

# CHALLENGES IN IMPLEMENTING AGRICULTURE INSURANCE AND RE-INSURANCE IN DEVELOPING COUNTRIES

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**T**his paper attempts to address certain basic issues relating to agricultural insurance in developing economies. The paper has been divided into three sections followed by conclusions. The first section deals with requirement of agricultural insurance in the developing countries. In the second section conceptual framework of agriculture insurance Programme has been discussed. The third section of the paper deals with the Indian experience in the implementation of Crop Insurance Scheme. Finally, the conclusions have been drawn based on experiences.

It also needs to be clarified at the outset that agriculture insurance in the broad sense includes insurance of crops, cattle, fisheries, forestry, sericulture etc. but in this paper attention has remained focused on crop insurance.

## SECTION-I

### REQUIREMENT OF AGRICULTURAL INSURANCE

Agriculture remains the dominant sector in a large number of developing countries. It accounts for a major share of the gross national product and is still the primary source of employment. Agricultural products are also an important export item for many countries. Productivity gains in

agriculture are necessary for self-sustaining economic development in most developing countries. Despite the importance of agriculture, the various initiatives taken for its development have often failed to deliver full benefits. Low levels of income, low capital-labour ratios and the general precariousness of agricultural production characterize this sector in developing economies. There is often a dichotomy between the urban and rural sectors of the economy, not only in terms of technology but more importantly, in terms of access to services like transportation, medical/educational facilities, credit/insurance services.

Agriculture has always been a risky business. Unlike the Industrial sector it is subject to the vagaries of the nature. Uncertainty of crop yield is thus one of the basic risks, which every farmer has to face, more or less, in all the developing countries. In most of these countries the overwhelming majority of farmers are poor and have extremely limited means and resources and are, therefore, unable to bear the risks of crop failure.

It is true that much of the present uncertainty of crop production in these countries could be removed by technical measures - assured irrigation, judicious use of land, crop rotation/mixed cropping and by improvements in marketing and

institutional set-up. The co-variability of risks however reduces the efficacy of traditional measures. The modern insurance sector can play a major role here, and considerably strengthen the financial security of farmers.

In many countries the state provides aid or relief to the agricultural sector in the event of a natural catastrophe as a matter of Public Policy. In some countries this is done on an adhoc basis while in others there are formal arrangements and even legislation for this purpose. Agricultural Insurance is a more efficient instrument and an effective institutionalized mechanism for dealing with the problem. It helps to streamline the relief efforts and reduces the direct and indirect costs on the national economy.

### IDENTIFIED ISSUES

There has been a feeling that agriculture/Crop Insurance itself cannot increase productivity or be a source of financing. But it can certainly play a role in enhancing both. There are some limitations and inherent constraints, which prevent rapid growth of insurance business in rural areas. On the basis of experience of implementation of crop insurance in developing countries some important issues have been identified as given under :-

- A. According to some experts, Crop Insurance is one of the means for providing compensation to farmers suffering from serious crop losses due to climatic factors, Plants diseases and Pests etc. during various stages of crop growth.
  - Lack of reliable long period data on crops yields and losses.
  - Wide variety of agricultural practices.
  - Existing land tenure and land record systems.
- B. Crop Insurance claims outgo is estimated at about 15% of crop value and expenses of crop insurance administration amounts to about 5% so that the overall cost of crop insurance premium comes to about 20% of crop value in most of the developing countries which is uneconomic.
  - General ignorance and poverty of farmers.
  - Lack of trained personnel.
  - Limited financial resources of the countries.
  - Lack of insurance consciousness amongst farmers.
  - Lack of Reinsurance support from professional reinsurer.
- C. Among the different types of Crop Insurance in vogue, Crop Hail Insurance is the most popular and transacted quite extensively in most countries of Europe and North America. It is transacted on commercial basis mostly by Private Insurance Companies, in the countries where Hail may occur more than 50 days in a year.
- D. Under specified risk cover crop insurance in many countries cover one particular risk like Hail or Fire or Flood or Drought or Cyclone or sometime more than one specified risk cover. The other major type of Crop Insurance is what is known as 'All Risks or Multi-Peril Insurance".
- E. To implement Crop Insurance in the developing countries a number of problems have to be faced. These are :-

Insurance Programme for agriculture could be designed for different countries keeping in view the agricultural situation, prevailing socio-economic factors and administrative infrastructure available. But foremost and most important for framing the Crop Insurance Scheme is to specify the broad objectives. The objectives of Crop Insurance can be decided on the basis of priorities for the development of agriculture in the country. Considering crop insurance as a risk management measure for agriculture production, following objectives may be assigned :-

- To stabilize agricultural production or farmer's income by reducing adverse effects resulting from crop losses due to natural hazards.
- To encourage farmers to adopt improved technologies which can lead to increased production and more efficient use of inputs/resources.
- For having better credit rating required for the increased flow of crop loans to the farmers.

