RESEARCH ARTICLE OPEN ACCESS

Crop Insurance, the Backbone of Indian farming community-Issues and Challenges

*Mr Susil Kumar Sarangi, Dr Dibakar Panigrahi
Asst. Prof Dept. of MBA, KIT, Gobind Bihar, Berhampur-10
Professor Department of MBA, Berhampur University. Bhanja Vihar

Abstract
The dynamism of the farming sector, and its environment, is reflected in developments in the design of new insurance products. In the last decade two types of new products have been introduced. In some cases these have partially displaced existing covers; in others they have resulted in demand from new clients. Implementation of technology in farming usually involves investment. Such changes also frequently alter the risk profile of the enterprise. There are occasions when insurance can be a key component in a range of risk management strategies for the insurers. From an administrative point of view bank-insurer linkages make a lot of sense, since both these providers of financial services require similar client data.
This type of link, crop insurance and loans, is already very common, both in developing and developed agriculture. The vast, heavily subsidized scheme in India is largely linked to bank lending. So instead of the usual policy wording, such as indemnity, or range of indemnity levels, or a per hectare basis for a given crop, for losses from specific causes, the coupon merely gives a monetary sum which becomes payable on certification that the named weather event, of specified severity, has occurred. Again the role of state is very important making available crop insurance on a large scale, as they are public good in nature. Recently in Odisha, for crops such as Niger, cotton, red grams, jute, turmeric, ginger and banana, the farmers of selected blocks in some district could take advantage of the scheme. Because indemnity claim is settled only on the basis of yield data furnished by the State government. Hence the criteria that is based on requisite number of crop cutting experiments conducted under general crop estimation surveys should be supported by State to offer desired result in crop insurance.
Key Words: - Insurance Product, Banker-Insurance Linkage, Indemnity, Crop Estimation Survey

I. Introduction

Safety in the food chain is a major concern in all countries, and increasing resources are being directed in many if not most countries to safeguarding domestic consumers. It continues with the application of correct on-farm practices, and is particularly important during harvesting, storage, processing and marketing. Many of the control measures are matters of appropriate procedures being followed in the food chain. However, where the appropriate measures are unknown, or when accepted controls prove to be inadequate, then large quantities of food could still be condemned for consumption, resulting in heavy losses. These losses could well be insurable with policies designed for the purpose. This is expected to become a growth area in the insurance industry. Insurance can also assist in managing the on-farm production risks consequent to changes in pest management practices.

The scientific community is not unanimous in attributing the increases in extreme weather events to global warming. However, there is a strong body of opinion which holds that this is the case. Their thesis is that global warming means more energy in the system. A consequence of this is a rise in the frequency and magnitude of extreme weather events. The increasing incidence of crop damaging weather events is likely to continue to push demand for insurance coverage of losses. At the same time the insurance industry is mindful of increasing exposures, and is exploring new financial instruments to assist in managing this exposure.

II. Indian perspective

The crop insurance scene in India is two-pronged. One of these prongs, a government programme that has a strong social objective, loses vast sums each year. Officials are believed to be attempting to re-design this programme, in order to make it more efficient and sustainable. The task is immense. In 2000 the programme insured 10.5 million farmers, with a total sum insured of US$1.8 billion on 15.7 million ha of crop land. On the other hand, a few insurance companies are active in offering commercially sound insurance products, especially geared to producers of high quality fruits, and much developmental work is being done in India on new products and approaches, following actuarially sound underwriting practices. The General Insurance Corporation (GIC) of India has formed a

specialist subsidiary, Agricultural Insurance Corporation (AIC) in order to provide a company/institutional focus for this class of business. Indian farmers, particularly rain fed farmers has been facing partial or total crop losses frequently due to various controllable (like pests and diseases) and uncontrollable risks (like weather risks). Their traditional coping mechanisms for addressing these risks are not adequate and not available to all. Due to climate change these issues are expected to increase in severity and frequency. Crop insurance as a solution to these issues has been in practice for long years. Indian crop insurance scenario has changed significantly in the recent past after private companies like ICICI Lombard; IFFCO Tokyo entered the scene with variety of weather insurance products. Even then the coverage is significantly very low. The state wise details under Modified under MNAIS from Rabi 2010 – 13 are shown below. State wise contribution under WBCIS 2005-13 kharif seasons is also depicted below. (Sources: NAIS Report 2012-13)

