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Publisher Page

The central theme of the current issue of IRDAI quarterly Journal is Crop Insurance. The articles on crop insurance have been sourced from those having deep knowledge and expertise in the field. We believe that they will be found useful by not only those who underwrite the crop insurance business but also by the general readers.Weather variation and the associated uncertainty of crop yields has been a global phenomenon. Agricultural activity and the incomes therefrom are often influenced by vagaries of nature like droughts, floods, storms etc. These events being beyond the control of the farmers, often result in heavy losses in crop production and the farm incomes. The magnitude of loss is also increasing due to the growing commercialization of agriculture. As on today, agriculture engages about half of the total workforce in the Indian economy and contributes about 17 % to the Gross Domestic Product (GDP). In such a scenario, the need and the importance of crop insurance cannot be over emphasized.

Crop Insurance is a necessity for a majority of farmers but is faced by problems of design and finance. Moral hazard and adverse selection are more pronounced in Crop Insurance as compared to other lines of insurance business.

Several Crop Insurance Schemes have been designed and rolled out by the Government of India from time to time starting from the Comprehensive Crop Insurance Scheme (CCIS) of 1985 to the Pradhan Mantri Fasal Bima Yojana (PMFBY) of 2016. The approach towards these schemes has been one of continuous improvement based on the recommendations of various committees appointed to study the shortcomings and the loopholes of these schemes. The efforts have resulted in a coverage of 30% of the gross cropped area during the year 2016-17.

However, we still have along way to go to increase the coverage of crop insurance and also the number of farmers insured. Improving the confidence of the farmers in the various crop insurance schemes and on the very concept of crop insurance is paramount to achieve this. This can be achieved only through a concerted effort by all the stake holders of the crop insurance sector. Quick settlement of claims is a very important element in encouraging the spread of crop insurance. Assessment of claims at the right time and timely disbursement of claims will not only help the farmers and their families to overcome the challenges of economic distress but encourages other uninsured farmers to opt for crop insurance. IRDAI, as the regulator, would constantly endeavor to provide a supportive regulatory environment for the development of this sector. Boosting the Crop Insurance would not only develop the agricultural sector but also the general insurance sector.

I am pleased that the articles published in this issue have covered various aspects of Crop Insurance in India, discussing the problems and prospects associated with the sector. This would encourage further discussion on the issue and will provide inputs and potential solutions to the various problems and issues being faced currently. The next issue of the journal would be on the theme of "Reinsurance"

Dr. Subhash C Khuntia

प्रकाशक का संदेश

आईआरडीएआई तिमाही जर्नल के प्रस्तुत अंक का केन्द्रीय विषय फ़सल बीमा है। फ़सल बीमा पर आलेख ऐसे व्यक्तियों से प्राप्त किये गये हैं जिनके पास इस क्षेत्र का गहरा ज्ञान और विशेषज्ञता है। हमारा विश्वास है कि ये न केवल उनके द्वारा जो फ़सल बीमा का जोखिम-अंकन करते हैं, बल्कि सामान्य पाठकों के द्वारा भी उपयोगी पाये जाएँगे। मौसम की विभिन्नता और फ़सल की पैदावार की संबद्ध अनिश्चितता एक वैश्विक तथ्य है। कृषि कार्य और उससे प्राप्त होनेवाली आय प्रायः प्रकृति की अप्रत्याशित स्थितियों, जैसे सूखा, बाढ़, तूफान आदि के द्वारा प्रभावित होती है। ये घटनाएँ किसानों के नियंत्रण से बाहर होने के कारण अकसर फ़सल उत्पादन और कृषि आय में भारी हानि का कारण बनती हैं। हानि का परिमाण खेती के बढ़ते वाणिज्यीकरण के कारण भी बढ़ रहा है। आज की स्थिति यह है कि खेतीबारी में भारतीय अर्थव्यवस्था के कुल श्रमिकों की लगभग आधी संख्या लगी हुई है तथा सकल देशी उत्पाद (जीडीपी) में लगभग 17 प्रतिशत का अंशदान करती है। ऐसे परिदृश्य में फ़सल बीमा की आवश्यकता और महत्व पर अधिक बल देने की जरूरत नहीं है।

फ़सल बीमा अधिकांश किसानों के लिए एक आवश्यकता है, परंतु यह अभिकल्प (डिजाइन) और वित्त की समस्याओं का सामना कर रहा है। बीमा व्यवसाय की अन्य व्यवस्थाओं की तुलना में फ़सल बीमा में नैतिक खतरा और प्रतिकूल चयन अधिक बताये जाते हैं।

1985 की व्यापक फ़सल बीमा योजना (सीसीआईएस) से लेकर 2016 की प्रधान मंत्री फ़सल बीमा योजना (पीएमएफबीवाई) तक समय-समय पर भारत सरकार द्वारा कई फ़सल बीमा योजनाएँ अभिकल्पित की गई हैं और जारी रखी गई हैं। इन योजनाओं के प्रति दृष्टिकोण इन योजनाओं की कमियों और बचाव के रास्तों (लूपहोल्स) का अध्ययन करने के लिए नियुक्त विभिन्न समितियों की सिफारिशों के आधार पर इनमें निरंतर सुधार करने का रहा है। इन प्रयासों के परिणामस्वरूप वर्ष **2016-17 के दौरान सकल फ़सल क्षेत्र के 30 प्रतिशत को बीमा-रक्षा प्रदान की गई है।**

तथापि, फ़सल बीमा की व्याप्ति और बीमाकृत कृषकों की संख्या में भी वृद्धि करने के लिए हमें अभी बहुत दूरी तय करनी होगी। विभिन्न फ़सल बीमा योजनाओं में किसानों के विश्वास को बढ़ाना और इसके लिए फ़सल बीमा की संकल्पना के संबंध में उनके भरोसे को हासिल करना सर्वाधिक आवश्यक है। फ़सल बीमा क्षेत्र के सभी हितधारकों द्वारा संगठित प्रयास के माध्यम से ही यह प्राप्त किया जा सकता है। फ़सल बीमा की व्याप्ति को प्रोत्साहित करने में दावों का त्वरित निपटान एक अत्यंत महत्वपूर्ण तत्व है। सही समय पर दावों के निर्धारण और दावों के समय पर संवितरण से न केवल आर्थिक दुर्दशा की चुनौतियों को पार करने में किसानों और उनके परिवारों को मदद पहुँचेगी, बल्कि दूसरों को भी फ़सल बीमा का चयन करने के लिए प्रोत्साहन मिलेगा। आईआरडीएआई विनियमनकर्ता के रूप में इस क्षेत्र के विकास के लिए एक समर्थक विनियामक परिवेश उपलब्ध कराने के लिए निरंतर प्रयास करेगा। फ़सल बीमा को बढ़ावा देने से न केवल कृषि क्षेत्र, बल्कि सामान्य बीमा क्षेत्र भी विकसित होगा।