There are some critical elements which determine the basic structure and some key elements which give ultimate shape to the scheme. In addition to critical and key elements there are some essential requirements which provide operational viability and sustainability. These elements and requirements for formulating the insurance programme are given in the following tabular form :-

Section-II

CONCEPTUAL FRAMEWORK

CONCEPTUAL FRAMEWORK FOR CROP INSURANCE PROGRAMME

Determination of Basic Structure →	Critical Elements →	Perils to be covered ● Public or Private Involvement ● Individual or Area Approach ● Voluntary or Compulsory Participation
Super Structure of Programme →	Key Elements →	Coverage of Farmers ● Coverage of Crops ● Determination of Sum Insured and loss assessment  Determination of Premium ● Loss Adjustment Mechanism ● Organization Structure ● Financing of the Scheme ● Communication with Farmers ● Reinsurance arrangement
Operational Sustainability of Programme →	Other Requirements →	Availability of Adequate Data ● Availability of trained Personnel ● Evaluation and Monitoring

## CRITICAL ELEMENTS

These elements determine basic structure of the scheme and lay foundation of the scheme. Brief description for each of the critical elements is given in the following paragraph :

### PERILS TO BE COVERED

A fundamental issue in the design of a crop insurance scheme is whether to cover all or certain specified risks. The former implies yield insurance. In other words, an insured farmer is eligible to get indemnity if the yield is below certain guaranteed level. It is argued that in case of yield insurance it is difficult to identify losses arising out of uninsured events.

In view of the above an alternative approach envisages coverage against crop losses caused by specific perils, e.g. hail, windstorm, typhoon and so on. In the recent literature more emphasis is placed on such schemes. In Mauritius windstorm was the only risk that was covered during the first 27 years of the scheme. In Cyprus the risks covered are hail, rust and drought.

The schemes operated in Brazil, Canada, India, Japan, Philippines, Sri Lanka and the U.S.A. are of all-risk type. According to the FAO survey, most of the schemes are specific peril and multi-perils categories. Two aspects of crop insurance with specific perils need special mention :

- There is general opinion that schemes covering specified risks provide much less economic benefit than the all-risk type.
- It may not always be possible to attribute and measure the loss due to the insured perils.

Hence, one has to consider the agro-climatic situation to determine the

degree of comprehensiveness or to identify the risks to be covered by a crop insurance scheme. A scheme based on named perils is feasible if the insured crops are affected by specific perils causing damage, which are measurable. If a scheme envisages coverage of all risks, it is necessary to provide adequate safeguards to minimize the incidence of moral hazard.

### INVOLVEMENT OF PUBLIC OR PRIVATE SECTOR

Relatively, larger number of crop insurance schemes have developed in the public sector. They are often of multi-risk or all-risk type. Some of these schemes are linked to agricultural credit. An insurance scheme in the public sector has an advantage that it could have access to government budget and cooperation of other public institutions and banks. The role of the Government can take various forms : a) the Government bears fully or partly the cost of administration; b) the government also shares a part of the indemnity, or pays a part of the premium with a view to ensuring that farmers can afford to buy insurance.

Private agricultural insurance has been in existence for many years in the form of hail insurance in Europe, the U.S.A., Canada and Australia. Private sector insurance has three characteristics : a) coverage of specific risks which are insurable; b) unsubsidized premium; c) voluntary insurance.

### INDIVIDUAL OR AREA APPROACH

There are two main approaches for determination of indemnity in crop insurance: the individual approach and the area approach. In case of the individual approach, assessment of loss is made separately for each insured farmer. It could be for each plot or for the farm as a whole (consisting of more than one plot at

different locations).

In case of area approach, indemnity is determined for a group of farmers. The insured farmers are indemnified on the basis of the average loss experienced by a specified homogeneous area that could be a district, a block, or even a village. It was Prof. Dandekar who gave it a concrete shape in the Indian context (Dandekar, 1976).

