सत्यमेव जयते

Report of the Committee to Review the Implementation of Crop Insurance Schemes in India

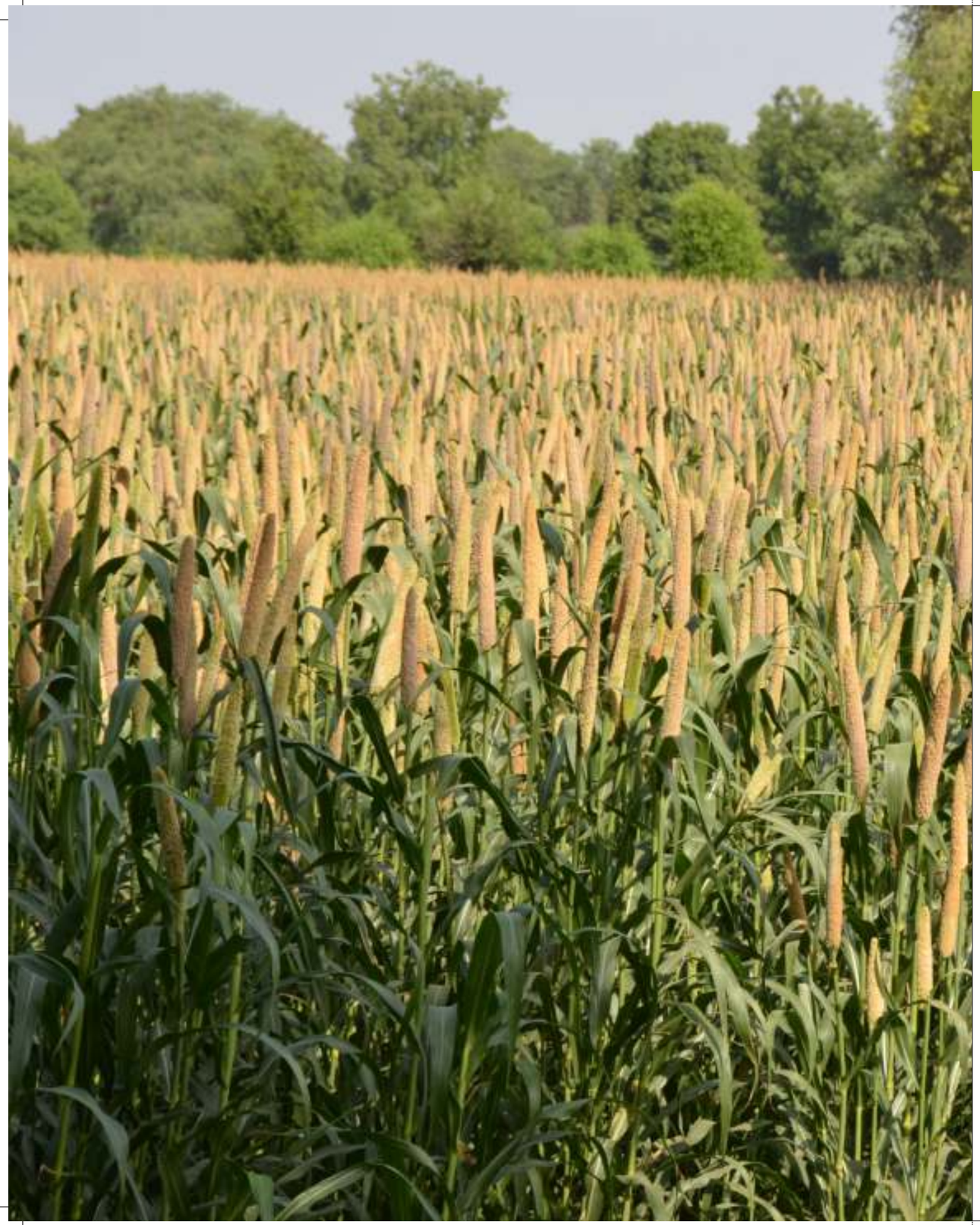
सत्यमेव जयते

Department of Agriculture & Cooperation,
Ministry of Agriculture, Government of India.

Krishi Bhawan, New Delhi – 110001

Department of Agriculture & Cooperation,
Ministry of Agriculture, Government of India.

May 2014



Contents

Preface

This report attempts to address some of the issues and challenges facing major crop insurance schemes being operated in India. Many of the issues and problems highlighted when the Committee interacted with stakeholders appear to be chronic ones, in existence since the early days of crop insurance schemes in the country. Despite efforts by previous committees, several of these issues persist, posing acute problems for the operation of crop insurance schemes. This is perhaps why several crop insurance schemes—experimental, pilot and so on—were introduced from time to time during the last three decades, sometimes in quick succession. Experimental schemes emerged even during the early years of operation of a nationwide scheme.

Agriculture in India is varied, diversified and prone to a variety of risks. Most farmers are small and marginal ones. In most areas, agriculture is rain fed, leading to a greater degree of yield variability and risk. Crop insurance, which aims at addressing yield risk—though necessary for a vast majority of farmers—is subject to structural, design and financial problems. Problems of asymmetry of information—moral hazard and adverse selection—and co-variability are more pronounced in crop insurance than in other forms of insurance. Consequently, crop insurance schemes face many problems. In response to such problems, schemes based on the area approach were introduced in the 1980s. More recent insurance schemes are based on weather, and adopt an area approach. Several agencies and organizations are involved in crop insurance programmes, given the vastness of the country, large number of small and marginal farmers, and adoption of area-based approaches. Hence, coordinated efforts are critical for effective implementation of crop insurance scheme. However, issues of governance and inter-agency coordination have posed many challenges.

The Committee kept the above broader aspects in view, while analysing various issues raised during its interactions and deliberations. It also looked at the experiences of earlier schemes starting from the Comprehensive Crop Insurance Scheme (CCIS) from an analytical perspective. It noted that many suggestions and recommendations of previous committees were not—or could not be—implemented, which led to many persistent problems.

Given the advancement of technology, particularly in mobile telephony, and easier access to satellite-based applications, the Committee feels that technology usage should be the main thrust area in addressing major issues and challenges. It is also necessary to focus on a few critical aspects so as to ensure effective actions, in a time-bound manner, to streamline the operations of crop insurance scheme.

In order to formulate its recommendations, the Committee considered the views and suggestions of stakeholders, experts and policy makers expressed during interaction meetings. It also analysed broadly the performance of major crop insurance schemes operated in the country over recent decades, and looked at operational aspects and governance issues.

We are grateful to Union Agriculture Minister, Sri Sharad Pawar, and Union Agriculture Secretary, Sri Ashish Bahuguna, for constituting the Committee to review crop insurance schemes in the country.

We would also like to thank Prof. Abhijit Sen, Member, Planning Commission, and Sri T. S. Vijayan, Chairman, IRDA, for sparing their valuable time to interact with the Committee; as well as Sri M. Ramaprasad, Member, IRDA and Sri Sriram Taranikanti, Executive Director, IRDA.

Dr Ashish Bhutani, Joint Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture and Cooperation, participated enthusiastically in the deliberations of the Committee and provided all possible help. Sri H. P. Verma, Consultant to DAC, MOA, also contributed a great deal and facilitated the smooth functioning of the Committee.

We would like to thank Sri Rajiv Takru, Secretary, Department of Financial Services, Ministry of Finance and senior officers of the department for interacting with the Committee and giving valuable suggestions. The Committee would also like to thank the senior officers of RBI, NABARD, State Bank of India, Punjab National Bank, Oriental Bank of Commerce and Andhra Bank, who participated in the meeting held at the Department of Financial Services, New Delhi.

The Committee had the privilege of interacting with senior officers of State governments of Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Odisha, Rajasthan, and Uttar Pradesh. It also interacted with the representatives of State cooperative banks, district cooperative banks, NABARD, RBI and IMD at the State level.

The Committee is thankful to a number of experts for their contribution to this review: Prof. Ramesh Chand, Director, NCAP, Dr K. K. Singh, IMD, Dr R. Parchure, GIPE, Pune, Dr C. S. R. Murthy, NRSC, Dr S. Doss and Sri S. N. Dash, NIA, Pune and Dr K. N. Rao, IRICBS.

The Committee places on record the valuable cooperation and contribution of officers of AIC who assisted in the working of the Committee, including Sri M. K. Poddar, Sri S. S. Saxena, Dr Ashok Yadav, Sri D. G. Halve, Sri Bhupesh Rahul and Ms Nima Megeji.

*****

Abbreviations

AFC ..... AFC India Ltd formerly known as Agricultural Finance Corporation Limited

AIC..... Agriculture Insurance Company of India Ltd

ATMA .... Agricultural Technology Management Agency

AWS ..... Automatic Weather Station

AY..... Actual Yield

BISAG..... Bhaskaracharya Institute of Space Application and Geo-Informatics, Gandhinagar

BPO ..... Business Process Outsourcing

CCE ..... Crop-Cutting Experiment

CCIS ..... Comprehensive Crop Insurance Scheme

CPIS ..... Coconut Palm Insurance Scheme

CVC ..... Central Vigilance Commission

DAC ..... Department of Agriculture & Cooperation

DNDC .... Denitrification Decomposition

ECIS ..... Experimental Crop Insurance Scheme

EPW ..... Economic and Political weekly

FF ..... Farmers' Friend

FIIS ..... Farm Income Insurance Scheme

GIC..... General Insurance Corporation of India

GIPE ..... Gokhale Institute of Politics and Economics, Pune

GoI ..... Government of India

GPS..... Global Positioning System

GPRS ..... General Packet Radio Service

Ha. ..... Hectare

IMD ..... India Meteorological Department

IRDA ..... Insurance Regulatory and Development Authority

IRICBS .... International Reinsurance and Insurance Consultancy and Broking Services Pvt. Ltd

IRMA..... Institute of Rural Management, Anand

IU ..... Insurance Unit

KCC ..... Kisan Credit Card
m. .... million
MNAIS ... Modified National Agricultural Insurance Scheme
MOA ..... Ministry of Agriculture
NABARD . National Bank for Agriculture and Rural Development
NAIS..... National Agricultural Insurance Scheme
NCAP..... National Centre for Agricultural Economics and Policy Research
NCIP..... National Crop Insurance Programme
NCML.... National Collateral Management Services Ltd
NIC..... National Informatics Centre
NIRD..... National Institute of Rural Development
NRSA..... National Remote Sensing Agency
NSSO ..... National Sample Survey Organization
PACS..... Primary Agricultural Cooperative Societies
PCIS ..... Pilot Crop Insurance Scheme
PSSCI ..... Pilot Scheme on Seed Crop Insurance
RBI..... Reserve Bank of India
Rs ..... Indian Rupee
RUA ..... Reference Unit Area
RWS..... Reference Weather Station
SACEM ... Small Area Crop Estimation Method
SAU..... State Agriculture University
SBI..... State Bank of India
SIAM ..... State Institute of Administration and Management, Jaipur
SLBC..... State-Level Bankers' Committee
SLCCCI ... State-Level Coordination Committee on Crop Insurance
TSU ..... Technical Support Unit
TY ..... Threshold Yield
UAV ..... Unmanned Aerial Vehicle
WBCIS.... Weather Based Crop Insurance Scheme
WMO .... World Meteorological Organization

*****

Executive Summary

The Government of India (GoI) has introduced several crop insurance schemes over the past three decades. The Comprehensive Crop Insurance Scheme (CCIS), launched in 1985, was the first nation-wide scheme. Previous crop insurance schemes had been operated on experimental and pilot basis, on a small scale and in a scattered manner. CCIS was operated for almost one and a half decades, before being replaced by the National Agricultural Insurance Scheme (NAIS) in 1999.

NAIS was conceptualized to address operational problems experienced during the implementation of CCIS. Since NAIS brought forth its own problems, modified NAIS (MNAIS) was formulated and implemented on a pilot basis in 50 districts from the *Rabi* season of 2010–11.

Meanwhile, public-and private-sector insurance companies also launched weather based crop insurance products on a pilot basis, as part of GoI's crop insurance programme in 2007–08.

According to the terms of reference, the Committee is "to examine the loopholes, if any, in the implementation of crop insurance schemes, i.e., National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS) and Weather Based Crop Insurance Scheme (WBCIS) and suggest measures for their removal."

In order to identify such loopholes, if any, the Committee decided to interact and consult with some of the stakeholders, experts and organizations associated with the schemes being implemented.

The Committee examined the performance of various crop insurance schemes, such as CCIS, NAIS, MNAIS and WBCIS, based on data available with Agriculture Insurance Company of India Ltd (AIC), and some of the reports of earlier Committees and study reports. The Committee reviewed, at length and in detail, the performance of the major crop insurance schemes from historical and analytical perspectives, in order to learn from past mistakes and to arrive at recommendations for the future.

Thus, the Committee found that the issues needing to be addressed fell under the following categories:

- Discrepancy in area insured
  [e.g., the area insured for a particular crop being more than the crop area sown]
- Crop-cutting experiments (CCEs)
  [e.g., delay in receiving crop-cutting data, and quality and reliability of such data]
- Weather data, particularly from private automatic weather stations (AWSs)
  [e.g., lack of confidence in AWS data; accreditation, certification and quality control of AWSs]
- Crop loan practices
  [e.g., non-compliance with the provision of compulsory insurance for loanee farmers, multiple loans on the same land, lack of seasonality discipline, etc.]

- Crop insurance premium
  [e.g., affordability for farmers, especially in case of MNAIS; transparency in determining premium rate]
- Role of banks and AIC in the operation of the schemes [e.g., banks simply compile information without due diligence; AIC—having no stake until recently—accepts this data from banks and farmers without adequate scrutiny]
- Settlement of claims
  [e.g., delay in settlement of claims; dissatisfaction with quantity of claims in case of WBCIS]
- Technical skill and capacity building of personnel associated with crop insurance schemes
  [e.g., personnel with government agencies, banks and insurance agencies]
- Allocation of districts to insurance companies
  [e.g., lack of transparency, lack of technical expertise to evaluate insurance products and allocation of area, season to season]
- Awareness of farmers regarding various features of the schemes
  [e.g., farmers do not have information on the schemes and principles of insurance]
- Product design
  [e.g., lack of innovation, poor correlation of product parameters with yield outcomes]

Available literature outlining the working of CCIS in the later half of the 1980s indicates numerous operational problems that arose during its implementation. Efforts were made to plug loopholes: seasonality discipline—missing from the original design—was incorporated into the scheme; and a limit was imposed on the sum insured. Area discrepancy—the area insured under a crop being greater than the area sown with that crop—emerged as a chronic problem in some districts of Gujarat, especially in the case of groundnut crop. There were problems relating to CCEs and loan procedures. The same issues were presented when this Committee interacted with stakeholders, indicating that these problems still exist, more than two decades after they were first documented. So the challenge before the Committee was to address these issues more effectively than had been done in the past.

The report of the GoI Joint Group, constituted to review the working of NAIS, contains a long list of issues raised during its interactions with stakeholders. It is interesting to see how similar issues were raised, a decade later, during our interactions with stakeholders.

Thus the Committee looked at the experiences of earlier schemes, beginning with CCIS, from an analytical perspective. It was interesting to see that a number of suggestions and recommendations made by some previous committees were not—or could not be—implemented, leading to many persistent problems.

As indicated, the Committee has not confined itself to mere loopholes in the schemes; it has looked at various issues and challenges from a broader perspective. Given that many of the problems and issues have

persisted for decades, and that there has been no improvement in spite of various measures suggested by previous committees, the Committee has recommended effective use of technology and prioritization of measures to be taken. The Committee has made, as enumerated in Chapter 5, a number of recommendations. The implementation of the recommendations with some prioritization and in a time-bound manner would help plug the loopholes, thereby effectively addressing the issues involved. Some important recommendations are listed below:

- A Web portal along the lines of that developed for Gujarat by the National Informatics Centre (NIC) may be developed for other States, so as to make data concerning land records available to financial institutions.
- The Web portal would enable financial institutions to link each farmer's existing loan account to the unique land account, facilitating detection of multiple loans taken on the same land.
- For the purpose of verification of the crops sown on a particular land, mobile phone technology may be used to capture and transmit photographs of standing crops once or twice during the season.
- State governments should ensure the use of GPRS-enabled and camera-fitted mobile phones or hand-held machines while conducting CCEs, so as to transmit data on a real-time basis. The applications developed in Gujarat, and also by the pilot studies under the World Bank technical assistance in Maharashtra and Rajasthan, can be utilized to put in place appropriate systems in other States.
- It is necessary to put in place a regulatory mechanism for AWSs. A system of accreditation, certification and quality monitoring of AWSs should be set up.
- RBI and NABARD should effectively monitor the compliance of their circulars regarding compulsory crop insurance for loanee farmers with respect to notified crops in identified areas.
- There is a need to revisit the premium rates in case of MNAIS. A World Bank-assisted study report contains useful suggestions regarding improving agricultural insurance ratemaking, product design and other aspects. It recommends methodologies such as de-trending, for the purpose of using past data to determine the premium rate.
- Insurance companies, including AIC, and banks should play a pro-active role in ensuring effective implementation of crop insurance schemes.
- A comprehensive programme of capacity building—in line with the needs of stakeholders such as State government functionaries, insurers and Central Government agencies associated with crop insurance schemes—should be organized.
- A programme of creating awareness and insurance literacy among farmers should be prepared by insurance companies and banks, in collaboration with the concerned State governments. The progress of these activities should be reviewed at the State and district level, on a quarterly basis, for the next two years.

- New and innovative products of insurance may be introduced.
- An atlas of critical weather elements, which trigger crop-yield losses in different crop growth periods, should be developed for different agro-climatic regions, to be used by governments and industry as benchmarks.
- The Central Government, in the Ministries of Home and Agriculture, should take measures to integrate crop insurance schemes with, or link them to, disaster mitigation activities.

*****

1 Introduction: Context, Approach and Methodology

1.1 General

On 10 September, 2013, the GoI's Ministry of Agriculture (Department of Agriculture and Cooperation) constituted a Committee to "examine the loopholes, if any, in the implementation of Crop Insurance Schemes" and suggest remedial measures. The terms of reference are broad, and discussed later in this chapter. In the following paragraphs, we describe the following:

- The context and rationale for the constitution of the Committee
- The composition of the Committee and the terms of reference
- The approach and methodology followed by the Committee

1.2 Context and Rationale

1.2.1 Until 1985, crop insurance schemes in India had been experimental or pilot projects, on a small scale and in a scattered manner. Then came the Comprehensive Crop Insurance Scheme (CCIS), GoI's first nation-wide crop insurance scheme, which operated for almost a decade and a half. During that time, other small-scale experimental schemes continued to be developed and introduced. These included one covering non-loanee farmers, one related to the production of certified seeds and a farmers' income insurance scheme. In 1999, CCIS was replaced by the National Agricultural Insurance Scheme (NAIS), which was conceptualized to address operational problems that arose during CCIS implementation.

In 1985, CCIS became India's first nation-wide crop insurance scheme, a step up from previous experimental and pilot crop insurance schemes

1.2.2 To counter problems arising during NAIS implementation, the Government then formulated a modified NAIS (MNAIS) and implemented on a pilot basis in 50 districts from the *Rabi* season of 2010–11.

1.2.3 In the meantime, public-and private-sector insurance companies introduced weather based crop insurance products on a pilot basis. These formed part of GOI's crop insurance programme in 2007–08.

1.2.4 On 1 November, 2013, during the course of this Committee's review, a GoI circular introduced the National Crop Insurance Programme (NCIP). NCIP comprised three components: the MNAIS, WBCIS and the Coconut Palm Insurance Scheme (CPIS), and was stipulated to come into force from *Rabi* 2013–14. Even States notified to implement NAIS during *Rabi* 2013–14 would have to withdraw such notification and implement NCIP instead. In other words, NAIS was to be discontinued from *Rabi* 2013–14. However, on the representation of some State governments, GoI reconsidered the matter and—through a circular dated 18 December, 2013—communicated that the fourteen States and Union Territories that had already notified NAIS for *Rabi* 2013–14 could continue its implementation. Further, States which had already notified NCIP should continue to implement it. There would be no further extension for NAIS beyond *Rabi* 2013–14.

1.2.5 As mentioned above, a number of crop insurance schemes have been introduced in the last three decades, and modified as and when required to address operational issues. Payment of crop insurance claims were delayed in many cases because of anomalies in data relating to insured area, insured crops and estimated yield of insured crops. Inconsistencies relating to the insured area of a crop and the area reported to be under such crop in a particular season posed a problem. Committees and groups were also set up periodically to address various issues.

1.2.6 The present Committee was tasked with examining the loopholes, if any, in the implementation of crop insurance schemes. The office memorandum constituting the Committee—No.12015/09/2013-Credit II, dated 10 September, 2013, of the Ministry of Agriculture (Department of Agriculture and Cooperation), Government of India— does not elaborate further on the terms of reference.

1.3 Composition and Terms of Reference of the Committee

The composition of the Committee and the terms of reference are as follows:

1.3.1 Composition

Dr P. K. Mishra (Chairman)	Former Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India; Current Director General, Gujarat Institute of Disaster Management
Sri Raj Kumar (Member)	Principal Secretary, Department of Agriculture, Government of Gujarat
Sri D. B. Gupta (Member)	Principal Secretary, Government of Rajasthan (until 23 December, 2013)
Sri Ashok Sampatram (Member)	Additional Chief Secretary, Department of Agriculture, Government of Rajasthan (from 24 December, 2013)
Sri P. J. Joseph (Member Secretary)	Chairman cum Managing Director, Agriculture Insurance Co of India Ltd

1.3.2 Terms of Reference

1.3.2.1 With regards to the Committee's terms of reference, the office memorandum cited above says:

> *It has been decided to constitute a Committee to examine the loopholes, if any, in the implementation of Crop Insurance Schemes, i.e., National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS) and Weather Based Crop Insurance Scheme (WBCIS), and suggest measures for their removal.*

1.3.2.2 Thus, the terms of reference are very broad. The question is whether there are any loopholes in the schemes mentioned above and, if so, what remedial measures to take. For this, we need to consider the meaning of the word "loopholes". According to Oxford Dictionaries, the word "loophole" means "an

ambiguity or inadequacy in the law or a set of rules." It gives an example: "They exploited tax loopholes." According to Cambridge Dictionaries Online, "loophole" is defined as "a small mistake in an agreement or law which gives someone the chance to avoid having to do something."

1.3.2.3 In order to identify loopholes, if any, in the crop insurance schemes being implemented, the Committee decided to interact and consult with some stakeholders, experts and organizations associated with the schemes.

1.4 Approach and Methodology

1.4.1 The Committee met with officials of State governments, representatives of banks, NABARD, RBI, IMD and other organizations implementing crop insurance programmes in New Delhi, Patna, Ahmedabad, Bengaluru and Jaipur. Issues relating to implementation of the schemes based on field-level experiences were discussed in this series of meetings and consultations.

In New Delhi, one meeting was held with Member (Agriculture), Planning Commission, and one meeting took place in the Department of Financial Services, Ministry of Finance. Experts from the National Centre for Agricultural Policy (NCAP), India Meteorological Department (IMD), Gokhale Institute of Politics and Economics (GIPE), Pune, and National Remote Sensing Centre (NRSC), Hyderabad, participated in some of the New Delhi meetings. In another meeting in New Delhi, senior officers of the rank of Principal Secretary of Agriculture Department of States such as Andhra Pradesh, Madhya Pradesh, Odisha and Uttar Pradesh were consulted. Senior representatives of various banks participated in the meeting held at the Department of Financial Services.

Representatives of private insurance companies such as ICICI Lombard General Insurance Company, HDFC Ergo General Insurance Company, IFFCO Tokio General Insurance Company, Tata AIG General Insurance Company, Cholamandalam MS General Insurance Company and Future Generali India Insurance Company participated in the meeting held in Bengaluru. The issues raised and suggestions made by the participants in various meetings are described in Chapter 2.