मुझे प्रसन्नता है कि इस अंक में प्रकाशित आलेखों में भारत में फ़सल बीमा से संबंधित विभिन्न पहलू शामिल किये गये हैं तथा इस क्षेत्र के साथ संबद्ध समस्याओं और संभावनाओं के बारे में चर्चा की गई है। इस विषय में आगे और विचार-विमर्श को यह प्रोत्साहित करेगा तथा वर्तमान में जिन विभिन्न **समस्याओं और प्रश्नों का सामना किया जा रहा है, उनके लिए निविष्टियाँ और संभावित समाधान उपलब्ध करायेगा। जर्नल का अगला अंक "पुनर्बीमा" के विषय पर केन्द्रित होगा।**

एस॰ सी॰ खुंटिया

Dr. Subhash C Khuntia

Inside

ISSUE FOCUS


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From the Editor

Going the Distance

Given the importance of agriculture in India in the historical, economic and cultural context, the need for transferring the risks of farming through insurance,needs no emphasis. The current edition tries to bring out the varied facets of the Crop Insurance,as a long term risk management tool, and also discusses issues and the challenges associated therewith.

"The biggest challenge in the crop insurance value chain is assessing crop yield in the insurance units for determining the indemnity payout. Therefore, the effectiveness and sustenance of the insurance scheme largely depends on the yield-loss assessment", argues Mr.C.S. Murthy's team in their article 'Towards improving crop yield estimation in the insurance of PMFBY'. The article also stresses upon the need for enhancement of transparency quotient in the Crop Cutting Experiment (CCE) processes, ensuring that crop yield estimates are done in an objective manner, minimizing the human induced biases, through use of satellite, mobile and GIS technologies. It also proposes to finally replace CCE in the long run with an alternative mechanism.

Terming Indian agriculture as a "gamble in the monsoon", Dr. Rajesh Das has analyzed the crop insurance experience of the State of Odisha in his article 'Crop Insurance & Technology intervention. Odisha is one of those states having considerable exposure to drought and floods. After understanding the benefits of crop insurance and taking into consideration the importance of Crop Cutting Experiments(CCE) in settlement of claims, the State pioneered in the usage of technology by streamlining the CCE process across the State through digitalization of data using the mobile applications. The article illustrates how the coordinated efforts of district and state level officials along with other key stakeholders in monitoring the implementation and progress were the key to the success of the scheme.

Delay in issuance of notification, lack of awareness about the benefits of insurance, enrolment process, non-existence of land ownership title documents for the tenant/share croppers; lack of adequate man-power for conducting large number of crop cutting experiments have been identified as some of the issues in the spreading of crop insurance by Mr. Azad Mishra in his article 'Agriculture/Crop Insurance in India: Key issues and way forward'. The recommendations include involvement of all stakeholders for spreading awareness, as well as utilization of technology such as Digital India Land Record Modernization Programme (DILMRP), utilization of remote sensing and drone based technology for smart sampling for timely settlement of claims.

In his article 'A closer look at Agriculture Insurance of India', Mr. VivekLalan touches upon the various obstacles hindering the smooth functioning of the crop insurance schemes in India. He stressed on the need to conduct large scale insurance awareness campaigns at the grass root level, to expand its outreach by linking of Aadhar number enabling Direct Benefit Transfers and use of technology for faster settlement of claims etc.

Utilization of sophisticated technology including Satellite Imagery and Remote sensing based information for assessment of crop yields/ losses is discussed in the article 'Technology interventions in crop insurance' by Mr. Ashok K Yadav.

Mr. M K Poddar, in his article presents the various operational issues plaguing the Pradhan Mantri Fasal Bima Yojana (PMFBY), from achieving landslide success. Some of the issues identified are skewed distribution of the risk, perceiving the payment of subsidy as financial burden bysome States, poor quality of CCE data etc. He also suggests a few measures that could make the Scheme sustainable and argues that like in many developed and developing countries, a comprehensive legislation on Agricultural Insurance should be put in place.

'Remote Sensing Applications in Crop Insurance being a success story from Tamil Nadu using Tamil Nadu Agricultural University-Remote sensing-based Information and Insurance for Crops in Emerging economies (TNAU-RIICE) technology' was presented by Dr.S. Pazhanivelan. The article also shows how remote sensing could be used to assess the impact of floods and droughts on crop conditions along with yield loss assessment.

The amount of insured losses from each major natural catastrophe – be it floods or localized calamities have been rising progressively. Reinsurance is an extension of the basic, fundamental concept of pooling and is an integralpart of the entire insurance business cycle. The focus of the next issue will be on 'Reinsurance'.

-K.G.P.L. Rama Devi

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Towards improving crop yield estimation in the insurance units of Pradhan Mantri Fasal Bima Yojana

Dr. C.S. Murthy *is Head, Agricultural Sciences and Applications, Remote Sensing Applications Area, National Remote Sensing Centre (NRSC-ISRO), Hyderabad.*

1. Introduction

India has a long history in the design, development and implementation of various crop insurance schemes with successive improvements from time to time. The idea is to insulate the farming community against various cultivation risks. Government of India introduced traditional crop insurance in the year 1972 on a limited scale, followed by national level large scale introduction of the Comprehensive Crop Insurance Scheme in 1985, National Agricultural Crop Insurance Scheme in 1999, Pilot Weather Based Crop Insurance Schemes in 2007 and Pilot Modified NAIS in 2010. However, implementation of PMFBY from *kharif* 2016, is a revolutionary step towards improving agriculture insurance system in the country. PMFBY, primarily an area-yield insurance contract, has many positive features to compensate for multiple risks during the entire life cycle of the crop season. Use of technologies viz. remote sensing, mobile and data analytics is being increasingly attempted for effective implementation of the scheme in the last two years.

National Remote Sensing Centre (ISRO) has taken several initiatives in recent years to demonstrate the technology capabilities to meet the information requirements of crop insurance. These initiatives include **(a)** pilot studies in different districts, **(b)** development and implementation of Mobile technology for field data collection for improving crop yield estimation and crop loss assessment, **(c)** training to the field level personnel of State Departments on mobile based field data collection, **(d)** collaborative studies with Agricultural Insurance Company of India Limited (AICIL) to improve crop insurance with remote sensing and GIS technologies, **(e)** awareness-cum-training to the industry on technology utilisation, **(f)** development of a Decision Support System for crop insurance for Odisha state and **(g)** conducting special studies to support the States.

India has a long history in the design, development and implementation of various crop insurance schemes with successive improvements from time to time. The idea is to insulate the farming community against various cultivation risks.