However, there are certain problems with this approach too. Farmers may be less interested to buy insurance if individual farm yields are not adequately correlated with the average area yield of the region. Further, it may be difficult to insure damage, which affects an area smaller than the specified area unit.

The choice of either the individual or the area approach depends on the nature of the agricultural insurance program and the agro-economic conditions: target farmers, farm size, crop insured and even communication facilities.

### VOLUNTARY OR COMPULSORY PARTICIPATION

A crop insurance scheme may envisage voluntary or compulsory participation. In case of the voluntary approach, participation is optional for a farmer who is eligible to be insured. Such schemes are in Canada, USA and Chile. As regards the compulsory participation, certain categories of farmers who are eligible to be insured or who grow specified crops participate automatically. The work 'compulsory' implied that there is a system of automatic insurance for a group of farmers. In Japan crop insurance is compulsory for all farmers who grow the insurable crops over more than a minimum prescribed area. The Mauritius, Cyprus and Windward Islands schemes are compulsory for all growers of certain

crops. In India and Philippines crop insurance is compulsory for farmers who borrow from banks and other financial institutions.

The compulsory approach has two advantages. The problem of adverse selection is reduced significantly, and there is reduction in the cost of sale of insurance. There may, however, be dissatisfaction among low-risk farmers who will have to cross-subsidize high-risk farmers.

### THE KEY ELEMENTS

Key elements that shape the structure and influence the working of a scheme of crop insurance are given as under :-

### COVERAGE OF FARMS/FARMERS

Farms with specialized activities include horticultural farms, aquaculture farms, poultry farms and orchards. The sub-sector adopts improved technology and has access to institutional finance in this sub-sector. It is in this sub-sector that private sector insurance has already shown interest.

There are farms of medium- and large-size, which are integrated with the market. They are commercially viable and the risks are insurable. One can follow an individual approach. In this case also there is tremendous scope for private sector insurance.

The semi-commercial and emerging sector refers to small- and medium-size holdings, which are in a state of transition from traditional to commercial agriculture. They also offer opportunities for private insurers. However, there is scope for public sector insurance to operate on a viable basis.

Farmers with small holding who usually employ family labour and produce primarily for self-consumption are in the traditional and subsistence sector.

They are most vulnerable to agricultural risks, and need insurance the most. However, the basic criteria of insurability may not be satisfied in the conventional sense. In many developing countries public sector programs try to address this sector, which poses the greatest challenge.

### COVERAGE OF CROPS

The objective of agricultural insurance is to stabilize farmers' income. It follows logically that all crops grown by a farmer should be covered by insurance. In practice, it is not feasible. During the initial years the scheme may be limited to some crops and expanded gradually to other crops depending on the experience and ability of the implementing agency.

### DETERMINATION OF SUM INSURED AND LOSS ASSESSMENT

Sum Insured coverage is usually based on: a) cost of production; b) a part of the value of yield; or c) the amount of production loan or crop loan.

In most of the schemes, the sum insured is based on the cost of production. The reason is because it is easier to assess the cost of production. Such cost of production data is available from independent sources like statistics and research organizations. There are, however, certain conceptual and practical problems. Should cost include only variable cost or also fixed cost? Should it include imputed value of family labour and profit?

The assessment of losses is more difficult in case of agricultural insurance than for the other general insurance, such as fire or property. For crop insurance loss relates to something yet to come into existence, or that is in the process of growth.

The deductible level and its nature

and application in relation to the risks insured are also important for determining the loss. Usually, some part of the loss or reduction in yield could be due to the negligence of the insured farmer. There may also be problem of moral hazard. Hence, an insurance agency normally has a deductible loss while finally determining the amount of indemnity.

### DETERMINATION OF PREMIUM

For a viable crop insurance scheme, the premium rate needs to cover the following :

- a) Pure risks;
- b) Administration Cost;
- c) Contribution to catastrophe reserve; and
- d) A reasonable return.

The insurance premium may be on a net or gross basis. Net premium covers only the average loss over a period and possibly an additional amount to accumulate a small reserve. Gross premium involves some 'loading' to include cost of administration and some return or profit.

A related issue is to whether and to what extent the government should subsidize the premium. In many situations, even a premium rate based on pure risks would be too high for some farmers to afford. In the Philippines a significant part of the premium is shared by the government and the banks in case of borrower farmers and by the government in case of non-borrower farmers.