1.4.2 The Committee examined the performance of various crop insurance schemes, such as CCIS, NAIS, MNAIS and WBCIS, based on data available with AIC, some reports of previous Committees and study reports. The Committee reviewed, at length and in detail, the performance of the major crop insurance schemes from a historical and analytical perspective in an effort to learn from past mistakes and thus arrive at recommendations for the future.

1.4.3 Based on the above, the Committee identified the issues to be addressed. Then, it analysed these on the basis of suggestions received during consultations and its own analysis of the data and review of performance of the schemes. All these formed the basis for the recommendations of the Committee.

1.5 Structure of the Report

The report contains five chapters. Chapter 1 describes the context and rationale for setting up of the Committee, its terms of reference, and approach and methodology. Chapter 2 describes the consultations

held by the Committee, issues and problems raised by the participants, and their suggestions. It also enumerates the issues to be addressed by the Committee. Chapter 3 contains a historical and analytical overview of crop insurance schemes in India. Based on the analysis, the Committee attempts to draw important inferences and conclusions, which guide its recommendations for future actions. Chapter 4 contains an analysis of the issues identified by the Committee, the findings of the Committee and its recommendations. Chapter 5 provides a summary of the Committee's recommendations.

*****

2 Meetings and Consultations by the Committee: Identifying 'Loopholes', Issues and Challenges

2.1 General

In this section we describe briefly the issues presented, and suggestions put forward, by the participants in various meetings with the Committee. Then, we identify the issues that we need to address.

2.2 Meetings of the Committee

The committee held several meetings. Important points brought out by the participants are highlighted below.

2.2.1 The first meeting: 23 September, 2013

2.2.1.1 In its first meeting, on 23 September, 2013, in New Delhi, the Committee discussed the terms of reference. The Committee had been constituted in the immediate context of problems of large differences between the area insured and the area reported to have been sown under certain crops in Gujarat and Rajasthan. However, the Committee was expected to go into all the relevant aspects and not limit its analysis only to the above. Consequently, it was decided to interact with various stakeholders, experts, and senior officers involved in implementing the crop insurance programmes. It was also decided that the Committee would visit four States: Bihar, Gujarat, Karnataka and Rajasthan—on the basis of their relatively higher number of, and problems in, settlement of claims—in order to understand field-level issues and interact with those directly involved in the schemes. Other important aspects highlighted for discussion are as follows.

2.2.1.2 Discrepancies between the area insured and the area reported to have been sown have created problems in settling claims for some crops in certain areas. In this context, one view was that applying the area reduction factor—as practiced for several years (e.g., groundnut crop of *Kharif* 2012 in Gujarat)—the entitlement to claim of farmers will be drastically reduced, which would be unfair and unjust to some farmers. Claims should be worked out after obtaining farmer-wise area sown. Banks could obtain such data from AIC. On the other hand, AIC pointed out that it gets consolidated information from nodal banks and does not have farmer-wise details. Since the scheme was designed to be based on an area approach, it does not envisage that AIC would participate at the farmer level.

2.2.1.3 In some parts of Rajasthan, e.g., *Kharif* 2012 crop in Churu District, the variation in area insured was to some extent due to the *beejmari* (crop sown but not germinated) area not having been accounted for while giving details of the area sown.

2.2.1.4 Farmers have expressed their lack of confidence in the weather data furnished by AWSs in the context of WBCIS.

2.2.1.5 There is also a problem of double/multiple insurance for the same crop area. After the discontinuance of the service-area approach, farmers are free to approach any bank for a loan. If a farmer avails himself of loans from two banks and insures the same crop through both the banks, the area insured will be more than the actual area sown.

2.2.2 The second meeting: 15 October, 2013

2.2.2.1 The Committee's second meeting was held at the State Institute of Administration and Management (SIAM), Jaipur, on 15 October, 2013. Those present included senior officers of the Government of Rajasthan, representatives of the State Cooperative Bank, District Central Cooperative Bank of Churu District, NABARD, the Lead Bank and AFC. The following aspects were highlighted during the discussion.

2.2.2.2 In the presentation made by the AIC Regional Office, several issues were highlighted: evaluation of term sheets under WBCIS by State governments, absence of uniform norms across States for allocation of districts among participating insurance companies, outsourcing and poor quality of monitoring of CCEs, adverse selection of risks by farmers, insistence of State governments on submitting list of insured farmers, delay in receipt of government's share of liabilities, Kisan Credit Card (KCC) withdrawals by farmers not being in alignment of crop growing season, challenging in court the weather data given by private providers, etc.

2.2.2.3 It was suggested that insurance companies be allocated districts for a period of three years, instead of for every season. This would give these companies enough time and incentive to popularize insurance products.

2.2.2.4 The need for third-party certification of equipment for weather stations, their maintenance and quality control of weather data were suggested.

2.2.2.5 It was proposed that there is a need to establish a Technical Support Unit (TSU) at the apex level to provide technical guidance on WBCIS to State governments and insurance companies.

2.2.2.6 AIC should play a larger role in verifying the end use of crop loans availed by insured farmers, so as to verify the area sown. Data from secondary sources, such as utilization of fertilizers and seeds, would be used to validate the claims of farmers regarding the area sown.

2.2.2.7 It was suggested that RBI take action against banks that violate norms relating to crop insurance.

2.2.2.8 It is necessary to ensure timely payment of claims to farmers. It needs to be ascertained whether third-party certification of weather data and equipment would delay the payment of claims to the farmers. It is also necessary to look into the validation process adopted by weather data providers, because, in some cases, there was a significant change in the temperature data after validation.

2.2.2.9 The possibility of a common database relating to insurance, which could be linked to the database on land holdings of farmers, could be explored.

2.2.2.10 There is a need to improve the existing system of CCEs. The Small Area Crop Estimation Method (SACEM), implemented on a pilot basis, was not successful. A new approach could focus on areas where the crop yield is adversely affected, undertaking higher number of CCEs in such areas rather than conducting CCEs in all areas by employing a standard formula. It was also suggested that target sampling

of CCEs be adopted, so that the number of CCEs to be conducted in an area unit would be reduced in a good crop season.

2.2.2.11 Representatives of banks stated that they would not be able to verify end use of crop loans and that the area sown should be verified by AIC and State Agriculture Departments through their field-level officials. They also mentioned that some farmers produce false certificates to avail multiple loans. They suggested that guilty farmer be barred from future insurance as a means to curb such malpractices. They also suggested timely issuance of notification by state governments.

2.2.2.12 Representatives of weather data provider NCML said it had 80 weather stations in Churu district and that it had followed World Meteorological Organization (WMO) procedure to validate the data.

2.2.2.13 A presentation by the AFC India Ltd (AFC) highlighted issues such as short time gap between repayment of the previous loan and the availing of a new loan, increased loaning towards the cut-off date, comparison of loans extended to cotton and groundnut, and new accounts opened by farmers in July, only to avail crop loans.

2.2.3 The third meeting: 12 November, 2013

2.2.3.1 The Committee's third meeting was held at Circuit House Annexe, Ahmedabad, on 12 November, 2013. In addition to senior officers of the Government of Gujarat, senior officers of NABARD, RBI, IMD, BISAG, SBI, the State Cooperative Bank, District Cooperative Banks and others attended the meeting. The following aspects were highlighted:

2.2.3.2 A presentation by AIC's Regional Office revealed that while NAIS covered 10 lakh farmers in the *Kharif* season of 2012–13, in the *Rabi* season only 30,000 farmers were insured. The Government of Gujarat representative pointed out that banks do not allocate funds separately for loans sanctioned for *Kharif* and *Rabi* seasons. Insurance premium is deducted only for *Kharif* season. Bank loans appear negligible in the *Rabi* season since all the loans are given prior to the *Rabi* season. The loan given to a farmer in the *Kharif* season of a particular year continues till the next *Kharif* season. Hence coverage appears low during the *Rabi* season. The perception of lower risk is another reason why farmers do not take out insurance in the *Rabi* season. The *Kharif* season being riskier, farmers tend to participate more during this season and not during the *Rabi* season which is relatively less risky. NABARD pointed out that cooperative banks have separate sanctioned limits for *Kharif* and *Rabi* seasons, unlike commercial banks from which farmers can get loans at any time.

2.2.3.3 Awareness about crop insurance schemes is low and there is a need to create awareness among farmers to ensure regular and greater participation by them. Moreover, if a farmer requests a bank to refrain from deducting premium, the bank obliges him as it does not want to lose a customer. Another view was that the weather in Gujarat is more stable in winter, unlike in States such as Punjab, Haryana and Rajasthan, where the risk of unseasonal rains is high.

2.2.3.4 Not only do honest farmers suffer due to adverse selection by farmers and improper loaning practices, but such practices also make crop insurance schemes unsustainable. It was suggested that

Kharif loans availed by farmers be recovered by 31 October, and fresh loans availed for the *Rabi* season. Even though crop insurance is based on area, sample verification during the crop season should be compulsory and if discrepancy in area sown and area insured is beyond a predetermined level, the premium should be refunded to the entire group of farmers. There should be a fear of adverse consequences so as to prevent wrongdoing.

2.2.3.5 The AIC's Regional Manager in Ahmedabad pointed out that, even in earlier years, area discrepancy was observed with reference to the figures of land record of 7/12. He further observed that there was no consistency of the area insured over a period of time. More area is insured during drought years than in normal years. For example, during *Kharif* 2012, the coverage under cotton crop increased drastically as compared to previous years, primarily because of additional subsidy in premium and also because of imminent drought. Cotton is insured on actual basis and AIC bears the entire liability. Such adverse selection would make the scheme unviable and there will be no reinsurance from national and international reinsurers.

2.2.3.6 One view was that insurance companies should accept premiums only after the crops have been sown.

2.2.3.7 It was suggested that banks should bear a part of premium so that they have an incentive to verify the end use of the loan.

2.2.3.8 Area estimation for important crops at field level can be done in *Rabi* season through remote sensing technology, e.g. identification of field—irrigated or un-irrigated—and sample stratification for CCEs. Radar technology could be used for area estimation in *Kharif* season; however, it is yet to be operationally viable.

2.2.3.9 There is a need for expeditious settlement of claims. This, if not done, leads to dissatisfaction among farmers.

2.2.3.10 Some reputed agencies may be engaged to verify end use of crop loans. The loss-assessment methodology under WBCIS should be revisited.

2.2.3.11 With insurance units getting smaller in size, quality of CCEs could deteriorate unless the quality of governance and supervision improves. Further, timely completion of CCEs is an administrative challenge.

2.2.4 The fourth meeting: 9 December, 2013

2.2.4.1 The Committee's fourth meeting was held mainly to interact with experts and senior officers of some State governments. Senior officers of Andhra Pradesh, Madhya Pradesh, Odisha and Uttar Pradesh participated; as did experts from the National Insurance Academy (NIA) Pune; National Remote Sensing Centre (NRSC), Hyderabad and Gokhale Institute of Politics & Economics (GIPE), Pune. Some of the aspects which were discussed are given below.

2.2.4.2 Farmers would perceive crop insurance as relatively more expensive in the context of some States offering interest subsidy on loans to farmers.

2.2.4.3 State government officials lack technical knowledge to deal with crop insurance tendering system conforming to CVC guidelines. It is necessary to issue guidelines relating to the procedures to be followed while allocating districts to insurance companies.

2.2.4.4 State finance departments would find it difficult to switch from a post-loss claims payment regime to an upfront premium subsidy regime required by NCIP implementation in the middle of the financial year, since it would involve changes in the budget.

2.2.4.5 With the introduction of NCIP, farmers would have to pay higher premium rates for MNAIS and WBCIS, than were applicable under NAIS and Pilot WBCIS. In order to contain resentment among farmers, rates prevalent under NAIS should be continued to be charged.

2.2.4.6 Insurance coverage could increase if lower premium is charged for irrigated crops and for farmers who adopt better farming practices.

2.2.4.7 There was no occasion when claims due to prevented sowing and post-harvest losses had been paid under MNAIS.

2.2.4.8 The cut-off date for MNAIS and WBCIS under NCIP need to be revised. There is a need to educate farmers on how insurance schemes operate. Farmers are not favourably inclined towards WBCIS.

2.2.4.9 In some cases farmers keenly watch CCEs in their area and compel officials to record less-than-actual yield to enable them to make crop insurance claims. The increasing number of CCEs under MNAIS will make it harder to maintain quality and sanctity of CCEs. A more objective method of yield assessment is needed for MNAIS.

2.2.4.10 Threshold Yield (TY) should be calculated based on yield data of the best three years of the last five years. Central and State governments should bear premium subsidy of 50 per cent each.

2.2.4.11 There is a possibility of using hand-held devices/tablets for ground truthing for processes relating to area sown and yield estimation. NRSC data can be used for macro-level estimation of area sown.

2.2.4.12 A specialized agency needs to be created for conducting CCEs. In this context, one can utilize the services of students of agriculture colleges.

2.2.4.13 Micro-wave data could be used as an alternative to satellite images in June, July and August, when optical data is unavailable. However, this can currently be used only for rice crops. Remote sensing technology is not a substitute for CCEs at this point, but could become a reality in a few years.

2.2.4.14 Area discrepancy can be addressed if a verification exercise is carried out by the AIC at periodical intervals, say, annually or biennially. This can have a positive effect at the ground level and can prevent malpractice.

2.2.5 The fifth meeting: 20 December, 2013

2.2.5.1 The Committee's fifth meeting—at Patna on 20 December, 2013—saw participation from senior officers of the Government of Bihar, IMD, NABARD, SBI and the State Cooperative Bank. The following are some of the points made.

2.2.5.2 WBCIS allows manipulation of weather parameters to reduce claim payouts.

2.2.5.3 Area discrepancies exist is both MNAIS and WBCIS, particularly in three or four districts of north Bihar. There is a lack of due diligence on the part of insurance companies, which shift the responsibility to banks on the grounds that the latter maintain the lists of farmers. Bihar has made it mandatory for all insurance companies to provide lists of farmers.

2.2.5.4 GoI should revise the parameters to evaluate performance of insurance companies. Currently, one of the parameters is claims ratio. However, this ratio depends on weather and climatic conditions, and is not an indicator of the performance of an insurance company. Also, participation of non-loanee farmers and timely payment of claims should replace participation by loanee farmers as performance evaluation criteria. Insurance companies need to be more transparent in operation of the schemes. Insurers also have the responsibility to create awareness among farmers about crop insurance schemes.

2.2.5.5 Insurance companies should start sharing weather data. In case of multiple weather stations in the Reference Unit Area set up by the IMD, State government agencies or private companies, the weather data provided by the agency giving the highest payout should be used.

2.2.5.6 Some participants argued that banks should continue giving out loans even after the cut-off date, to fulfil farmers' need for credit.

2.2.5.7 There should be a provision for a no-claim bonus to encourage farmers to participate in insurance schemes.

2.2.5.8 Temperature within a district does not vary by more than one or two degrees. Hence, it is possible to verify the accuracy of data provided by private agencies by comparing with the data available with the IMD at the district level. Real-time transmission of weather data by private agencies to a central receiving station at the State-government level will reduce possibility of manipulation of weather data. Private agencies usually take seven days to send the data.

2.2.5.9 Rainfall is difficult to monitor since, unlike temperature, it does not remain uniform across districts, and is likely to vary every 25km. However, cumulative rainfall data within a district for a month would not have much variation. Rainfall data can be transmitted every three hours.

2.2.5.10 There is a possibility of the weather data being captured wrongly. IMD has software through which the raw data can be smoothened. If the raw weather data is moderated in accordance with prescribed norms, it cannot be termed as manipulation. It was suggested that State governments set up AWSs to avoid the possibility of data manipulation.

2.2.5.11 Non-loanee farmers often rush to enrol in crop insurance schemes when a State government declares a drought. Banks, particularly cooperative banks, find it difficult to handle this rush due to a lack of manpower and infrastructure. Hence, insurance companies should enrol such farmers directly.

2.2.5.12 There is no clear guideline on KCCs. Hence, cooperative banks fix 50 per cent limit for *Kharif* and 50 per cent for *Rabi* season, but premium is deducted in *Kharif* season only. Farmers perceive high premium rate as a disincentive to participate in crop insurance schemes. Insurance companies should create awareness among farmers.

2.2.6 The sixth meeting: 30 December, 2013

2.2.6.1 The Committee's sixth meeting took place at Bengaluru on 30 December, 2013, with senior officers of the Government of Karnataka, NABARD, RBI, IMD, Syndicate Bank, the National Sample Survey Organization (NSSO), the State Cooperative Bank and others. The Committee also met with representatives of private insurance companies: ICICI Lombard, Tata AIG, Reliance General Insurance, HDFC Ergo General Insurance, Cholamandalam General Insurance, and IFFCO Tokio. The following are some of the points that emerged.

2.2.6.2 With the introduction of NCIP, the premium payable by the farmers has increased exponentially, making it unaffordable. Affordable premium is an important factor in increasing coverage of crop insurance schemes. The feasibility of designing schemes covering limited but critical perils may be explored.

2.2.6.3 There is a need to involve crop experts, governments and farmers in designing and standardizing the weather insurance terms sheet for a particular crop and unit area.

2.2.6.4 A single scheme or product should not be applied to all areas and crops.

2.2.6.5 There is a need for capacity building at the State-government level, to improve the quality of yield-estimation surveys and for assessment of crop area.

2.2.6.6 There is a need to notify crops with assured irrigation and similar agro-climatic conditions at a higher level of insurance unit; this will reduce the number of CCEs.

2.2.6.7 Crops like pomegranate, vegetables, oil palms and crops grown in poly houses should be included under crop insurance schemes.

2.2.6.8 Representatives of private insurance companies suggested the following:

- Standardization of norms for establishing and maintaining of weather stations is urgently required so as to have reliable weather data. An audit of weather stations, by teams comprising representatives of insurance companies and State government officials, could be introduced.
- Delay or non-payment of advance premium subsidy by State governments leads to non-compliance of section 64 VB of the Insurance Act.

- There is a need for a scientific system and a basis to design weather insurance products. State governments should avoid unilateral fixing of triggers in the terms sheet.
- It is necessary to use technology to make it easier for insurers to supervise large number of CCEs in a short time.
- Sanctity of cut-off dates for participation of farmers needs to be maintained.
- Premium needs to be further subsidized under NCIP to make it more affordable to farmers and encourage their participation.
- There is a need to create a central database of yield and weather data.

2.2.7 The seventh meeting: 15 January, 2014

2.2.7.1 The seventh meeting of the Committee was held in the committee room of the Planning Commission, New Delhi, on 15 January, 2014. The Committee interacted with Prof. Abhijit Sen, Member, Planning Commission; Dr Ramesh Chand, Director, NCAP; and Dr K. K. Singh, Head, Agromet, IMD. The following are some important aspects highlighted by the experts.

2.2.7.2 There are alternative methods such as FASAL, available today, which could be used to estimate crop yield.

2.2.7.3 There is a need to have convergence between insurance and Minimum Support Price (MSP).

2.2.7.4 AIC should have a panel of surveyors to evaluate crop losses, who could be moved from one geographical area to another as and when losses occur.

2.2.7.5 The current density of AWSs present is insufficient to implement WBCIS across the country. Satellite data is used along with AWS data on parameters such as temperature and rainfall for weather monitoring and forecasting. However, in India—unlike in some other countries—it is not done to generate high resolution virtual weather grids for crop insurance.

2.2.7.6 To capture weather data correctly it is necessary to have proper site selection, maintain proper exposure condition such as elevation of site, distance from obstruction, etc. The calibration of sensors/equipment, quality of data and consistency checks are important.

2.2.7.7 Some States have a good network of weather stations, but the maintenance of the stations is poor. It may be useful to set up a national level organization other than the IMD for approving and monitoring the quality of data of the weather stations installed by agencies other than IMD.

2.2.7.8 An important observation by Member, Planning Commission, was that WBCIS cannot be a substitute for yield-based insurance schemes, but can be used as a tool that enables quicker payment of claims. It is more suitable for high-value crops. It can be used as a component of a double-trigger crop insurance product.

2.2.7.9 A mechanism may be put in place so that the area insured can be identified at the village level.

2.2.7.10 The number of CCEs should be rationalized. More CCEs can be conducted in those areas where the probability of loss is high, based on data gathered using remote sensing technology.

2.2.7.11 Too much competition in insurance could result in insurers avoiding high-risk crops or increasing rates for such crops.

2.2.7.12 When crop insurance is made compulsory along the lines of third-party insurance for motor vehicles, the rates will be affordable.

2.2.8 The eighth meeting: 3 February, 2014

2.2.8.1 The Committee's eighth meeting was held at the Department of Financial Services, Ministry of Finance, New Delhi. The meeting was attended by senior officers of the Department of Financial Services, NABARD, RBI, Andhra Bank, Oriental Bank of Commerce, Punjab National Bank and the State Bank of India. The following are the highlights of the participants' observations and suggestions.

2.2.8.2 In case of the KCC facility, segregation of limits is a challenge because all crops, whether insured or not, and consumption loan are included.

2.2.8.3 Now-a-days, *Kharif* loans are not repaid by 30 September. Further, it is very difficult for banks to verify the end use of loans. This is much more difficult in respect of non-loanee farmers.

2.2.8.4 In the event of a drought-like situation, large numbers of farmers approach banks around the cut-off date for loans. During normal years, farmers approach for disbursement of loan after the cut-off date in order to avoid insurance.

2.2.8.5 State agriculture departments have to play a major role in addressing the problem of area discrepancy.

2.2.8.6 AIC should have more presence at the field level.

2.2.8.7 There should be provision of a no-claim bonus.

2.2.8.8 There should be a season-wise limit for withdrawal through KCCs.

2.2.8.9 There is a need to integrate land records with the banking system.

2.2.9 Meeting with IRDA: 10 April, 2014

2.2.9.1 The Committee met with the Insurance Regulatory and Development Authority (IRDA) in Hyderabad on 10 April, 2014. IRDA Chairman Sri T. S. Vijayan, Member Sri M. Ramaprasad and Executive Director Sri Sriram Taranikanti participated in the discussion. Sri Taranikanti made a detailed presentation on various aspects of crop insurance. The Chairman and Member also made a number of suggestions. The following aspects were highlighted.

2.2.9.2 The coverage of crop insurance in India is limited, given the number of farmers and value of agricultural GDP. There is tremendous potential for increased coverage and scope for insurance business. Insurance companies should expand their activities with respect to agricultural insurance.

2.2.9.3 There is a need to look beyond subsidized insurance programmes and introduce farmers-specific products and better settlement mechanisms.

2.2.9.4 An area-based approach, with parametric measures, is not fair to individual farmers. It is desirable to move towards plot-based or individual approach-based insurance. In other words, crop insurance for farmers should be at the plot level.

2.2.9.5 To this end, purpose remote sensing technology should be used for estimating crop yield. Past data on crop yield and satellite images can be used to develop the required algorithm, which can then be continuously improved, based on ongoing CCEs.

2.2.9.6 Organizations such as NRSCA, NIRD, State space application centres and agricultural universities can be associated with this programme of developing the algorithm to assess crop yield through remote sensing technology.

2.2.9.7 Customer service centres can be utilized to market crop insurance products.

2.2.9.8 IRDA and reinsurance companies can provide infrastructure, and technical and financial support to AIC and other insurance companies, for developing crop insurance products, marketing them and improving settlement mechanisms.

2.2.10 Final meeting: 28 April, 2014

The Committee held another meeting in New Delhi on 28 April, 2014 and finalized the report.

2.2.11 The Committee submitted its report to the Secretary to the Government of India, Department of Agricultural and Cooperation, Ministry of Agriculture on 15 May, 2014.

2.3 Issues emerging from consultations with stakeholders

As described in the previous section, a number of issues, challenges and suggestions were put forward by stakeholders and other participants during various meetings with the Committee. Some issues relate to design of crop insurance schemes, some relate to operational aspects and some others relate to governance aspects of the agencies/organizations involved in the implementation of the schemes.

