

# Strategies for Increasing Agriculture Insurance Penetration in India

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April 2013

## Abstract

*A review of the development of crop insurances in India show crop insurances has achieved a penetration of about 25 per cent among the approximately 12.5 million farmers in India. While this figure is impressive considering that the NAIS was introduced in 1983, much remains to be achieved. Of the 12.5 million farmers, about five million farmers are loanees and of these about 2.5 million are insured. This paper suggests that the remaining 10 million can easily be covered provided the funds that are periodically spent on agricultural debt waivers are routed through the India's crop insurance mechanism. By doing this not only the debt waiver funds will be uniformly spend among all farmers but such disbursement will enhanced the creditworthiness of farmers and help to enhance the flow of organized credit to agriculture. The paper has also suggested some technological interventions to trigger partial claim payments to farmers immediately after the cropping season.*

## 1. Introductory

Indian agriculture is characterised by

- (a) Ubiquitous geographically scattered preponderance of small land holdings (of 120 million farm holdings 63 per cent have an average holding of 0.4 hectares) all over the country.
- (b) High riskiness, in particular due to vagaries of the monsoons, that results in droughts and floods.
- (c) Low-technology labour intensive production processes.

Agricultural activity is subject to several sources of risk; the risk of not realizing the expected yield, the risk of not realizing the expected price, the risk of not realizing the expected quality of output, the risk of deterioration in the output in the stages of storage and transportation, input risks of various types etc. Crop Insurance is a mechanism to mitigate only the first of these risks, the risk of not realizing the expected yield. Other sources of risk can be mitigated by other instruments e.g. MSP for price risk. Of course there are some risks for which there may be no feasible risk transfer mechanism so that the risks have to be self insured by farmers.

The combined effect of the three characteristics of Indian agriculture and of the various risks, is subject to leads to a situation in which the highest risk economic activity is being carried out by a large number of poor farmers whose risk-bearing capacity is the lowest. The large scale misallocation of risk that this represents has necessitated the introduction of crop insurance as a risk mitigation tool with governments, both central and state, playing the role of residual risk-bearers.

## **2. Unique Features of India's Crop Insurance Program**

Crop insurance in India has two unique features not necessarily found in other countries of the world,

- (i) The credit-insurance linkage
- (ii) The element of compulsion in the insurance cover for loanee farmers.

Both these features are inescapable in designing a crop insurance system for India. The preponderance and geographical spread of a vast number of small dispersed holdings producing low value of output per holding implies that the insurer cannot viably approach individual farmers to solicit business, collect premiums, collect claim reports, conduct individual loss survey assessments and pay individual claims. The costs would be prohibitive. Equally, the farmers are so poor and their need for cash so acute especially at the start of the cropping seasons that they would not voluntarily pay premiums. If the standard protocols of insurance solicitation were to be adopted for crop insurance its penetration would be limited to a few large farmers.

The Indian crop insurance system has been widely acknowledged as an ingenious solution to this problem; by adopting the homogenous area-yield approach and by requiring the payment of insurance premium and indemnities in and out of the crop loan account it has greatly economized transaction and administration costs of insurance selling and claims administration. The system also ensures that every penny spent by the government on paying claims reaches the farmer for whom it is intended. Bancassurance was invented in India as a solution to the problem of designing a crop insurance scheme!

## **3. Element of Compulsion Necessary**

The element of compulsion has in agricultural insurance lately come under the scanner of the courts of law which, going by the established legal principles governing insurance contracts, have naturally viewed compulsion unfavourably. Economic arguments would suggest otherwise. The problem of food security and farmers' income security are nationwide in nature. This applies to both loanee and non-loanee farmers. In case of loanee farmers, the risks faced by the farmers has ripple effects on the solvency of loan portfolios of lenders. In case of non-loanee farmers the risks have to be absorbed by the farmers themselves when they are in fact unable to bear them. Considering this it may be desirable to amend the IRDA Act and related legislation to make agricultural insurance compulsory for all farmers having holding below say five hectares of land. This will greatly facilitate the task of extending a larger credit flow towards the agricultural sector.