The biggest challenge in the crop insurance value chain is assessing crop yield in the insurance units for determining the indemnity payout. The effectiveness and sustenance of area-yield insurance scheme is therefore largely dependent on the objective yield-loss

assessment mechanism using reliable, current and historical crop yield data, which posed a serious challenge

In India, crop yield estimation in the insurance units is done by conducting Crop Cutting Experiments (CCE) in the field-plots selected through a sampling scheme. Subjectivity in the yield measurements has become a major concern and it is widely agreed that the quality of crop yield data needs to be improved drastically to enhance the strength of the crop insurance contracts for their sustenance. Technology interventions such as use of satellite data to improve crop yield estimation is largely recommended and hence attempts are being made to adopt the same since the start of PMFBY in *kharif* 2016. This paper examines various loopholes in the current mechanism of yield estimation through CCE and suggests the strategies for enhancing technology utilisation to address both human induced and methodological shortcomings to improve the yield data.

Implications of inaccurate and biased yield data on the insurance mechanism are first discussed followed by different strategies for improving the yield assessment.

2. Implications of biased yield data

Bias in the crop yield data of different insurance units is on the lower side for most of the time, as observed from various reports, news items and views of different stake holders. Such under-estimation of crop yields in the insurance units, has cascading effect on the entire system of insurance. Reduced yields attract higher payouts, reflecting higher risk and higher cost of insurance (premium rate) in subsequent years. Another impact of the biased data is that it reduces the threshold / guaranteed yield of the crop for an insurance unit which is based on the average of preceeding 5-7 years yield in the insurance unit.

Therefore, the probability of experiencing less than the threshold yield (which is already on lower side due to past series of biased data) gets minimised gradually over a period of time. As a result, the insured farmers would be either unindeminified or partially indemnified despite facing crop losses. Consequently, the crop insurance contract will become a financial risk enhancing instrument rather than risk reducing instrument, as the farmers may endup paying the premiums without getting the compensation for crop loss in return. Thus, biased yield estimation in the insurance units leads to disastrous and cascading effect on the crop insurance mechanism in the short run as well as in the long run.

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3. Strategies for improving crop yield estimation

Three broad strategies for improving the crop yield estimation in the insurance units include; **(1)** measures to enhance transparency and objectivity in the CCE process, **(2)** implement smart sampling on the basis of yield proxies to improve the sampling design in terms of reduced sample size and logical distribution of the sample plots and **(3)** replace the CCE with alternate mechanism. The main focus of this paper is on the measures for immediate implementation and these are mostly related to the first and second strategies mentioned above. The third strategy is the outlook for medium to long terms and not much emphasised here.

Human induced prejudices/ choices and methodological

Human induced prejudices/ choices and methodological limitations together impact the quality of yield data in the current system of CCE. By infusing technologies such as remote sensing, mobile, GIS and data analytics the effect of these limiting factors can be minimised.

limitations together impact the quality of yield data in the current system of CCE. By infusing technologies such as remote sensing, mobile, GIS and data analytics the effect of these limiting factors can be minimised.

3.1 Selection of CCE plots

Generally speaking, four CCE plots in each insurance unit for a given crop and season are considered for yield measurment and average yield estimation. These four plots are identified in the randomly selected fields. The underlying assumption is that the insurance unit is homogeneous with respect to crop performance and hence the average yield of any four plots represents the insurance unit's average. The validity of this assumption is the key to the success of this randomisation process. Unless and otherwise, it is establsished with real data, it remains as a theoretical assumption which may not match with ground situation.

In an insurance unit, the crop area may be distributed under irrigated conditions, rainfed conditions, semi-dry conditions, fertile areas, less fertile areas etc. Further, in the event of risk occurrence, part of the insurance unit only may be affected. Thus, spatial variability of crop performance and spatial variability in the occurrence of different risks – floods, drought, pest, diseases etc, within the insurance unit would seriously distract the homogeneity assumption. Therefore, random selection of four CCE plots would tend to result in skewed representation of field conditions leading to biased estimate of the average yield.

Currently, random number of fields for locating CCE plots are being identified in the beginning of the crop season. It means, the crop risks that may occur during the course of crop season are not duly recognised and to this extent the sampling is non-representative of the ground level situation. Therefore, selection of CCE plots should be guided by yield affecting/ indicating factors to ensure optimal spread of these plots.

In order to overcome the above stated sampling issues and towards improving the distribution of CCE plots, the scope for using moderate resolution satellite data has been investigated in detail for wheat crop in Ujjain district. Sentinel data of 10m spatial reolution and 5-6 days repeat has been procured for analysis. There are 21 number of satellite images covering complete phenology of wheat crop.

Crop mapping was done using multitemporal data and decision rules approach. On the basis of sowing time, three types of wheat namely – early sown, normal sown and late sown could be delineated using satellite data. Early wheat and late wheat produces less yield compared to normal class as observed from the field data and interactions with farmers. Early wheat completes flowering before the close of winter, where as late wheat crop commences flowering in the high temperature period. These could be the reasons for yield reduction in these two classes. The number of irrigations ranges from 2-6 based on water availability.

Insurance unit level wheat yield variability and its association with satellite indices are also analysed. For this purpose CCE were conducted in some of the villages based on the sampling scheme using satellite data. It is observed that wheat yield variability within the insurance units is higher and hence estimating average yield using four CCE plots in each village (insurance unit) may not produce the representative yield for the unit.

Satellite derived wheat NDVI profiles, wheat crop map and NDVI based crop condition zones are shown in Figs. 1-3. Index derived from temporal NDVI i.e., Season's Max. NDVI has shown high correlation with wheat yield as shown in Table1.

