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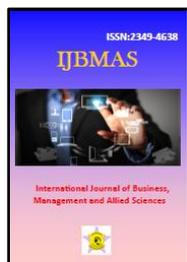
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### CROP INSURANCE PROGRAMMES IN INDIA -A CASE STUDY OF ANDHRA PRADESH

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#### ABSTRACT

In a country like India, where crop production has been subjected to vagaries of weather and large-scale damages due to attack of pests and diseases, crop insurance assumes a vital role in the stable growth of the sector. An All-Risk Comprehensive Crop Insurance Scheme (CCIS) for major crops was introduced in 1985, coinciding with the introduction of the Seventh-Five-year Plan and subsequently replaced by National Agricultural Insurance Scheme (NAIS) w.e.f. 1999-2000. These Schemes have been preceded by years of preparation, studies, Planning, experiments and trials on a pilot basis. Different experiments on crop insurance on a limited, ad-hoc and scattered scale started from 1972-73. In 1972-73, the General Insurance Department of Life Insurance Corporation of India introduced a Crop Insurance Scheme on H-4 cotton. Later in 1972, general insurance business was nationalized and, by an Act of Parliament, the General Insurance Corporation of India (GIC) was set up. The new Corporation took over the experimental scheme in respect of H-4 cotton. This Scheme was based on "Individual Approach" and later included Groundnut, Wheat and Potato and implemented in the states of Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka and West Bengal. Andhra Pradesh is the third largest rice growing state after West Bengal and Uttar Pradesh in India, with over an area of 4.33 million hectares (9.63% all India) and production of 14.24 (14.36 per cent of all India) million tonnes (Directorate of Economics and Statistics, 2011). The Indian scheme has made heavy financial losses; on the benefit side, sample data from Andhra Pradesh suggest that some farmers have converted to yield-raising techniques as a result of presence of crop insurance scheme but the scheme has not brought out any improvement in loan repayment performance, even though that was the scheme's explicit objective. Authors concluded that the scheme requires an increase in premiums and reduction in the range of risks covered.

#### Introduction

The Indian agricultural sector is dependent on vagaries of weather – particularly rain-fed areas which constitute more than 60% of the total sown areas. Large scale damage to crops for various reasons including weather is very common and the farming communities, whose sole livelihood depends on crops, bear the brunt of this. Due to the high element of risk involved in farming because

of unfavourable weather, it becomes all the more important to protect the farmers from the losses that can occur due to large scale destruction of crops. Crop insurance is purchased by agricultural producers, including farmers and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities. For this purpose, the Government of India introduced 4 crop insurance schemes in the country as follows:

1. National Agricultural Insurance Scheme (NAIS).
2. Modified National Agricultural Insurance Scheme (MNAIS).
3. Weather Based Crop Insurance Scheme (WBCIS).
4. Coconut Palm Insurance Scheme (CPIS). First scheme is being run only by the Agricultural Insurance Corporation and is most wide spread throughout the country (nearly 450 districts).

For NAIS, Insurance provider will always be Agriculture Insurance Company (AIC) and for other schemes, MNAIS and WBCIS, insurance Provider(s) are selected on the basis of experience, relevance of the insurance product and the overall benefits of the product, premium rate, existence of infrastructure and quality of services like coverage of farmers & area, payout in terms of quantum etc. State Government invites all the empanelled insurance companies to submit the premium rates at the level indicates, along with Threshold Yields, Sum Insured etc. for the season. Such products are evaluated and allocation of notified crops/areas are made to companies on the basis of merit. Limitation in the current process is that the period between date of issuance of notification and cutoff date is hardly 15 days which is definitely insufficient period for farmers to know about and opt for it. Secondly, there is no fixed standard of notification. Every state issues the notification in its own way which again hampers the process of broadcasting this information to farmers who are located remotely. Thus, in order to streamline the process and to automate administrative functions, a web-based, integrated IT solution is being proposed which will open a window of opportunity to remote and economically-weak farmers to benefit from crop insurance services. In the current scenario, not even officials of the State Government also do not know about insurance products for different crops and locations - what to say of farmers.