### LOSS ADJUSTMENT MECHANISMS

An important operational aspect is to have an effective system of loss adjustment procedures. It should be effective enough to minimize spurious claims and at the same time fair to the insured. The procedure will depend on whether the scheme is based on an area approach or the individual



approach. In case of the area approach, it is necessary to determine the average crop yield of the area on the basis of which indemnity is determined.

In case of the individual approach, it is necessary to have field inspections with the help of field staff. If the coverage is based on the expected yield, valuation of losses in yield are assessed through : a) eye estimation; or b) crop cutting procedures.

### ORGANIZATIONAL STRUCTURE

There is diversity of organizational structure across countries. It may be of the following types :-

- A private organization as in Chile;
- A private organization with government support, e.g. agricultural mutuals of Japan where premium subsidy and reinsurance support are given by the government.
- A parastatal organization with minimal government control as in Mauritius; and
- A public sector organization such as state-owned corporation as in the Dominican Republic, Philippines and India.

The administrative structure chosen by a country depends on socio-economic infrastructure, type of insurance scheme, target farmers and crops, comprehensiveness of its coverage and size of operation. In recent times many developing countries are striving to introduce economic liberalization including reforms in the financial and insurance sectors. This will mean opening of the insurance sector to international competition and allowing foreign insurers to operate in the country.

Whichever be the structure for providing agricultural insurance in a country the objective should be to :

a) function on sound principles of insurance; b) have operational freedom; and c) ensure an access to outside resources, e.g. reinsurance.

It is necessary to have field level units, especially in large countries, with decentralization and delegation of operation and commercial activities.

### FINANCING OF THE SCHEMES

Financing is important to a program of agricultural insurance because in disaster years the requirement of fund is very large. A scheme should be self-financing if the premium rates are set properly and if the loss adjustment mechanisms are appropriately structured. In reality, there may at times be an imbalance between the premium income and the fund required for payment of indemnity. Catastrophic losses may overwhelm the normal financing arrangement of the program. Hence, it is necessary to build a reserve during the early years of a program. The size of the reserve should be determined keeping in view a realistic estimate of the maximum probable loss.

Public sector programmes have access to government budget, though limited in developing countries, as a source of fund not only for premium subsidy and cost of administration but also as a safety net at the time of catastrophe.

### REINSURANCE ARRANGEMENTS

Reinsurance provides access to larger reserves by spreading the risk wider. It can take the following forms :-

- Reinsurance support from the government as in Japan & Canada;
- Loan funds from the government at the time of catastrophe as in Japan and Canada;

- Budgetary fund from the government as in India; and
- Private reinsurance in the international market as in case of the Mauritius program.

The last category of reinsurance may not be feasible for many agricultural insurance programs, because international reinsurers impose strict conditionalities, in terms of viability, management structure – safeguards against political interference – and professional and commercial orientation of the program, as eligibility criteria for reinsurance.

### COMMUNICATION WITH FARMERS

Farmers must be convinced that the program is in their interest. This is important if the scheme envisages compulsory participation, otherwise there will be dissatisfaction among farmers. In case of voluntary participation coverage will depend on how and to what extent farmers perceive it as beneficial to them. Farmers should feel that the terms and conditions of insurance are fair, and have the confidence that claims would be settled in time.

Communication with farmers is an important element of a program of agricultural insurance. This may be through mass media, education programs and group interactions.

### OTHER REQUIREMENTS

Availability of adequate data, trained personnel and monitoring & evaluation etc. will make the scheme operationally sound.

### ADEQUATE DATA-BASE

While considering the possibility of a crop insurance program, one needs to ensure that data are available to work out the financial implications. Without adequate data on yield over

a period of time it is not possible to formulate scheme of crop insurance. Such data form the basis for determination of premium, guaranteed yield, indemnity etc. It is also necessary to have adequate details on climatic conditions (e.g. frequency of droughts), land tenure, land record systems, cropping pattern, availability of agricultural inputs including credit, and other infrastructure in an area. Such information can facilitate realistic assessment of exposure of various crops to the perils proposed to be covered.

### AVAILABILITY OF TRAINED PERSONNEL

Trained personnel are necessary to operate insurance schemes at different levels – at the headquarters and also in the field. Human resource is as important as financial resources for any program. Agricultural insurance schemes are more complex than other types of insurance. It is necessary to create facilities for specialized training in the theory, techniques and practices of agricultural insurance.