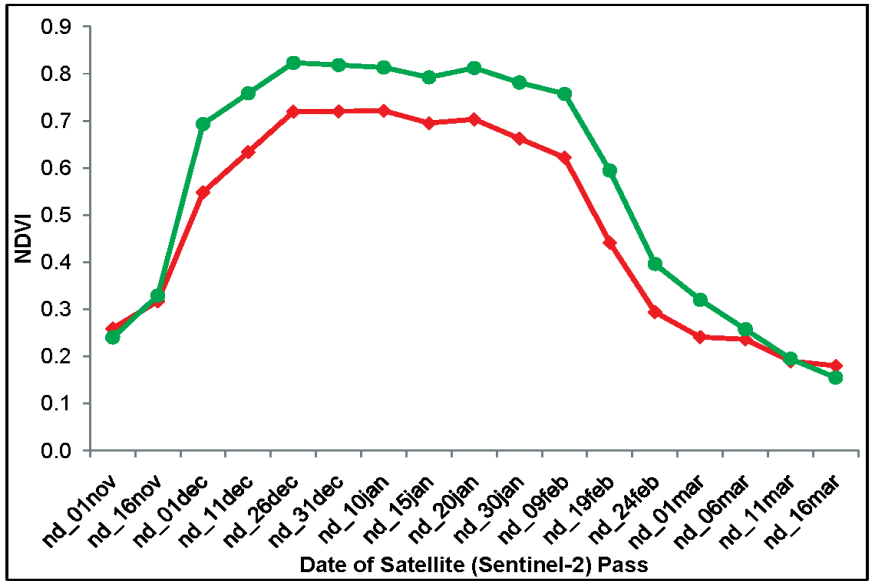

Fig.1 NDVI profiles of CCE plots using 21 Sentinel-2 temporal Scenes

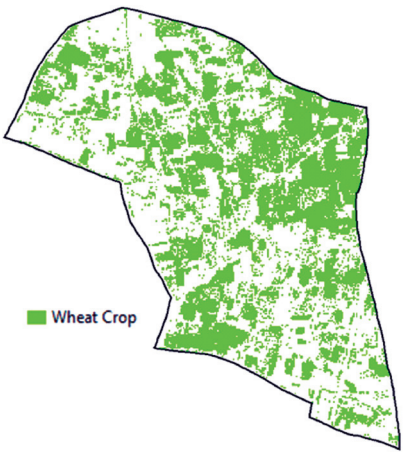

Fig.2 Satellite derived wheat crop map village, Ujjain district, *Rabi* 2017-18

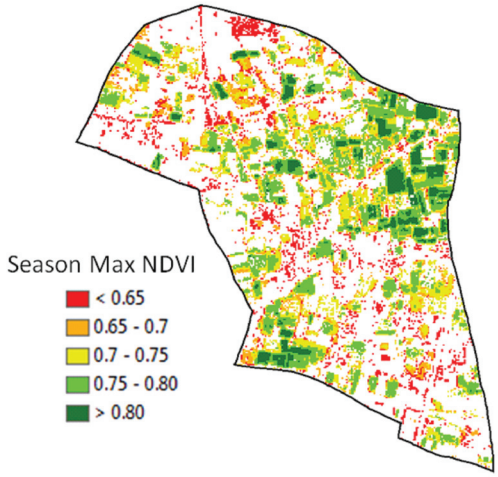

Fig.3. Wheat crop condition variability within the village, Ujjain district, *Rabi* 2017-18

S. No.	Halka (Insurance Unit)	Correlation between wheat yield and NDVI
1	Ajawada	0.78
2	Bichrod Istamurar	0.71
3	Mungawada	0.83
4	Ninora	0.81
5	Rudaheda	0.82
6	JawasiyaSolanki	0.88
7	Jhalara	0.79

Table 1: Correlation coefficient between Wheat yield and Season Maximum NDVI at Insurance units of Ujjain district (2017-18)

3.2 Notification of fields for CCE plots

The survey numbers of the fields selected for CCE are communicated to the field functionaries in the first one or two months of the crop season. This information eventually reaches the farmers of the village and creates opportunities for moral hazard activities in the CCE fields. There are some incidents in recent years where there was deliberate mismanagement of crop in the fields notified for CCE. This is typically a governance related issue and can be addressed through management interventions.

3.3 Locating CCE fields on the ground

The CCE plots are identified with the help of survey numbers of the corresponding fields. The location of these fields is not represented in any digital map base or by coordinates. As a result, there is scope for replacing the actual CCE field with nearby or a convenient field in the same village. Identification of random numbers and field plots should go completely in digital mode with map outputs using the digital cadastral layer of the village. Latitude and longitude details of the selected fields along with survey numbers are to be advised to the field personnel. Mobile App may be modified in such a way

The CCE plots are identified with the help of survey numbers of the corresponding fields. The location of these fields is not represented in any digital map base or by coordinates. As a result, there is scope for replacing the actual CCE field with nearby or a convenient field in the same village.

that, only when the field person reaches close to the selected survey number, within the predefined buffer zone of about 10m radius, the data fields of the app are activated enabling the data entry. Thus, by using map base and by modifying the mobile app, the identification of CCE plots on the ground becomes foolproof.

3.4 Recording with Mobile App

Mobile Applications are being used extensively by many of the states for recording CCE yield data, from 2017 *kharif* season.Thus the intention to establish transperancy in the process of CCE data collection is made clear.

The element of concern in this process is the location errors of CCE plots measured through GPS system of the Mobile. Location errors of the CCE plots are ranging from 10 mt. to 1000 mt. When the CCE data is linked to map base and satellite data for GIS analysis, it is evident that many of the CCE plots are wrongly located in non-agriculture areas, neighbouring villages etc. In some cases, there are more than 10 CCE located in a Gram Panchayat, as a result of wrongly recorded latitude and longitude. This is typically a problem of data collection. The field level person using the Mobile app, has to wait for a few minutes, for getting the best lattitude/longitude by using the signals of more number of GPS satellites. Therefore, till the location error becomes less than 10-15m, the App should not enable the data fields for inputing the information. If the mobile app based CCE data is within the acceptable location error limits, such data is useful for further analysis such as linking with satellite data, weather data for the purpose of analytics and value addition.

3.5 Post CCE verification of yield data

Insurance unit average yields computed from the CCE data are quite often disputed by stake holders. In many cases these data sets are suspected to be biased thereby causing abnormal delay in the decision making on claims settlement. Technologies play an important role in the verification of yield data. Satellite derived crop

condition indices are available in 10-60 metres spatial resolution once in five days. These indices are useful to detect the crop condition anomalies in insurance units to corroborate with estimated yield. By comparing the yield data and crop condition data of the current year with previous normal years, one can get an idea whether the crop yield reduction in the current year, if reported, is justified or not. For example, the insurance unit (Gram Panchayat) level average yields of paddy and season's maximum NDVI of AWiFS sensor for all the units are plotted in Fig. 4. Season's max NDVI of paddy is associated with paddy yield showing positive correlation. This maximum NDVI corresponds to heading/flowering phase of paddy crop. This association between NDVI and yield of paddy may be exploited to correct the wrongly reported CCE data, when there are no abnormal weather conditions or pest resurgence in the post heading phase of crop.

Similarly, weather data sets of different years can be compared. Using multiple parameters – satellite derived NDVI, NDWI/LSWI, rainfall, rainy days, dry spells etc, decision rules can be developed to infer whether the reported yield reduction is justified or not. There is scope for developing semi-automated procedures for quick verification of yield data. Localised risks and the risks that happen just before harvest may go un-noticed in such verification process, which needs to be supplemented with ground truth information.