Issues identified:

- Area discrepancy
- CCEs: delay in receiving crop-cutting data; quality and reliability of data
- Lack of confidence in AWS data
- Crop-loan practices
- Crop-insurance premium
- Role of banks and AIC in scheme operation
- Settlement of claims
- Technical skill and capacity building of crop insurance personnel
- Allocation of districts to insurance companies
- Awareness of farmers
- Product design

2.3.1 Categorizing the issues raised during consultations

To be more specific, the issues relate to the following aspects:

- Area under various crops insured
  [e.g., area discrepancy, or the area insured for a particular crop being more than the crop area sown]
- Crop-cutting experiments
  [e.g., delay in receiving crop-cutting data, and quality and reliability of such data]
- Weather data, particularly of AWSs of private providers
  [e.g., lack of confidence in the data of AWSs; accreditation, certification and quality control of AWSs]
- Crop-loan practices
  [e.g., non-compliance with the provision of compulsory insurance for loanee farmers, multiple loans for the same land, lack of seasonality discipline, etc.]
- Crop-insurance premium
  [e.g., affordability for farmers especially in case of MNAIS, transparency in determining premium rate]
- Role of banks and AIC in the operation of schemes
  [e.g., banks simply compile the information without due diligence; AIC, having no stake until recently, accepts the data submitted by banks and farmers without adequate scrutiny]
- Settlement of claims
  [e.g., delay in claim settlement, discontent about high number of claims under WBCIS]
- Technical skill and capacity building of personnel associated with crop insurance schemes
  [e.g., personnel at government agencies, banks and insurance agencies]
- Allocation of districts to insurance companies
  [e.g., lack of transparency, lack of technical expertise to evaluate insurance products and seasonal allocation of area]
- Awareness of farmers regarding various features of the schemes
  [e.g., farmers do not have information regarding the schemes and principles of insurance]
- Product design
  [e.g., lack of innovation, poor co-relation of product parameters with yield outcomes]

2.3.2 Going beyond loopholes

The question arises as to whether the Committee should address the above aspects/issues or limit itself to

only those issues related to "loopholes" as previously defined. For example, the problem relating to area discrepancy—which could result from the area-based design of the crop insurance schemes—arises because of deficiencies not only in the system of assessment of crop area by government agencies but also a lack of due diligence by banks in preventing multiple insurance for the same land, or verifying the end use of the loan advanced. It also arises when seeds that have been sown do not germinate due to failure of rains. Thus the problem of area discrepancy arises because of the nature of the scheme which is area-based—individual farms are not taken as insurance units and hence not verified—and also because of governance and implementation issues of banks and the relevant departments of State governments. Similarly, issues relating to lack of confidence among farmers regarding weather data arise from the non-existence of systems of certification and quality control of weather stations. As regards to CCEs, there do not seem to be any loopholes in the crop insurance schemes as such, but there are acute and widespread problems of administration and governance. Hence, the Committee has attempted to address all the issues, whether strictly of the nature of 'loopholes' or not, that have emerged during its interactions and deliberations.

2.3.3 Relevance of past experiences

Interestingly, many of the problems that were highlighted in the interaction meetings have existed since the beginning of nation-wide crop insurance schemes in the country. Some previous committees also tried to address the problems, and changes were regularly made in the design of crop insurance schemes. It is worthwhile to briefly describe the experiences of operating crop insurance schemes in India during the last two or three decades. The idea is not merely to provide a chronology of events for its own sake; the objective is to see if we can learn some lessons from our past experiences so as to address the issues of today and tomorrow more effectively.

3 Crop Insurance in India: A Historical and Analytical Overview

3.1 General

The idea of crop insurance in India, in existence for more than a century, took decades to solidify into concrete, workable schemes. That was three decades ago. Since then, we have progressed a great deal in conceptualizing, formulating and implementing crop insurance schemes. However, we continue to grapple with several issues and challenges. In order to work out measures to address those issues, it is worthwhile to analyse and evaluate the schemes which have been or are being implemented. So, in this chapter we provide an analytical overview, from a historical perspective, of our experiences with crop insurance.

3.2 Early efforts

3.2.1 Until the early 1990s, most writings on crop insurance in India traced its history to the country's independence in 1947. Interestingly, a paper published in the *Economic and Political Weekly (EPW)* in 1995 revealed that the idea of introducing crop insurance in India has existed since the early 20th century. In his pioneering work, published as a book entitled, *Agricultural Insurance: A Practical Scheme Suited to Indian Conditions in 1920*, J. S. Chakravarti proposed a rain insurance scheme for Mysore State to protect farmers against drought. The scheme was based on an area approach. He had already published a number of papers on this subject since 1915 in the *Mysore Economic Journal*. But his valuable work had been lost in history until the early 1990s. Another early example of crop insurance in India is that of Dewas State of Madhya Pradesh in the form of a compulsory crop insurance scheme of 1943. There are a few other examples as well.

3.2.2 The 1995 *EPW* paper mentioned above was a landmark publication that brought to light J. S. Chakravarti's seminal work. It also contributed immensely to the emergence of rainfall/weather-based insurance products/schemes in India. Though some academics and multi-lateral financial institutions were already suggesting experimentation with weather index-based insurance as their own original ideas, in the 1990s, the *EPW* paper showed that the concept and its application had already existed in India. The paper with its contemporary perspective inspired—though indirectly—a few insurance companies and NGOs to introduce weather-based insurance products in the market.

3.3 After Independence

It is, however, a fact that crop insurance received concerted attention only after 1947. Several attempts were made at the national level to formulate and operationalize agricultural insurance in India.

[1] Mishra, P. K. (1995), 'Is Rainfall Insurance a New Idea: Pioneering Scheme Revisited' , *Economic and Political Weekly*, vol. XXX, no. 25, pp. A84–88. The above paper was an outcome of one of the findings of the author in the course of his doctoral research on crop insurance during 1991–94 at the Institute of Development Studies, United Kingdom.

[2] Shah, V. B. and Maharaja, M. H. (1983), 'Crop Insurance Scheme in Gujarat' , in Sardar Patel University, Crop Insurance in India: Proceedings of an All-India Seminar on Crop Insurance held 6–7 February, 1981, at Vallabh Vidyanagar.

3.3.1 First Decade: Optimism

The subject of crop insurance was discussed in 1947 by the Central Legislature, and the then-Minister of Food and Agriculture, Dr Rajendra Prasad, gave an assurance that the Government would consider the feasibility of introducing crop and cattle insurance. An officer on special duty was appointed in August 1948 with the task of formulating experimental schemes of crop and cattle insurance for selected areas. His report, *Problems of Crop Insurance under Indian Conditions*, was published in 1950. Two pilot schemes prepared by him were circulated among different States for adoption, but they were unwilling to operate the schemes because of resource constraints.

History of Crop Insurance in India

Early efforts:
- Rainfall insurance scheme of 1920
- Proposed schemes: 1950s
- Model scheme of 1960s
- Experimental schemes of 1970s

Area based schemes:
- Pilot crop insurance scheme 1979–84
- CCIS 1985–1999
- NAIS 1999–2013
- ECIS 1997–1998
- PSSCI
- FIIS
- MNAIS
- WBCIS
- NCIP

3.3.2 Second Decade: Pessimism

Crop insurance again received attention at the time of formulation of the Third Five-Year Plan (1961–66), but the Working Group on Agriculture was not in favour of recommending its inclusion in the Plan. Interestingly, the Government of Punjab proposed the inclusion of crop insurance in its State Plan and sought financial assistance from the Central Government. The Punjab scheme envisaged compulsory crop insurance in selected areas of the State. In October 1965, the Government of India decided to draw up a Crop Insurance Bill and a Model Scheme of Crop Insurance in order to enable States to introduce crop insurance, if they wanted to do so. Draft documents were prepared, and sent to the State governments for their views before finalization. The State governments differed in their views on the above documents. The Punjab Government was no longer willing to introduce crop insurance, because the State had been reorganized in the meantime and the Government felt that there was no need for insurance as its agriculture was irrigated. In March 1970, the GoI decided to refer the Bill and the Model Scheme to an expert committee, under the chairmanship of Dr Dharm Narain, which submitted its report in 1971. The committee concluded that it would not be advisable to introduce crop insurance in the near future because of the financial burden on the public exchequer. Thus after two decades of deliberations and debate, the possibility of introducing crop insurance in independent India appeared to have receded.

3.3.3 Third Decade: Revival

Prof. V. M. Dandekar contributed immensely to the revival of crop insurance in India. He examined, in detail, the arguments of the expert committee mentioned above and strongly advocated in his 1976 paper the introduction of crop insurance based on an area approach.

3.3.4 Experimental crop insurance schemes

In reality, crop insurance had already emerged, though on a small-scale, experimental basis. During 1973—76, fertilizer companies, such as Gujarat State Fertiliser Company in Gujarat and Rashtriya Chemicals and Fertilisers Company in Maharashtra, started pilot crop insurance schemes as components of agricultural extension projects. Similar experimental schemes were started in Andhra Pradesh,

Karnataka, Tamil Nadu and West Bengal. All these schemes-implemented by the General Insurance Corporation of India (GIC) from its inception in 1973 until 1976-covered cotton, wheat, groundnut and potato crops, and 2,154 farmers. Another experimental scheme for cotton, covering 909 farmers, was operated during 1978–79 in Gujarat, Madhya Pradesh and Maharashtra. These loss-making schemes led to the realization that schemes based on individuals were not practical on a national scale.

3.3.5 The Pilot Crop Insurance Scheme

Following Prof. Dandekar's suggestion, GIC prepared a crop insurance scheme based on the area approach and put it into operation from 1979–80. Initially, it was introduced as a pilot scheme in three States and was extended to twelve States by 1984–85. Participation was voluntary. The insurance premium ranged from 5–10 per cent of the sum insured. The number of farmers covered in a year ranged from 16,000 to 60,000, except for 1984–85, when 4 ,47,000 were covered. The loss ratio was 1.10 over the five-year period from 1979–80 to 1980–84. The scheme was discontinued in 1985, when CCIS was introduced.

3.3.6 The Comprehensive Crop Insurance Scheme (CCIS)

3.3.6.1 The GoI introduced CCIS in the financial year 1985–86. Operated by GIC in collaboration with the respective State governments, the scheme covered cereals, pulses and oilseeds. Crop insurance was linked to institutional credit; farmers who availed themselves of loans for specified crops were eligible for insurance coverage. State governments were left to decide whether to operate the scheme in the State or not. Once it was operational, participation of farmers taking out short-term crop loans from credit institutions was compulsory. The indemnity and premium were shared by the Central and the State governments in the ratio of 2:1. Originally, the farmer was insured for 150 per cent of the loan disbursed to him for growing the insured crops; this was reduced to 100 percent in 1988. The rate of premium was uniform for the whole country: 2 per cent of the sum insured for rice, wheat and millet crops, and 1 per cent for pulses and oilseeds. Even the low rate of premium was subsidized by 50 per cent in the case of small and marginal farmers. This is in contrast of the rate of 5–10 per cent in the pilot crop insurance scheme. The latter was voluntary, whereas CCIS was compulsory.

3.3.6.2 The scheme was based on the area approach. Area units called "defined areas" were identified for the purpose of assessing the indemnity. A defined area could be a district, a taluka, a block or any other contiguous area. The actual average yield per hectare of the defined area was determined on the basis of crop-cutting experiments. If the actual yield of an insured crop would fall short of the specified TY, for the area, all insured farmers growing that crop in that area would be deemed to have suffered the shortfall in the respective yield and entitled to receive the indemnity.

---

[3] Dandekar, V. M. (1976), 'Crop Insurance in India' , *Economic and Political Weekly*, vol. XI, no. 26, June 26, pp.A61–80

[4] The above details were compiled for the first time in Mishra, P. K. (1994), 'The Comprehensive Crop Insurance Scheme in India 1985–91: A Study of Its Working with special Reference to Gujarat' , PhD thesis, University of Sussex, Brighton, UK.

[5] Data could be obtained for the period which excludes the last year of the scheme.

[6] For the CCIS threshold yield of an insured crop for a defined area was 80 per cent of the average (moving average) area yield for the preceding five years.

3.3.7 The Experimental Crop Insurance Scheme (ECIS)

In 1992, even while CCIS was being implemented, GoI considered introducing a new pilot scheme called the Experimental Crop Insurance Scheme (ECIS) in one district of each State. The idea was to provide insurance coverage to all farmers, unlike only loanee farmers under CCIS. A draft scheme was circulated among State governments and national agencies in 1992. Finally, ECIS was introduced during the *Rabi* season of 1997–98. The scheme was similar to CCIS; however, it was meant only for small/marginal farmers (both loanee and non-loanee) and the premium was fully subsidized. The scheme was operated during 1997–98 rainy season in Andhra Pradesh, Assam, Karnataka, Orissa and Tamil Nadu. The indemnity was Rs 37.80 crore against the premium receipt of Rs 2.80 crore. The scheme was discontinued after one season due to financial problems.

3.3.8 The Pilot Scheme on Seed Crop Insurance (PSSCI)

The Government of India's PSSCI came into effect from *Rabi* 1999–2000. The objective was to provide a sense of financial security to seed breeders and seed growers against failure of seed crops. The scheme covered breeder, foundation and certified seeds of the following crops:

- Cereals (paddy, wheat, maize, jowar [sorghum], ragi and bajra [pearl millet])
- Lentils (soya bean, gram, green gram, black gram, red gram and pea)
- Oil seeds (sunflower, castor, mustard, and groundnut)
- Cotton and jute
- Potato

3.3.9 The National Agricultural Insurance Scheme (NAIS)

3.3.9.1 After NAIS was introduced in *Rabi* 1999–2000, leading to the discontinuation of CCIS. Like CCIS, NAIS is primarily based on the area approach. It covers all farmers: loanees and non-loanees. It envisages coverage of cereals, millets, pulses, oilseeds and annual horticultural/commercial crops for which adequate yield data are available.

3.3.9.2 Salient features of NAIS:

- **States and areas covered:** All States and Union Territories had the option of implementing the scheme.
- **Farmers covered:** All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas were eligible for coverage. The scheme was compulsory for farmers availing crop loans and voluntary for others.

[7] Insurance Institute of India (2001), Agricultural Insurance, p. 21

- **Crops covered:** Food crops (cereals, millets and pulses) Oilseeds Annual commercial/horticultural crops (sugarcane, cotton, potato, onion, chilli, turmeric, ginger, jute, tapioca, annual banana and annual pineapple)
- **Sum insured:** The minimum sum insured (SI) in case of loanee farmers is the amount of loan availed, which can be further extended up to value of 150 per cent of average yield. For non-loanee farmer, it can be up to value of 150 per cent of average yield.
- **Premium rates:** The premium rates are 3.5 per cent for oilseeds and bajra and 2.5 per cent for cereals, millets and pulses during *Kharif*; 1.5 per cent for wheat and 2 per cent for other food crops and oilseeds during *Rabi*. The rates for annual commercial/horticultural crops are based on actuals.
- **Premium subsidy:** Premiums for small/marginal farmers are subsidized to the extent of 50 per cent, to be shared equally between the Centre and States. The premium subsidy was to be phased out over a five-year period on sunset basis, starting with 50 per cent subsidy in the first year, which would be reduced by 10 per cent each year and was to be completely phased out in five years. However, 10 per cent subsidy continued to be given till the end.
- **Scheme approach:** The scheme covered losses from sowing to harvesting, and operated on area approach for widespread calamities. For this purpose, a unit of insurance is defined which may be a Village Panchayat, Mandal, Hobli, Circle, Phirka, Block, Taluka, etc., to be decided by the State government/UT. However, each participating State government/UT was required to reach the level of village panchayat as the unit within three years. The Scheme operated on an individual basis for specific localized calamities on an experimental basis.
- **Loss assessment, levels of indemnity and threshold yield:** The threshold yield or guaranteed yield for a crop in an insurance unit was the moving average yield, based on the past three years, in case of rice and wheat, and five years' yield in case of other crops, multiplied by the level of indemnity. Three levels of indemnity—90 per cent, 80 per cent and 60 per cent, corresponding to low-risk, medium-risk and high-risk areas—were available for all crops. The insured farmers of each unit area could also opt for higher level of indemnity on payment of additional premium.

  If the actual yield (AY) per hectare of the insured crop for the defined area fell short of the specified TY, all the insured farmers growing that crop in the defined area were deemed to have suffered the same amount of shortfall in their yield.
- **Sharing of risk:** Government of India and States shared claims beyond 100 per cent of premium for food crops and oilseeds on a 50:50 basis. In case of annual commercial/horticultural crops, claims beyond 150 per cent of premium in the first three or five years and beyond 200 per cent thereafter was borne by Centre and State on 50:50 basis.

3.3.10 The Pilot Project on Farm Income Insurance Scheme (FIIS)

FIIS was introduced on a pilot basis in fifteen districts of eight States during *Rabi* 2003–04. Given that NAIS

was designed to protect farmers against yield fluctuations, it does not address the problem of price fluctuation or price risk. The income of a farmer depends both on yield and market price. The new scheme envisaged addressing both yield risk and price risk so as to stabilize farmers' incomes. It, however, focused on income in respect to individual crops, and not the farm income. In other words, insurance was for income from specific crops instead of the entire income of a farm growing several crops. The scheme was discontinued on the recommendation of the Joint Group referred to later in this chapter.

3.3.11 Modified National Agricultural Insurance Scheme (MNAIS)

MNAIS was initiated during the 11th Plan from *Rabi* 2010–11 on pilot basis on the recommendation of the GoI Joint Group, in 50 districts. The salient features of MNAIS are as under:

- Actual premium, with subsidy in premium ranging up to 75 per cent to all farmers
- Only upfront premium subsidy is shared by the Central and State government on 50:50 basis; all claims liability is on the insurance company
- Unit area of insurance is reduced to village/village panchayat level for major crops
- Indemnity for prevented sowing/planting risk and for post-harvest losses due to cyclone (in coastal areas), etc.
- On-account payment up to 25 per cent of likely claims as immediate relief to farmers
- More realistic basis for TY calculation; and minimum indemnity level increased to 70 per cent, from 60 per cent in NAIS. Like NAIS, MNAIS is compulsory for loanee farmers and voluntary for non-loanee farmers
- Private-sector participation to create a competitive crop insurance environment
- Setting up a catastrophe-relief fund at the national level, with 50:50 contributions from the Central and State governments, to provide protection to the insurance companies in the event of premium to claim ratio exceeding 1:5 at the national level and failure to procure appropriate reinsurance cover at competitive rates. NAIS was withdrawn from those area(s)/crop(s) where MNAIS was implemented.

3.3.12 Weather Based Crop Insurance Scheme (WBCIS)

3.3.12.1 The basic approach of "weather index" insurance is to estimate the percentage deviation in crop output due to adverse deviations in weather conditions. There are crop models and statistical techniques available to work out the correlation between crop output and weather parameters. These techniques attempt to indicate the linkage between the financial losses suffered due to adverse weather variations and also estimate payouts. WBCIS envisages such weather index-based insurance products designed to offer insurance protection against losses to crop resulting from adverse weather conditions.

3.3.12.2 Piloted in the *Kharif* 2007 season, WBCIS also operates on the concept of area approach. For loss estimation, a Reference Unit Area (RUA) is deemed to be a homogenous area unit of insurance. Each RUA is linked to a Reference Weather Station (RWS); claims are determined on the basis of weather data recorded by the RWS. Adverse weather events during the season entitle the insured to a pay-out, subject to the weather triggers defined in the "Payout Structure" and the terms and conditions of the scheme. The claim settlement is an automatic process, based on the weather readings at the RWS. In a given RUA, the payout given per unit area is the same for all cultivators under the same RWS. Claims are normally settled within 45 days from the end of the insurance period. Insurance companies declare a per-unit Sum Insured at the beginning of each crop season in consultation with experts. This may vary from crop to crop in each RUA. The sum insured for the loanee farmer is calculated by multiplying per unit area value of inputs with crop specific acreage declared by the farmer in the loan application form submitted to the lending bank. For a non-loanee farmer, the acreage figure is expected area sown/planted under the particular crop as declared in the insurance proposal form.

3.3.13 National Crop Insurance Programme (NCIP)

As mentioned earlier, the GoI has discontinued NAIS from *Rabi* 2013–14, with the exception of a few States for one season only, and launched NCIP from November 2013. In the new programme, WBCIS, MNAIS and Coconut Palm Insurance Scheme (CPIS) are included as full-fledged schemes with certain modifications over their pilots. Farmers are entitled to maximum premium subsidy up to 50 per cent under WBCIS and 75 per cent under MNAIS on a graded scale. Premium rates have been capped according to the type of crop and season, and in cases where the actuarial premium rates are higher than the capped limit, the sum insured for such crops will be reduced in proportion to the cap level. The Ministry of Agriculture, GoI, has also issued operational guidelines for the schemes.

3.4 An analysis of the working of major crop insurance schemes: CCIS, NAIS, MNAIS and WBCIS

As discussed above, several crop insurance schemes have been introduced in India during the past three decades. Sometimes, new schemes were introduced on a pilot basis even before the ongoing scheme stabilized. A few schemes were discontinued after being operated for two or three seasons. The two schemes that were in existence for longer periods are CCIS and NAIS. MNAIS and WBCIS, though introduced in recent years, are the major schemes in existence today. Below, we analyse the performance of these schemes in order to draw some lessons for the future.[9]

3.5 Some aspects of the working of CCIS, 1985–99

CCIS was the first crop insurance scheme implemented on a nation-wide scale in India. In the following paragraphs, we analyses—based on data relating to the progress of its implementation and its financial performance—how CCIS made significant progress within a short time though it was financially unviable. We also discuss the operational problems which arose in the course of CCIS implementation. These are based on the details given in some analytical studies.[10]

[9] The analytical framework including the format of the Tables for analysis and presentation of data are, as in case of most of the recent publications and reports, based on that in Mishra, P. K. (1996), *Agricultural Risk, Insurance and Income: A Study of the Impact and Design of India's Comprehensive Crop Insurance Scheme*, Avebury, Aldershot.

[10] The details on CCIS, including the tables, are from Mishra, P. K. (2004), *'Agricultural Insurance in India'*, Paper presented at the IRMA Silver Jubilee Symposium, Anand, Gujarat.

3.5.1 Coverage of farmers and area and financial aspects

Major Crop Insurance Schemes in India:
- CCIS, NAIS, MNAIS and WBCIS
- NCIP includes MNAIS, WBCIS & CPIS

3.5.1.1 The number of States and UTs that participated in the scheme increased from 13 in the first *Kharif* season to 21 during *Kharif* 1987, which was third consecutive year of drought, and one of the most severe. In a typical year, 16–17 States and UTs participated during each season.

3.5.1.2 It is interesting to note that the scheme commenced operations in a big way right from the first year, i.e., 1985–86, with a coverage of 3.85 million farmers and 7.69 million hectares of gross cropped area during both *Kharif* and *Rabi* seasons of 1985–86 [Tables 1 and 2]. This increased to 6.48 million farmers and 10.89 million hectares of land during the last two seasons of its operation. The gross cropped area in 1998–99 was 193 million hectares. According to the agricultural census for 1995–96, there were 115.6 million operational holdings. Thus, during 1998–99, 5.6 per cent of farmers were covered, as was 5.6 per cent of the gross cropped area.