State-wise details of coverage under Modified National Agricultural Insurance Scheme (MNAIS) from Rabi 2010-11 to Rabi 2012-13

State	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers benefitted ('000)	Farmers benefitted (%)
Andhra Pradesh	681	744	29,007	2,008	4,391	300	44
Assam	16	13	489	19	12	2	14
Bihar	504	566	11,612	2,401	564	61	12
Chhattisgarh	0.02	0.03	0.5	0.02	0	0	0
Gujarat	0.40	1	26	3	0	0	0
Haryana	170	285	11,714	398	405	30	18
Jharkhand	45	39	907	88	2	0.4	1
Karnataka	414	693	9,909	1,107	807	114	28
Madhya Pradesh	146	225	2,827	135	10	3	2
Maharashtra	52	50	762	136	0	0	0
Mizoram	1	0.50	10	1	1	1	100
Odisha	76	55	1,623	72	74	13	18
Rajasthan	1,319	1,251	11,462	1,281	601	201	15
Tamil Nadu	212	240	5,141	576	950	104	49
Uttar Pradesh	325	283	8,837	304	78	38	12
Uttarakhand	55	37	930	39	10	8	14
West Bengal	566	196	14,982	2,311	736	91	16
TOTAL	4,580	4,678	1,10,240	10,880	8,640	967	21

Source : India. Department of Agriculture & Cooperation, Report of the Committee to Review the Implementation of Crop Insurance Schemes in India, 2014, p.40

State-wise details of coverage under Weather Based Crop Insurance Scheme (WBCIS) from Kharif 2007 to Kharif 2013

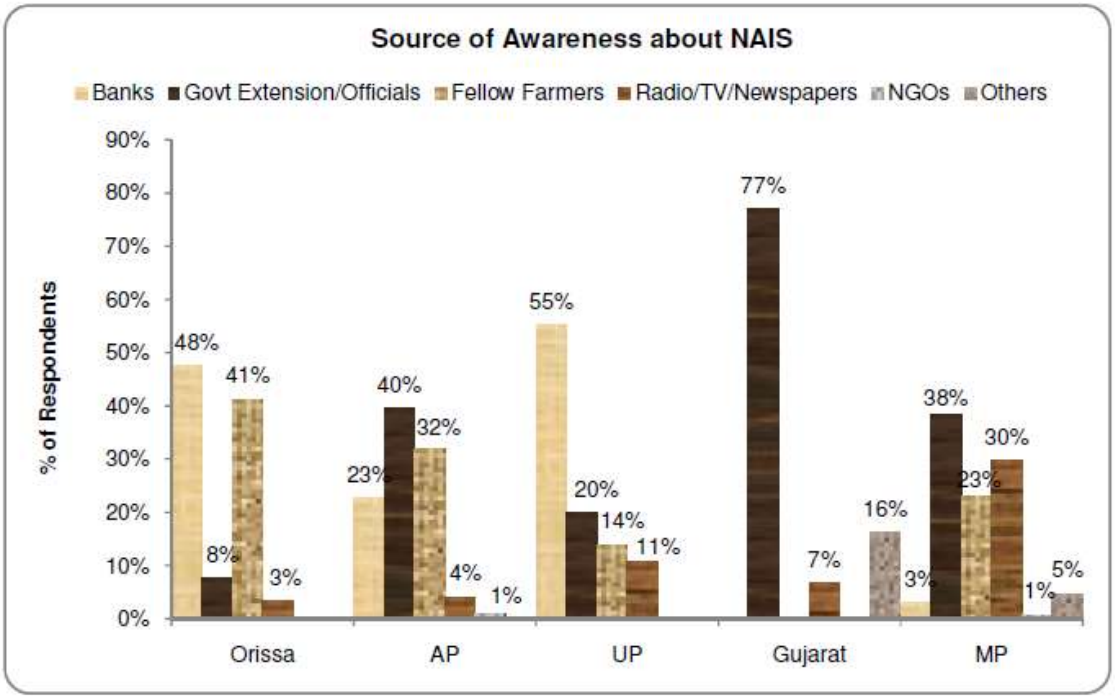
State	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted ('000)	Farmers Benefitted (%)
Andhra Pradesh	2,840	4,503	1,12,360	11,297	9,920	2,178	76
Bihar	8,886	9408	2,15,880	18,704	13,690	6,882	77
Chhattisgarh	214	389	7,460	595	620	155	72
Gujarat	498	413	2,240	224	90	171	34
Haryana	267	427	13,340	1,222	500	144	54
Himachal Pradesh	89	1,000	4,340	500	480	60	68
Jharkhand	358	342	6,560	577	400	294	82
Karnataka	815	1,028	13,640	1,484	1,040	584	72
Kerala	81	57	1730	183	130	44	54
Madhya Pradesh	942	1,662	35,630	3,177	1,720	787	84
Maharashtra	591	679	21,120	2,533	1,800	444	75
Odisha	316	457	11,780	566	320	216	68
Punjab	0.1	0.3	5	0.5	0.1	0.1	75
Rajasthan	30,280	42,046	3,45,770	32,367	21,140	16,692	55
Tamil Nadu	127	185	3,080	295	180	52	41
Uttar Pradesh	447	299	10,140	977	330	203	46
Uttarakhand	84	190	2,640	317	360	44	52
West Bengal	103	115	1,790	173	140	56	55
TOTAL	46,937	63,201	8,09,510	75,192	52,860	29,006	62