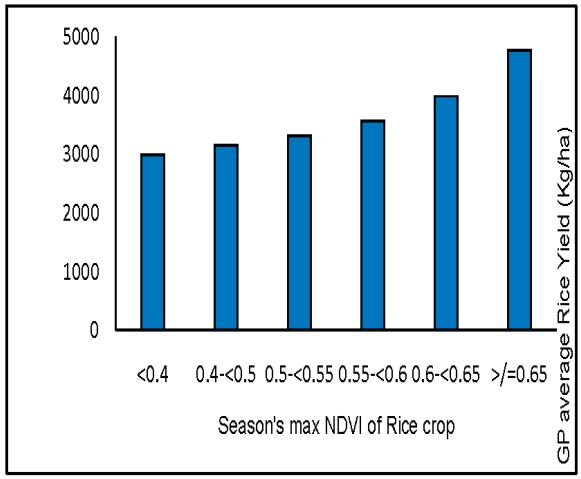

Fig.4 Paddy yield versus AWiFS NDVI among the insurance units (GPs), *kharif* 2016-17, Odisha state (Data source: Department of Agriculture and Farmers Empowerment, Government of Odisha)

3.6 Digital data availability

Adoption of remote sensing, mobile apps and GPS and implementation of the techniques of spatial analysis for improving crop insurance needs GIS data base which consists of satellite images, mobile app collected CCE data and field data, weather data sets, shape files of administrative units – villages, Gram Panchayats, insurance units etc. It has been observed that in many cases, all the insurance units (villages) could not be identified in the available shape files. A significant number of Gram Panchayats (insurance units) in Odisha, remain unidentified in the shape file. Similarly, about 25% of villages could not be located in the shape files of some of the districts in Maharashtra state.

Therefore, the most important and immediate requirement for technology application in crop insurance is availability of uniform and standard shape files of villages/ blocks/districts. Without identifying all the insurance units in map base, undertaking any scientific analysis in respect of yield verification, smart sampling etc.is not possible

3.7 Trained man power for conducting CCE

The number of CCEs required to support PMFBY is very huge, accounting to about 35-40 lakhs per year. Conducting CCE in such a large number needs logistic support, trained personnel and budget support. To generate quality yield data, CCEs need to be conducted in a systematic way and hence it requires trained manpower. The

persons having some knowledge on field data collection in agriculture are suitable for this purpose. Lack of trained man power is one of the most critical impediments faced by many states and insurance companies. Coordination between the agencies involved such as department of agriculture, revenue and statistics is an important requirement for successful completion of the CCE. State Agriculture Universities with their network of research stations may be roped in to the CCE task, to overcome the man power shortage on one hand and to avail their expertise for supervision and quality improvement on the other.

3.8 Correction factor for the biased yield data

Development of a correction factor for biased yield data is a real challenge and needs to be addressed. Some of the studies have reported regression approach – between yield and NDVI, between yield and rainfall etc for correcting the yield data. These empirical methods may not produce consistent results from place to place and time to time. Uncertainty is high and may not be good for operational use. By forcing the data through regression techniques, another form of subjectivity would be introduced in the yield data.

Yield estimation in the insurance units based on smart sampling data involves empirical procedures and hence prone to errors. Therefore, quantifi-cation of error and assigning error limits to the final estimate need due diligence.

Another approach reported is giving weightages to CCE yield, rainfall and NDVI. Arriving at optimal weights for different crops and locations is a challenge. To sum up, correcting the biased yield data with empirical or semi empirical or rule based procedures is still an unaddressed problem. Machine learning algorithms may be promising for developing such correction factors. This is an important R&D element in crop insurance and there is a lot of scope for initiating pilot studies.

3.9 Smart sampling for reducing the number of CCE

Smart sampling or intelligent sampling aims at two benefits **(a)** reducing the number of CCE plots and **(b)** improving the distribution of CCE plots, without compromising the error limits of final estimates. Sampling scheme is applied at aggregated level say district or taluk level, and the estimates are generated at disaggregated level. Smart sampling will be efficient if a strong yield proxy is developed preferably at a later part of the crop growing season capturing the most systemic and idiosyncratic risks that the crop has faced and using the same in sampling design. Yield proxy is useful to arrive at homogeneous zones and to locate the fields for CCE. Considering the limitations of the satellite based indices and weather datasets and other data, it is desirable to develop a blended index as yield proxy.

Yield estimation in the insurance units is based on smart sampling data involves empirical procedures and hence is prone to errors. Therefore, quantification of error and assigning error limits to the final estimate needs due diligence. Another important point of attention while adopting smart sampling is that it is more likely that in some of the insurance units there will not be any CCE plots and hence no yield measurement. Therefore, the average yield data of insurance units that result from smart sampling techniques is 'estimate' and not 'measured'.

In the event of implementing the smart sampling techniqes in the near future i.e., next 1-2 years, the compatibility between the smart sampling derived yield estimates for the implementing year and the corresponding yield derived from the CCE based measured yields of previous years will pose a problem which may be overcome to some extent by empirically transforming the CCE based yields of historic years by using the concurrent datasets of one year.

3.10 Dispensing with CCE system

Considering the complexities associated with the current mechanism of CCE as mentioned in the above sections, the most preferred choice is to replace the system with alternative mechanism that is less prone to errors. Development of an alternative scientific method of yield estimate in the insurance units is the biggest research challenge. Generally, crop yield estimation methods are of three categories – empirical, semi-empirical and simulation models. Remote sensing derived NDVI which represents crop vigour has been correlated with yield to investigate the possibility of developing crop yield index for crop insurance. Considering the limitations of NDVI, some studies have recommended the use of bio-physical variables derived from satellite data to develop index based crop insurance schemes. Local weather conditions, crop management practices, soil, variety/ hybrid, water related parameters, etc. are important yield determinants but their effect is not completely manifest in any single index. Therefore, semi empirical techniques are being developed involving spectral indices, weather data and local crop growing conditions. Adopting crop simulation models call for very intensive field data on different variables, calibrations etc limiting its scalability.

Technology based innovations need to be blended with local contexts, i.e., local crop growing conditions such as cultivation practices, soil, weather elements etc. that frequently influence the agricultural production. Quantifying the frequent and localized phenomena that affect the crop production is a main challenge in the area-yield crop insurance. Machine learning algorithms may be promising to develop yield estimation techniques. Thus, alternative methods for crop yield estimation are still in development phase and hence replacement of CCE with other mechanism is yet to be realised.

Considering the complexities associated with the current mechanism of CCE as mentioned in the above sections, the most preferred choice is to replace the system with alternative mechanism that is less prone to errors

4. Conclusion

Crop yield data is the most crucial data for the area-yield insurance contracts. Crop yield estimation in insurance units continues to be the subject of greater concern with ever increasing disputes on the quality of yield data.

Although, technology infusion to improve yield measurement has been started, by way of using satellite images and mobiles, since the launch of PMFBY in *kharif* 2016, there are still several factors plaguing the quality of yield data. Loopholes or short comings in the current system of crop yield estimation in the insurance units and the means to improve the system through technology interventions in a more strategic way are highlighted in this paper. These interventions would certainly fix the methodology related factors and also

minimise the human induced biases in order to make the yield measurements more objective. Biased yield data leads to disastrous and cascading effect on the crop insurance mechanism in the short run as well as in the long run. Technology interventions should be undertaken in a big way across the nation to overcome this menace of yield data quality and to sustain the crop insurance system with wider acceptability..