3.5.1.3 Tables 1 and 2 also indicate the financial aspects of CCIS. The percentage of indemnity to the sum insured, known as loss cost, ranges from 3.36 to 24.32 percent during *Kharif* seasons and from 1.31 to 4.47 per cent during *Rabi* seasons. For the entire period of 14½ years—or 29 seasons (1985–86 to 1999 *Kharif*)-the sum insured, premium and indemnity amounted to Rs 24,975 crore, Rs 403.5 crore and Rs 2,319 crore, respectively. So, the loss cost and claims ratio work out to 9.29 percent and 5.75, respectively. Thus, the indemnity paid was about six times the premium received over this period. It is worthwhile to note that the indemnity payment was more than the premium received in all the seasons except for two *Rabi* seasons. In other words, there were losses in 27 out of 29 seasons. Thus, CCIS was financially unviable.

Table 1
CCIS: Performance during 1985–1999 *Kharif* seasons

Kharif Season	No. of participating States/UTs	No. of Farmers Covered (m.)	Area Covered (m. Ha.)	Sum Insured (SI) (m. Rs)	Premium (m. Rs)	Claims (m. Rs)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
1985	13	2.64	5.37	5,427.3	94.2	978.86	10.39	18.04
1986	18	3.96	7.74	8,562	149.9	1,724.23	11.5	20.14
1987	21	4.63	8.41	11,406.8	191	2,773.96	14.52	24.32
1988	13	2.97	5.24	5,507	88.7	291.86	3.29	5.30
1989	17	4.23	6.65	8,738.9	144.8	344	2.38	3.94
1990	17	1.94	3.41	5,151.5	76.6	815.59	10.65	15.83
1991	17	3.76	6.86	9,314.1	144.3	1,952.71	13.53	20.97
1992	17	4.23	7.37	11,794.7	186.1	438.27	2.36	3.72
1993	17	4.22	6.95	13,093.8	206.5	1,771.78	8.58	13.53
1994	17	4.34	7.14	15,657.84	242.78	526.35	2.17	3.36
1995	17	4.78	7.8	17,841.57	274.01	1,319.76	4.82	7.40
1996	17	4.85	8.06	19,734.42	304.22	1,524.82	5.01	7.73
1997	17	5.13	8.35	22,295.71	343	1,709.12	4.98	7.67
1998	17	5.29	8.21	24,441.52	382.86	1,188.98	3.11	4.86
1999	17	5.58	8.97	28,330.54	440.25	4,616.86	10.49	16.30
Total 15 *Kharif* seasons		**62.55**	**106.53**	**2,07,297.70**	**3,269.22**	**21,977.15**	**6.72**	**10.60**

Table 2
CCIS: Performance during 1985–1998 *Rabi* seasons

Rabi Season	No. of participating States/UTs	No. of Farmers Covered (m.)	Area Covered (m. Ha.)	Sum Insured (m. Rs)	Premium (m. Rs)	Claims (in m. Rs)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
1985–86	16	1.21	2.32	2,384.1	44.78	31.16	0.70	1.31
1986–87	17	1.13	2.1	2,423.7	45.17	45.87	1.02	1.89
1987–88	19	2.13	3.24	4,754.4	88.5	120.78	1.36	2.54
1988–89	9	0.87	1.01	1,641	31.2	38.71	1.24	2.36
1989–90	17	0.66	0.96	1,515.6	27.6	28.79	1.04	1.90
1990–91	16	0.79	1.07	1,962.8	35	40.38	1.15	2.06
1991–92	15	0.8	1.12	2,068.5	36.5	60.32	1.65	2.92
1992–93	16	0.79	1.06	2,411.6	43.1	71.28	1.65	2.96
1993–94	16	0.82	1.12	2,778.4	48.9	114.39	2.34	4.12
1994–95	16	0.84	1.1	3,110.8	54.31	53.57	0.99	1.72
1995–96	16	0.88	1.28	3,796.78	69.29	169.59	2.45	4.47
1996–97	16	0.99	1.4	4,931.88	89.3	206.87	2.32	4.19
1997–98	16	0.86	1.35	4,002.62	71.76	141.64	1.97	3.54
1998–99	16	0.90	1.92	4,668.62	80.67	89.53	1.11	1.92
Total 14 *Rabi* seasons		**13.67**	**21.05**	**42,450.8**	**766.08**	**1,212.88**	**1.58**	**2.86**
Total CCIS		**76.22**	**127.58**	**2,49,748.5**	**4,035.30**	**23,190.03**	**5.75**	**9.29**

Table 3
CCIS: Crop-wise Premium, Indemnity, Claims Ratio and Loss Cost as % of total (1985–1999)

Crop	Premium (% of total for all crops)	Indemnity (% of total for all Crops)	Claims Ratio (Claims/Premium)	Loss Cost (Claims as % of Sum Insured)
Paddy (rice)	57.88	31.38	3.12	6.24
Wheat	4.42	1.3	1.69	3.39
Jowar (sorghum)	8.35	4.96	3.42	6.83
Bajra (pearl millet)	4.12	5.4	7.53	15.06
Other cereals	1.39	0.66	2.69	5.38
All cereals	76.16	43.7	3.3	6.60
Groundnuts	19	52.94	16.02	16.02
Other oilseeds	3.51	1.4	2.28	2.28
All oilseeds	22.51	54.34	13.88	13.88
Pulses	1.33	1.96	8.5	8.50
All crops	**100**	**100**	**5.75**	**9.29**

Source: Calculated on the basis of data from the Agriculture Insurance Company of India (AIC) Ltd.

Table 4
CCIS: Financial aspects relating to Andhra Pradesh, Gujarat, Maharashtra and other States 1985–1999

State	Sum insured (m. Rs)	Premium (m. Rs)	Indemnity (m. Rs)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
Gujarat	54,119.08	661.58	10,978.23	16.59	20.29
Maharashtra	31,988.96	519.23	2,184.99	4.21	6.83
Andhra Pradesh	66,315.78	1,133.02	4,826.05	4.26	7.28
Sub–total	1,52,423.82	2,313.83	17,989.27	7.77	11.80
% of All India	(61.03)	(57.34)	(77.57)	NA	NA
Other States	97324.74	1,721.75	5,200.86	3.02	5.34
% of All India	(38.97)	(42.66)	(22.43)	NA	NA
All India	2,49,748.56	4,035.58	23,190.13	5.75	9.29
	(100.00)	(100.00)	(100.00)	NA	NA

Source: Calculated on the basis of data from the Agriculture Insurance Company of India (AIC) Ltd.

3.5.1.4 An analysis of the experience with respect to different crops provides an important insight. As the available data indicates (Table 3), groundnut has the highest claims ratio of 16.02. Furthermore, groundnut accounts for 53 percent of the total indemnity though its share in the premium is only 19 percent.

3.5.1.5 Another aspect is the experience of different States. Three States, namely, Gujarat, Maharashtra and Andhra Pradesh, accounted for the major part of the indemnity. As Table 4 indicates, these States accounted for 61 percent of the sum insured, 57 percent of the premium and 78 percent of the indemnity for the entire country.

3.5.2 Operational aspects: issues and challenges

3.5.2.1 A study of the working of CCIS[11] brings out several operational problems which arose right at the beginning of the scheme's operation.

3.5.2.2 There were many problems relating to CCEs. In some cases, the numbers of CCEs actually conducted were much less than that was planned, resulting in delay and sometimes non-payment of indemnity. It took some time to consider combining two or three defined areas for the purpose of assessing indemnity.

3.5.2.3 Some States made an attempt to reduce the area unit to gram panchayat level, which resulted in sharp increase in the number of CCEs. For example, in Odisha, the number of CCEs increased from 314 in 1986 to 4,700 in 1987 for insured crops. West Bengal also tried to operate the scheme at the gram panchayat level. Both these States faced acute problems of administering such high numbers of CCEs, and could not cope with the task at that time.

3.5.2.4 The following extracts from the 1996 book mentioned above bring out interesting aspects of the operational problems in the context of the CCIS:

[11] Mishra, P. K. (1996), *Agricultural Risk, Insurance and Income : A Study of the Impact and Design of India's Comprehensive Crop Insurance Scheme*, Avebury, Aldershot, pp. 110-114.

Numerous PACs (Primary Agricultural Co-operative Societies) are associated with CCIS. They perform grassroots-level functions, such as compiling details of borrowers, loans disbursed and sums insured. In some cases, avoidable errors have been committed due to inadequate understanding of the provisions of the scheme. At other levels and in other agencies also, there was lack of information regarding operational aspects. Such problems of inadequate skill and knowledge are bound to arise when a new scheme is implemented on such a large scale and over such a large area. It brought into prominence the need for training, in order to accelerate the process of learning by doing. Some of these problems probably could and should have been foreseen when the scheme was introduced.

.....

CCIS is basically a yield guarantee scheme, but its linkage to crop loans created the impression in some quarters that it was a crop loan insurance scheme. This led to some serious anomalies. As a farmer-borrower is automatically insured and as the scheme is an area yield guarantee scheme, there was, especially in the early years, no explicit stipulation to verify whether the insured crop was actually sown. The problem arose in Gujarat in 1987. The monsoon was so long delayed that many insured farmers could not even sow groundnut. But they claimed that they had already utilized a significant part of the loan in pre-sowing operations like ploughing the fields and applying a basal dose of fertilizer. They, therefore, contended that they were entitled to receive indemnity. The GIC took the view that, unless there was sowing, no indemnity could be claimed. Indeed, the scheme had no explicit provision to the effect that actual sowing of the crop was a precondition for insurance coverage and indemnity.

.....

In some areas of Gujarat there was, during the operation of CCIS, a sharp increase in the total amount of crop loans, especially in respect of insured crops. In some villages and even defined areas (area units) the loan amount increased by 100percent percent or more in a year. For some areas the increase in loans in respect of insured crops was much larger than in the case of other crops.

.....

It was reported from some areas that there was local pressure on the village-level officials (of the Agriculture Department) who conduct CCEs to underestimate the yield so that farmers in the area could get the indemnity. Thus, there could be a problem of undeserving claims even in an area approach, though not as severe as in the individual approach. This brought out the need for strengthening and more effectively supervising the administrative machinery in charge of CCEs. GIC sought the assistance of autonomous organizations like the National Sample Survey Organization and NABARD in order to monitor CCEs.

In some cases, data on CCEs and yield data for previous years were not furnished expeditiously by State government departments to GIC. On the other hand, at times,

different types of verification undertaken by GIC and the Government of India led to delay in the payment of indemnity. For example, payments of 1990 Kharif claims for Gujarat were, as described below, settled only in 1992. The State government held that the delay was on the part of GIC and GOI, while the latter felt that State governments were not furnishing the required information in time. In other words, at times there was a problem of inter-agency co-ordination.

Gujarat (especially groundnut crops in the Saurashtra region) took the lion's share of the indemnity during the first three Kharif seasons—1985, 1986 and 1987. These were years of severe drought. Owing to favourable monsoons during the next two years, i.e., 1988 and 1989, the claims from Gujarat were very low—less than the premium income in the 1988 Kharif and 1989–90 Rabi seasons [GIC, 1992, p.41]. But there was a sharp rise in 1990 as usual because of failure of the groundnut crop in the Saurashtra region on account of drought. Gujarat again became the centre of controversy. The Government of India set up a committee to verify the claims arising from the state. GIC engaged two consultancy agencies to undertake independent studies on the insurance claims for the 1990 Kharif season in respect to four districts of the Saurashtra region. Voltas International Ltd (VIL) was assigned the study relating to Junagadh and Rajkot districts; and the Agricultural Finance Corporation (AFC), that of Amreli and Jamnagar districts. Prolonged correspondence and deliberations took place among agencies like GOI, GOG, RBI, GIC, etc. In February 1992, the government of India decided that (a) loans for groundnut crops disbursed up to 31 July, 1990, would be considered for CCIS indemnity; (b) loans for groundnut disbursed after 31 July and before 31 August would qualify for indemnity only if they were not fresh loans, i.e., the first instalment was disbursed prior to 31 July 1990; (c) the State government should set up a committee to verify all loans in the light of the above criteria; (d) indemnity in respect to other insured crops in all districts should be paid. The committee set up by the State government submitted its report in July 1992. Indemnity for the 1990 Kharif season was settled during the second half of 1992 and early 1993. The claims were scaled down from Rs 873 m. to Rs 696 m.

.....

In April 1994, the Government of India set up a committee to look into the admissibility of the 1993 Kharif claims of Gujarat, particularly of the five Saurashtra districts. The committee held a number of meetings during the latter part of 1994 and early 1995. It came to the conclusion that there was an overestimation of crop loans and cropped area relating to the groundnut crop, because crop loans disbursed for a number of crops—including uninsured crops—were shown as for groundnut. In view of this, the committee laid down certain principles for deciding on the admissibility of claims; among them: (a) for the purpose of indemnity, loans disbursed to insured farmers are to be apportioned among crops (insured and uninsured) in the same ratio as they were sought for various crops; (b) the sum insured is to be based on the crop loans net of deductions towards share capital contributions and over-dues; (c) the insured area in a taluka is to be the total area shown in the declaration submitted by the credit agencies, or the total area sown (as furnished by the State government) multiplied by the average proportion of area

sown by loanee farmers in the taluka, whichever is the less.

Finally an amount of Rs 1,616 m. was paid as indemnity in mid-1995.

.....

The difficulties relating to crop loans and credit agencies were mentioned in the previous section. As a result of this experience, it was decided to adopt a specific lending period for the entire country for the purpose of coverage under CCIS. It was stipulated that only those loans disbursed between 1 April and 30 September would qualify for crop insurance coverage for the Kharif season. The details of these loans have to be furnished to GIC, at the latest, by 31 October of the corresponding year. Similarly, loans disbursed from 1 October to 31 March of the following year would qualify for crop insurance coverage for the Rabi season, with the details to be furnished to GIC by 30 April. Loans disbursed before and after the specified period are not covered under the scheme.

In September 1988, the following modifications were introduced:

The sum insured was to be limited to Rs 10,000 per farmer, irrespective of the size of loan taken out by him. The total sum insured was reduced from 150 percent to 100 percent of the crop loan.

3.5.2.5 The above extracts show how numerous operational problems arose during CCIS implementation. Efforts were made to plug loopholes, e.g., seasonality discipline, lacking in the original design, was incorporated into the scheme. A limit was imposed on the sum insured. Area discrepancy—insured area for a crop being higher than the sown area reported for the crop—emerged as a chronic problem in some districts of Gujarat, especially for groundnut crop. There were problems relating to CCEs and loaning procedures. The same issues were presented when this Committee interacted with stakeholders, more than two decades after the above facts had been documented. So the challenge facing the Committee was how to address the issues more effectively than had been done before.

3.6 Some aspects of the working of NAIS, 1999–2013

NAIS is the major crop insurance scheme introduced in India in recent times. CCIS, though large in its scale, coverage and spread, was the first crop insurance scheme to be introduced in the country after several experiments and pilots. NAIS was the culmination of years of thinking, experiments and experiences. It was introduced in *Rabi* 1999–2000 and continued until *Kharif* 2013. Thus, it was implemented for fourteen years. In the following paragraphs, we analyse the performance of NAIS, based on data up to 2011–12, i.e., for 13 years.

3.6.1 Coverage of farmers and area, and financial aspects

3.6.1.1 During the 13 *Kharif* seasons up to *Kharif* 2012, 15.27 crore (153 million) farmers and 23.12 crore (231 million) hectares of land were insured. For the 13 *Rabi* seasons up to 2011–12, the corresponding figures were 5.11 crore (51.1 million) farmers and 7.64 crore (76.4 million) hectares of land. In other

words, on an average, 1.57 crore (15.7 million) farmers and 2.37 crore (23.7 million) hectares of land were covered by NAIS each year. Thus, it was operated in a significantly larger scale than the CCIS [Tables 5 and 6].

3.6.1.2 Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Uttar Pradesh and West Bengal accounted for the major part of the coverage in terms of number of farmers insured. In other words, the coverage was more widely spread compared to the CCIS.

3.6.1.3 The States showing higher than average loss costs are: Bihar (19.37 per cent), Gujarat (18.24 per cent), Jharkhand (16.21 per cent), Karnataka (12.21 per cent), Maharashtra (11.54 per cent), Manipur (12.90 per cent), Mizoram (48.34 per cent), Rajasthan (16.18 per cent) and Tamil Nadu (12.04 per cent) [Table 9].

3.6.1.4 Overall, the loss ratio was 3.31 and loss cost 9.86 per cent [Table 10] as compared to 5.75 and 9.29 per cent, respectively, in case of the CCIS. Thus the loss cost is marginally higher for NAIS, but the claims ratio is much lower. This is because of higher premium rates under NAIS. The average premium in case of NAIS was 2.98 per cent, compared to 1.62 per cent percent under CCIS.

3.6.1.5 During this period 11 States-Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal—accounted for 95 per cent of the premium and 96 per cent of the claims [Table 10].

3.6.1.6 As regards different crops [Table 11], oilseeds accounted for 31.40 per cent of premium and 32.72 per cent of indemnity. Groundnut contributed 17.67 per cent of premium and accounted for 25.28 per cent of indemnity. Cereals contributed 41.24 per cent of premium and accounted for 48.57 per cent of indemnity. Among the cereals, wheat accounted for 6.47 per cent of the indemnity, though it contributed 3.94 per cent to the overall premium. It can be seen that the share of different crops in the indemnity was broadly similar to their contribution to the premium though wheat has a higher claims ratio of 6.47. Potato has a claims ratio of 7.39. There is greater balance among crops, unlike in CCIS, where groundnut had a share of 53 per cent in the indemnity against its contribution of 19 per cent to the premium. All the oilseeds taken together also had a more than proportionate share in the indemnity in case of CCIS.

Table 5
NAIS: Performance for *Kharif* seasons from *Kharif* 1999–2000 to *Kharif* 2012

Season *Kharif*	Farmers Insured (in m.)	Area Insured (m. Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted (m.)	Farmers Benefitted (%)
2000	8.41	13.22	69,033.80	2,067.40	12,224.80	3.64	43.23
2001	8.70	12.89	75,024.60	2,616.20	4,936.40	1.74	20.03
2002	9.77	15.53	94,316.90	3,254.70	18,243.90	4.30	43.99
2003	7.97	12.36	81,141.30	2,833.30	6,526.80	1.71	21.48
2004	12.69	24.27	1,31,706.20	4,589.40	10,381.70	2.68	21.08
2005	12.67	20.53	1,35,191.00	4,499.50	10,850.30	2.69	21.19
2006	12.93	19.67	1,47,593.60	4,672.90	17,762.20	3.13	24.22
2007	13.40	20.76	1,70,079.60	5,243.20	9,153.60	1.59	11.88
2008	12.99	17.64	1,56,660.70	5,119.40	23,778.00	4.22	32.47
2009	18.25	25.77	2,76,167.10	8,628.50	45,374.50	7.97	43.67
2010	12.68	17.11	2,37,110.70	7,217.90	16,412.10	2.25	17.77
2011	11.56	15.78	2,34,871.00	7,143.50	16,654.10	1.85	15.97
2012	10.65	15.69	2,71,813.60	8,782.40	27,895.20	1.90	17.83
Total	152.67	231.21	20,80,710.10	66,668.30	2,20,193.60	39.66	25.98

Table 6
NAIS: Performance for *Rabi* seasons from *Rabi* 2000 to *Rabi* 2011–12

Season *Rabi*	Farmers Insured (m.)	Area Insured (m. Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted (m.)	Farmers Benefitted (%)
1999–00	0.58	0.78	3,564.10	54.20	76.90	0.06	9.48
2000–01	2.09	3.11	16,026.80	277.90	594.90	0.53	25.19
2001–02	1.96	3.15	14,975.10	301.50	646.60	0.45	23.17
2002–03	2.33	4.04	18,375.50	385.00	1,885.50	0.93	39.83
2003–04	4.42	6.47	30,494.90	640.60	4,970.60	2.10	47.46
2004–05	3.53	5.34	37,742.10	758.50	1,605.90	0.77	21.89
2005–06	4.05	7.22	50,716.60	1,048.20	3,383.00	0.98	24.23
2006–07	4.98	7.63	65,422.10	1,428.80	5,159.70	1.39	27.96
2007–08	5.04	7.39	74,666.40	1,587.10	8,101.80	1.58	31.30
2008–09	6.21	8.86	1,11,487.10	2,957.20	15,101.80	1.98	31.88
2009–10	5.68	7.90	1,10,075.00	2,917.00	5,861.70	1.04	18.36
2010–11	4.97	6.94	1,10,105.60	2,981.70	6,579.30	1.14	22.91
2011–12	5.24	7.61	1,12,839.40	2,576.80	5,454.80	1.29	24.58
Total	**51.08**	**76.43**	**7,56,490.70**	**17,914.50**	**59,422.50**	**14.23**	**27.87**
Kharif + *Rabi*	**203.74**	**307.64**	**28,37,200.80**	**84,582.80**	**2,79,616.10**	**53.89**	**26.45**

Table 7
NAIS: State-wise business statistics from *Rabi* 1999–2000 to *Kharif* 2012 (All States)

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	28,386	43,501	5,53,018	15,895	46,372	6,698	23.60
Assam	316	240	5,628	156	142	61	19.30
Bihar	6,037	7,378	1,19,040	3,038	23,062	2,431	40.27
Chhattisgarh	9,774	19,781	1,02,214	2,611	3,824	1,672	17.11
Goa	8	13	28	1	0	1	12.50
Gujarat	13,266	30,505	3,53,695	13,719	64,522	4,886	36.83
Haryana	631	765	8,233	239	434	129	20.44
Himachal Pradesh	290	223	4,253	92	175	107	36.90
Jharkhand	6,070	3,577	32,207	802	5,222	2,178	35.88
Karnataka	12,788	20,391	1,55,950	4,641	19,044	5,133	40.14
Kerala	423	374	7,169	154	251	76	17.97
Madhya Pradesh	26,634	66,065	4,04,351	11,871	17,301	4,679	17.57
Maharashtra	31,764	27,483	1,95,061	7,868	22,508	9,534	30.02
Manipur	19	22	620	16	77	19	100.00
Meghalaya	28	30	456	22	5	3	10.71
Mizoram	0.1	0.1	2	0.1	1	0.1	98.35
Odisha	14,412	14,442	1,92,788	4,818	14,275	2,662	18.47
Rajasthan	15,059	31,380	1,62,031	4,575	26,217	5,201	34.54
Sikkim	2	1	25	0	0	0	4.50%
Tamil Nadu	4,993	6,691	1,32,290	3,305	15,934	1,723	34.51
Tripura	19	13	289	8	6	3	15.79
Uttar Pradesh	21,541	28,813	2,87,333	5,884	10,097	4,228	19.63
Uttarakhand	371	347	7,915	183	414	117	31.54
West Bengal	10,834	5,494	1,11,111	4,657	9,691	2,337	21.57
Andaman & Nicobar Islands	3	4	73	2	2	0	14.67
Puducherry	36	52	877	17	29	7	19.44
Jammu & Kashmir	37	53	546	11	12	4	10.81
Total	2,03,743	3,07,638	28,37,201	84,583	2,79,616	53,889	26.45

Table 8
NAIS: State-wise business statistics from *Rabi* 1999–2000 to *Kharif* 2012 (major States)

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	28,386	43,501	5,53,018.1	15,894.5	46,372.3	6,698	23.60
Bihar	6,037	7,378	1,19,040.2	3,038.3	23,061.5	2,431	40.27
Gujarat	13,266	30,505	3,53,694.6	13,718.6	64,522.0	4,886	36.83
Karnataka	12,788	20,391	1,55,949.8	4,640.5	19,043.5	5,133	40.14
Madhya Pradesh	26,634	66,065	4,04,350.5	11,870.5	17,300.7	4,679	17.57
Maharashtra	31,764	27,483	1,95,061.4	7,868.1	22,507.8	9,534	30.02
Odisha	14,412	14,442	1,92,787.5	4,818.0	14,274.5	2,662	18.47
Rajasthan	15,059	31,380	1,62,030.9	4,575.4	26,216.6	5,201	34.54
Tamil Nadu	4,993	6,691	1,32,289.8	3,305.2	15,934.4	1,723	34.51
Uttar Pradesh	21,541	28,813	2,87,333.3	5,884.2	10,097.3	4,228	19.63
West Bengal	10,834	5,494	1,11,110.8	4,657.0	9,691.2	2,337	21.57
Total of Major States	1,85,714	2,82,143	26,66,666.9	80,270.3	26,9021.8	49,512	26.66
% of Total of All States	91.15	91.71	93.99	94.90	96.21	91.88	
Other States	18,028	25,495	1,70,534	4,313	10,590	4,376	24.27
% of Total of All States	**8.85**	**8.29**	**6.01**	**5.10**	**3.79**	**8.12**	
Total of All States	**2,03,742**	**3,07,638**	**28,37,201**	**84,583**	**2,79,612**	**53,888**	**26.45**