Indeed one can go further. The compulsory nature of insurance ought to be extended to livestock and horticultural crops as well as to protect farmers' incomes, ensure food security and facilitate the extension of credit for these activities as well. Augmentation of the flow of credit to the agricultural sector conditional upon the extension of agricultural insurance.

#### 4. Performance of NAIS

During the NAIS regime since 1999 both the coverage and benefits of crop insurance have been steadily rising. Starting from 17 states/UT's, 9.0 million farmers and 13.24 million hectares the coverage has increased to 26 states/UT's, 23.5 million farmers and 25 million hectares for *kharif* and *rabi* seasons in 2010. In financial terms too there has been a growth in the sum insured from ₹ 7,260 crores to ₹ 34,345 crores and premium collections from ₹ 212 crores to ₹ 1008 crores. Claims payments have of course varied depending upon the production losses in different years. The cumulative figures for claim payments, premiums and sum insureds for the 10 years period gives a good idea of the observed claims cost and claims ratios.

##### Financial Highlights of NAIS, 2000-2010

	<i>Kharif</i>	<i>Rabi</i>
1 Claims (₹ Cr.)	17190.96	4984.67
2 Premium (₹ Cr.)	5074.12	1517.36
3 Sum Insured (₹ Cr.)	157397.34	63862.92
4 Subsidy (Claims – Premiums) (₹ Cr.)	12116.84	3467.31
5 Subsidy per annum (₹ Cr.)	1211.68	346.73
6 Claims Ratio (Claims/Premium)	338.8 per cent	328.51 per cent
7 Claim Cost (Claims/Sum Insured)	10.92 per cent	7.8 per cent
8 Subsidy/Sum Insured	7.69 per cent	5.44 per cent
9 Farmers' Share/Sum Insured	3.23 per cent	2.36 per cent

The average per annum (*Kharif+Rabi*) subsidy is ₹ 1558 crores (Row Five). The claim cost (*Kharif+Rabi*) is 10.02 per cent (Row Seven).

#### 5. Shortcomings of NAIS

While the development of crop insurance in India can be described as being moderately satisfactory there appear to be some fundamental shortcomings. These may be listed as follows:

(i) Despite being linked to credit crop insurance has not penetrated among all loanee farmers. Of the 120 million farm holdings, it is estimated that about 50 million farms regularly avail crop loan facility, the remaining being either irregular loanees or simply non-loanees. Only about 50 per cent of these, i.e., 25 million are covered by crop insurance. The immediate target should be to increase the penetration to 100 per cent of the loanee farmers.

(ii) Although it is linked to credit, crop insurance has not obviated the need for periodic debt waivers. The last debt waiver, worth ₹ 70,000 crores, apart from its several defects as a policy instrument, is actually evidence of the failure of the crop insurance mechanism.

(iii) Because claims assessment is linked to crop cutting experiments there is an enormous delay in the final claims settlement (over six months) which impairs the ability of the farmer to repay the crop loan.

(iv) It is doubtful if the present crop insurance arrangement in which the sum insured is linked to the size of the crop loan provides adequate cover for the entire crop loan especially for small farmers. Because the crop loan itself is a fraction of the input costs (excluding the farmer family's subsistence) and the input cost is a fraction (on an average about 50 per cent) of the expected yield. That means that the crop loan would be about 35 to 40 per cent of the value of the threshold yield. If, in a season, there is a 40 per cent shortfall in the yield at an indemnity limit of 90 per cent then the farmer will be receive an indemnity of only 40 per cent of the loan amount even though the loss he has suffered is 2.5 times as much. It is likely that the loan will become bad because the farmer has not even been able to recover his subsistence requirements.

If the total crop loan amount is to be fully covered by crop insurance, the scheme needs to be modified to cover the input cost plus subsistence requirements. The modified NAIS (MNAIS) has sought to correct this but it is only in a pilot stage.