### MONITORING AND EVALUATION

Monitoring and evaluation are important aspects of a program. There should be a system of regular monitoring and evaluation so as to take remedial measures on time.

### SECTION-III

### INDIAN EXPERIENCE IN CROP INSURANCE

A beginning in Crop insurance was made in 1972 by implementing an experimental scheme for Hybrid-4 cotton in few districts of Gujarat State. This scheme was based on 'individual approach' and uniform guaranteed yield was offered to selected farmers. This scheme continued till 1979 and it

is concluded that under the situation prevailing in the country, Crop Insurance Schemes based on individual approach are not feasible and economically unviable to implement on large scale. Hence, these schemes were phased out. In the background and experience of the aforesaid experimental schemes for crop insurance, based on the recommendations of Prof. V. M Dandekar, a Pilot Crop Insurance Scheme (PCIS) was introduced by GIC from 1979. This scheme was based on Area Approach. It covered cereals, millets, oilseeds, cotton, potato crops and confined to loanee farmers. PCIS-1979 was implemented in 13 States till 1984-85 and covered 6.27 lakh farmers for premium of Rs. 196.95 lakhs against claims of 157.05 lakhs.

### COMPREHENSIVE CROP INSURANCE SCHEME (CCIS)

For the first time, a Comprehensive Crop Insurance Scheme (CCIS) which was introduced with effect from April, 1985 by the Government of India with active participation of the State Governments. This scheme was optional for the State Governments.

CCIS was linked to short term crop credit and implemented on Homogenous Area Approach. Other major features of the scheme are given below :-

- It covered farmers availing crop loans from Financial Institutions for growing food crops and oilseeds on compulsory basis. The coverage was restricted to 100% of crop loan subject to a maximum of Rs. 10,000/- per farmer.
- The premium rates were 2% for Cereals and Millets and 1% for Pulses and Oilseeds. 50% of the premium payable by Small and Marginal farmers was subsidized equally by Central and State Governments.
- Premium and claims were shared by Central and State Government in 2 :1 ratio.
- The scheme was a multi agency effort, involving Government of India, Departments of State Governments, Banking Institutions and GIC.

The Scheme was implemented by 19 States and 3 Union Territories in one or more crop seasons. The summary of coverage particulars until Kharif 1999 since inception is as follows :

Total number of farmers covered	:	7,61,79,361
Total area covered (Hectares)	:	12,75,13,668
Total Sum Insured (Rs. Crores)	:	24922
Total Insurance Charges (Rs. Crores)	:	402.83
Total claim (Rs. Crores)	:	2302.68
Claims ratio	:	1:5.72

Majority of the claims were paid in the States of Gujarat Rs. 1086 Crores (47%), Andhra Pradesh Rs. 482 crores (21%), Maharashtra Rs. 213 crores (9%) and Orissa Rs. 181 crores (8%). Among causes, drought was the chief cause,

accounting for nearly 75% of claims, followed by floods with 20%.

The CCIS was criticized on account of the following :-

- It was financially non-viable.
- Predominance of rainfed crops like oilseeds, pulses and millets.
- Coverage of loanee farmers alone.
- Coverage of limited number of crops and exclusion of important commercial and horticultural crops.
- Deficiencies in the system of crop cutting experiments and assessment of yield.

### NATIONAL AGRICULTURAL INSURANCE SCHEME (NAIS)

Keeping in view, the demands of States, farming communities etc. for improving the scope and content of CCIS a new crop insurance scheme titled National Agricultural Insurance Scheme (NAIS) was introduced in the country w.e.f. Rabi 1999-2000. The NAIS provides for greater coverage in terms of farmers (i.e. non-loanee farmers brought under coverage); crops (annual commercial/horticultural crops included) and risk (i.e. up to the value of threshold yield). The premia structure in the scheme has been rationalized to achieve some financial viability. The implementing States will now have greater stake in the financial liabilities (i.e. sharing of financial liabilities between the Central and State Government is 1 : 1 instead of 2 : 1). The farmers under the new scheme has the choice for the coverage of more risk (in terms of sum insured) by paying higher premium rate. Important features of NAIS are given as under :-

- The Scheme is available to all farmers, including sharecroppers, tenant farmers, irrespective of the size of the holdings.

- The Scheme is compulsory for loanee farmers and optional for non-loanee farmers.

- The Sum insured may extend to the value of threshold yield of the area insured.