Source : India. Department of Agriculture & Cooperation, Report of the Committee to Review the Implementation of Crop Insurance Schemes in India, , 2014, p.44

III. The Odisha Scenario

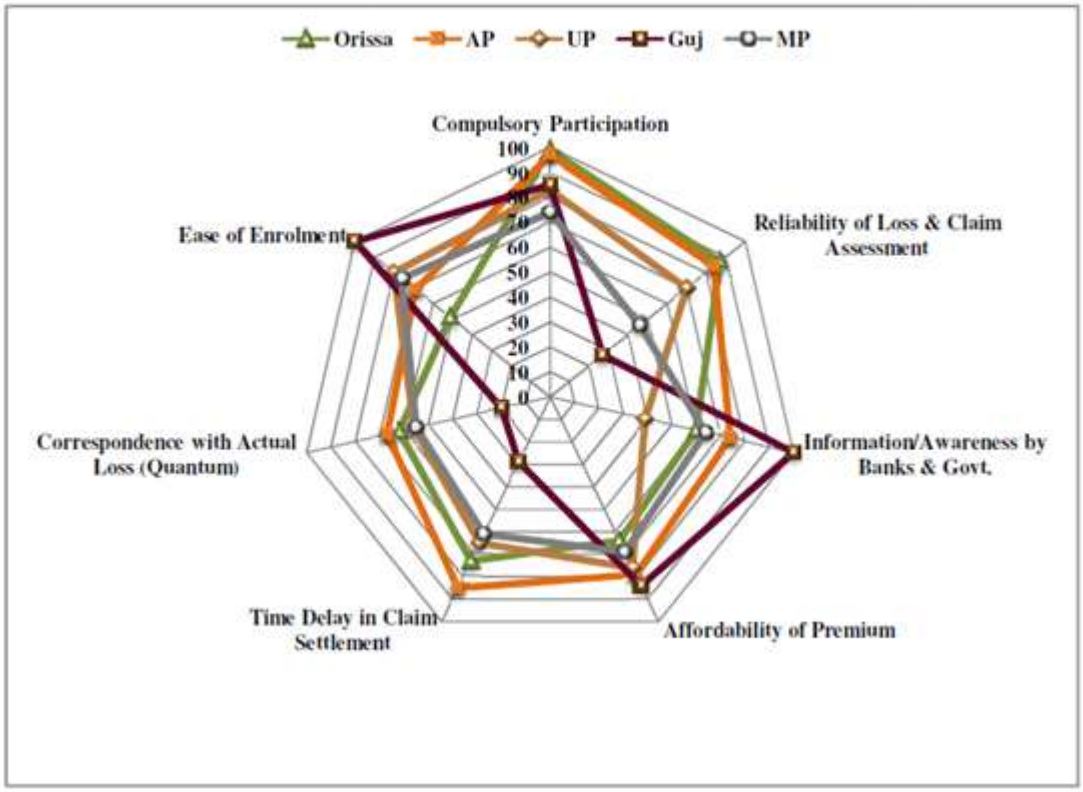
The Odisha government has identified 10 crops, which will be covered under the National Agricultural Insurance Scheme (NAIS) for 2015 crop season. The crops notified to be covered under the NAIS include paddy, maize, groundnut, Niger, red gram, cotton, jute, turmeric, ginger and banana. While farmers who have taken loan for producing notified crops in identified areas will compulsorily be insured, all farmers growing insurable crops can opt for the scheme. For loanee farmers, the sum insured will be 100 per cent of the crop loan at normal premium rate. There is also option to cover up to 150 per cent of the average yield. The seasonality discipline for crops to be insured in respect of loanee farmers will be April to September this year. Gram panchayats, notified area council and municipalities have been taken as unit for insurance for paddy. For rest of the crop, blocks will be unit area.