## **6. Extending Credit and Insurance to Non-loanee Farmers**

The case of 70 million non-loanee farmers and the need to bring increasing proportions of them within the fold of organized agricultural credit and agricultural insurance deserves special consideration. At present only about two million of the 70 million non-loanee farmers avail insurance which is a penetration of hardly three per cent. For various reasons which include lack of affordability, lack of awareness and unsureness about the benefits of insurances insurance buying in this large segment of Indian agriculture has remained extremely poor. Also being non-loanee farmers they are subject to the risk of having to raise money from unorganized sectors at higher costs. And lack of access to organized credit implies also a relative lack of access to better inputs, technologies, knowhow and the like.

The solution to this seems to lie in a strategy of a joint penetration of agricultural credit and agricultural insurance as complements of one another. And the first mechanism that needs to be operationised to achieve this would be to activate the large network of 1,30,000 PACS and a network of over 1,00,000 Common Service Centres (CSCs) to

- (i) Identify non-loanee farmers
- (ii) To conduct financial literacy programs among groups of non-loanee farmers
- (iii) To explain to farmers the benefits of agricultural credit, agricultural insurance and the state support that these activities enjoy.

At a parallel second level agricultural extension programme officers must also be trained to create awareness among non-loanee farmers about the benefits of agricultural credit and insurance as necessary preconditions for adopting better agricultural technologies.

Incidentally, there has been a marked tendency on the part of groups of farmers, particularly non-loanee farmers, to seek insurance much after the cut-off dates for payment of premiums. This is true of both the weather based crop insurance schemes as well as NAIS. Every time there is adversity the implementing States have made it habit to approach the GoI to extend the cut-off dates for participation of non-loanee farmers. This is in contrast to the utility value and universal principles of insurance. This adverse selection strategy by States and farmers' groups has resulted in greater claims cost ratios. This is a matter that must be primarily addressed by the GoI and the Banks. Late entry into agricultural insurance is permissible if and only if farmers pay successively larger differential premiums, and participate within a reasonable time after sowing. The schedules of differential premia for both the weather based insurance and NAIS are available with the AICI as part of their actuarial rating exercises and should be made available to banks with strict guidelines for implementation.

Another suggestion to minimize the risk of high claim ratios arising out of adverse selection is to promote multiple season/year insurance contracts wherein farmers are encouraged to buy insurance for a couple of seasons/years, in advance. This will also help in discounting the premiums to some extent.

### **7. Debt Waiver v/s Crop Insurance: Relative Efficacy**

A word is in order regarding the relative merits of a credit linked crop insurance system such as the one operating in India over the policy of debt waivers. A debt waiver is a completely arbitrary gift of money to loanee farmers. Besides creating conditions for moral and morale hazards in the utilization of scarce government resources both among farmers and populist politicians, debt waivers undermine at a stroke all the hard work done by the lending and insurance agencies in giving out and recovering the loans.

Not only that, debt waivers are in fact costlier than indemnities paid out through crop insurances. To get an idea of the magnitudes consider this. The annual subsidy both on central and state government accounts at 50 per cent coverage of loanee farmer works out to ₹ 1558 crores (Refer Row No. 5 in Table on page 5). If crop insurance is up scaled to all loanee farmers this figure will double to ₹ 3116 crores. Over a period of a decade (which is roughly the periodicity of debt waivers in the past) the total subsidy works out ₹ 31160 crores which is less than half of ₹ 70,000 crore debt waiver doled out in 2008 budget on central government account alone!

Indeed if all non-loanee farmers are covered as well, the annual subsidy on the central and state governments would be ₹ 7790 crores which over the course of a decade will stand at ₹ 77900 crores distributed over 120 million loanee and non-loanee farmers. In terms of political economy this makes much more sense than doling out ₹ 70,000 crores to 25 million loanee farmers on central government account alone.

In fact even if the sum insured is increased in line with the recommendation made in 4(iv) to cover input cost plus subsistence the annual subsidy on both central and state government accounts will not exceed ₹ 13,350 crores.

## **8. Role of the State in Agricultural Insurance: A Redefinition of its Scope**

This point about state intervention in agricultural risk management is need of generalization, amplification and refinement.