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Crop Insurance & Technology Intervention,(Odisha-experience)

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When I entered the College of Agriculture for a Bachelor course in Agriculture in early eighties, the Agronomy teacher welcomed us with the sentence "Indian Agriculture is a gamble in the Monsoon". Even after 35 years, I still feel that in spite of all our scientific developments in the field of agriculture, we still are grappling with various uncertainties and the sentence has not lost its relevance. In those days, the best way to make agriculture secure was to bring the cultivated area under irrigation, use more fertilizers, better varieties of seeds and prophylactic sprays to safeguard against imminent pest attack. Odisha as a state that had not harnessed much benefit out of the first "Green Revolution" continued with these strategies.

The climate change has made the arrival of monsoon, distribution of rain and departure uncertain. Although irrigation potential has already been created for 50% of cultivated area and Government is seriously attempting to bring more area under irrigation, proper availability of water for irrigation is still a question. In fact water availability in irrigated commands is solely dependent on distribution and quantum of rainfall during rainy season. Without having a proper ground water recharge plan, the unjudicious use of ground water may further complicate the matter in future. The indiscriminate use of fertilizers & pesticides coupled with climate change made the emergence of new pests affecting agricultural production.

The long exposure to coast line (about 480 Km) makes Odisha more prone to cyclone and floods. An analysis of occurrence of drought and flood in past 50 years reveal that in 42 years, the agricultural production in the State has been affected by either drought or flood and even both in the same year

The long exposure to coast line (about 480 Km) makes Odisha more prone to cyclone and floods. An analysis of occurrence of drought and flood in past 50 years reveal that in 42 years, the agricultural production in the State has been affected by either drought or flood and even both in the same year (Table-I).In this back drop, the need for providing a protective cover to farmers through "Crop Insurance" has become a pressing necessity than ever before.

The history of Crop Insurance in Odisha dates back to 1999 when the National Agricultural Insurance Scheme (NAIS) was introduced as a flagship programme. The State successfully implemented the scheme till Rabi 2015-16. In the interim period schemes like MNAIS, WBCIS, NCIP

etc, were implemented on pilot basis.

In 2011 a major intervention in the NAIS scheme was made by lowering down the Insurance unit of Paddy to Gram Panchayat Level from Block level. It is pertinent to mention here that paddy is the major crop of the state and accounts for about 95% of the insurance. Thus the State was able to extend the benefit of the programme to a large chunk of farmers.

It is revealed from the NAIS implementation data that in Kharif season about 16-18 lakh farmers were covered under the programme and similarly during Rabi season about 60,000—80,000 farmers were covered. The average areas covered for Kharif & Rabi season were 13 lakh ha and 0.75 lakh ha respectively .The Rabi coverage under insurance has always been minimal. (Table-II).

The turn around to the Insurance programme came in the year 2015-16 (Scheme NAIS) when the estimated claim level for Kharif '15 reached about 2000 crore. The state never had that kind of claim payment history. This was an eye opener for all at the administrative level and a serious relook was given to Crop Cutting Experiment (CCE) process, the main way of claim assessment.

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It was then decided that the CCE process shall be digitized and all pre-selected CCE points will be geo-tagged. The experiences of capturing CCE data using Mobile App under "FASAL" project of Mahalnobis National Crop Forecast Centre (MNCFC) came in really handy. The District level officials were identified as "Master Trainers" to train the Primary Workers regarding capturing of CCE data through mobile App using Smart Phone. All the primary workers were provided with a complete set of CCE kit comprising of weighing balance, measuring tape, iron pegs, rope, cloth bag, tarpaulin, cap etc. It is pertinent to mention that here the conduct of crop cutting is treated as an experiment and for an experiment to yield desired results, it has to be performed with properly calibrated tools, precautions and protocols.

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While all these arrangements were being made, the "Pradhan Mantri Fasal Bima Yojana (PMFBY)" was launched. The mainstay of the scheme is "Use of Technology" and this boosted the State's initiative to stream line the CCE process. As a first step in this regard, all Primary Workers were provided with an incentive of Rs. 2500/- for downloading the "CCE Agri-App" and registering in portal with a condition that they will be capturing and uploading CCE-data for three years. Additional Incentive of Rs. 100/- per CCE was provided for capturing & uploading the CCE data. Training Camps were organized for "Primary Workers" as well as "District level Approvers". In fact the concept of "District Level

Specific "Mobile App" are being developed for loss assessment in case of Localized Calamity & Post Harvest Losses. Efforts are also being made to notify more crops under the programme. A major learning from the programme implementation is that technological intervention is the only way for taking the scheme further.

Approvers" as a check & balance measure in CCE data approval process was introduced at the behest of Odisha.

For effective programme execution "What's App" groups were created in each district through which CCE schedules were shared. Guidelines for multi level physical CCE verification was formulated and district administration was instructed to scrupulously monitor the process and progress. An Officer in the rank of Addl. Dist. Magistrate was declared as "Nodal Officer" to coordinate the CCE process. Periodic video-conferences between State and District officials were held to keep a tab on the progress of conduct of CCE and its approval. A "State level What's App group" involving all key stake holders and also District Magistrates was also created for sharing of ideas and monitoring the programme. Two new collaborative projects "Crop Insurance Decision Support System (Technical Partner-NRSC, Hyderabad)" and Science Based Crop Insurance (Technical partner-International Rice Research Institute,Manila,Phillipines)" were launched for augmenting PMFBY implementation.

Outcomes- This changed the entire scenario of programme implementation. Odisha became the pioneer state in the country with regards to use of technology in Crop Insurance. This helped in quicker claim settlement (by end of June '17 i.e one of the earliest in the country) bringing in transparency to the CCE-process-the core area of controversy and instilling confidence among the empanelled insurance companies. As a result, while the actuarial premium rates were going high in other states, Odisha got much better rates for Kharif '17 & Rabi 2017-18. The experience of four seasons are presented below in Table-3.

The journey, did not end there. The CCE results of Kharif '16 and Kharif '17 were analyzed by MNCFC and the findings are being used to plug in the gaps in the system. It has also been decided to go for smart sampling techniques based on crop phonological parameter for selection of ideal plots for conduct of CCE and use of satellite imageries (coupled with ground trothing) to assess sown area under various crops in an Insurance Unit. The state is also contemplating to implement a novel concept "Picture Based Insurance" on a pilot basis starting from Kharif '18.