Since paddy is grown all over the State, all the 30 districts have been identified as insurance coverage area. Major crops like groundnuts and maize will be insured in 15 and 10 districts respectively. As far as crops such as Niger, cotton, red grams, jute, turmeric, ginger and banana are concerned, farmers in selected blocks in some district could take advantage of the scheme. The notification says indemnity claim will be settled only on the basis of yield data furnished by the State government in cooperation department based on requisite number of crop cutting experiments conducted under general crop estimation surveys. The source of awareness about NAIS shows picture of the Corp Insurance scenario in Odisha, AP, UP, Gujarat, & MP. (Sources: NAIS Report 2012-13)



As shown in the Reference Chart-1.The summery of Satisfaction level with Key aspects of NAIS, state wise, The Potential sources of respondents were enlisted into six main categories: Banks, Govt. Extension/Officials, Fellow Farmers, Radio/TV/Newspapers, NGOs and Others. More than three-fourth respondents (77%) from Gujarat have attributed their awareness of NAIS to Govt. Extension/Officials. In AP as well as in MP, the contribution of Govt. Extension/Officials towards awareness on NAIS has been recognized by 40% respondents and 38% respondents respectively. On the other hand, nearly 55% respondents from UP have given credit to banks for their awareness on NAIS. In case of Orissa, banks have been reckoned as the key source of awareness on NAIS by nearly 48% respondents while 41% respondents from the same state have ascribed their awareness of NAIS to fellow farmers.(Sources: NAIS Report 2012-13)

REFERENCE CHART 1: SUMMARY OF SATISFACTION LEVEL WITH KEY ASPECTS OF NAIS (STATE-WISE)



It shows the compulsory provisions of loanee farmers' reliability of loss & claim assessment, information/awareness by Banks & Govt. personnel, affordability of correspondence with quantum of actual loss and ease of enrolment The highest levels of satisfaction (average pertaining to overall effectiveness of NAIS. Respondents from Orissa have recorded the lowest level of satisfaction on this aspect with 62% of respondents indicating satisfaction- Both basis of indemnity and reliability (average–57%) trail considerably behind basis of participation (average –77%)

- All the respondents from Gujarat have vouched for the reliability of NAIS whereas half or less than half the respondents from the other states have expressed on this aspect (Orissa–50%, UP–48%, AP–47%, MP–42%)
- Respondents from Orissa have indicated the lowest level of satisfaction with less than one-third (32%) seeing merit in the basis of indemnity under NAIS Lowest level of satisfaction have been recorded on the aspect dealing with affordability of premiums under NAIS
- Barring the exception of UP (with 59% respondents), the other four states have witnessed 50% or less satisfaction level regarding affordability of premiums under NAIS (Orissa–50%, Gujarat–40%, MP–27%, AP–20%).The below table shows a comparative state share in total Insurance and other categories with respect to Sum Assured, Small and marginal Holdings, Cropped area, Irrigated area, RW area, CCER area, PLOLS(RW=Rice and Wheat, CCER=Coarse cereals, OLS=oilseeds, PLOLS=Pulse and Oilseeds) area in an all India scenario.