- (i) Parallel with the central government, state governments too declare relief packages from time to time (approximately once in six years). The funds under these relief packages will be more efficiently utilised if they are routed through the crop insurance system in terms of (a) reaching exactly those areas/farmers that have faced the greatest adversities and (b) and reaching to them intact so without any leakages.
- (ii) Several instances have occurred in which the premium and/or claim subsidies payable by the state governments have not reached the treasury on time on account of the fluctuating exigencies and priorities of these governments. However, if risk protection to farmers is considered as a high priority and inviolable duty of state governments, it should be perfectly possible to make an inbuilt arrangement in the federal finance system itself whereby the distribution of states' shares can be made after netting out the amount of their liabilities towards agricultural insurance.
- (iii) A fundamental base line of risk, what may be termed as Catastrophic Agricultural Insurance Cover (CAT cover) can be wholly sponsored by the central and state governments. The definition of catastrophe can be appropriately chosen as an adversity that occurs in a region once in say 20 years e.g. (a) more than 40 per cent deviation in long period average of rainfall; (b) less than 60 per cent realization in expected yield in a certain crop in a certain region. Of course, the reduction in regular premium that this represents can be passed on to the farmers.
- (iv) One reason often quoted and inferred from the low level of participation of non-loanees (and to some extent even loanees), is that the ad-hoc relief measures extended by the government comes free, whereas one has to pay premium to buy crop insurance. It's therefore, pertinent to take a 360 degree view of agriculture risk management and avoid duplicity of interventions, and to that extent integrate them in a way the overall benefits *vis-à-vis* the government fiscal exposure is optimized.

It is well known that lenders have an insurable interest in loanees; bankers insist on asset insurance, home insurance, life insurance of borrowers, keyman insurance, etc. before advancing loans to loanees. The possibility of banks, as lenders to the agricultural sector due to which they incur NPA's, sharing a part of the agricultural insurance premium is also worthwhile considering. To find how much, it would be necessary to reckon the sum-at-risk due to agricultural lending and the capital charge that is required to cover the risk weights of this portfolio.

## **9. Livestock and Horticultural Insurance**

Within agriculture, the fastest growing segments are animal husbandry and horticultural crops. Livestock and dairy accounts for 25 per cent of the agricultural GDP and is expected to raise upto 40 per cent over the coming decade. In terms of coverage livestock insurance penetration is low, hardly eight million animals out of

485.2 million animals as of 2003, i.e., 1.65 per cent. The government sponsored livestock insurance scheme was implemented in the 10<sup>th</sup> and 11<sup>th</sup> Five-Year Plans on a pilot basis in 100 selected districts with a 50 per cent premium subsidy. Insurance awareness in this line of business is very low and moral hazard is rampant. A detailed actuarial investigation of the mortality and morbidity patterns for various animal categories in various regions is required for a significant penetration to be achieved. Also tamper-proof RFID devices to identify animals are required to address the problem of moral hazard.

In regard to horticulture insurance the situation is very grim for three reasons: (i) the causes of fruit crop losses are complex and diverse; (ii) there is no independent machinery to report fruit crop losses; (iii) the financial consequences of fruit crop losses are difficult to quantify. Thus most extant insurance horticultural products are weather based products whose design has been arrived at in negotiation with farmers' organizations in local fruit-producing areas. Whether and how much farmers are or are not satisfied with the insurance products is hard to say.

To improve the status of horticultural insurance, very deep and extensive experiment-based studies of the principal fruit crops needs to be undertaken in conjunction with agricultural universities and international horticultural experts to pin down the causes of fruit crop losses and their consequences before satisfactory insurance products can be designed for them.