Database given by the Agriculture Insurance Corporation relates to only the units which have been allotted to it so far. There are many more units which are notified or can be notified in future under various schemes. These units are non-standard in the sense that these vary from one State to another (e.g. Hobli, Sub-Mandal, Revenue Circle, Patwar Circle etc.). These are not available in any standard databases like Census, Rural Development etc. Hence, the first step is to get the entire data entry done for the administrative units prevalent so far in the State. Different levels of units (e.g. Mandal, Sub-Mandal, Panchayat and Village in case of Andhra Pradesh) are to be entered by the States as the first step immediately. Newly added units should be shown separately along with counts to expedite and simplify data entry.

According to the latest data released by ministry of agriculture, crop insurance claims worth of `22,135 crore have been settled till now for 4.86 crore farmers mostly from Andhra Pradesh, Gujarat, Rajasthan, Maharashtra, Bihar and Karnataka. With an insurance claim settlement of `4099 crore, Andhra Pradesh tops list of states getting maximum benefit of the scheme followed by Gujarat (`3917 crore), Rajasthan (`2621 crore), Maharashtra (`1873 crore), Bihar (`1794 crore) and Karnataka (`1635 crore) (Financial Express, 2012). Regarding the private sector participation in rural insurance, it was observed that companies such as TATA AIG General Insurance, Reliance General Insurance, and HDFC Ergo are involved in selling cattle insurance plans. While for crop insurance, the participation of private players has been very scanty in India. ICICI Lombard pioneered weather insurance space by launching rain fall insurance scheme in 2003 in Andhra Pradesh (Venkatesh, 2008).

#### **Weather Based Crop Insurance Scheme**

Weather Based Crop Insurance Scheme (WBCIS) is a unique weather related insurance product designed to provide insurance protection against losses in crop yield resulting from adverse weather incidences. This is a new type of crop insurance in which an indemnity becomes payable

upon the occurrence of the weather event to which the insurance relates. It provides payout against adverse rainfall incidence (both deficit and excess) during kharif and adverse incidence in weather parameters like frost, heat, relative humidity, un-seasonal rains etc. during rabi season. As such, it is not yield guarantee insurance. The main difference between this and standard crop insurance is that crop losses are not measured, either on individual insured farms or on an area basis. Rather, reliance for triggering the coupon is based upon data generated by weather recording instruments, with the possibility of verification of the occurrence of the insured weather event by recourse to aerial or satellite photography. Index insurance promises us a cargo net, productive safety net and crisis safety net. Mostly rainfall in given area is taken as index for making payment of indemnities. This type of insurance is being implemented by Agricultural Insurance Company of India (AIC), ICICI Lombard General Insurer and IFFCO-TOKIO General Insurer, in the form of Weather Based Index Insurance in selected states of India (Raju and Ramesh, 2010). WBCIS has been piloted in the country since kharif 2003 season. Some of the states where the scheme is piloted over the years are Andhra Pradesh, Bihar, Chattisgarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh etc (AIC, India).