Table4.4A: State shares in Total insurance and other categories

	Sum Insured	Small/marginal Holdings	Cropped area	Irrigated area	RW Area	CCER Area	PLOLS Area	COM Area
	%	%	%	%	%	%	%	%
High Irrigated	**10.84**	**43.76**	**23.80**	**39.47**	**36.91**	**15.45**	**14.43**	**19.06**
Bihar	1.28	13.88	4.13	5.95	8.22	2.11	1.76	1.66
Haryana	0.00	1.24	3.35	6.96	4.81	2.50	1.78	3.34
Tamilnadu	0.93	7.75	2.79	3.23	2.03	3.08	2.72	3.87
Uttar-Pradesh	8.63	20.89	13.53	23.34	21.86	7.76	8.17	10.19
Medium Irrigated	**43.49**	**20.98**	**29.56**	**27.16**	**19.12**	**37.88**	**35.13**	**34.20**
AndhraPradesh	21.23	9.23	6.49	6.22	4.31	5.32	10.03	6.92
Gujarat	17.45	2.26	5.93	5.43	2.08	5.74	8.08	9.84
Rajasthan	0.38	2.91	11.36	8.32	3.04	25.64	15.04	10.49
Uttarakhand	0.06	0.00	0.69	0.74	0.58	0.97	0.00	1.39
West-Bengal	4.36	6.58	5.09	6.44	9.11	0.19	1.97	5.56
Low Irrigated	**45.60**	**32.84**	**40.99**	**22.32**	**32.17**	**44.21**	**48.30**	**44.79**
Assam	0.07	2.40	2.08	0.28	3.76	0.00	0.64	2.43
Chhatisgarh	2.61	0.00	2.99	1.53	5.39	1.20	1.87	1.69
Himachal	0.02	0.79	0.50	0.24	0.52	1.10	0.00	0.58
Jharkhand	0.16	0.00	1.17	0.30	2.08	0.81	0.57	0.63
Karnataka	13.92	4.66	6.01	3.52	2.00	11.88	8.74	5.25
Kerala	0.46	6.66	1.55	0.55	0.42	0.00	0.00	6.11
MadhyaPradesh	10.42	6.68	10.38	7.52	8.28	7.59	20.98	4.21
Maharashtra	11.37	8.03	11.64	4.99	3.20	21.06	13.36	16.49
Meghalaya	0.01	0.13	0.14	0.11	0.00	0.00	0.00	0.62
Orissa	6.54	3.51	4.53	3.28	6.51	0.55	2.14	6.78
All India	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

IV. Issues in Corp Insurance in India

It is a well known fact that only less than 10 % of the farmers in India are covered with currently prevailing crop insurance products. The following note addresses the following aspects related to crop insurance:

1) Difficult to insure crop losses.

Crop insurance is very different from Life insurance, livestock insurance products in many ways, which makes it difficult to insure. The difficulties related to insuring crop losses are given below.

a) Spatially correlated risk- Output or Yields devastated over a wide region, creating large financial loss – Drought, Floods, but independent or idiosyncratic risks are what life, health or livestock insurance products try to address most of the time.

b) Range of losses- meager, moderate and severe losses

c) Long tail distribution of losses; very severe losses coming at low frequency. This makes the premium very costly for the farmers.

2) The main issues with existing area based and weather based crop insurance

Due to these difficulties traditional indemnity based crop insurance has not been successful throughout the world. To address these difficulties, all over the world there has been a shift from indemnity based insurance to area yield index based insurance and recently to weather index based insurance. But the main issues related to area yield insurance to which the National Agricultural Insurance Scheme (NAIS) of Agriculture Insurance Company (AIC) of India belongs, are:

A) Technical problems

a] Geographic basis risk.

b] Area yield data are not collected for all crops and all regions

c] Insufficient time-series of area yield data for a given region

d] Historical area yield data are not reliable

e] If there are continuous three drought years, the expected block yield will be very less

f] Current year area yield estimate is subject to manipulation (by farmers, politicians etc)

B) Implementation problems:

a]Limited reach: Less than 5 % of the total number of farmers.

b] Compulsory coverage: The product is tied to the crop loans given by rural public sector banking system. The coverage is compulsory for the borrowers and not voluntary. In many cases farmers themselves do not know that they were covered.

c] Lack of transparency: Claims are assessed by crop cutting (loss adjustment) experiments in which yield assessment is made in few farms and the results are supposed to represent a large geographical area, usually a block or Taluk. The experiment results are not available for public verification and therefore the objectivity of the experiments is in doubt.

d] Uniform premium: The premium rate is uniform for a crop across the whole country while the risk certainly is not uniform nationwide.

e] Very late compensation: The claim settlement process takes a very long time- from six months to two years in some cases, thereby allowing all the bad consequences of the yield loss to occur before the compensation reaches the insured. This considerably reduces the developmental impact of the insurance.