Table 9
NAIS: Coverage, claims ratio and loss cost from *Rabi* 1999–2000 to *Kharif* 2012, i.e., for 26 seasons

State	Sum Insured (m. Rs)	Premium (m. Rs)	Claims (m. Rs)	Claims Ratio (Claims / Premium)	Loss Cost (Claims as % of Sum Insured)
Andhra Pradesh	5,53,020	15,895	46,372	2.92	8.38
Assam	5,630	156	142	0.88	2.49
Bihar	1,19,040	3,038	23,061	7.59	19.37
Chhattisgarh	1,02,210	2,611	3,824	146	3.74
Goa	30	0.5	0.2	04	0.67
Gujarat	3,53,690	13,719	64,522	4.70	18.24
Haryana	8,230	239	433	1.79	5.22
Himachal Pradesh	4,250	92	174	1.89	4.00
Jharkhand	32,210	802	5,222	6.53	16.21
Karnataka	1,55,950	4,640	19,044	4.10	12.21
Kerala	7,170	154	251	1.67	3.49
Madhya Pradesh	4,04,350	11,870	17,301	1.46	4.28
Maharashtra	1,95,060	7,868	22,508	2.86	11.54
Manipur	620	16	77	4.00	12.90
Meghalaya	460	22	5	0.00	0.01
Mizoram	2	0.1	1	9.82	48.34
Odisha	1,92,790	4,818	14,275	2.96	7.40
Rajasthan	1,62,030	4,575	26,217	5.72	16.18
Sikkim	30	0.4	1	0.04	0.01
Tamil Nadu	1,32,290	3,305	15,931	4.81	12.04
Tripura	290	8	6	1.00	3.45
Uttar Pradesh	2,87,330	5,884	10,097	1.72	3.52
Uttarakhand	7,910	183	414	2.28	5.18
West Bengal	1,11,110	4,657	9,691	2.08	8.72
A & N Islands	70	2	2	1.17	2.69
Puducherry	880	17	29	1.50	3.41
Jammu & Kashmir	550	11	12	1.00	1.82
GRAND TOTAL	28,37,201	84,583	2,79,612	3.31	9.86

Table 10
NAIS: Coverage, claims ratio and loss cost from *Rabi* 1999–2000 to *Kharif* 2012, i.e., for 26 Seasons (major states)

Serial no	State	Sum Insured (m. Rs)	Premium (m. Rs)	Claims (m. Rs)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
1	Andhra Pradesh	5,53,020	15,890	46,370	2.92	8.38
2	Bihar	1,19,040	3,040	23,060	7.59	19.37
3	Gujarat	3,53,690	13,720	64,520	4.70	18.24
4	Karnataka	1,55,950	4,640	19,040	4.10	12.21
5	Madhya Pradesh	4,04,350	11,870	17,300	1.46	4.28
6	Maharashtra	1,95,060	7,870	22,510	2.86	11.54
7	Odisha	1,92,790	4,820	14,270	2.96	7.40
8	Rajasthan	1,62,030	4,580	26,220	5.72	16.18
9	Tamil Nadu	1,32,290	3,310	15,930	4.81	12.04
10	Uttar Pradesh	2,87,330	5,880	10,100	1.72	3.52
11	West Bengal	1,11,110	4,660	9,690	2.08	8.72
Total of Major States		**26,66,660**	**80,280**	**2,69,010**	**3.35**	**10.09**
% of Total of All States		93.99	94.90	96.21	**NA**	**NA**
Other States		1,70,534	4,313	10,590	**2.46**	**6.21**
% of Total of All States		6.01	5.10	3.79	**NA**	**NA**
Total of All States		28,37,201	84,583	2,79,612	**3.31**	**9.86**

Table 11
NAIS: Crop-wise premium (as % of the total), indemnity (as % of the total), claims ratio and loss cost *Rabi*1999–2000 to *Kharif* 2012

Crop	Premium (% of Total for all Crops)	Indemnity (% of Total for all Crops)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
Paddy	30.79	32.77	3.52	8.65
Wheat	3.94	6.47	5.43	6.81
Other Cereals	6.51	9.33	4.74	15.14
All Cereals	41.24	48.57	3.89	9.07
Rapeseed and Mustard	0.53	1.06	6.64	11.14
Groundnut	17.67	25.28	4.73	16.58
Other Oilseeds	13.20	6.38	1.60	5.65
All Oilseeds	31.40	32.72	3.44	11.90
Major Pulses (Black Gram, Green Gram and Bengal Gram)	3.65	4.34	3.94	9.92
Other Pulses	1.96	2.30	3.43	9.25
All Pulses	5.61	6.38	3.76	9.70
Sugarcane	3.10	0.79	0.84	1.59
Potato	5.32	7.39	4.67	23.12
Other Commercial	13.42	4.15	1.02	7.32
All Commercial	**21.75**	**12.33**	**1.87**	**8.92**
All Crops	**100**	**100**	**3.31**	**9.86**

3.6.2 Operational aspects: issues and challenges

3.6.2.1 As mentioned earlier, NAIS was introduced in *Rabi* 1999-2000. During its implementation, the Government of India felt that there were some shortcomings in NAIS and other crop insurance schemes being implemented at that time. Consequently, in August 2004, it constituted a Joint Group—under the chairmanship of Additional Secretary, Ministry of Agriculture—to review the status of existing crop insurance schemes and suggest improvements, if any. The Joint Group submitted its report in December 2004, after interactions with stakeholders and consultations with experts. The report of the Group contains a long list of issues raised during its meetings by the participants. We reproduce below the list of issues contained in the report, because it is interesting to see how similar issues were raised, a decade later, during our interactions with stakeholders. An extract from the report is given below:

Some aspects of CCIS & NAIS

	CCIS	NAIS
Average number of farmers insured per year (m.)	5.3	15.7
Average area (m. Ha.) insured per year	8.6	23.7
Claims ratio	5.75	3.31
Loss cost (%)	9.29	9.86

1.2. 4. Main Issues and Perceptions:

Despite high claim ratio and low premium rates, farmers are not coming forward to avail crop insurance in a big way. It is a pointer that the scheme is falling short of expectations of farmers. NAIS was discussed at different levels both formally and informally to understand the reasons for low acceptability. The suggestions and views expressed for improving acceptability of NAIS are listed below:

Coverage related:

- *Package policy covering crop and other assets of the farmers to be made available through single window*
- *Inclusion of perennial horticulture crops*
- *Inclusion of vegetable crops*
- *Pre-sowing risks should be covered in instances where sowing is prevented.*
- *Post-harvest losses should be covered*
- *The maximum coverage to be restricted to 100 per cent of the threshold yield*
- *Irrigated and unirrigated areas within a crop should be notified separately*
- *The scheme should be restricted to loanee farmers only*
- *Specific measures such as improved marketing facilities for inclusion of large number of non-loanee farmers under the scheme*
- *The seasonality discipline should be uniform for both loanee and non-loanee farmers*

Premium related:

- *Actual premium rates in case of Annual Commercial and Horticulture crops should be capped at 3 per cent. Alternatively, the scheme should be made voluntary for these crops.*

- *Restoring premium subsidy in case of small and marginal farmers*
- *All small and marginal farmers in rain-fed areas to be given 100per cent percent subsidy in premium*
- *Regional premium rating to be adopted instead of uniform State Level Rates*
- *Farming community feels that premium rates are already high, while implementers/administrators feel it is low.*

Indemnity related:

- *Claims to be paid immediately after loss*
- *Ad-hoc/on-account settlement of claims*
- *Individual assessment of claims*
- *Objective loss assessment procedures*
- *Guaranteed yield to be based on 3–5 best years out of past 10 years*
- *Indemnity limit should be at least 80 percent*
- *No-claim bonus to be allowed*
- *Single series of CCEs should not be insisted upon*
- *Individual assessment in case of localized calamities should be implemented in all areas*
- *Areas where stipulated number of CCEs is not completed should be considered for claims by using appropriate method such as clubbing with neighbouring areas, etc.*
- *Insurance unit size should be small so that losses reflected are closer to reality*
- *Surplus premium over and above claims in normal/good years should be carried forward*
- *Risk sharing between Government of India and the State Government should be 4:1 or at least 2:1*
- *State share of claims may be met out of Calamity Relief Fund of the Government of India*

Administration related:

- *Sample size of CCEs should be reduced*
- *Time schedule should be prescribed for various activities under the scheme, particularly settlement of claims*
- *Delay in receipt of yield data and/or funds from states leading to longer settlement periods for claims should be avoided*
- *Implementing agency should strengthen its infrastructure and manpower, including network at district level to have a good reach to the farmers*
- *Central government should take steps to create awareness and bear the publicity expenditure*

- *The entire expenditure on additional CCEs required for lowering the insurance unit to village panchayat should be borne by Government of India*
- *Banks should streamline their functioning and stop perceiving the administrative work involved as additional burden*
- *The service charges payable to banks under the scheme are not commensurate with job involved, and needs to be enhanced*
- *Lack of adequately trained staff with banks to interact with the farmers regarding the scheme provisions*
- *Legal cases should not be filed against compulsory provisions of scheme*

Insurance Principles related:

- *Adverse selection problems (choosing to participate in the scheme selectively even after being certain of crop losses) particularly of non- loanee farmers*
- *Inflated claims resulting from false coverage or tampered yield data or both*
- *Lack of spread in risk due to non-participation of important states*

Considering the experience of other countries in using remote sensing applications in crop insurance, and the fairly developed technology available in the country, the Joint Group recommends that a pilot project on using remote sensing technology in crop insurance should be taken up by AIC from Kharif 2005 season onwards. The areas for pilot project may include:

- *Acreage estimation*
- *Crop health reports*
- *Yield modelling*
- *Reduction of sample size of CCEs*
- *Yield models based on combination of agro-meteorological data and spectral data*
- *RS data as proxy indicators for finalizing quantum of 'on-account' indemnity*
- *Deciding eligibility of claims for prevented sowing together with weather data*

3.6.2.2 Having identified the above aspects, out of the numerous issues raised during consultation meetings, the Joint Group made some recommendations for modifications in NAIS. GoI accepted a number of the Joint Group suggestions, and introduced modifications to the NAIS, leading to the setting up of the modified National Agricultural Insurance Scheme or MNAIS. The Group also recommended the discontinuance of the scheme relating to farm income insurance.

3.7 Some aspects of the working of MNAIS, *Rabi* 2010–11 to *Rabi* 2012–13

As mentioned earlier, MNAIS includes certain new features, even though it is similar to NAIS. MNAIS was introduced on a pilot basis in selected districts from *Rabi* season of 2010–11. The data so far available relate

to two and a half years, or five seasons. Since NAIS was also available to the States, initially the States were hesitant to implement MNAIS on account of increased manpower requirement and expenditure for conducting CCEs. The target of 50 districts could be achieved only during *Rabi* 2011–12 and *Kharif* 2013. AIC covered the majority of the districts in all five seasons.

3.7.1 Coverage of farmers and area, and financial aspects

3.7.1.1 During the five seasons of its implementation, MNAIS covered 20,59,000 and 25,21,000 farmers, respectively, during three *Rabi* and two *Kharif* seasons. The area insured was 17,73,000 and 29,05,000 hectares, respectively, during *Rabi* and *Kharif* seasons. Thus, so far, MNAIS has been operated on a much smaller scale than NAIS and CCIS [Tables 12 and 13].

3.7.1.2 MNAIS was implemented in 17 States; but, as Tables 14 and 15 indicate, major participation came from Andhra Pradesh, Bihar, Haryana, Karnataka, Rajasthan, Tamil Nadu and West Bengal. These States have a share of 85 per cent of the sum insured and 93 per cent of the premium. They also account for 98 per cent of the claims paid.

3.7.1.3 As regards the financial aspects, the claims payout was Rs 864 crore against a gross premium of Rs 1,088 crore. The claims ratio was 0.79. The loss cost was 8 per cent [Table 15]. The claims ratio was highest in Andhra Pradesh (2.19) followed by Tamil Nadu (1.65) and Haryana (1.02). In all other States, it was less than 1. This implies that the claims payout was lower than the premium collected for these five seasons. In other words, MNAIS apparently has a better financial performance than NAIS and CCIS. The lower claims ratio is because of actuarial premium rates and ex-ante payment by governments towards the premium, unlike ex-post payment towards claims in case of CCIS and NAIS. The loss cost is 8 per cent as against 9.29 per cent and 9.85 per cent in case of CCIS and NAIS, respectively. MNAIS has so far been implemented in a few districts and for only five seasons; hence it may not be logical to compare it with CCIS and NAIS at this stage.

3.7.1.4 As regards various crops, groundnut has the highest claims ratio of 1.71 and loss cost of 27 per cent. Paddy has a claims ratio of 1.21 and loss cost 13 per cent. Paddy and groundnut accounted for 52 per cent of the premium received, but 83 per cent of the claims payout [Table 16 crop-wise data analysed for AIC coverage only].

Table 12
MNAIS: Business statistics for *Rabi* seasons from *Rabi* 2010–11 to *Rabi* 2012–13 (All companies combined)

Season *Rabi*	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted ('000)	Farmers Benefitted (%)
2010–11	358	324	6,940	473	161	47	13
2011–12	755	707	20,100	1,652	824	122	16
2012–13	946	742	20,770	1,894	546	103	11
TOTAL	**2,059**	**1,773**	**47,810**	**4,019**	**1,531**	**272**	**13**

Table 13
MNAIS: Business statistics for *Kharif* seasons from *Kharif* 2011 to *Kharif* 2012 (all companies combined)

Season *Kharif*	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers benefitted ('000)	Farmers benefitted (%)
2011	458	666	13,460	1,218	961	100	22
2012	2,063	2,239	48,970	5,643	6,148	595	29
TOTAL	**2,521**	**2,905**	**62,430**	**6,861**	**7,109**	**695**	**28**

Table 14
MNAIS: State-wise business statistics from *Rabi* 2010–11 to *Rabi* 2012–13 (All companies combined)

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**

Table 15
MNAIS: Coverage and financial aspects of major States from *Rabi* 2010–11 to *Rabi* 2012–13 (All seasons; All companies combined)

State	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Claims Ratio (Claims / Premium)	Loss Cost (Claims as % of Sum Insured)
Andhra Pradesh	29,007	2,008	4,391	2.19	15
Bihar	11,613	2,401	564	0.24	5
Haryana	11,714	398	405	1.02	3
Karnataka	9,909	1,107	807	0.73	8
Rajasthan	11,462	1,281	601	0.47	5
Tamil Nadu	5,141	577	950	1.65	18
West Bengal	14,982	2,311	736	0.32	5
Total of 7 States	93,828	10,083	8,454	0.84	9
% of All India	85%	93%	98%	NA	NA
Others	16,412	797	186	0.23	1
Grand Total	1,10,240	10,880	8,640	0.79	8

Table 16
MNAIS: Crop-wise premium, claims, claims ratio, and loss cost from *Rabi* 2010–11 to *Rabi* 2012–13 (All Seasons; Agriculture Insurance Company of India)

Crop	Sum Insured		Premium		Claims		Claim Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
	(m. Rs)	(% of total of all crops)	(m. Rs)	(% of total of all crops)	(m. Rs)	(% of total of all crops)		
Cereal Crops								
Wheat	9,370.4	10	542.0	5	145.2	2	0.27	2
Paddy	47,406.9	50	4,927.7	49	5,979.1	77	1.21	13
Other cereals	1,647.3	2	195.3	2	207.9	3	1.06	13
All cereals	58,424.5	62	5,664.9	56	6,332.3	81	1.12	11
Oilseed Crops								
Groundnut	1,788.2	2	285.2	3	487.5	6	1.71	27
Mustard	2,377.6	3	243.8	2	97.6	1	0.40	4
Other Oilseeds	341.5	0.4	43.8	0	22.1	0	0.50	6
All Oilseeds	4,507.2	5	572.8	6	607.2	8	1.06	13
Pulses	9,206.6	10	1,123.2	11	257.2	3	0.23	3
Commercial Crops								
Chilli	729.5	1	49.9	0	15.1	0	0.30	2
Potato	15,021.1	16	2,313.0	23	450.2	6	0.19	3
Sugarcane	4,691.0	5	127.0	1	71.8	1	0.56	2
Other commercial crops	**1,866.7**	**2**	**176.4**	**2**	**71.8**	**1**	**0.41**	**4**
All Comm. crops	**22,308.3**	**24**	**2,666.3**	**27**	**608.9**	**8**	**0.23**	**3**
All Crops	**94,446.6**		**10,027.3**		**7805.6**		**0.78**	**8**

3.8 Some aspects of the working of WBCIS, *Kharif* 2007 to *Kharif* 2013

Weather Based Crop Insurance Scheme has been implemented by AIC and private companies since 2007, meaning it has been in operation for six and a half years so far. Initially, the coverage was very limited, but has expanded over the years. WBCIS was introduced as an alternative to yield-based crop insurance. It would be interesting to see its financial performance as compared with yield-based crop insurance schemes.

3.8.1 Coverage of farmers and area, and financial aspects

3.8.1.1 During the period of six and a half years from 2007–08 to 2012–13 (*Kharif* 2007 to *Kharif* 2013) 4,69,37,000 farmers—3,01,52,000 and 1,67,85,000 farmers during *Kharif* and *Rabi* season, respectively-were covered by WBCIS. The total area insured was 6,32,01,000 hectares during this period. On average, the per-season coverage of farmers and crop area were: 4,307,428 farmers and 5,905,143 hectares for *Kharif* and 2,797,500 farmers and 3,644,167 hectares for *Rabi* season. In a year, an average about 7 million farmers and 9.5 million hectares were covered [Tables 17 and 18]. The coverage in terms of number of farmers and crop area is comparable to that of CCIS. Of course, the States with more coverage are different from that in case of CCIS.

Some aspects of WBCIS & MNAIS

	MNAIS	WBCIS
Average number of farmers insured per year (m.)	1.8	7.2
Average area (m. Ha.) insured per year	1.9	9.7
Claims ratio	0.8	0.7
Loss cost (%)	8	7

3.8.1.2 The amount of claims payout was Rs 5,286 crore against the premium received of Rs 7,519 crores. The amount of claims was less than the amount of premium in all the 13 seasons, except for *Rabi* 2012–13, when it was marginally higher. For the entire period, the claims ratio was 0.70 and the loss cost was 7 per cent [Table 20]. Both these ratios are significantly lower for WBCIS than that for CCIS and NAIS, indicating better financial viability. A question, though, arises as to whether WBCIS addresses the problem of yield risk adequately for farmers, which requires more in-depth analysis. In fact, during interactions the issue of inadequate payout despite significant crop losses was raised repeatedly.

3.8.1.3 WBCIS scheme was implemented in 18 States. The highest coverage of 3,02,80,000 farmers and 4,20,46,000 hectares of land was in Rajasthan. In Bihar, 88,86,000 farmers were covered over an area of 94,08,000 hectares. In all the States, except Chhattisgarh and Uttarakhand, the amount of claims was less than the amount of premium received. [Table 19].

3.8.14 Table 21 shows, for AIC, the sum insured, premium, claims, claims ratio and loss costs in respect of various crops. Interestingly, groundnut has a claims ratio of 0.71 and loss cost of 7 per cent. This is significantly different from the experience with groundnut crop in case of MNAIS and other schemes. Fruits/plantation crops and pulses have claims ratio greater than 1. Banana has the highest claims ratio of 2.55 and loss cost of 30 per cent followed by gram with a claims ratio 2.20 and loss cost of 18 per cent.

Table 17
WBCIS: Business statistics for *Kharif* seasons from *Kharif* 2007 to *Kharif* 2013 (All companies combined)

Season *Kharif*	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted ('000)	Farmers Benefitted (%)
2007	44	50	530	70	50	35	81
2008	184	221	3,510	362	160	109	59
2009	1,161	1,531	21,160	2,121	1,580	903	78
2010	4,919	7,391	56,820	5,960	1,920	1,792	36
2011	6,909	9,788	1,08,670	10,300	4,260	3,598	52
2012	8,008	11,125	1,28,710	12,947	8,680	6,749	84
2013	8,927	11,230	1,46,380	14,817	10,430	5,601	63
TOTAL	**30,152**	**41,336**	**4,65,780**	**46,577**	**27,090**	**18,787**	**62**

Table 18
WBCIS: Business statistics for *Rabi* seasons from *Rabi* 2007–08 to *Rabi* 2012–13 (All companies combined)

Season *Rabi*	Farmers Insured ('000)	Area Insured ('000 Ha.)	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Farmers Benefitted ('000)	Farmers Benefitted (%)
2007–08	635	1,018	17,390	1,413	1,000	191	30
2008–09	192	261	5,360	455	330	121	63
2009–10	1,202	1,891	28,580	2,355	1,870	600	50
2010–11	4,386	5,757	86,490	6,951	4,430	2,527	58
2011–12	4,766	5,945	98,580	8,146	7,500	2,732	57
2012–13	5,606	6,992	1,07,330	9,295	10,630	4,049	72
TOTAL	**16,785**	**21,865**	**3,43,730**	**28,615**	**25,770**	**10,219**	**61**

Table 19
WBCIS: State-wise Business Statistics 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	9,408	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**

Table 20
WBCIS: Coverage and financial aspects of major States from *Kharif* 2007 to *Kharif* 2013 (All seasons; all companies)

State	Sum Insured (m. Rs)	Gross Premium (m. Rs)	Claims (m. Rs)	Claims Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
Andhra Pradesh	1,12,356	11,297	9,920	0.88	9
Bihar	2,15,881	18,704	13,693	0.73	6
Haryana	13,345	1,222	497	041	4
Himachal Pradesh	4,340	500	475	0.95	11
Karnataka	13,635	1,484	1,039	0.70	8
Madhya Pradesh	35,635	3,177	1,716	0.54	5
Maharashtra	21,123	2,533	1,804	0.71	9
Rajasthan	3,45,768	32,367	21,144	0.65	6
Total of 8 States	7,62,082	71,285	50,287	0.71	7
% of All India	94%	95%	95%		
Others	47,428	3,907	2,573	0.66	5
Grand Total	8,09,510	75,192	52,860	0.7	7

Table 21
WBCIS: Crop-wise Premium, Claims, Claims Ratio, and Loss Cost from *Kharif* 2007 to *Rabi* 2012–13 (All Seasons; AIC)

Crop	Sum Insured		Premium		Claims		Claim Ratio (Claims/ Premium)	Loss Cost (Claims as % of Sum Insured)
	(m. Rs)	(% of total of all crops)	(m. Rs)	(% of total of all crops)	(m. Rs)	(% of total of all crops)		
Bajra	25,684	6	2,568	6	628	2	0.24	2
Wheat	1,08,611	25	8,372	21	4,333	14	0.52	4
Paddy	40,381	9	4,017	10	2,448	8	0.61	6
Other cereals	11,097	3	1,060	3	807	3	0.76	7
All cereals	1,85,772	43	16,017	40	8,216	27	0.51	4
Mustard	23,692	5	1,866	5	3464	11	1.86	15
Soya bean	13,745	3	1,375	3	724	2	0.53	5
Groundnut	62,747	15	6,276	16	4,448	14	0.71	7
Other oilseeds	4,481	1	429	1	141	0	0.33	3
All oilseeds	1,04,664	24	9,945	25	8,777	28	0.88	8
Apple	3,865	1	446	1	428	1	0.96	11
Banana	3,345	1	399	1	1,015	3	2.55	30
Grapes	2,932	1	352	1	17	0	0.05	1
Mango	2,372	1	279	1	321	1	1.15	14
Other fruit/plantation crops	4,552	1	535	1	352	1	0.66	8
All fruit / plantation crops	17,066	4	2,010	5	2,133	7	1.06	12
Gram	31,341	7	2,492	6	5,491	18	2.20	18
Guar	18,645	4	1,865	5	542	2	0.29	3
Green gram	9,875	2	989	2	292	1	0.29	3
Other pulses	11,287	3	1,126	3	495	2	0.44	4
All pulses	71,147	16	6,472	16	6,820	22	1.05	10
Chilli	6,334	1	608	2	675	2	1.11	11
Cotton	21,068	5	2,303	6	1,230	4	0.53	6
Cumin	11,863	3	1,396	3	892	3	0.64	8
Other comm. crops	13,369	3	1,582	4	2,065	7%	1.31	15
All comm. crops	52,633	12	5,889	15	4,863	16%	0.83	9
All crops	4,31,280		40,330		30,810		0.76	7

*****

4 Analysis of Issues, Findings and Recommendations

In this chapter, we analyse the issues identified during consultation meetings and enumerated in subsection 2.3.1 of Chapter 2. While doing so, we have kept in view the suggestions put forward by stakeholders and experts, and also the review of experiences with major crop insurance schemes as described in Chapter 3. We arrived at our findings and formulated our recommendations based on this analysis.