### Literature Review

The topic of crop insurance has been widely studied in the domain of agricultural insurance by the academicians. Studies in US for crop insurance are widespread. These studies have focused on several issues particularly the failure of crop insurance programs to perform as expected. Several authors have suggested that this failure is primarily due to problems of moral hazard, adverse selection, and systemic risks<sup>1</sup>. In this section, various articles in relation to crop insurance in India have been reviewed. Pal and Mondal (2010)<sup>2</sup> studied the approaches and challenges for agriculture insurance in India. They advocated peril-indexed insurance and options as a risk management technique aimed at stabilizing the revenue of farmers, which is highly dependent on Indian weather conditions. Like Pal and Modal (2010), Venkatesh (2008)<sup>3</sup> also advocated the use of weather insurance as a panacea to ills of crop insurance. It is prevalent in countries like US, UK and Canada. In India, ICICI Lombard pioneered this insurance as a weather risk mitigation tool. In support of this suggestion, Ifft (2001)<sup>4</sup> recommended use of indexed based contracts such as rain fall contracts where in farmers would be compensated if the rainfall in an area would go below a set level, with varying levels of payment depending upon the level of rainfall. In a working paper of National Centre for Agricultural Economics and Policy Research (Indian Council of Agricultural Research), Raju and Chand (2008)<sup>5</sup> discussed and explored the problems and prospects of agriculture insurance in the country. They also empirically examined the perceptions of the farmers in Andhra Pradesh regarding the Agricultural insurance. Those who availed crop insurance mentioned financial security as the most important factor for getting their crop insured and wanted quick settlement of claims. The non-loanee farmers mentioned lack of awareness as the major reason for not availing such insurance. Mahajan and Bobade (2012)<sup>6</sup> made an attempt to study the growth and development of NAIS and to examine the important features and performance of NAIS. As per the findings, even after the 10 years of launching the program, there is lack of awareness of farmers about scheme. Raju and Ramesh (2008) conducted a field survey in Vijayanagaram and West Godavari districts of Andhra Pradesh to know about the farmers' perception regarding agriculture insurance. Both borrower and non-borrower who were availing and not availing agriculture insurance service were interviewed for recording responses. More than  $\frac{3}{4}$  of insurance beneficiaries mentioned that financial security was the motivation for going for insurance. Only 5% of the respondents considered bank compulsion as the reason for going insurance. Among those who have not availed insurance cited that they were not aware of the scheme as the single most important reason for not availing agriculture insurance. Chilli is an important cash crop in India and is grown for its pungent fruits, which are used both green and ripe (the latter in the dried form) to impart pungency to the food. It is now grown in all parts of India covering about 7, 33,800 hectares. The largest producer of chillies in the world is India accounting for 11 lakh tons of production annually followed by China with a production of around four lakh tons.

The major states where chilli is cultivated in India are Andhra Pradesh, Karnataka, Maharashtra, Uttar Pradesh, Punjab, Tamil Nadu, Rajasthan, Orissa, West Bengal and Madhya Pradesh. Andhra Pradesh stands first in the list of leading chilli-producing states in India and also constitutes the maximum acreage for chilli cultivation in the country. It occupies 49% share in the Indian total production and produces around 2.7 lakh tons of chillies. Karnataka follows Andhra Pradesh, which share 14 per cent of the production in the country (Agricultural situation in India at a glance, 2012).

### Discussion

Government of Andhra Pradesh is implementing WBCIS on Pilot basis during Kharif, 2014 season for Red Chilly, Tomato, Cotton, Groundnut, Oil palm and Sweet orange crops in various districts of Andhra Pradesh. Andhra Pradesh is one of the leading states in implementing weather based crop insurance scheme in the country. WBCIS had started from kharif 2009 about 16,500 chilli cultivators in Guntur district have received the first ever insurance claim of 17.34 crores under the new Weather Based Crop Insurance Scheme launched by the Agriculture Insurance Company (AIC). In 2009, 16,500 farmers cultivated chillies in 11,939 ha and the total premium received was Rs.11.5 crores under WBCIS in Guntur district. The WBCIS has provided enormous benefits to the Chilli growers in the first season. The number of farmers receiving the benefit was 16,357 spread over 38 mandals and the total amount of claims was Rs 17.34 crores (AIC, India). Since 2009, WBCIS successfully implemented in the state. In this context, an economic assessment of WBCIS which is being implemented in the district since five years for red chillies assumes importance.