- All the food crops (cereals, millets & Pulses) & oilseeds are covered. In addition to this annual commercial/horticultural crops for which past yield data is available are also covered. At present, sugarcane, potato, cotton, onion, chillies, turmeric, ginger, jute, tapioca, annual banana and pine-apple, are covered.

- The premium rates are 3.5% for bajra and oilseeds, and 2.5% for other Kharif crops; 1.5% for wheat, and 2% for other rabi crops. In case the rates worked out on the basis of actuarial data are less than the prescribed premium rate, the lower rate will be applicable.

- In the case of annual commercial/horticultural crops, actuarial rates are charged.

- Small/ Marginal farmers are provided subsidy of 50% of the premium charged from them. The premium subsidy will be phased out over a period of five years on sun-set basis.

- The scheme is operated on the basis of area approach. Each implementing State is required to reduce the unit area of insurance to Gram Panchayat.

- Until transition to actuarial regime of premium rates in respect of food and oilseed crops is made, all claims above 100% of premium are borne by the Central and State Governments.

- In case of annual commercial/horticultural crops Implementing Agency bears the liability of claims up to 150% of premium. Beyond 150% of premium claims liability is met out of the Corpus Fund.

- To meet catastrophic losses a Corpus Fund is created with contributions from Central and State Governments.

The NAIS, at present, is implemented by 23 States and 2 Union Territories. During the first seven seasons i.e. from Rabi 1999-2000 to Rabi 2002-03, 338.24 lacs farmers have been covered over an area of 527 lacs Hectares insuring a sum amounting to Rs. 29129.35 crores. Claims to the tune of about Rs. 3578.07 crores are paid/payable as against the premium income of Rs. 897.44 crores. The total coverage during first seven seasons is as under :

Total number of farmers covered	:	3,38,23,599
Total area covered (Hectares)	:	5,27,05,925
Total Sum Insured (Rs. Crores)	:	29129.35
Total Insurance Charges (Rs. Crores)	:	897.44
Total claim (Rs. Crores)	:	3578.07
Claims ratio	:	1 : 4

The loss-cost under the scheme comes to about 12.8% while ratio between premium to claims works out to 1 : 4. It concludes that NAIS (on the basis of performance of seven crop seasons) is better placed as compared to CCIS in terms of viability. Under NAIS also maximum amount of indemnity claims (about 53%) have gone to State of Gujarat followed by Maharashtra, Andhra Pradesh, Madhya Pradesh and Orissa. Among the perils, drought has remained consistently main cause for crop-loss and consequently major amount of insurance claims under NAIS are paid. About 751 crore of indemnities received by Gujarat alone in Kharif 2002, on account of drought. Crop-wise analysis of claims paid shows that highest amount of claims have gone to groundnut crop (37%) followed by paddy (28%) and cotton (14%).

In the light of experience gained after 3-1/2 years of implementation of NAIS many issues/reservations regarding some of the provisions of the scheme have been raised mainly by the Implementing states. Some of these issues need to be mentioned here.

NAIS covers food, oilseeds and annual commercial/horticultural crops. Perennial crops such as apple, coconut, orange, mango etc. are not covered. Some states like Himachal Pradesh, J & K, Andhra Pradesh, Maharashtra etc. are insisting for inclusion of these crops. States (particularly H.P. and J & K) are justified because mainly horticultural crops are grown in these states. Coverage of perennial crops has not been provided under the scheme because of their multi-yield nature and availability of inadequate past yield data. Whatever, may be the difficulty a start in the coverage of perennial crop need to be made in the interest of farmers growing horticultural crops.

As per the provisions of the scheme, the implementing states are required

to reduce the insurance unit to the level of Gram Panchayat (GP) in a period of three years. Availability of adequate yield data based on requisite number of Crop Cutting Experiments (CCEs) per unit area of insurance is a pre-condition for the implementation of the scheme. But in view of limited resources with the states huge requirement for undertaking increased number of CCEs is difficult. According to Agricultural Scientists/statisticians, it is increasingly becoming difficult to depend upon the system of CCEs in assessing the yield rates because of increased amount of non-sampling errors. Therefore, it is suggested to adopt some alternative method for assessing the yield rates in crop insurance. Small Area Crop Estimation Method (SACEM) has been suggested for experimentation and assessing the yield rates.

In areas, prone to regular calamities, guaranteed yield comes down drastically due to the application of moving average, which considers yield data of preceding 3 or 5 years. It has been argued that preceding yield data of longer duration need to be considered for the calculation of guaranteed/threshold yield.