f] Lack of viability: Parchure estimated that from 1985-6 through 1999 the loss ratio, excluding huge management expenses stood at 5.72 (Hess, 2003). The claim to premium ratio was 4.17 in the kharif season of 2002 showing that this intervention is not viable. The recent data also indicates the same trend.

g] Administrative cost: Administrative cost is very high very high as crop cutting method is used for loss assessment.

h] Inequality of benefits: The premiums and claims were not "equitably" distributed across crops and states, favoring paddy, groundnut and wheat farmers from Gujarat, Maharashtra and
Andhra Pradesh.

i] Political interference: Political interference at times converts this intervention into an instrument of popular politics, as it is used as a sop. Effectiveness of the product largely depends on synchronizing the policy initiation date and the sowing date and in calculating compensation based on actual rainfall in each village. But the insurance companies rely on a reference station, which is usually an Indian Meteorology Department (IMD) station, meant for a large number of villages and so are not capable of offering customized policies on a micro scale.

3) Farmers lack of Interest.
a] Lack of understanding of need for insurance: Not able to see how insurance can address their risk and appreciate it.
b] Lack of knowledge on insurance and how it works: Most of the farmers see premium as some kind of savings; they want to get compensation or the premium back. Not able to understand how insurance works by collectively pooling risk and transferring from one village/region to other.
c] Cognition failure; Farmers forget bad events and focus mostly on what happens in that year; So not ready to pay actuarial based premiums, which takes into consideration the risks of total losses by severe drought or flood; It is a classic problem in pricing risk.
d] Lack of customized products: In the crop insurance domain, lack of coverage is discussed as the main issue as if there is a robust insurance product that meets the requirement of farmer. But the reality is that in crop insurance there are no very robust products that reflect the real risks faced by the farmers. There are no trusted crop insurance products in the market. This is the case whether it is the conventional area yield insurance product or weather insurance product. So, lot of action research is needed here and an agriculture research institution of the country has not done much in this direction.
e] Lack of free access to institutions offering insurance: Currently insurance is offered mostly through the existing banks, cooperatives network and they are not easily accessible to small and marginal farmers.
f] Inadequate affordability on the part of farmers.

4) Prerequisites for effective crop insurance
a]Addressing the various challenges on both insurer side and farmers' side mentioned above.

b] Layering the risk: the less significant, very frequent losses to be managed by farmers themselves through their savings; moderately significant and moderately frequent losses to be met by insurance by farmers; rare but total crop loss situations to be managed with the support of government.

c] Crop insurance, a risk transfer measure, will be effective only in combination with risk reduction measures like physical measures (E.g. Bunding, Silt application), biological measures (E.g. Quality seeds), timely cultivation practices (sowing in the Pattam, optimum season) and diversification measures (E.g. Diversification to livestock/ tree crops) and risk coping measures like timely credit availability.

d] Linking crop insurance with risk education and prevention, so that over the years the premium comes down.

V. Towards a solution

Accordingly, much attention is given during the design of crop insurance programmes to avoiding these tensions to the extent possible. Such avoidance is aimed at optimizing the role of the public sector, while harnessing the drive and efficiency of the private industry sector. Several steps are involved. One listing might suggest the following as important:

1. Ensure that any existing company or new entity has a sound legal basis on which to offer insurance products, with the required level of business competence.
2. Clarify the government's objective in promoting crop insurance. If the latter is the case, then the avenue for financial support has to be ring-fenced from day-to-day political interference.

This is not easily done, yet it is essential if there is to be the required continuity of financial conditions in order to build efficiency and fairness into the system.

3. Establish strong linkages, at an early stage, with international re-insurers. These companies can assist not only with technical advice, but can also be instrumental in ensuring the necessary adherence to correct application of premium setting procedures, and settlement of claims. Although the opportunity for profit may be some years away, such companies are often prepared to become involved in a new geographical field of business. They operate with long term time horizons, and this can work very much to the benefit of a nascent crop insurer - whether this is a new company or a new section within an established company.
4. The financial base for the insurer must be adequate. This must be sufficient to survive initial years in which weather conditions might be such that underwriting profits are sharply negative. On top of this loss, administrative expenses have to be met. In many developing countries there may have to be public sector participation in ensuring a sound financial base.
5. Work closely with representatives of the farming and/or forestry sectors. This will help ensure that the service and products are popular and therefore in demand.