### Premium Rate, Subsidy and Remittance of Premium

A ready reckon of Premium sharing, subsidy portion and farmer's Contribution is presented in the table. For other crops i.e. Red chilli, the Farmer's contribution is 50% of the total premium. The balance premium in respect of all these crops shall be shared by Central Govt. and Government of Andhra Pradesh on 50:50 basis and released as upfront subsidy and for AIC the risk incepts only upon receiving the premium in full including the subsidy component. The premium (farmer's share) shall be remitted through Demand Draft favoring "AIC of India, A/c no.008010200023922 payable at Hyderabad". Separate Demand Drafts need to be obtained for coverage of Loanee and Non-loanee farmers.

Present status of WBCIS for all crops in Andhra Pradesh Though WBCIS initiated in India in 2003, it got implemented in Andhra Pradesh in 2009. The crops covered in each year, district wise presented in table 5.6. In Andhra Pradesh this scheme was introduced firstly in red chilli crop at Guntur district. The numbers of farmers benefited were 16357 and claim settlement was around 17.32 crores. The scheme was extended to 4 more districts in rabi 2009-10 for coriander crop. There was an improvement in the immediate next year 2010 kharif covering 4 crops in 6 districts. The number of farmers benefited from cotton crop 0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 Rs. Millions states Gross premium(Rs.million) Subsidy premium(Rs.million) net premium(Rs.million) Claim settled(Rs.million) was 46354 among 88077 number of farmers considered covering an area of 105718.83 ha (table 5.7) with sum insured amount of 266 crores from Adilabad, Khammam and Warangal districts during 2009-10. Alike this scheme was implemented in Guntur and Warangal districts for red chilli, West Godavari for Oil palm and Nalgonda for Sweet lime crops respectively. In the same year, this scheme was extended to mango in Rangareddy and Chittoor districts. In the next year, it was extended to 5 crops covering 10 districts. Besides 4 crops in 2010, groundnut farmers were also benefited in Anathapur, Kurnool, Kadapa and Chittoor districts. The new extended districts along with earlier covered districts of kharif 2010 were Guntur for cotton, Warangal and Khammam for red chilli, Khammam for Oil palm and Kadapa for sweet lime. In rabi 2011-12 there was a vast extension for mango covering 16 districts. In rabi, 2011 banana brought under this scheme for the first time and covered farmers from Kadapa and Vizianagaram districts. In kharif, 2012 tomato farmers from Chittoor district were also included along with farmers of 2011 kharif season. During rabi, Cashewnut farmers from Srikakulam and Vizianagaram districts were also included along with Banana and Mango of rabi 2012-13.

**Table District Wise Crops Covered Under WBCIS in Andhra Pradesh**

Districts / Year	2009-10		2010-11		2011-12		2012-13	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
Adilabad		Coriander	Cotton		Cotton	Mango	Cotton	Mango
Anantapur					Groundnut		Groundnut	
Chittoor				Mango	Groundnut	Mango	Groundnut Tomato	Mango
Kadapah		Coriander			Groundnut Sweetlime	Banana Mango	Groundnut Sweetlime	Banana Mango
East Godavari						Banana Mango		Banana Mango
Guntur	Red Chilli		Red Chilli		Red Chilli Cotton		Red Chilli	Banana
Karimnagar						Mango		Mango
Khammam			Cotton		Red Chilli Cotton Oil palm	Mango	Red Chilli Cotton Oil palm	Mango
Krishna						Mango		Mango
Kurnool		Coriander			Groundnut	Mango	Groundnut	Mango Banana
Mahaboobnagar						Mango		Mango
Medak								Mango
Nalgonda			Sweet lime		Sweet lime	Mango	Cotton Sweetlime	Mango
Prakasam		Coriander						
Ranga reddy				Mango		Mango		Mango
Srikakulam						Mango		Mango Cashewnut
Vizianagaram						Banana Mango		Banana Mango cashewnut
Visakhapatnam						Mango		Mango
Warangal			Red Chilli Cotton		Red Chilli Cotton	Mango	Red Chilli Cotton	Mango
West Godavari			Oil palm		Oil palm	Mango	Oil palm	Mango