There are certain issues relating to financial viability of the scheme. In some crop seasons (particularly Kharif 2000), claims reported were more than five times of total premium generated. There are two major reasons for this. The premia structure made applicable under NAIS provides for huge gap between actuarial rates and existing flat rates of premium. Actuarial rate for groundnut crop in Gujarat for example, works out to more than 25%. But premium actually charged for groundnut is 3.5% only. Higher risk commitment allowed under NAIS is another cause for higher indemnity claims. There is a provision to extend sum insured up to 150% of the value of average yield in the unit area. This open-ended nature of fixing the sum

insured is likely to inflate the claims liability during the adverse season. Therefore, there is a need to limit sum insured and also to rationalize the premia-structure.

### FARM INCOME INSURANCE SCHEME (FIIS)

It has been observed over a period of time that climatic factors (particularly uncertainties in Monsoon) cause wide fluctuations in the yield and consequently in price. This in turn results in wide fluctuations in the incomes of farmers and hence in their capacity to invest in improved inputs, techniques of production and capital formation in agriculture.

Hence, in order to target the two critical components of a farmer's income, namely yield and price through a single policy instrument, Farm Income Insurance Scheme (FIIS) has been formulated.

This Scheme has been conceived to provide income protection to the farmers by integrating the mechanism of insuring production as well as market risks. Besides protecting farm incomes, the Scheme aims at sustainable production in the agriculture sector, ensuring food and livelihood security, encouraging crop diversification and enhancing the competitiveness of the sector in the context of exports.

The Scheme is implemented initially on pilot basis in selected states/ districts. Based on the outcome of the Pilot implementation scheme would be appropriately fine-tuned.

The main features of the Scheme are given below :

- a) A farmer's production and price risk for the crop produced by him, would be protected by ensuring minimum guaranteed income. If the actual income as a product of



yield recorded during the season multiplied by prevailing market price falls short of the guaranteed income the farmer would be eligible for compensation to the extent of indemnity from the Agricultural Insurance Company (AIC).

- b) An area approach as in National Agricultural Insurance Scheme (NAIS) would be used for actual yield and price measurement of the insured crop. Initially the programme would cover paddy and wheat only.
- c) A premium subsidy of 75% is proposed to be given in case of small and marginal farmers and 50% for other farmers.
- d) The Scheme would be compulsory for farmers availing seasonal agricultural operations loans from financial institutions and optional for non-loanee farmers.
- e) Procurement operation at Minimum Support Price (MSP) will be withdrawn in the districts where FIIIS would be implemented.

The Scheme has been implemented in 21 districts of 13 States in Rabi 2003-04. As per the latest information available more than 27,329 farmers and risk commitment of about Rs. 22 crore are covered so far, under the scheme. The Pilot Project is also proposed to be implemented in 100 districts in Kharif 2004 season.

### WEATHER INSURANCE (RAINFALL INSURANCE)

For developing financially viable insurance product in the agriculture "Weather Insurance" has drawn the attention of private sector. The insurance losses due to vagaries of weather i.e. excess rainfall, shortfall in rainfall, lack of sunshine, temperature and humidity variations etc. could be

covered on the basis of weather index. If actual index of specific weather event is less than the threshold, the claims become payable as a percentage of deviation of actual index from the pre-specified threshold.

One such product namely Rain-fall Insurance has been developed recently, by ICICI-Lombard General Insurance Company and has piloted in some parts of the Andhra Pradesh. Under the scheme coverage for deviation in rainfall index is extended and compensations for economic losses due to less or more than normal rainfall are paid. The advantages of Rainfall insurance scheme are : administrative costs are low or negligible; calculation of rainfall index is transparent and fully objective; immediate claims settlement is possible and re-insurance facility is easily available. It may be noted that Weather Insurance Scheme is highly relevant particularly for food and plantation crops.

### CONCLUSIONS

The market for crop insurance in developing countries, is no doubt, as vast as the acreage under cultivation. However, at the present stage of development of crop insurance coverage of crops, areas and farmers will vary from country to country depending upon national priorities and also the objectives set and the limitations imposed under crop insurance schemes. Based on experiments, some of the important conclusions for designing crop insurance programme in developing countries have been drawn :

### PENETRATION OF INSURANCE

It has to be admitted that penetration of insurance in most developing countries is low. The annual crop insurance coverage of the farmers in India is about 10% and annual risk commitment (i.e. sum insured) is about

Rs. 10,000 crore. Insurance needs of other sub-sectors of the rural economy also have to be analysed, and based on an assessment of effective demand, suitable products simplified and modified should be worked out. The dynamics are complicated and the components have to be carefully planned.