The 12th Five Year Plan Vision

The general understanding that crop insurance coverage can be improved with small changes here and there is highly inadequate. As can be seen above, the challenges are multiple in natures and related to each other in the 12th five year plan. So without a large scale and simultaneous efforts and investments at national level on the following five key parameters there will not be significant progress in coverage of small and marginal farmers: 1) research to evolve location specific insurance products, 2) insurance education for the small and marginal farmers, 3) capacity building of various stakeholders like farmers' organizations, SHGs, cooperatives, banks and insurance companies to offer viable and robust crop insurance products, 4) Investment in infrastructure like automatic rain gauges and data collection systems and 5) bringing in favorable regulatory environment for various insurance delivery institutional mechanisms like mutual insurance.

VI. Suggestion

a) Research to evolve location specific insurance products.

There need to be open admission of all the crop insurance providers that there is dearth of robust location/region specific crop insurance products and relevant agricultural research institutes both public and private need to involve in serious medium to long term action research in evolving appropriate products. All States need to support this research.

b) Insurance education for the small and marginal farmers.

Like a drive for financial literacy at the national level, a separate drive for insurance literacy among small and marginal farmers is needed to address the critical attitude and knowledge changes needed for them to appreciate crop insurance product. Farmers need to be having a new attitude of giving importance to effective crop insurance on par with the importance they give to other risk management measures like land development, seeing insurance as one of the working capital expenses and seeing the logic behind pooling premiums for pooling risks and transferring to others. It is the role of State to create markets for crop insurance on which private insurance players can make further investment in a later stage.

c) Capacity building of various stakeholders like farmers' organizations, SHGs, cooperatives, banks and insurance companies.

Microfinance through SHGs has been an important development success and banks could reach the poor families remote corners of the country through SHGs. It is time those farmers groups, SHGs and various kinds of farmers' bodies to be made vehicle for crop insurance not only for delivery but also for evolving appropriate products. They can act as risk aggregators for effective crop insurance delivery.

d) Investment in infrastructure like automatic rain gauges and data collection systems.

Again the role of state to create these for making available crop insurance on a large scale, as they are public good in nature. Further effective PPP arrangements can be tried for addressing this challenge. A good quality automatic rain gauge costs Rs. 35000 with the cost of installation and the annual maintenance cost is Rs. 6000. Like Karnataka government has tried, a network of rain gauges need to be created along with central server for receiving information at each district level. The data base created from now on will help in offering precise products in future. Postponing this investment will result in postponing the availability of robust crop insurance products to the poor farmers. Several steps are involved. One listing might suggest the following as important.

1. Ensure that any existing company or new entity has a sound legal basis on which to offer insurance products, with the required level of business

competence. Establish strong linkages, at an early stage, with international re-insurers. Establish strong linkages, at an early stage, with international re-insurers. These companies can assist not only with technical advice, but can also be instrumental in ensuring the necessary adherence to correct application of premium setting procedures, and settlement of claims. Although the opportunity for profit may be some years away, such companies are often prepared to become involved in a new geographical field of business. They operate with long term time horizons, and this can work very much to the benefit of a nascent crop insurer – whether this is a new company or a new section within an established company.

2. The financial base for the insurer must be adequate. This must be sufficient to survive initial years in which weather conditions might be such that underwriting profits are sharply negative. On top of this loss, administrative expenses have to be met. In many developing countries there may have to be public sector participation in ensuring a sound financial base.

3. Work closely with representatives of the farming and/or forestry sectors. This will help ensure that the service and products are popular and therefore in demand.

VII. Conclusion

Currently it is State's responsibility to give compensation when there is a catastrophe like drought or flood. If State can take insurance before such catastrophe occurs, then the cost of spending for catastrophe can come down significantly. On the other hand if government insures for catastrophic risk, then farmers are left out with only moderate risks and so the premium they have to pay will come down significantly, thereby making the crop insurance product affordable to them. Further there is need to bring about many regulatory changes for accommodating various insurance delivery institutional mechanisms like the case of mutual crop insurance in Mexico, for giving incentives to insurance companies and small farmers to enroll into the crop insurance and for ensuring availability of reinsurance. Many state governments like Rajasthan and Andhra Pradesh has taken some initiatives for supporting small and marginal farmers. A separate national mission for crop insurance need to be created. This mission must have representation from various stakeholders, have to be of high profile enough for dealing with various state governments as agriculture is a state subject and more importantly must have to be endowed with adequate budgetary resources.

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