Source: AIC, Hyderabad

From the above table, the numbers of farmers covered under WBCIS during kharif 2009 to Rabi 2012-13 were found to be 21.57 million. The maximum number of farmers was covered in kharif 2012 for groundnut crop (9.65 million) and minimum of farmers are covered in rabi 2009-10 for Coriander (5) and mango (249). The total area covered under WBCIS was 34.43 million ha. Average loss ratio for each crop was higher than '1' in seasons, except rabi 2009-10. AIC was bearing a loss from WBCIS activities. The average loss ratio or claims to premium ratio stood at Rs.211.32 which indicates that AIC is paying Rs. 211.32 as compensation to farmers, per one rupee premium collected. The maximum loss ratio has found in kharif 2012 for Oil palm (439.19) and minimum for chilli (45.71). The average break-even ratio is Rs.1.11 with maximum in kharif 2012 for oil palm (3.39) and minimum in kharif 2010 for chilli crop (-1.55).

The compound growth rates in adoption of WBCIS in Andhra Pradesh state were calculated and have been reported found progressive. The compound growth rates were found to be positive for both seasons. On the whole, WBCIS has performed well in terms of coverage of farmers and benefits extended to the farmers. But, it also signals towards the substantial increase in the amount of claim paid compared to the premium received, as this may create fund management problems to the government.

#### National Agricultural Insurance Scheme (NAIS)

The National Agricultural Insurance Scheme (NAIS) was introduced from 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, fire pests and diseases.

The new scheme is now available to all the farmers – loanee and non-loanee – irrespective of their size of holding. It envisages coverage of all the food crops (cereals, millets and pulses), oilseeds and annual horticultural/commercial crops, in respect of which past yield data is available for adequate number of years.

During Rabi 1999-2000, 16 States/UTs – Assam, Goa, Gujarat, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Orissa, Pondicherry, Andhra Pradesh, Bihar, Meghalaya, Uttar Pradesh, Karnataka, Andaman Nicobar Islands and Tamil Nadu, have joined the scheme.

In the case of area an insignificant growth was recorded in Anantapur and Penukonda only. A significant growth was recorded in Dharmavaram division only and also in the state as a whole with respect to sum insured amount. Regarding the premium amount, in Dharmavaram division, a significant growth was noticed. It is also observed a significant growth in premium amount in Andhra Pradesh State and also in India. A similar trend was observed in claims as in sum insured amount that is in Dharmavaram division and Andhra Pradesh State. The growths in claims are significant. A significant growth in percentage of loss ratio was recorded in two revenue divisions, namely Penukonda and Dharmavaram where as growth in loss ratio is insignificant in the Anantapur division. The percentage of claim ratio is significant only in Dharmavaram Division and also in the state of Andhra Pradesh.

#### **Crop Insurance in Andhra Pradesh<sup>7</sup>**

- National Agricultural Insurance Scheme (NAIS) is implemented from Kharif 2000 season with an objective to provide a measure of financial support to the farmers in the event of Crop loss due to any calamity to restore the credit eligibility for the next season and to stabilize farm incomes.
- Pradesh is the only State to have "Village as Insurance Unit" Scheme in all the districts of the Andhra state from Kharif 2008 season onwards. The Village level insurance programme provided more benefits to the farmers as the losses in smaller area would be more representative. The crops for the village level implementation are selected based on the cropped area under the principal crops.
- As regards the position of Crop Insurance at present, A.P. stands in No. 1 position in terms of area covered, farmers covered/claims paid and farmers benefited. Recently the Claims in respect of Kharif 2011& Rabi 2011-12 amounting to Rs. 460.30 Cr. in favour of 10.20 lakh farmers was released for all the twenty two districts.
- Crop Insurance Scheme, from the inception of the scheme i.e., from Kharif 2000 season an Under amount of Rs.4651.38 Crores paid as Crop Insurance Claim benefiting 72 lakh farmers in the State.