4.1. Discrepancy in the crop area insured, as compared to the net area reported to have been sown

4.1.1 A major issue in existence right from the early years of crop insurance is the discrepancy in the crop area insured as compared to the net-sown area reported by relevant government agencies as a part of the area and production estimates of crops. This problem was very acute in Gujarat—particularly in four or five districts growing groundnut as a major crop—as early as 1990, when CCIS was operational. Some details for 1990 and 1993 were given in the previous chapter while discussing operational problems in context of CCIS. In the following paragraphs, we give some more details in order to trace the origin of-and analyse the rationale for using-area-correction factors.

4.1.2 In *Kharif* 1993, the monsoon was weak in Gujarat's Saurashtra region. It was realized in August 1993 that a drought was likely, which would result in the failure of the groundnut crop. GIC, the then-implementing agency, supervised 98 CCEs of groundnut crop out of 416 experiments in 24 talukas of five districts in Saurashtra. About 90 percent of the CCEs supervised by the GIC indicated some yield while most of the other CCEs that were not supervised showed zero yield. For groundnut crop, the claim amount reported was Rs 192.96 crore out of a total claim Rs 207.42 crore for all crops. It appeared that the large claims were not only due to natural factors; there was over-estimation of claims on account of problems of the credit delivery system. The area insured in many cases was much higher than the area under groundnut crop. Crop loans disbursed by banks to farmers for cultivation of a number of different crops were being shown as only for groundnut crop, for which the scale of finance was higher and the premium rate, lower. The loans disbursed also included amounts relating to adjustment of share capital and other outstanding loans, and not only for use as working capital for the insured crops. The implication was that the area actually cultivated by the farmers with groundnut was much less than the area declared for the purpose of insurance. The location of CCEs had to be changed in a number of cases, as there was no groundnut cultivated in those locations even though significant area had been declared for those locations as being under groundnut crop, for the purpose of insurance.

4.1.3 In this context—on 25 April, 1994—GoI constituted a committee chaired by Mrs Asha Das, Additional Secretary, to look into the admissibility of claims of groundnut crop in Gujarat for the *Kharif* 1993 season. Other members included representatives of the Ministry of Finance, NABARD and GIC. The committee recommended as follows:

- Crop loans disbursed would be apportioned between different crops (insured and non-insured) in the same proportion it was sought for different crops. Accordingly, the sum insured of groundnut would be scaled down, if the ratio of groundnut loan disbursed was higher than the ratio of groundnut loan sanctioned, to adjust for the tendency on the part of the credit institutions to shift crop loans from non-insured crops.
- Deductions made towards share capital contributions, overdues, etc., out of crop loans were excluded from the insurance amount.
- If the area insured was more than the area sown by loanee farmers, the sum insured was proportionately scaled down.

4.1.4 Such correction factors continued to be applied, during the subsequent years of CCIS, wherever there was area discrepancy.

4.1.5 After the introduction of NAIS in 1999–2000, the problem of area discrepancy arose again in Gujarat in *Kharif* 2000. In fact, more crops were eligible for insurance under NAIS, and 100 per cent of the loan disbursed could be insured, unlike the limit of Rs 10,000 per farmer in the case of CCIS. NAIS stipulated that loans disbursed for unsown areas would not be covered. The area-correction factor was applied for area units in which there was discrepancy in the area insured and the area actually sown. It is worthwhile to mention that NAIS does not have any provision for area-correction factor.

4.1.6 Thus, the problem has continued for more than two decades. The problem of area discrepancy has arisen even in the case of WBCIS, e.g., in respect to Bengal gram crop during Rabi 2012–13 season in Rajasthan's Churu district. One of several reasons for the discrepancy or variation is that farmers, banks and Primary Agricultural Cooperative Societies (PACS) include the area where the crop is sown but not germinated (known as *beejmari*) while declaring the insured area in their proposals/declarations.

4.1.7 Another reason is that farmers sometimes insure the same land multiple times, with different banks. After the service-area approach for banks was discontinued and requirement of collateral for short-term crop loans diluted, farmers are free to approach any bank. If needed, they may also approach more than one bank to meet their credit requirement. This results in multiple loans and multiple insurance for the same crop area. Banks do not insist on NOC from other lenders in a bid to fulfil their priority-sector lending target. Since insurance is compulsory for loanee farmers, multiple coverage is an obvious outcome.

4.1.8 As discussed earlier, AIC has applied area-correction factors to address the above problem. To invoke the area-correction factor, AIC seeks consent from the concerned State government and approval from the Government of India. The area-correction factor is arrived at by dividing the area sown by the area insured for a given unit area, and applied on the claim amount in order to scale it down. As a result, the claims of all the farmers in a unit area are scaled down uniformly. Some States have showed an unwillingness to apply such correction factors across the board as genuine farmers may get penalized in the process.

4.1.9 According to information submitted by AIC to the committee, area-correction factors have been applied many times with the consent of concerned State governments in the event of the insured area

being more than the area sown as reported by the State government. For NAIS, area-correction factors were applied during various years in Andhra Pradesh, Bihar, Gujarat, Karnataka, Rajasthan, Madhya Pradesh and Tamil Nadu. Annexure 2 gives the details of the crops and years for which area-correction factors were applied in the above States.

4.1.10 It is interesting to note that despite area discrepancy in States such as Madhya Pradesh (for some years), Maharashtra, Odisha and Uttar Pradesh, the area-correction factor could not be applied due to a lack of reliable data on the area sown. The following reasons are brought out in a note submitted by AIC:

> *Madhya Pradesh: Area discrepancy was observed in respect to some crops/NFAs and the Regional Office (RO) was informed about it. RO has informed that they have obtained clarification from the banks having declared the whole land in the declaration for which farmer has availed loan and not the actual area cultivated under the insured crop. Also, the State government provides in some areas a uniform figure, of say 100 h., and in some areas as zero. So the area sown data can't be relied upon. Banks also inadvertently include the same extent of area multiple times in respect to more than one instalment of loan availed by the farmers, leading to over-reporting.*
>
> *Odisha: The procedure adopted by the Department of Economics and Statistics for reporting the sown area is based on simple random sampling method called land utilization survey (LUS) in which 20 percent of total villages of a block/cluster of blocks are selected every year so that all the villages of the block are covered over a period of five years. As a result, the sown area figures provided by the State government are not accurate.*
>
> *Uttar Pradesh: The Government of Uttar Pradesh provides the area sown figures, along with yield data, and mentions that the area sown data provided by them is for the previous year. Hence area factor has not been applied.*
>
> *Maharashtra: The State government provides area sown data with a gap of two to three years.*

4.1.11 An alternative solution is to collect data relating to crop area sown for all the individual farmers. Such data is supposed to be maintained by the relevant departments of State governments, known as *Girdwari* in some States. In Gujarat, it is called *"pahni patrak"* and recorded in village form 7/12. These practices are age old. Unfortunately, they are not completed on time. Further, farmers often challenge the accuracy of *Girdwari*. Dependence on this data for settlement of claims of individual farmers can create more problems and delay the process.

4.1.12 Some more suggestions that emerged during the discussions with stakeholders to reduce the discrepancy between area sown and area insured are:

- State government officials and bank representatives should interact on the issue at least twice a year. Insurance companies and banks should conduct verification exercises to identify net area sown and area insured at regular intervals.
- Quantity of seeds and fertilizer purchased by a farmer in a season can indicate probable crop area sown.

- A mechanism to identify the area insured should be established at the village level.

4.1.13 Based on elaborate consultation and discussion, the committee feels that the age-old problem of area discrepancy can be addressed only through use of information technology (IT). Principal Secretary, Department of Agriculture, Government of Gujarat, presented an IT-based application already prepared for Gujarat and suggested that it could be replicated in other States with suitable modifications. Some salient aspects of the application are described below.

4.1.14 Most States have computerized their land records. Similarly, almost all financial institutions, scheduled banks, regional rural banks and cooperative banks, have switched over to the Core Banking System (CBS) and data on account holders is computerized. If the State government makes the database of land-holders accessible to financial institutions through a Web portal, the latter can easily link other details such as bank account number, KCC number, Aadhaar number and mobile phone number of the land-holders. As and when the landholder applies for short-term crop loan, the bank can further update details such as loan amount, crop season and type, and amount of premium deducted. Further, if the banks so desire, they can also update outstanding loan details on the portal so that the government agencies can help them in the recovery of outstanding loan amounts, as arrears of land revenue. Subsequently, as per the provisions of NAIS/NCIP, financial institutions can share full particulars of crop loan, crop type, amount of premium deducted in respect to each of the loanee and non-loanee farmers with the insurance company.

4.1.15 NIC, Gujarat, has developed a prototype of the Web portal (http://kcc.gujarat.gov.in) in consultation with the State agriculture department, State Level Bankers' Committee (SLBC) and the Regional Office of RBI.

4.1.16 The above Web portal can enable financial institutions to link each farmer's existing loan account to the unique land account of the farmer. This will facilitate detection of multiplicity of loans for the same land, which—as discussed earlier—appears to be a chronic problem for years.

4.1.17 Another question is how to address the problem of verification of crop area sown. Even though bank managers are required to verify end use of crop loans, field-to-field verification is time-consuming and unfeasible. Banks do not even do sample verification, which is feasible. Banks' perception that crop loans are secured, both by way of a charge on the land and insurance cover, makes them complacent with regard to field verification of crops sown. There are also problems relating to CCEs—discussed later in this chapter—because there is a tendency to underestimate the actual crop yield with a view to having undue benefit of crop insurance claims. These problems can be addressed through geo-spatial tools, coupled with mobile-phone technology solutions.

4.1.18 With the easy availability of affordable smart mobile-phone handsets and extensive mobile networks, it is feasible to obtain GPS bearing photographs of each insured field. With appropriate transaction-based compensation to the honorary Farmers' Friend (FF) under the Agriculture Technology Management Agency (ATMA) scheme, he could be motivated to visit such fields and take a photo of standing crop using a mobile application. GPRS-enabled mobile phones would transfer the photo to a

server that verifies the GPS coordinates of the field and photograph. If the GPS coordinates match, a confirmation message is sent to the FF and the predetermined transaction fee, say Rs 20, is deposited in his account.

4.1.19 The above photograph is later viewed and its information digitized by a BPO unit in the SAU, whose graduates verify the pictorial information and convert it to processable data format: crop type, status, etc. In case the crop data is different from that available on the Web portal, an alert is sent to the bank, insurance agency and the loanee/non-loanee farmer and appropriate action is initiated.

4.1.20 When CCE is performed at the time of harvesting, a video can be recorded using a smart phone and uploaded on the server. Thus, the risk of tampering or misreporting of data can be minimized. Periodic photographs depicting field-wise crop type/conditions and videography of CCEs would provide credible evidence of the situation on the ground. If adopted, this technology solution would enable the State agriculture department to conduct a large number of CCEs with the help of FFs, as one FF is available for every two villages.

4.1.21 Thanks to the infrastructure in the area of geo-spatial technology by way of the Bhaskaracharya Institute of Space Application and Geo-Informatics (BISAG), Gujarat has developed a prototype using smart-phone handsets and conducted pilots. However, this is still at an early stage.

4.1.22 The above discussion brings out how area discrepancy has become a chronic problem, particularly in some States. The practice of applying the area-reduction factor, which began in the early years of CCIS, continued year after year. The AIC's main argument is that, since crop insurance schemes are area-based, it does not need to have information on individual farmers, which is available at the level of nodal banks or bank branches. Further, collecting such information will involve tremendous efforts and costs, and would not be feasible. It is also a fact that State government information on area sown is inaccurate, inconsistent and delayed. Banks also do not fulfil their obligation to verify, at least on a sample basis, whether loanee farmers have actually grown the crops for which loans have been disbursed. The problem will be much worse in case of non-loanee farmers.

4.1.23 Applying the area-correction factor has become a simplistic solution to the above problems. It is unfair to those farmers who have taken insurance only for the crop area which they have actually sown. It results in undue benefit for those farmers who have misrepresented the crop area sown, either knowingly or unknowingly. Thus, the argument that an area-based insurance scheme negates the need to verify the crop area of individual farmers does not appear to be valid today. Further, developments in technology mean that such verification is not as difficult as it was under CCIS. Considering all these aspects, the committee recommends the following:

4.1.24 It is more appropriate to use technology to address area discrepancy rather than the area-correction factor, which is unfair to honest farmers. A Web portal, in line with that developed for Gujarat by NIC, may be developed for other States, so as to make land-record data accessible to financial institutions. The latter could link details of crop loans, premiums and profiles of loanee and non-loanee farmers to this database. The Web portal would enable financial institutions to link each farmer's existing loan account to

the unique land account, which would then facilitate detection of multiplicity of loans for the same land.

4.1.25 Mobile-phone technology may be used to capture and transmit photographs of standing crops once or twice during the season, to verify the crops sown on a particular land. Farmers' Friends (FF), identified under ATMA, should be motivated to visit such fields and transmit these photographs. They may be paid for each visit. GPRS-enabled mobile phones would transmit the photo to a server, which would verify the GPS coordinates of the field and photographs. If the coordinates match, a confirmation message is sent to the FF. The photograph is then to be digitized by an expert agency so as to ascertain the crop type and other aspects. In case crop data is different from that available on the web portal, an alert message may be sent to the bank and insurance agency.

4.1.26 Insurance companies and banks should undertake verification relating to area sown and area insured at periodic intervals during the crop season, especially for districts in which there discrepancies were noted in the past.

4.1.27 Relevant government officials, and representatives of insurance agencies and banks, should have coordination meetings at the State and District level on a quarterly basis, in order to monitor the area sown vis-à-vis the area insured.

- A Web portal, along the lines of that developed for Gujarat by NIC may be developed for other States, so as to make land records accessible to financial institutions.
- The portal would allow financial institutions to link farmers' loan accounts to unique land accounts, enabling the detection of multiplicity of loans.
- Mobile phones may be used to capture and transmit photographs of standing crops once or twice during the season, to verify crops sown in a particular field.

4.2 Crop-cutting experiments for accurate estimation of crop yield

4.2.1 CCEs are critical in estimating actual yield of a unit area and, consequently, determining indemnity. As we have seen earlier, there have been problems relating to CCEs right from the early years of crop insurance, when schemes such as CCIS and NAIS were operated. With MNAIS, the problem would be more acute because of smaller area units and increased number of CCEs. There are two major issues. First, managing/administering CCEs is a challenge because of the high number, the large area over which they are spread, and the short time available to complete the task. The second challenge is ensuring that the data thus collected is reliable. This is because those conducting CCEs may not take due care to follow the prescribed procedures. Often, there is local pressure to underestimate the yield so that those insured can become eligible for crop insurance claims. As CCE data is not available on a real-time basis, there is considerable delay in the consolidation of such data and, as a result, settlement of claims is delayed.

4.2.2 The committee considered a number of suggestions put forward during its interactions with experts and stakeholders.

4.2.3 There is a need to standardize the procedure for conducting CCEs and monitor quality through random checks. The personnel involved in CCEs should be properly trained.

4.2.4 Since the time available for CCEs is short—around 15–20 days—it is unfeasible for a State government to conduct a large number of CCEs. Hence, in some cases, the work is outsourced to agencies having experience in agricultural operations. Such outsourcing should follow a standard procedure, so that only capable agencies, with desired skills and experience, are selected.

4.2.5 Over the medium term, efforts should be made to prepare a specialized cadre of personnel with skill and grounding in crop insurance. With help from such a cadre, who could be like professional assessors, it will be easier to conduct CCEs effectively. Loss assessment for crop insurance requires technical skills that are different from other insurance businesses.

4.2.6 Another approach for improving quality is to rationalize the number of CCEs to be conducted, rather than undertake CCEs across the board. A larger number of CCEs can be conducted in those areas where probability of loss appears to be high, based on data received from remote sensing techniques and weather parameters. Such target sampling of CCEs would reduce the total number of CCEs to be conducted in a State or district in a good crop season.

4.2.7 Thus, efforts should be made to use satellite imagery-based yield and crop health estimation for planning, validating and improving crop-loss estimation procedures. Remote sensing technology should be able to give a sense of probable yield within an area, based on which the number of CCEs and other control measures could be modulated for better data capture from that area.

4.2.8 As mentioned in the previous section, it is feasible to use technology—particularly GPRS-enabled and camera-fitted hand-held devices and smart phones/mobile phones—to record CCEs and uploaded the videos to a server. This would minimize the risk of mis-reporting CCE data. Photographs depicting crop condition at periodic intervals and videography of CCEs would provide reliable evidence of facts on the ground. With this technology solution, and help from FFs, State governments can conduct large numbers of CCEs. Technology is the only way to address the old problems of getting timely and accurate CCEs, especially since the challenges are larger when larger numbers of CCEs are required to be undertaken.

4.2.9 In fact, a World Bank technical assistance project studied the possibility of strategic sampling, with the use of remote sensing, for CCEs with reference to two districts in Bihar. Although the study found weak relationships between satellite data and yield, the simulation study indicated that significant increase in accuracy and reduction in costs associated with CCEs can be achieved by using remote sensing data. The study suggested as follows:

- Creating crop-type maps from satellite data twice a year; during *Rabi* and *Kharif*. Crop-type maps are critical for planning and implementing a crop insurance scheme. These maps should be created using radar and optical data, along with field validation. Final maps should be at the 100 m or finer resolution.
- Crop-type maps should be used to integrate radar and optical data with weather data, within the framework of a model (e.g., DNDC) to create yield estimates four to six weeks before harvest.
- These estimates of crop yield by IU, in units of mean and variance over the IU, should be used to determine the number of CCEs per IU.
- Each season, CCEs should be entered into a maintained database and used to validate yield estimates, thereby improving the yield-estimation algorithm.

4.2.10 Another study of the World Bank was based on two rounds of implementing pilots in Maharashtra (*Rabi* 2011) and Rajasthan (*Rabi* 2011). The objectives of these pilots were to develop and demonstrate the use of mobile technology for capture and transmission of CCE data on a close-to-real-time basis. By utilizing mobile communication technology, particularly the use of GPS, time-sampling and video capture, the idea was to explore how these technologies can improve data quality, timeliness and support timely claims-processing and payment. AIC, together with the World Bank team, and in collaboration with the State governments, was involved during the pilots from development of mobile CCE protocol and software design to field visits and participation in training of field officers. The pilots demonstrated that the implementation of mobile CCE was relatively easy. Once the software and protocol had been developed, it was straight forward to carry out. The difficulty in implementation was in the willingness of officers to use the mobile technology to collect CCE data. This can be addressed if a formal decision is taken by the State government concerned to implement mobile-phone-based CCEs.

State governments should ensure the use of GPRS-enabled and camera-fitted mobile phones or hand-held machines for conducting CCEs, so as to transmit data on a real-time basis. The applications developed in Gujarat, and also by the pilot studies under World Bank technical assistance in Maharashtra and Rajasthan, can be used to put in place appropriate systems in other States.

4.2.11 Having considered the above aspects the Committee recommends as follows:

4.2.12 State governments should ensure the use of GPRS-enabled and camera-fitted mobile phones or hand-held machines while conducting CCEs, so as to transmit data on a real-time basis. The applications developed in Gujarat, and also by the pilot studies under World Bank technical assistance in Maharashtra and Rajasthan, can be utilized for putting in place appropriate systems in the States.

4.2.13 Efforts may be made to rationalize the number of CCEs to be conducted, so as to improve timeliness and quality of data. This can be done keeping in view the areas where probability of losses is higher as determined by remote sensing techniques and satellite images. This will reduce cost and lead to improved quality and timeliness.

4.2.13 There is a need to standardize the procedure for conducting CCEs and monitoring quality through random checks. The outsourcing agency should be selected in a way that it possesses the required skill and experience. It should be ensured that the outsourcing agency follows the prescribed procedure. The States should maintain a single series of yield data.

4.2.14 Loss assessment for crop insurance requires technical skills that are different from those required for other insurance businesses. Over the medium term, efforts should be made to prepare a specialized cadre of personnel with skills and aptitude in crop insurance. They need not be dedicated and full-time for this purpose. Some of them can be from among the FFs, extension workers and village-level revenue officials. What is important is training and capacity building of these persons.

[12] World Bank, 2013, *Crop Insurance in India: Strategic Sampling with Remote Sensing*, pp. 26–27.

[13] World Bank, 2013, *Crop Insurance in India: Implementation of Mobile-Phone Technology for CCEs*.

4.2.15 It is necessary to explore the feasibility of new methods and tools such as the SACEM for yield estimation at the panchayat or village level, and the use of unmanned aerial vehicles (UAVs) equipped with 3D cameras for taking photographs of standing crops.

4.2.16 Yield data is of the nature of a public good. There should be a central depository of yield data so that it is accessible to insurers, researchers and others.

4.3 Confidence in weather data

4.3.1 During the Committee's meetings, issues were raised regarding lack of confidence of insured farmers in the weather data of AWSs, which form the basis for determination of claims in the context of WBCIS. It was pointed out that such data could be manipulated. Such issues were raised both on behalf of the insured and also of insurers.

4.3.2 According to IMD, the present density of AWSs is insufficient to implement WBCIS effectively. Satellite data is being synthesized with AWS readings on parameters such as temperature and rainfall for the purpose of weather monitoring and forecasting. It is necessary to ensure data transfer on a real-time basis, every hour, to a satellite link and also conduct quality checks using appropriate software. There is a need to establish a national-level organization for approving and monitoring the quality of data of AWSs installed by agencies other than IMD. This is to ensure that private agencies follow WMO guidelines or any other approved guidelines.

4.3.3 According to IMD, temperature within a district does not vary by more than one to two degrees. Hence, it should be possible to check the veracity of data furnished by private weather data providers by comparing it with the data available with IMD at the district level. Transmission of weather data by such providers on a real-time basis to a central receiving station at the State government-level would reduce possibility of manipulation of weather data. Private agencies usually take seven days to send the weather data recorded. Real-time monitoring has to be ensured.

4.3.4 Rainfall, unlike temperature, is not uniform across a district and is likely to vary every 25km, making it difficult to monitor. However, cumulative rainfall data within a district in a month would not have much variation. Rainfall data can be transmitted every three hours.