#### **10. Weather and Satellite based Insurance: Advantages and Disadvantages**

As regards the problem of delays in claims settlement which in its own way aggravates the problem of crop loan recovery, two solutions have been proposed of which one, viz. weather based crop insurance, particularly rainfall based insurance is already on the ground. This too is subsidized and claims experience has been found to be stable during the last six years or so making it particularly attractive for reinsurers. Of course weather-based insurance is partial; it covers one or more weather based perils and so is much less comprehensive than traditional crop insurance which covers all perils. Multi-peril weather insurance products are complicated and difficult for the farmers to understand and frequently result in payment of tiny claim amounts. However, the claim settlement is fast especially with the spread of Automated Weather Stations (AWS). It is therefore, a useful complement to yield based insurance. It should be easy to devise ways whereby partial claim payments are triggered quickly based on the intensity of weather perils and the full and final claim settlement can be linked to yield data as and when they become available.

As of now the penetration of weather insurance is in the region of 10 million farmers covering 12 million hectares which shows that its growth beginning from 2004 has been much more rapid than that of yield-based insurance. This is clearly insurer-driven; insurers find it easy to engineer weather based insurance products and are keen to sell them due to their profitability and the readiness of reinsurers to share the risks.

Also of interest is the use of satellite based remote sensing which gives an indication of crop health based on vegetative indices. This technology too, though it has not been

put to extensive vigorous tests, can be used to trigger partial claim payments, especially in homogenous areas containing mono-cropping.

### **11. Technological Infrastructure for Achieving Greater Agricultural Insurance Penetration**

Finally the need for building a substantial technological infrastructure that can comprehensively address the long-term penetration of agricultural credit and insurance cannot be overemphasized. The most important initiatives on these lines are three:

- (i) The modified NAIS has been conceived to be reduce the homogenous area definition from the level of taluka or block to the level of the gram panchayat. This means a 15 to 20 fold increase in the number of crop cutting experiments. State governments don't seem to have responded to this challenge adequately in terms of devoting the necessary resources. If some technological support can be given, may be in the form of high resolution satellite imagery, MNAIS pilots will turn out to be successful and motivate further extensions.
- (ii) If the appropriate definition of the homogenous area for weather insurance is considered roughly to be circles of 10 kms radius then the estimated number of weather stations would be upwards of 50,000. The weather stations themselves must be of a certified standard quality. Moreover, if the IMD Is not equipped to man these stations then possibly some PPP arrangement would be needed to put them in place.
- (iii) If proposals of agricultural insurance, particularly of non-loanee farmers are backed up by photos showing pictures of land and crop that capture the date of the photo taken by hand-held devices by village heads/Village Level Entrepreneurs (VLE) of CSC and/or credit societies then they can be made to match with survey records to verify the genuiness of the insureds. This will incidentally prevent purely speculative non-farmers from buying subsidized insurance by submitting false proofs of land ownership arranged through local level bureaucrats.



Annexure 1: Crops Covered by AIC under Weather Risk Insurance

Cereal and Millets		Annual Comm/Hort Crops	
Crop	Season	Crop	Season
<i>Cereals and Millets</i>		<i>Commercial Crops</i>	
Paddy	Kharif and Rabi	Potato	Rabi
Sorghum	Kharif	Coriander	Rabi
Pearl millet	Kharif	Cumin	Rabi
Maize (Corn)	Kharif	Fenugreek	Rabi
Finger millet	Kharif	Isabgol	Rabi
Wheat	Rabi	Onion	Kharif
Barley	Rabi	Garlic	Rabi
<i>Pulses</i>		Chilly	Kharif- Rabi
Blackgram	Kharif	Cotton	Kharif
Greengram	Kharif	Tomato	Kharif- Rabi
Pigeon Pea	Kharif	Banana	Annual
Chick Pea	Rabi	<i>Perennial Horticultural Crops</i>	
Peas		Grapes	Rabi
Lentil	Kharif	Mango	Rabi
<b>Oilseeds</b>		Cashew nut	Rabi
Groundnut	Kharif	Pepper	Kharif
Soyabean	Kharif	Apple	Rabi
Linseed	Rabi	Coffee	Annual
Rape Seed and Mustard	Rabi	Orange	Annual
Sunflower	Kharif	Kinnow	Rabi
Sesamum	Kharif	Pomegranate	Annual