Besides the technological innovations and interventions, the State Government has formulated a scheme for systematic publicity campaign especially to bring in more non-loanee farmers into the ambit of the crop insurance and capacity building of the State officials in loss assessment in case of various risk scenarios. Specific "Mobile App" are being developed for loss assessment in case of Localized Calamity & Post Harvest Losses. Efforts are also being made to notify more crops under the programme. A major learning from the programme implementation is that technological intervention is the only way for taking the scheme further.

This way it is expected that coordinated effort and use of technology shall make the State an example for other states to emulate.

TABLE-1

Sl.No.	Year	Normal Rainfall mms	Actual rainfall mms	Kharif Rice Production (In lakh MTs.)	Remarks
1	2	3	4	5	6
1.	1961	1502.5	1262.8	36.99	
2.	1962	1502.5	1169.9	36.32	
3.	1963	1502.5	1467.0	42.47	
4.	1964	1502.5	1414.1	43.59	
5.	1965	1502.5	997.1	31.89	Severe drought
6.	1966	1502.5	1134.9	35.37	Drought
7.	1967	1502.5	1326.7	34.43	Cyclone & Flood
8.	1968	1502.5	1296.1	38.48	Cyclone & Flood
9.	1969	1502.5	1802.1	38.39	Flood
10	1970	1502.5	1660.2	39.13	Flood
11.	1971	1502.5	1791.5	33.76	Flood, Severe Cyclone
12.	1972	1502.5	1177.1	37.35	Drought, flood
13.	1973	1502.5	1360.1	41.91	Flood
14.	1974	1502.5	951.2	29.67	Flood, severe drought
15.	1975	1502.5	1325.6	42.74	Flood
16.	1976	1502.5	1012.5	29.58	Severe drought
17.	1977	1502.5	1326.9	40.50	Flood
18.	1978	1502.5	1261.3	41.89	Tornados, hail storm
19.	1979	1502.5	950.7	27.34	Severe drought
20.	1980	1502.5	1321.7	40.31	Flood, drought
21.	1981	1502.5	1187.4	36.63	Flood, drought, Tornado
22.	1982	1502.5	1179.9	27.07	High flood, drought, cyclone
23.	1983	1502.5	1374.1	47.63	
24.	1984	1502.5	1302.8	38.50	Drought
25.	1985	1502.5	1606.8	48.80	Flood
26.	1986	1502.5	1566.1	44.56	
27.	1987	1502.5	1040.8	31.03	Severe drought
28.	1988	1502.5	1270.5	48.96	
29.	1989	1502.5	1283.9	58.40	
30.	1990	1502.5	1865.8	48.42	Flood
31.	1991	1502.5	1465.7	60.30	
32.	1992	1502.5	1344.1	49.76	Flood, drought
33.	1993	1502.5	1421.6	61.02	
34.	1994	1502.5	1700.2	58.31	
35.	1995	1502.5	1588.0	56.48	
36.	1996	1502.5	990.1	38.27	Severe drought
37.	1997	1502.5	1493.0	57.51	

38.	1998	1502.5	1277.5	48.85	Severe drought
39.	1999	1502.5	1435.7	42.75	Severe Cyclone
40.	2000	1502.5	1035.1	41.72	Drought & Flood
41.	2001	1482.2	1616.2	65.71	Flood
42.	2002	1482.2	1007.8	28.26	Severe drought
43.	2003	1482.2	1663.5	61.99	Flood
44.	2004	1482.2	1273.6	58.84	Moisture stress
45.	2005	1451.2	1519.5	62.49	Moisture stress
46.	2006	1451.2	1682.8	61.96	Moisture stress/Flood
47.	2007	1451.2	1591.5	68.26	Flood
48.	2008	1451.2	1523.6	60.92	Flood , Moisture Stress
49.	2009	1451.2	1362.6	62.93	Flood/ Moisture stress/ Pest attack.
50.	2010	1451.2	1293.0	60.51	Drought/ Un-seasonal rain
51.	2011	1451.2	1327.8	51.27	Drought & Flood
52.	2012	1451.2	1391.3	86.29	Drought in Balasore, Bhadrak, Mayurbhanj&Nowapara districts.
53.	2013	1451.2	1627.0	65.85	Flood& Cyclone in 18 dists due to Phailin.
54.	2014	1451.2	1457.4	85.78 to Hud-Hud	Flood & Cyclone in 8 dists due
55	2015	1451.2	1144.3	88.37	Late Season Drought

TABLE-2

Crop Insurance- NAIS (5 Years)

Year	Nos of Farmers Insured	Area Covered (lakh ha)	Premium Paid in Crore Rupee	Claims Paid in Crore Rupee	Nos of Farmers Benefitted
2011-12	15,12,354	15.83	78.66	690.67	6,70,860
2012-13	15,22,969	13.44	85.30	66.63	99,516
2013-14	13,62,493		89.60	398.18	5,57,996
2014-15	19,18,490	16.85	143.48	263.32	1,86,255
2015-16	22,58,697	20.51	190.51	1782.64	11,75,133

TABLE-3

Four seasons of PMFBY

eason	Farmers Insured (in Lakhs)	Area Covered (lakh ha)	Premium Paid in Crore Rupee	Claims Paid in Crore Rupee	Nos of Farmers benefitted
arif'16	17.63 (0.30)	12.57	532.47	426.16	1,67,115
bi 16-17	0. 5 5 (0.02)	0.61	6.40	2.10	1877
arif'17	17.65 (1.28)**	15.08	940.20	2000 (Expected)	
bi 17-18	0.64(0.03)	0.66			

** Four Fold increase in coverage of Non-Loanee Farmers
(-) Fig in parenthesis – Nos of Non-Loanee Farmers

Views expressed in this paper are author's personal only and not of the affiliating organisations

Agriculture/Crop Insurance in India: Key issues and way forward

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Crop Insurance acts as financial security to farmers by mitigating the risks associated with agriculture. Crop Insurance provides compensation to the insured farmers in the event of crop losses due to various factors such as deficit rainfall, excess rainfall, high temperature, low temperature etc. Crop insurance compensation during adverse climatic conditions not only covers the farm losses but also encourages investment on farming for next season.

Under crop insurance, sum insured for the policy is equivalent to scale of finance decided for notified crop in notified district. Farmers have to pay a premium amount which is charged by insurance company to insure the crop in specified location for defined risks and policy periods during the season. But the frequency and quantum of crop losses may be very high and wide spread for some crops and geographies. This may result into high actuarial premium rates. So farmers find it difficult to afford crop insurance. In order to make the crop insurance affordable to farmers, most of the countries have developed crop insurance schemes wherein subsidies are provided on the premium amount to be collected from the farmers. India also has its own crop insurance programme which provides subsidy to farmers.