### RANGE OF INSURANCE PRODUCTS

Providing insurance tailored for the rural market and covering perils that do not have problems with risk independence, exposure or tariffs/premium are worth considering. A broad range of innovative insurance schemes may be permitted to operate at a time, so as to charge competitive/reasonable price for buying the insurance and cater to the specific need of the farming community. In India, besides the Government sponsored National Agricultural Insurance Scheme is in operation, the insurance companies in private sector are encouraged to float their products i.e. rainfall insurance etc. Further, to serve specific need and to provide the income protection to the farmers Government of India has launched Pilot Project on Farm Income Insurance.

### INSURANCE ON A GROUP/AREA BASIS

Group insurance is rewarding in many ways. Delivery and servicing become easier and administrative costs can be kept low. If the group is sufficiently large and homogeneous, problems of anti-selection, and to some extent the problem of moral hazard, can be mitigated.

In the developing countries like India, individual based crop insurance scheme have to face numerous problems such as large number of farm holdings, preponderance of small farmers, non-availability of past data, large variety of crops, varied

agro-climatic conditions and package of practices etc. Assessment of reliable and accurate yield rate at the individual farm level become difficult. However, unit area of insurance could be brought down to a smaller level, in case, new techniques like Satellite Remote Sensing are developed for making assessment of crop health and yield.

### LINKAGE WITH BANKS AND OTHER ORGANIZATIONS

Banks and insurance companies cooperate with and depend on each other. A linkage and close working arrangement with the banking sector is significant for agricultural insurance. Marketing of insurance is much easier if it is linked to credit. Furthermore, it is also possible to coordinate and integrate part of the administrative work with the banks. This will help in keeping expenses low. This strategy has been implemented in many countries. Other institutions with which linkages would be fruitful are cooperatives, trade associations, suppliers of inputs such as fertilizer, pesticide, seeds and farm equipment, processors of the produce, marketing organizations, extension services of the Government, departments of animal husbandry, fisheries etc. and research institutions and universities concerned with agriculture.

### REINSURANCE

An external possibility of enhancing underwriting capacity is the utilization of the reinsurance market. Reinsurance also provides a degree of financial discipline. However, reinsurance support is available only for technically viable programmes. Furthermore, the international reinsurance capacity for agricultural risks in developing countries is limited, particularly for natural catastrophes. This, in fact, is one of the major factors inhibiting the development of agricultural insurance. Serious thought needs to be given to this aspect. The State can play a significant role by creating additional reinsurance

facilities, either by encouraging the establishment of reinsurance companies or directly providing reinsurance.

### ROLE OF PRIVATE SECTOR

National insurance markets in most developing countries have been established only in the last two decades, and by and large, private sector insurance companies have not so far become involved in agricultural insurance to any significant extent. They are unlikely to be effective in providing insurance for three basic reasons : first, their main line of business, servicing the industrial and commercial sector, absorbs their financial and personnel resources. Secondly, private sector insurance companies in developing countries are often constrained by a small capital base, and are unlikely to attract additional resources for underwriting agricultural insurance. Lastly, prospects of assured profits in this line of activity are not promising. However, to the extent that private insurance companies are willing to be involved in the exercise, they should be encouraged. This has to be done at several levels and should, inter alia, consist of providing a suitable legal

framework, offering a level playing field vis-à-vis public sector institutions, and setting up incentive mechanisms.

### STEP-BY-STEP APPROACH

Three strategies need to be mentioned. First, insurance products for the rural areas should be simple in design and presentation so that they are easily understood. Second, wherever possible, a package approach should be adopted so that the various covers do not have to be marketed separately. Third, a beginning could be made with simpler and easily administered lines, such as livestock.

Agricultural insurance besides protecting farm income has a role to play in the development of the rural economy, which will in turn strengthen the national economy. At the same time, it should be recognized that agriculture insurance is only one of several financial services. Insurance should not be seen or promoted as a solitary effort but as a component of services that need to be extended to the agricultural sector. In fact, agricultural insurance can be most effective if it is conceived and implemented as a part of this broader framework.

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