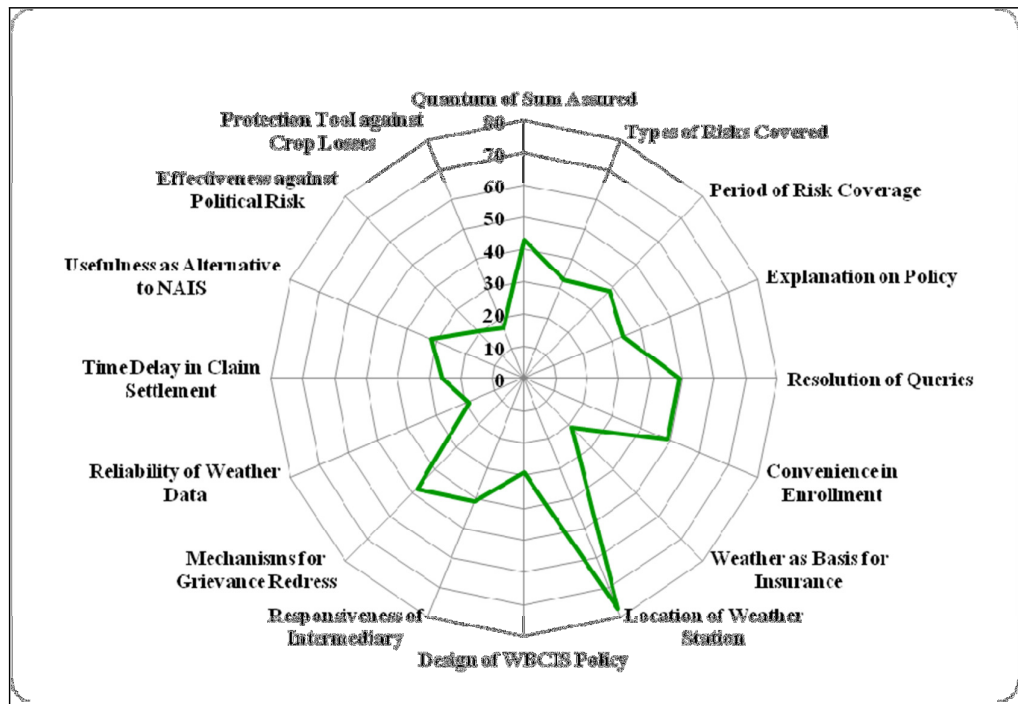
Annexure 2: Government Support to Agricultural Insurance Exceeds 50 per cent of Agricultural Insurance Premium Volume

Region	Government Support	per cent of total Agricultural Premium
USA and Canada	US\$ 7,800 Million	73
Europe	US\$ 1,500 Million	37
Asia	US\$ 1,800 Million	50
Africa	US\$ 1 Million	3
Latin America	US\$ 260 Million	36

Annexure 3: Index Based Crop Insurance Progress: 2011-2012

Programme	Farmers (Millions)	Hectares (Millions)	Sum Insured (US \$ Millions)	Premium (US \$ Millions)	Programme Nature
NAIS	16.731	22.947	7415.29	219.22	Administrated
WBCIS	11.607	15.629	4179.99	219.22	Actuarial
MNAIS	1.084	1.182	730.56	219.22	Actuarial
Total	29.422	39.758	12325.84	219.22	

Annexure 4: Aspects of WBCIS with the Maximum 'Not Satisfied' Respondents



Source: Report on Evaluation of WBCIS, Government of India, October 2010

Annexure 5: Weather Index Parameters

S. No.	Weather Parameter	Components
1	Rainfall	Deficit Rainfall, Consecutive Dry Days (CDD), Number of Rainy Days, Excess Rainfall, Consecutive Wet Days (CWD)
2	Temperature	Max. Temperature (heat), Min. Temperature (frost), Mean Temperature, Hourly Chilling Units
3	Relative Humidity	High Humidity
4	Wind Speed	High Wind Speed
5	Disease Proxy	Combination of Weather Parameters Like Rainfall, Temperature and Humidity