4.3.5 The committee recommends as follows:

4.3.6 It is necessary to put in place a regulatory mechanism for AWSs. A system of accreditation, certification and quality monitoring of AWSs should be set up, to ensure accuracy and standardization of sensors. In this regard, WMO guidelines should be followed. Initially, IMD could be entrusted with the task of regulating automatic weather stations of private data providers.

It is necessary to put in place a regulatory mechanism for automatic weather stations (AWSs). A system of accreditation, certification and quality monitoring of AWSs should be set up.

4.3.7 There is a plan to set up 5,000 AWSs in the country. Public-private partnership models should be adopted with mechanisms such as viability gap funding. These AWSs may be installed in such a manner as to align them to agro-climatic zones.

4.3.8 As in the case of yield data, weather data should also be treated as a public good. AIC and private providers should share weather data with others. There could be a central depository of such weather data.

4.3.9 IMD's current website shows recent data on weather. Getting historical data takes some time. IMD should have a system for easy and timely availability of historical weather data.

4.4 Credit delivery-related issues

4.4.1 The procedure and practices followed by many bank branches do not conform to the principles and guidelines of crop insurance schemes. This is evident from the fact that large numbers and amounts of loans are disbursed in the *Kharif* season; the disbursement of loans drops significantly, in many areas, during the *Rabi* season because of assured irrigation and lesser chances crop failure (low risk perception). In some States, it is observed that there is an abnormal increase in disbursement of loans towards the cut-off date, and there are even requests for the extension for the cut-off date.

4.4.2 Another aspect is that banks extend loans mostly in the *Kharif* season, keeping a small portion for disbursement during *Rabi* season. Banks do not apportion loan amounts between *Kharif* and *Rabi* seasons based on crops grown by farmers. In case of KCC, which is actually a working capital account for the farmers, there is no distinction between a *Kharif* and *Rabi* loan. Sometimes, banks, in conjunction with farmers, disburse loans after the cut-off date and help farmers evade payment of premium.

4.4.3 There seem to be inconsistencies between the stipulations in crop insurance schemes and the loaning practices of credit institutions. Though crop insurance is compulsory for specified crops in the areas notified by the State governments, banks very often do not adhere to the scheme. Very often, they do not enforce payment of premium by loanee farmers, particularly when weather conditions are favourable. Further, there seems to be no clear distinction between loans for *Kharif* and *Rabi* seasons. It is difficult to determine when the *Kharif* loan is repaid and *Rabi* loan is disbursed. In fact, quite often repayment of loan is notional or only on paper because the new loan is adjusted against repayment of earlier loan. The data relating to crop insurance for several States reveal inconsistencies, because of the distortions caused by anomalous lending practices.

4.4.4 The above factors have resulted in the area discrepancy discussed earlier, adverse selection, and even moral hazard. The problems have persisted for decades. An easy way out is to say that the credit delivery system should be streamlined. This is, however, easier said than done. The committee feels that the only solution is to use technology as explained earlier, to establish a linkage between data relating to insurance, land records and area sown.

4.4.5 Though both RBI and NABARD—the apex regulators for commercial banks and cooperative/rural banks, respectively—issue circulars for promoting adherence to mandatory crop insurance provisions by banks, the regulators are not inadequately stringent in their administration to ensure that this mandate is fulfilled by banks. Such circulars do not elicit the required enforcement from credit institutions, leading to ineffective implementation of crop insurance schemes.

4.4.6 Further, mandatory crop insurance of loanee farmers has been challenged in courts. Wide-ranging interpretation of court judgments has also diluted the level of commitment with which various State governments implement crop insurance schemes.

4.4.7 The committee recommends:

4.4.8 Financial institutions should ensure that loan accounts are related or linked to land records, through the Web portal to be set up by the State government concerned. They should regularly check, as and when loans are sanctioned and disbursed, that multiple loans are not taken for the same land. There should also be a software interface between banks and insurers, which would allow online transfer of crop insurance data to facilitate coverage and timely payment of claims.

RBI and NABARD should effectively monitor the compliance of their circulars regarding compulsory crop insurance for loanee farmers in respect to the notified crops in the identified area units.

4.4.9 Crop insurance is compulsory for loanee farmers for notified crops. The extent of compliance of compulsory coverage under crop insurance schemes should be reflected in the audit reports of the banks.

4.4.10 RBI and NABARD should effectively monitor the compliance of their circulars regarding compulsory crop insurance for loanee farmers in respect to notified crops in the identified area units.

4.4.11 Financial institutions should work out a mechanism to separate loan amounts utilized for *Kharif* and *Rabi* seasons even if it is done through KCC.

4.5 Premium related issues

4.5.1 It was pointed out by most State government representatives that the rate of premium under NCIP is very high and would discourage farmers' participation in crop insurance. In fact, it will make crop insurance unaffordable for most farmers and certainly for small farmers. Even though the premium amount is supposed to be an addition to the crop loan as per the scheme, farmers perceive it to be a cost of loan similar to the interest cost. When they compare the rate of premium with the interest rate, which is highly subsidized (effectively 4 per cent with Government of India subsidy of 3 per cent), they feel dissatisfied with the high rate of premium. The introduction of MNAIS under NCIP, would lead to much higher premium rates, meaning many farmers might choose not to take crop loans.

4.5.2 One way is to educate the farmers regarding the principle, practice and utility of crop insurance. However, there is a need to look at the affordability of premium in case of NCIP. Some suggestions were made during interactions with the Committee.

4.5.3 It was suggested that premium rates for irrigated crops should be different from that of non-irrigated crops so as to encourage participation of farmers with irrigated agriculture. This will lead to larger participation and contribute to greater viability of the scheme.

There is a need to revisit the premium rates in MNAIS. A World Bank-assisted study report contains useful suggestions regarding improving agricultural insurance ratemaking, product design and other aspects. It recommends methodologies such as de-trending for the purpose of making use of past data in order to determine premium rate.

Introduction of a no-claim bonus would also encourage farmers to participate in the scheme.

4.5.4 It was pointed out that premium rates are subject to a load due to an absence of panchayat/village-level crop-yield data; a database of yield data needs to be created to work out village-level premium rates.

4.5.5 At present, a number of risks are bundled together while calculating the premium rate for a particular crop. Instead, the most critical risks associated with a particular crop should be identified first and the insurance product should be designed accordingly. This will reduce the loading on premium, thereby reducing the rate.

4.5.6 It was also pointed out that too much competition in insurance would result in insurers avoiding high-risk crops or increasing premium rates for such crops. If crop insurance is made compulsory on the lines of third-party insurance, say for motor vehicles, the rates would be more affordable.

4.5.7 There is a need to revisit the premium rates in MNAIS. A World Bank-assisted study report contains useful suggestions regarding improving agricultural insurance ratemaking, product design and other aspects. It recommends methodologies such as de-trending for the purpose of making use of past data in order to determine premium rate.

4.5.8 The amount of government subsidy may have to be increased, especially for small and marginal farmers.

4.5.9 The Committee recommends:

4.5.10 There is a need to revisit the premium rates in case of MNAIS. Inadequate yield data for smaller area units result in more loading leading to higher premium than it would normally be. Determination of premium needs to be rationalized. A World Bank-assisted study report contains useful suggestions in this regard.

4.5.11 Instead of bundling together several risks while calculating premium rates for a particular crop, the most critical risk could be identified first so as to design the insurance product. Other risks can be included as additional benefits with incremental premium.

A no-claim bonus can be provided for in the form of a discount in premium for those who do not claim indemnity for a specified number of years.

The provision of scaling down of the sum insured in case of actuarial premium exceeding the capped premium will lead to inadequate protection for the value of the crop. As an alternative, a better, workable solution is the introduction of an additional indemnity level of 70 per cent and/or basing the guaranteed yield on the average of the preceding seven years without eliminating the calamity years, etc. These matters may be left to the SLCCCI.

Capped pricing of insurance premiums will discourage insurance companies from accepting high-risk crops/districts and eventually the target of reaching higher penetration will not be achieved. An alternative could be capping the farmers' premium and giving the balance premium as a subsidy.

In order to arrest outflow of reinsurance premium outside the country—which is happening now—a fund may be created, under the aegis of DAC, MOA, through a pooling arrangement of the empaneled insurers to meet catastrophic losses.

4.6 Role of AIC and banks

4.6.1 AIC and banks are critical elements in the organizational architecture for implementing crop insurance schemes. Because of historical reasons, the area-based approach and also the incentive effect of the design of these schemes, the agencies have not been playing a proactive role in ensuring that schemes are implemented in a viable and innovative manner.

4.6.2 Not only do banks provide loans, they also motivate farmers to participate in crop insurance schemes. Banks are also the beneficiaries of crop insurance; not only does this help farmers in the event of crop losses by restoring their income and hence credit eligibility, it also secures the bank's resources from the risk of loan defaults. Banks are expected to play a major role in the crop insurance programme. However, when lending to farmers, banks only collate the data related to crop area. In many cases, they do not collect premium from loanee farmers, who are automatically or compulsorily required to be insured. They do not monitor the end use of crop loans. Banks argue that they have a shortage of manpower and infrastructure, and are not in a position to monitor loan usage or maintain data on the area sown and related aspects.

4.6.3 Banks may face constraints of human and other infrastructure; however, it appears that many banks do not perform even the minimum due diligence of sample verification in respect to crop insurance. They do not have any incentive to do so because they have no stake.

4.6.4 In view of the fact that banks benefit from crop insurance in the form of a security against default, it may be logical to have a provision that banks bear a part, however small, of the insurance premium. This will give them an incentive for greater involvement and due diligence.

AIC, other insurance companies and banks should play a pro-active role in ensuring effective implementation of crop insurance schemes.

4.6.5 Similarly, AIC seems to have been implementing the crop insurance schemes as government schemes and not as a commercial venture. Historically, all the risks were borne by GoI and State governments, which met even the cost of administration of the schemes. AIC—and GIC before it—was just a medium through which the programme was coordinated. It received the details from banks, compiled information, calculated the claims, if any, and moved the government for funding. Similarly, when the government made funds available for payment of claims, AIC passed it down to the banks to be deposited in the accounts of the insured farmers. AIC had no stake or incentive to function in a way so as to make the schemes financially viable. Of course, the situation has changed to some extent with the introduction of MNAIS.

4.6.6 It was rightly pointed out during interaction meetings that AIC needs to play a pro-active role in organizing and ensuring verification of crop area vis-à-vis the insured area. It should also play a critical role in ensuring that the yield-data based on CCEs are credible. As technology solutions are available today, it will be easier for AIC to make a more significant contribution to these activities.

4.6.7 The Committee recommends:

4.6.8 AIC and other insurance companies should play a pro-active role and create institutional capacity for ensuring effective implementation of crop insurance schemes. AIC should play a leading role in facilitating development of applications for mobile technology-based CCEs in different States, particularly in the States where the claims have been historically high. Similarly, AIC should encourage development of software for interface between banks and insurers. GoI may support the pilots for adoption of new technology. After the technology is standardized, the expenses may be shared by the States and Centre.

4.6.9 Insurance companies should monitor the progress of insurance coverage and crop area sown through the crop cycle so as to detect area discrepancy during the season itself.

4.6.10 GoI's Ministry of Agriculture should examine if crop insurance schemes should provide for a part of the premium to be borne by the banks which have the benefit of better repayment because of crop insurance.

4.7 Expeditious settlement of claims

4.7.1 Delays in settlement of claims creates dissatisfaction among insured farmers. Delays in settlement of claims are as old as crop insurance schemes. The design of crop insurance schemes involves the participation of several agencies, such as insurance companies, financial institutions and Central and State government agencies. Unless each agency fulfils its roles and obligations in a timely and systematic manner, there is bound to be delay, as it happens again and again at many places. There can be delay even if only one—out of many—agency is not able to complete its part of the task within the stipulated time. The main reasons for delays have been non-submission of yield data, based on CCEs and the differences arising because of area discrepancy. If the measures suggested to address these issues are implemented, delays in settlement of claims would be reduced.

4.7.2 A suggestion in this regard is to introduce "double-trigger" insurance products, which will mean an early payout, based on the weather index, and the remaining payment based on yield estimation. Even if there is some delay in compiling and analysing yield data, the farmer will receive some amount of the claim during the crop season itself, based on weather data.

4.7.3 Though the above product appears attractive, it could be complex to design. There might be some difficulty in defining the features of such an insurance product. For example, an issue may arise as to the initial period for which the weather index is to be monitored. Further, even if the weather index is not triggered in the initial period, it might become adverse by the time of harvest. On the other hand, even though the weather index for the initial period indicates an unfavourable crop season, the situation might improve at a later stage. Payout based on weather index for the earlier period would create complications if the yield data does not show a shortfall, which would mean the insured farmer is ineligible for claims. The issue of recovery of the interim payment could arise.

4.7.4 Our experience in operating weather index-based insurance schemes is still limited. At this stage, it may not be feasible to go in for double-trigger insurance products. In any case, MNAIS provides for on-account advance payment, based on prevented sowing/planting and some other conditions.

4.7.5 The Committee recommends:

4.7.6 A time limit of three months from the prescribed date of submission of CCE data may be incorporated into MNAIS itself for payment of claims.

4.8 Capacity building and improving technical skill

4.8.1 It was strongly suggested during various meetings that there is a need to improve technical skills of those in charge of undertaking activities related to crop insurance. For this purpose, it would be useful to set up a well-equipped TSU at the Central Government-level, which could undertake measures for capacity building and improving technical skills of State government agencies and even banks. It could identify appropriate crop insurance schemes and also support State governments in identifying appropriate insurance products. It will also address issues such as monitoring loss estimation and improving CCEs. It can strengthen and handhold States with data sets, technical training, review report and advice. The unit could be located in the Ministry of Agriculture.

4.8.2 The Committee recommends:

4.8.3 The setting up of a well-equipped TSU at the Central government-level, which could undertake measures for capacity building and improving technical skills of State government agencies and banks. The core functions of the TSU will be as follows:

- Create a "centre of expertise" to support the development and up-scaling of agricultural insurance
- Establish a core team of agricultural insurance experts to provide technical support to insurance providers in underwriting, product development, pricing, product delivery, grievance redressal, etc.
- Handhold States in evaluating insurance products and choosing the best and effective insurance products

4.8.4 GoI, State governments and AIC should organize a comprehensive programme of capacity building—keeping in view the needs of stakeholders such as State government functionaries, insurers and Central government agencies associated with crop insurance scheme should be organized—with technical input from the TSU, in a phased manner. This can be organized at State administrative training/disaster management institutes and also in institutes specializing in insurance-related subject.

A comprehensive programme of capacity building should be organized, keeping in view the needs of stakeholders such as State government functionaries, insurers and Central government agencies associated with crop insurance scheme.

4.9 Allocation of districts to insurance companies

4.9.1 During interaction meetings, representatives of insurance companies pointed out that there are no clear guidelines for allotment of clusters of unit areas or districts to insurance companies. They also observed that the parameters to evaluate performance of insurance companies need to be revised.

Participation of non-loanee farmers and timely payment of claims should be performance indicators, rather than claims ratio and participation of loanee farmers. Another suggestion was that, instead of allocating districts every season, State governments should allocate districts to insurance companies for a period of at least three years, to give the latter enough time to plan marketing and publicity, and to design suitable products to attract farmers.

4.9.2 The Committee recommends:

4.9.3 Currently, districts are allocated every season, creating uncertainty among insurers that are willing to invest in insurance education and awareness. Further, even those insurers that pay a large amount of claims in a particular season may not reap goodwill the next season if allocated another district. It is recommended that districts/crops be allocated to an insurer for a minimum period of three years.

4.9.4 The tender/bidding process followed by States for allocation of districts/crops varies widely. Given the huge government support and public interest, a standard procedure for bidding, which inter alia will include a fair and transparent process, should be prescribed.

4.9.5 The GoI-level TSU should hand-hold and help States, if they want, with data sets, technical training, review reports and advice, giving them access to tools and expertise in order to efficiently evaluate the products offered by insurance providers during the tendering process.

4.9.6 It is also necessary to prepare a standard format for notification of crops and area units for insurance coverage. This can be done by the Central government.

4.9.7 State governments should ensure that they issue notifications of crops and area units for insurance coverage well in advance of a crop season or for a number of seasons.

4.9.8 State governments should also ensure timely payment of premium subsidy to the insurance companies.

4.10 Measures for awareness and insurance literacy among farmers

4.10.1 Several participants pointed out that the lack of awareness among farmers about the mechanism of crop insurance leads to lower participation, adverse selection and dissatisfaction among those who do participate.

4.10.2 The report of an AFC study—"Report on Evaluation and Impact Assessment of Crop Insurance Schemes"—submitted to the Ministry of Agriculture in August 2013 finds that there is widespread ignorance about crop insurance schemes among farmers. It finds that 65.4 per cent of farmers surveyed were not aware that crop insurance is mandatory for loanee farmers who avail of crop loans for a notified crop. Even among those insured, only 10 per cent knew the difference between various crop insurance schemes. Only 28 per cent were aware that insurance premium is deducted from crop loans of loanee farmers. About 57 per cent did not even know the sum for which they were insured.[16]

[16]Agricultural Finance Corporation, 2013, *Report on Evaluation and Impact Assessment of Crop Insurance Schemes*, New Delhi, p. 9.

4.10.3 It is necessary to undertake insurance awareness programmes for farmers in a big way. This cannot be done by only one agency. In addition to government extension agencies, banks and insurance companies can play an important role. The fundamentals of insurance and its pricing need to be explained to farmers, as can their concerns about high premium and not receiving financial benefits every year. Procedures relating to existing crop insurance schemes should also be explained. Banks may consider opening counselling centres, either individually or with pooled resources, not only for insurance literacy but also for covering subjects relating to credit and agricultural technology.

4.10.4 Mass media, self-help groups and other mechanisms relating to agricultural technology dissemination can play an important role in this regard.

4.10.5 Personnel associated with agriculture extension activities should also be trained in the fundamentals and other aspects of crop insurance schemes, so that they are able to create awareness and acceptance among farmers.

4.10.6 The Committee recommends:

4.10.7 Banks and insurance companies, in collaboration with concerned State governments, should prepare a programme to create awareness and insurance literacy among farmers. The progress of these activities should be reviewed at the State and district level on a quarterly basis for the next two years.

4.11 Product design

4.11.1 During the interaction meetings, a number of suggestions were made in respect to design of crop insurance products.

4.11.2 One suggestion to minimize the risk of adverse selection is to promote multiple season/year insurance contracts, wherein farmers are encouraged to buy insurance for two or three years in advance. This can be made more attractive by giving some discount in the premium rate.

4.11.3 An important issue relates to the cut-off date. There is a tendency among some farmers, particularly non-loanee farmers, to seek insurance much after the cut-off dates for premium payment. This is true for both weather-based and yield-based crop insurance schemes. Every time there is an adverse weather condition, the States concerned approach the Centre to extend the cut-off date, so that more farmers can participate in crop insurance. This is inconsistent with the principles of insurance.

4.11.4 As mentioned earlier, when CCIS was introduced in 1985, the scheme did not incorporate any cut-off dates. After three years of operations—in which it was discovered that farmers had a tendency to buy insurance on a large scale

Insurance companies and banks, in collaboration with the concerned State governments should create awareness and insurance literacy among farmers. The progress of these activities should be reviewed at the State and district level on a quarterly basis for the next two years.

when there was a likelihood of crop failure—cut-off dates were incorporated for *Kharif* and *Rabi* seasons. Subsequently, different dates were fixed for different States. There are still problems, despite the cut-off dates.

4.11.5 A disincentive in the form of a higher premium for those enrolling in the insurance scheme at a later date would discourage farmers from waiting until the last moment. For example, there can be two premium rates: one for those who enrol a month, or more, before the cut-off dates, and another for those enrolling less than one month prior to the cut-off date.

4.11.6 Historical correlation studies of crop yield with weather parameters would help in developing weather thresholds (triggers) beyond which crops start getting affected adversely. For this, well-calibrated and validated crop weather models can be effectively employed. This can be helpful in designing weather index products-termsheets. The Committee has been informed that AIC, in conjunction with some research institutions/SAUs, is working on developing scientific correlation between weather and yield. Based on the results of the present study, the same may be broad-based and extended to more crops and areas, to establish trigger points for large number of crops or on a pan-India basis.

4.11.7 Threshold triggers are very critical for weather-based crop insurance. Considerable dissatisfaction among the stakeholders, especially farmers, is often related to the disagreement on threshold values of weather that trigger losses. Absence of a standardized process of determining triggers for pay-offs in insurance causes much variability in different products. Each trigger, its specific parameter and time should have a standardized guiding principle. The standardization process should be determined in such a way that it provides flexibility for designing localized products. Research organizations should perform a scientific agro-ecological zone-specific analysis of such critical thresholds as rainfall, temperature and other important weather elements for key crops; this analysis can be used as a benchmark by the insurance industry and governments. The suitability of multiple triggers, related to weather as well as yield, should be further researched.

- New and innovative insurance products may be introduced.
- An atlas of critical weather elements, which trigger crop yield losses in different crop growth periods, should be developed for different agro-climatic regions. This could be used by governments and the industry as benchmarks.
- GoI Ministries of Home and Agriculture should take measures to integrate or link crop insurance schemes with disaster mitigation activities.

4.11.8 In recent times, insurance is recognized as an important tool for disaster mitigation and a mechanism for ex-ante financing for disaster relief and recovery. Crop insurance can play an important role in this regard. Crop-insurance claims can provide some relief to those affected by a disaster such as drought or flood. On the other hand, disaster response/mitigation funds available with the Central and State governments may be utilized to enhance and expand crop insurance-related activities. GoI Ministries of Home and Agriculture should take measures to integrate or link crop insurance schemes with disaster-mitigation activities.

4.11.9 The Committee recommends the following:

4.11.10 In order to minimize the risk of adverse selection insurer should offer multiple year/season insurance contracts, wherein farmers are encouraged to buy insurance for three years or more at a time, at a discounted premium.

4.11.11 New and innovative products such as community-based insurance may be introduced.

4.11.12 A basic insurance product—such as index-based insurance—with a lower premium rate, but with a 'top-up' option for additional triggers or perils at incremental premiums could be introduced. This will give farmers more choice, and the basic product would be more affordable.

4.11.13 In case of WBCIS, all existing products should be tested with reference to past data, so as find out how realistically the parameters correlated with yield outcomes. Based on such analysis, product designs should be improved so that claims payout would correspond to shortfalls in yield in most cases.

4.11.14 Variable premium rates could be introduced to discourage farmers from enrolling just before or on the cut-off date, when they already know that there could be a shortfall in crop yield or an adverse weather situation. Those who come forward to enrol themselves, particularly in case of non-loanee farmers, more than a month before the cut-off date could be given a discount in the premium.

4.11.15 An atlas of critical weather elements that trigger crop-yield losses in different crop-growth periods should be developed for different agro-climatic regions. Governments and industry could use this as a benchmark.

4.11.16 GoI Ministries of Home and Agriculture should take measures to integrate or link crop insurance schemes with disaster-mitigation activities.

4.11.17 Crop Insurance Legislation

Crop insurance is different from general insurance in many ways. It is a special type of insurance, and does not strictly follow the rules and regulations of general insurance, such as the receipt of insurance premium under section 64 VB for accepting risk, claim intimation by the insured, etc. Under the IRDA, crop insurance falls under the miscellaneous category of the general insurance business. In the absence of a law, various provisions, such as compulsory coverage of loanee farmers, application of area discrepancy factor, etc., are being challenged in courts. It would, therefore, be appropriate to have an Agriculture Insurance Act, which would deal with specific needs of the crop insurance and agriculture insurance in general.

