradesh had a reverse of the results obtained here that extreme tail events of the rainfall distribution were insured in the state during 2006.

Summary and Conclusion :

Weather Based Crop Insurance Scheme (WBCIS) was introduced in India to specifically address the weather related risks in agriculture production. Since weather index is an proxy for yield loss, there are chances that the index may not adequately reflect actual field loss and result in no and inadequate compensation when there is huge loss in field and higher outgo during normal agriculture production season. So, this study was done with the main objective of evaluating the performance of the scheme in terms of its ability to compensate the loss.The analyses of frequency of claims (proportion of insured farmers received claims) and claim ratio reveals good performance of WBCIS in paying claims. But comparison of claim paid with respect to sum insured (severity) and frequency distribution of farmers under various claim paid categories and amount distribution reveals a different picture. Claim paid were inadequate and very less compared to actual risk of crop and claim amount distribution and number of benefitted farmers distribution is highly skewed towards lower claim per hectare. Distribution analysis using percentile ranking technique also proves the same result that lower side risks are insured (smaller payouts) and higher side risks are less protected (less large payouts). It suggests that redesigning WBCIS product in such a way that it is beneficial during bad years and maximum claim possibility during bad years will help to improve the performance of the scheme in future.

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