There are other schemes to ensure income of the farmers, or insure their assets such as buildings, equipment and livestock. We maintain that crop insurance should be kept as a separate programme. It should not be clubbed with insurance of income or assets of the farmers, as the requirements the protocol for these are entirely different. For millions of Indian farmers National Agricultural Insurance Scheme is vital for providing insurance cover, yet despite relatively high claim premium ratios, farmers have not joined NAIS in large numbers. It is limited to about 10 percent of the farmers. It has not won abiding loyalty of even this small section as is evident from the fact that numbers fluctuate widely, across farmers, across regions, across seasons and across crops. Based on our study a few suggestions are offered to improve the efficiency of the scheme. Suggestions are offered to:

■ Improve the market penetration ■ Rationalize premium payments \* Improve Indemnity assessment and payment ■ Revisit Financial Arrangements ■ Enable Agricultural Insurance Company to perform its tasks more effectively.

Farmers Insured The total number of farmers insured has increased by 20.4 percent (from 47.5 million to 57.2 million between 2015-17 and 2016-17. The new crop insurance scheme has provided coverage to 38.9 million farmers in Kharif 2016 as compared to 25.4 million farmers in Kharif 2015, an

increase of 53.1 percent (Table 1a). In Rabi 2016-17 the number of insured farmers insured under PMFBY is 16.2 million, an increase of 17.4 percent from Rabi 2015- 16 (Table 1b). The increase in number of farmers insured is significant in Gujarat, Himachal Pradesh, Karnataka, Uttar Pradesh and West Bengal in Kharif 2016.

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Annexure 1

State	No of Farmers Insured (in 000s)				
	Kharif 2012	Kharif 2013	Kharif 2014	Kharif 2015	Kharif 2016
Andaman & Nicobar	0.6	1.0	0.7	0.6	0.0
Andhra Pradesh	2618.5	2228.0	261.0	1519.2	1618.5
Assam	34.8	34.1	24.7	31.5	51.7
Bihar	1615.8	1861.8	2298.3	1655.2	1485.4
Chhattisgarh	1182.2	650.6	974.2	1203.9	1399.2
Goa	0.3	0.3	0.2	0.1	0.7
Gujarat	1143.9	1005.1	658.9	502.2	1842.3
Haryana	108.1	122.2	0.0	0.0	738.8
Himachal Pradesh	17.7	11.8	17.4	28.8	134.6
Jammu & Kashmir	3.8	4.5	1.4	0.0	0.0
Jharkhand	497.8	334.5	193.9	536.1	828.4
Karnataka	859.6	600.5	1076.0	872.1	1725.7
Kerala	17.7	34.0	24.4	26.5	31.5
Madhya Pradesh	2032.5	2411.0	2522.5	2959.5	4083
Maharashtra	1334.5	1496.5	5770.2	8938.5	10997
Manipur	5.0	5.0	3.5	7.5	8.4
Meghalaya	1.6	2.3	1.2	0.5	0.1
Mizoram	0.0	0.0	0.0	0.0	0.0
Odisha	1477.7	1604.7	1800.9	2152.5	1766.4
Puducherry	1.8	0.5	0.3	0.4	0.0
Punjab	0.0	0.0	0.0	0.0	0.0
Rajasthan	6058.9	6570.3	5866.0	6409.8	6228.2
Sikkim	0.0	0.0	0.0	0.0	0.0
Tamil Nadu	269.3	213.4	44.8	137.7	15.9
Telangana	0.0	0.0	335.6	898.7	711.3
Tripura	0.9	0.0	0.0	0.9	1.9
Uttar Pradesh	814.5	1122.5	738.6	1688.7	3591.1
Uttarakhand	59.6	67.1	57.9	85.9	175.2
West Bengal	563.0	580.5	1081.8	1024.7	3056.7
<b>Grand Total</b>	<b>20719.9</b>	<b>20962.2</b>	<b>23754.1</b>	<b>30681.5</b>	<b>40492.2</b>