*****

5 A Summary of the Recommendations of the Committee

This chapter contains a summary of the Committee's recommendations. For more details and the rationale behind the recommendations, one may refer to the corresponding section of Chapter 4 of the report, indicated by the middle digit of the paragraph number of a particular recommendation. For example, for details on, and the background of, recommendations 5.2.1 through 5.2.6 listed below, one needs to look at section 4.2 of Chapter 4. As previously indicated, the Committee did not confine itself to mere loopholes in the schemes, but looked at various issues and challenges from a broader perspective. It has taken note of the fact that many of the problems and issues have persisted for decades, and that there has been no improvement in spite of various measures suggested by previous committees. Considering all these, the Committee has recommended effective use of technology and prioritization of measures to be taken. The Committee has made, as enumerated below, a number of recommendations. The implementation of the recommendations—with some prioritization and in a time-bound manner—would help plug the loopholes, thereby effectively addressing the issues involved.

5.1 Area discrepancy

5.1.1 It is appropriate to use technology to address the chronic problem of area discrepancy, instead of the area-correction factor, which is iniquitous and unfair to honest farmers. A Web portal, along the lines of that developed for Gujarat by NIC, may be developed for other States, so as to make data of land records accessible to financial institutions. The latter, in turn, should link details of crop loan, premium and the profile of loanee and non-loanee farmers with this database. The Web portal would enable financial institutions to link each farmer's existing loan account to the unique land account, thus facilitating detection of multiplicity of loans for the same land.

5.1.2 Mobile phones may be used to capture and transmit photographs of standing crops once or twice during the season, for the purpose of verification of the crops sown on a particular land. FFs, identified by ATMA, should be motivated to visit such fields and transmit the above-mentioned photographs. They may be paid for each visit. GPRS-enabled mobile phones would transmit the photo to a server that can verify the GPS coordinates of the field and photographs. If the GPS coordinates match, a confirmation message is sent to the FF. The photograph is to be digitized by an expert agency, so as to ascertain the crop type and other aspects. In case the crop data is different from that on the Web portal, an alert message may be sent to the bank and insurance agency.

5.1.3 Insurance companies and banks should undertake verification relating to area sown and area insured at periodic intervals during the crop season, especially in districts with a history of large area discrepancy.

5.1.4 Government officials concerned, and representatives of insurance agencies and banks, should have coordination meetings at the State and District level on a quarterly basis in order to monitor the area sown, vis-à-vis the area insured.

5.2 Crop-cutting experiments

5.2.1 State governments should ensure the use of GPRS-enabled and camera-fitted mobile phones/smart phones or hand-held machines in conducting CCEs, so as to transmit data on a real-time basis. The applications developed in Gujarat, and also by pilot studies under technical assistance from the World Bank in Maharashtra and Rajasthan, can be utilized for putting in place appropriate systems in States.

5.2.2 Efforts may be made to rationalize the number of CCEs to be conducted, so as to improve timeliness and quality of data. This can be done keeping in view the areas where probability of losses is higher as revealed by remote sensing techniques and satellite images. This will reduce cost and lead to improved quality and timeliness.

5.2.3 There is a need to standardize the procedure for conducting CCEs and monitoring the quality through random checks. The outsourcing agency should be selected in a way that it possesses the required skill and experience. It should be ensured that the outsourcing agency follows the prescribed procedure. The States should maintain a single series of yield data.

5.2.4 Loss assessment for crop insurance requires technical skills that are different from those required for other insurance businesses. Over the medium term, efforts should be made to prepare a specialized cadre of personnel with skills and aptitude in crop insurance. They need not be dedicated and full-time for this purpose. Some of them can be from among the FFs, extension workers and village-level revenue officials. What is important is training and capacity building of these persons.

5.2.5 It is necessary to explore the feasibility of new methods and tools, such as SACEM or any other technology-based method, viz. pixel intelligence for yield estimation at panchayat- or village-level, and the use of aircraft equipped with 3D cameras for taking photographs of standing crops.

5.2.6 Yield data is of the nature of a public good. There should be a central depository of yield data so that it is accessible to insurers, researchers and others.

5.2.7 Historical time series of crop yields need to be established at village/panchayat/block level to support NCIP. Historical crop-yields data is generally available at district/State level while it is needed at a much lower scale for MNAIS. Ministry of Agriculture and other relevant agencies should sponsor projects to support development of such historical time series.

5.3 Weather data

5.3.1 It is necessary to put in place a regulatory mechanism for AWSs. A system of accreditation, certification and quality monitoring of AWSs should be set up. It is necessary to ensure accuracy and standardization of sensors. WMO guidelines should be followed. Initially, IMD could be entrusted with the task of regulating automatic weather stations of private data providers.

5.3.2 There is a plan to set up 5,000 AWSs in the country. Public-private partnership models may be adopted with mechanisms such as viability gap funding. These AWSs may be installed in such a manner as to align them with agro-climatic zones.

5.3.3 As in the case of yield data, weather data should also be treated as a public good. AIC and private providers should share weather data with others. There could be a central repository of such weather data. In fact, it would be worthwhile to create a single data repository where all insurance-related data on weather and crop-yield data is easily and equally accessible to all stakeholders. The Ministry of Agriculture should launch and manage such a website and initially provide freely accessible historical time series of block level area, production and yield data of different crops.

5.3.4 Currently, the IMD website shows recent data on weather. However, getting historical data it takes some time. IMD should have a system for easy and timely availability of its historical weather data to users.

5.4 Credit-delivery system

5.4.1 Financial institutions should ensure that loan accounts are related or linked to the land records through the portal to be set up by the relevant State governments. They should verify from time to time, as and when loans are sanctioned and disbursed, whether more than one loan is taken for the same land. There should also be a software interface between banks and insurers, which would allow online transfer of crop insurance data to facilitate coverage and timely payment of claims.

5.4.2 Crop insurance is compulsory for loanee farmers for the notified crops. The extent of compliance of compulsory coverage under crop insurance schemes should be reflected in the audit reports of the banks.

5.4.3 RBI and NABARD should effectively monitor the compliance of their circulars regarding compulsory crop insurance for loanee farmers in respect to notified crops in area units.

5.4.4 Financial institutions should work out a mechanism to separate loan amounts utilized for *Kharif* and *Rabi* seasons, even if it is through KCC.

5.5 Premium rates

5.5.1 There is a need to revisit the premium rates in case of MNAIS. Inadequate yield data for smaller area units results in more loading, leading to higher premium than normal. Determination of premium needs to be rationalized. A World Bank-assisted study report [17] contains useful suggestions in this regard.

5.5.2 The provision of scaling down of sum insured in case of actual premiums exceeding the capped premium will lead to inadequate protection for the value of the crop. As an alternative, a better, workable solution, is the introduction of an additional, Indemnity Level of 70% and/or basing the guaranteed yield on average of the preceding seven years without eliminating the calamity years, etc. These matters may be left to SLCCCI.

5.5.3 Capped pricing of insurance premium will discourage insurance companies in accepting high-risk crops/districts and, eventually, the target of reaching higher penetration will not be achieved. An alternative could be capping the farmers' premium and giving the balance premium as subsidy.

[17] World Bank (GFDRR), 2011, *Enhancing Crop Insurance in India*.

5.5.4 In order to arrest outflow of reinsurance premium outside the country, as is happening now, a fund may be created, under the aegis of DAC, MOA, through a pooling arrangement of the empaneled insurers to meet catastrophic losses.

5.5.5 Instead of bundling together several risks while calculating premium rates for a particular crop, the most critical risk could be identified first, so as to design the insurance product. Other risks can be included as additional benefits with incremental premium.

5.5.6 A no-claim bonus can be provided for in the form of a discount in premiums for those who do not claim of indemnity for specified number of years.

5.6 Role of AIC and Banks

5.6.1 AIC and other insurance companies should play a pro-active role and create institutional capacity for ensuring effective implementation of crop insurance schemes. AIC should play a leading role in facilitating development of applications for mobile-phone technology-based CCEs in different States, particularly those in which claims have been historically high. Similarly, AIC should encourage development of software for interface between banks and insurers. GoI may support the pilots for adoption of new technology. After the technology is standardized, the expenses may be shared by the States and Centre.

5.6.2 Insurance companies should monitor the progress of insurance coverage and crop area sown through the crop cycle, so as to detect area discrepancy during the season itself.

5.6.3 GoI's Ministry of Agriculture should examine whether crop insurance schemes should provide for a part of the premium to be borne by the banks, who have the benefit of better repayment because of crop insurance.

5.7 Settlement of claims

5.7.1 A time limit of three months from the prescribed date of submission of crop-cutting data may be incorporated in MNAIS itself for payment of claims.

5.8 Capacity development

5.8.1 A well-equipped TSU may be set up at the Central-Government level, to undertake measures for capacity building and improving technical skills of State government agencies and banks. The core functions of the TSU will be as follows:

- Create a "centre of expertise" to support the development and up-scaling of agricultural insurance
- Establish a core team of agricultural insurance experts to provide technical support to insurance providers in underwriting, product development, pricing, product delivery, grievance redressal, etc.
- Handhold the States in evaluating the insurance products and choosing the best and effective insurance products

5.8.2 GoI, State governments and AIC should organize a comprehensive programme of capacity building—with technical input from the TSU—in a phased manner, keeping in view the needs of stakeholders such as State government functionaries, insurers and Central government agencies associated with crop insurance schemes. This can be organized at State administrative/disaster-management training institutes and also in other institutes specializing in insurance-related subjects.

5.9 Allocation of districts

5.9.1 At present, districts are allocated every season, creating uncertainty among insurers willing to invest in insurance education and awareness. Further, even those insurers that pay a large amount of claims in a particular season may not reap goodwill in next season, when allocated another district. It is recommended that districts/crops be allocated to an insurer for a minimum period of three years.

5.9.2 The tender/bidding process followed by States for allocation of districts/crops varies widely. Given the huge government support and public interest, a standard procedure for bidding, which inter alia will include a fair and transparent process, should be prescribed.

5.9.3 The GoI-level TSU should handhold and help States, if they want, with data sets, technical training, review reports and advice, so as to enable them to have access to tools and expertise in order to efficiently evaluate the products offered by insurance providers during the tendering process.

5.9.4 It is also necessary to prepare a standard format for notification, by State governments, of crops and area units for insurance coverage. This can be done by the Central government.

5.9.5 State governments should ensure that they issue notifications of crops and area units for insurance coverage in a timely manner, well in advance of a crop season or for a number of seasons.

5.9.6 State governments should also ensure timely payment of premium subsidy to the insurance companies.

5.10 Creating awareness and insurance literacy among farmers

5.10.1 Many farmers still view insurance as an "investment" rather than as a risk-mitigation option. Banks, insurance firms and the respective State governments should prepare a programme to create awareness and insurance literacy among farmers, and demystify technical aspects of insurance. The progress of these activities should be reviewed at the State and district-level on a quarterly basis for the next two years.

5.11 Product Design

5.11.1 In order to minimize the risk of adverse selection, the insurer should offer multiple year/season insurance contracts, wherein farmers are encouraged to buy insurance for three years or more at a time at a discounted premium.

5.11.2 New and innovative products, such as community-based insurance, may be introduced.

5.11.3 A basic insurance product, possibly index-based insurance, could be introduced at a lower premium rate, with the option of a "top-up" against additional triggers or perils, with incremental premium. This will give farmers a greater choice and make the basic product more affordable.

5.11.4 In case of WBCIS, all the existing products should be tested with reference to past data, so as find out how realistically the parameters correlated with yield outcomes. Based on such analysis, product designs need to be improved so that claims payout would correspond to shortfalls in yield in most cases.

5.11.5 Variable premium rates could be introduced to discourage farmers from enrolling just before or on the cut-off date, when they already know that there could be a shortfall in crop yield or an adverse weather situation. Those who come forward to enrol themselves, particularly in case of non-loanee farmers, more than a month before the cut-off date could be given a discount in the premium.

5.11.6 Threshold triggers are very critical for weather-based crop insurance. Considerable dissatisfaction among stakeholders, especially farmers, is often related to the agreement on threshold values of weather conditions that trigger losses. A scientific agro-ecological zone specific analysis of such critical thresholds of rainfall, temperature and other important weather elements for key crops should be done by research organizations to be used as a benchmark by the insurance industry and governments. The suitability of multiple triggers related to weather as well as yield should be further researched. An atlas of critical weather elements that trigger crop-yield losses in different crop-growth periods should be developed for different agro-climatic regions which could be used by governments and the industry as benchmarks.

5.11.7 GoI Ministries of Home and Agriculture should take measures to integrate or link crop insurance schemes with disaster-mitigation activities.

5.11.8 Crop Insurance Legislation: Crop insurance is different from general insurance in many ways, in the sense that it is a special type of insurance and does not strictly follow rules and regulations of general insurance, such as receipt of insurance premium under section 64 VB for accepting risk, claim intimation by the insured, etc. IRDA also places crop insurance under the miscellaneous category of the general insurance business. In the absence of a law, various provisions such as compulsory coverage of loanee farmers, application of area discrepancy factor, etc., are being challenged in courts. Therefore, it would be appropriate to have an Agriculture Insurance Act, which would take care of specific needs of the crop insurance and agriculture insurance in general.

*****

Annexure - I

BY SPEED POST / FAX

No. 12015/09/2013-Credit II
Government of India
Ministry of Agriculture
Department of Agriculture & Cooperation
(Credit Division)

Krishi Bhavan, New Delhi
Dated the 10th September, 2013

Subject: Constitution of Committee to examine the loopholes in the implementation of the Crop insurance schemes and suggest measures for their removal – reg

It has been decided to constitute a Committee to examine the loopholes, if any, in the implementation of Crop Insurance Schemes i.e. National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance Scheme (MNAIS) and Weather Based Crop Insurance Scheme (WBCIS) and suggest measures for their removal.

The composition of the Committee would be as follows:

1. **Dr. P. K. Mishra**
   Ex- Secretary, Department of Agri. & Coopn., GoI — **Chairperson**
2. Chief Secretary/Principal Secretary/
   Agriculture Production Commissioner
   Agriculture & Cooperation Department,
   State Govt. of Gujarat, Gandhinagar — Member
3. Chief Secretary/Principal Secretary/
   Agriculture Production Commissioner
   Department of Agriculture,
   State Govt. of Rajasthan, Jaipur — Member
4. Chairman- cum-Managing Director,
   Agriculture Insurance Company of India Ltd. (AIC),
   Ambadeep Building, 13th Floor, K.G. Marg,
   New Delhi-110001. — Member Secretary

2. The Committee will submit their report within a period of six months.

3. Secretariat assistance to the committee will be provided by AIC.

4. The Expenditure on boarding & lodging, TA and DA of Dr. P.K. Mishra will be paid in accordance with TA & DA rules and the expenditure would be met out of the budget provisions for Pilot Modified National Agricultural Insurance Scheme (MNAIS).

This has the approval of competent authority.

(Dr. Ashish Kumar Bhutani)
Joint secretary (Credit & Coop.)

Distribution:
1. All members, as above.

Copy for information to PPS to Secretary (A&C)/PPS to AS(DS)/PPS to JS (C&C).

Annexure - II

Statement showing Area Correction Factor applied under NAIS in different States/Seasons

State	Season	Crop	Total Claim Reported (m. Rs)	Total Revised Claim (m. Rs)
Andhra Pradesh	*Kharif* 2002	Groundnut Irr and UI	1,337.64	1,225.80
Andhra Pradesh	*Kharif* 2003	Groundnut	1,807.70	1,605.90
Andhra Pradesh	*Kharif* 2004	Paddy	2.22	0.57
Andhra Pradesh	*Kharif* 2006	Groundnut UI	5,358.29	3,918.55
Andhra Pradesh	*Kharif* 2008	Groundnut UI	9,254.34	7,183.80
Andhra Pradesh	*Kharif* 2009	Groundnut Irr	6,637.78	3,440.17
Andhra Pradesh	*Kharif* 2010	Groundnut UI	2,784.46	2,029.71
Andhra Pradesh	*Kharif* 2012	Paddy	5,597.30	4,181.30
Andhra Pradesh	*Rabi* 2006–07	Bengal gram	172.51	166.09
Andhra Pradesh	*Rabi* 2010–11	Bengal gram, Sunflower	705.23	575.05
Andhra Pradesh	*Rabi* 2011–12	Paddy	688.75	522.27
Bihar	*Rabi* 2009–10	Wheat	2,853.98	2,462.62
Gujarat	*Kharif* 2001	Paddy, Cotton	2,194.74	1,340.71
Gujarat	*Kharif* 2002	Groundnut, Cotton, Castor	9,004.34	7,102.86
Gujarat	*Kharif* 2004	Groundnut	3,693.27	2,791.64
Gujarat	*Kharif* 2005	Bajra	31.89	24.92
Gujarat	*Kharif* 2006	Groundnut, Bajra, Maize	786.16	751.53
Gujarat	*Kharif* 2007	Bajra, Groundnut	207.38	196.84
Gujarat	*Kharif* 2008	Paddy, Bajra, Groundnut	5,995.02	4,669.78
Gujarat	*Kharif* 2009	Paddy, Bajra, Groundnut, Castor	11,106.81	8,001.38
Gujarat	*Kharif* 2010	Groundnut	1,458.42	676.72
Gujarat	*Kharif* 2011	Maize, Groundnut	6,718.27	3,165.33
Gujarat	*Kharif* 2012	Paddy, Bajra, Maize, Groundnut	282.86	160.80
Gujarat	*Rabi* 2009–10	Wheat Irr	46.96	46.37
Gujarat	*Rabi* 2011–12	Wheat Irr	29.10	25.08
Karnataka	*Kharif* 2001	Paddy RF, Groundnut	1,327.78	1,183.86
Karnataka	*Kharif* 2002		3,205.96	3,098.16
Karnataka	*Kharif* 2003	Paddy Irr, Paddy RF, Maize Irr, Maize RF, Ragi, Jowar, Groundnut, Cotton RF	3,059.35	2,769.78
Karnataka	*Kharif* 2005	Potato Irr & RF, Onion RF, Jowar RF, Maize Irr & RF, Black gram RF, Green gram RF, Groundnut RF, Soya bean RF, Sunflower Irr & RF	473.21	438.77
Karnataka	*Kharif* 2006	Groundnut Irr, Groundnut RF, Jowar RF, Maize RF, Onion Irr, Onion RF, Paddy Irr, Paddy RF, Sunflower RF, Sunflower Irr, Tur RF	1,817.20	1,502.81

State	Season	Crop	Total Claim Reported (m. Rs)	Total Revised Claim (m Rs.)
Karnataka	*Kharif* 2007	Paddy Irr, Maize Irr, Ragi UI, Green gram UI, Groundnut UI, Potato UI, Onion (I)	347.23	280.10
Karnataka	*Kharif* 2008	Paddy Irr, Paddy RF, Jowar Irr, Maize RF, Navane RF, Tur RF, Black gram, Green gram, Groundnut Irr, Groundnut RF, Sunflower Irr, Sunflower RF, Sesamum RF, Soya bean RF, Potato RF, Onion Irr	1,550.24	1,416.03
Karnataka	*Kharif* 2009	Paddy Irr, Paddy RF, Maize Irr, Maize RF, Jowar RF, Ragi Irr, Bajra RF, Tur Irr, Tur RF, Soya bean RF, Sunflower Irr, Sunflower RF, Groundnut Irr, Groundnut RF, Navane RF, Black gram RF, Green gram RF, Sesamum RF, Onion Irr	2,109.21	1,678.13
Karnataka	*Kharif* 2010	Paddy Irr, Paddy RF, Maize Irr, Ragi RF, Groundnut Irr, Save RF	499.64	454.29
Karnataka	*Kharif* 2011	Maize Irr, Maize RF, Jowar RF, Ragi RF, Tur RF, Sunflower RF, Groundnut Irr	532.37	406.86
Karnataka	*Kharif* 2012	Paddy Irr, Paddy RF, Maize Irr, Maize RF, Bajra RF, Black gram RF, Tur RF, Green gram, Horse gram, Soya bean RF, Sunflower RF, Sesamum, Groundnut RF	1,445.69	1,268.63
Karnataka	*Rabi* 2001–02		163.48	162.26
Karnataka	*Rabi* 2002–03	Wheat Irr, Wheat RF, Jowar, Ragi, Bengal gram, Horse gram, Sunflower, Safflower, Groundnut	276.07	229.43
Karnataka	*Rabi* 2003–04	Wheat Irr, Wheat RF, Jowar, Ragi, Bengal gram, Horse gram, Sunflower, Safflower, Groundnut, Paddy	2,606.08	2,212.74
Karnataka	*Rabi* 2004–05	Potato Irr, Wheat Irr, Wheat RF, Jowar Irr & RF, Maize Irr, Horse gram RF, Bengal gram RF, Sunflower Irr & RF, Safflower RF	51.67	40.22
Karnataka	*Rabi* 2005–06	Bengal gram, Horse gram, Sunflower, Safflower	19.02	14.89
Karnataka	*Rabi* 2006–07	Bengal gram, Horse gram, Jowar, Linseed, Maize RF, Maize Irr, Safflower, Sunflower Irr, Sunflower RF, Wheat Irr, Wheat RF, Groundnut Irr, Paddy Irr	910.49	563.96

State	Season	Crop	Total Claim Reported (m. Rs)	Total Revised Claim (m Rs.)
Karnataka	*Rabi* 2008–09	Bengal gram RF, Horse gram RF, Safflower RF, Sunflower Irr, Sunflower RF, Sunflower Irr (Summer)	116.34	81.89
Karnataka	*Rabi* 2009–10	Jowar RF, Maize Irr, Maize RF, Bengal gram Irr, Bengal gram RF, Sunflower Irr, Sunflower RF	175.85	158.54
Karnataka	*Rabi* 2010–11	Maize Irr, Safflower UI, Sunflower Irr	15.22	14.51
Karnataka	*Rabi* 2011–12	Maize Irr, Maize RF, Horse gram, Linseed, Jowar Irr, Jowar RF, Wheat Irr, Wheat RF, Bengal gram Irr, Bengal gram RF, Safflower RF, Sunflower RF, Sunflower Irr, Paddy Irr (summer)	1,534.64	1,000.09
Karnataka	*Rabi* 2012–13	Maize Irr, Horse gram, Linseed, Wheat Irr, Wheat RF, Bengal gram Irr, Bengal gram RF, Safflower RF, Sunflower RF, Sunflower Irr, Paddy Irr (summer)	348.14	291.16
Madhya Pradesh	*Kharif* 2002	Soya bean, Paddy Irr, Jowar, Groundnut	1,878.99	1,783.68
Rajasthan	*Kharif* 2006	Bajra, Black gram, Green gram, Guar, Jowar, Sesame	231.62	110.33
Rajasthan	*Kharif* 2007	Green gram, Sesame	32.47	6.12
Rajasthan	*Kharif* 2008	Bajra, Black gram, Green gram, Groundnut, Guar, Sesame	2,560.01	2,474.94
Rajasthan	*Kharif* 2009	Bajra, Urad, Cowpea, Moong, Groundnut, Guar, Jowar, Maize, Moth, Til, Soya bean	3,020.84	1,975.26
Rajasthan	*Rabi* 2006–07	Barley, gram, Cumin, Isabgol, Mustard, Taramira, Wheat	262.37	136.98
Rajasthan	*Rabi* 2007–08	Barley, Bengal gram, Mustard, Isabgol	831.38	775.32
Rajasthan	*Rabi* 2008–09	Bengal gram, Mustard, Taramira, Wheat, Cumin, Isabgol	906.41	765.35
Rajasthan	*Rabi* 2009–10	Wheat, Barley, gram, Rapeseed and Mustard, Taramira	792.91	504.92
Tamil Nadu	*Rabi* 2007–08	Paddy II	1,250.14	1,170.86
Tamil Nadu	*Rabi* 2008–09	Paddy II	8,129.74	6,516.61
Tamil Nadu	*Rabi* 2010–11	Paddy II	3,025.44	2,092.05
Tamil Nadu	*Rabi* 2012–13	Paddy II	10,023.29	7,408.05