Crop Insurance in India formally started way back in 1972 and has taken different forms and shapes in recent years. Government of India launched Pradhan Mantri Fasal Bima Yojana (PMFBY) during 2016-17 with a goal of minimum premium and maximum insurance for farmer welfare. Premium rates for all insured crops were kept at lowest as compared to all previously implemented crop insurance schemes. Crop insurance under PMFBY has gained significant outreach whereby the coverage of famers under the scheme increased by 18% as compared to 2015-16 and penetration on Gross Cropped Area (GCA) reached 30% during 2016-17. Sum Insured per hectare was changed from value of threshold yield to scale of finance under PMFBY which resulted in increase in overall sum insured by more than 70%. Also new crop insurance scheme came up with more comprehensive coverage wherein add on cover such as prevented sowing, post harvest losses, mid season payments, localized risks are added with existing standing crop cover.

Crop Insurance provides compensation to the insured farmers in the event of crop losses due to various factors such as deficit rainfall, excess rainfall, high temperature, low temperature etc. Crop insurance compensation during adverse climatic conditions not only covers the farm losses but also encourage investment on farming for next season.

Key issues to ponder over and way forward

1. Time window available for coverage

Issues

Time window available for coverage of farmers under crop insurance is inadequate due to delay in issuance of notification in many states. During PMFBY implementation in 2016-17, coverage time window in some states was as short as 10-15 days, which resulted into lower coverage of farmers.

Way Forward

In order to provide ample time window for creating awareness and ensuring maximum enrolment under the scheme, State Government should issue notification for PMFBY at least 3 months before the cut off date which will provide insurance companies and district administration ample time to increase coverage by putting in well coordinated efforts.

2. Awareness about the scheme

Issues

After the launch of PMFBY, large scale marketing activities have been organised by Central and State Governments which resulted in increased non loanee coverage of 24% of total coverage as compared to 7% during 2015-16. however still many farmers are not yet covered under the scheme due to lack of awareness about the scheme features, benefits, process of enrolment and process of claim settlement. Even for the block level administration, scheme awareness is low due to lack of adequate training programmes.

Timelines, process and mode of enrolment needs to be clearly briefed through various modes of communication. This will bring in more confidence among the farmers for enrolment under scheme. A Nationwide marketing plan needs to be launched involving all stakeholders something in line with Jan Dhan Yojana.

Way Forward

Awareness of the insurance scheme and its operational guidelines needs to spread uniformly wherein State Government, District administration and insurance companies should make collaborative efforts to communicate the scheme features and process of enrolment via different media like television advertise ments, press release, press advertisements, radio advertisements, brochures, posters, banners, leaflets etc. Also regular farmer's meetings and workshops needs to be conducted to increase the awareness about the scheme. Timelines, process and mode of enrolment needs to be clearly briefed through various modes of communication. This will bring in more confidence among the farmers for enrolment under scheme. A Nationwide marketing plan needs to be launched involving all stakeholders something in line with Jan Dhan Yojana. Targets can be allocated at block level for coverage of non loanee farmers and reward programme may be initiated in line with Rural Housing mission.

3. Documentation for coverage of farmers

Issues

It has been observed that land documents are yet to be digitized in some states and even if digitized, the recent changes in the crop sown are not updated. Further to this tenant farmers (especially oral lessee) and share croppers in many locations are not able to get covered under the scheme due to lack of proper documentation.

Way Forward

Early adoption of model leasing act in addition to separate guidelines for coverage of tenants (especially oral lessee) and

landless farmers need to be framed and implemented. Digitization of land records needs to be given priority and all the land records needs to be generated in soft form in a state or central portal. This also needs to be properly updated before the start of season (with owner details and crop sown). Digital India Land Record Modernization Programme (DILMRP) was initiated to usher in new system of updated land records, automated mutation, integration of textual and spatial records. The progress of digitization of land records under this programme needs to be monitored properly and all digital land records should be linked to Aadhaar card (which in turn can be linked to bank account). This will help in smooth quality check of land documents and will reduce over insurance which will further reduce subsidy outlay.

4. Lack of adequate infrastructures to conduct Crop Cutting Experiments (CCEs)

Issues

After the launch of PMFBY, notified units have gone down to Gram Panchayat for majority of crops and locations which resulted in larger number of targeted CCEs for estimating yield at notified unit level. Due to lack of adequate manpower to conduct CCEs in a short time window (usually 20 to 40 days), the quality of CCEs is affected. In addition to that, manual capturing and consolidation of CCEs yield data further delays the process.

Way Forward

Considering lack of infrastructure to conduct large number of CCEs all across India , guidelines should be framed for usage of remote sensing and drone based technology for smart sampling which will reduce the expected number of CCEs. CCEs should be mandatorily conducted on the mobile app which will reduce the timeline for collating yield data which consequently lead to reduced claim settlement time with added benefits of bringing transparency and improving quality of CCEs.

5.Adherence to seasonality discipline

Issues

As per the PMFBY operational guidelines, seasonality discipline had been clearly mentioned with cut off date for submission of final coverage details, subsidy payment, CCE yield data submission and claims computation. However seasonality discipline has not been followed properly in many states wherein there had been delay in receipt of final coverage detail, premium subsidy payment by States to insurance companies, submission of final yield report which in turn resulted in the delayed payment of claims to farmers.

Way Forward

In order to ensure claim settlement to farmers as per the defined time lines, seasonality discipline should be properly followed by all stakeholders.

In order to achieve the ambitious goal of reaching penetration up to 50% under PM Flagship scheme, all stakeholders needs to be working together within the framework of operational guidelines with strict adherence to seasonality discipline which will bring in transparency in the system and claim settlement with defined timelines will prove as confidence booster for farmers even during distress situations.

Views expressed in this paper are author's personal only and not of the affiliating organisations

TECHNOLOGY INTERVENTIONS IN CROP INSURANCE

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India is a vast country with varied agro climatic conditions comprising of more than 14 million farmers with an average landholding of 2 -3 acres growing a number of crops in a season mostly for self-sustenance and approximately 60% of the area doesn't have assured irrigation. The agricultural production is therefore, greatly dependent on rains, particularly south west monsoons that provide rains from June to September. Even a slight deviation of these rains in time and quantity causes great losses in yields of various crops in one or the other part of country every season. Given this uncertainty of weather, crop insurance is very important and relevant for the country.

Crop insurance in India –an overview

In India, there have been proposals for crop insurance during pre-independence era. The concept of rainfall insurance had been mooted by J S Chakravarty as early as 1920. Soon after independence, a committee had been constituted to explore the possibility of crop insurance. We have been experimenting with various forms of crop insurance in India.Crop insurance for H4 cotton based on Individual assessment was provided by fertilizer companies from 1972 to 1978. Thereafter, the emphasis shifted to yield index based on area approach. After some initial pilots, a full-fledged area yield index based scheme was launched for the entire country in 1985 which ran successfully for fourteen years. The experience gained through these schemes gave way to the formation of a broader yield index based scheme launched in 1999 i.e. National Agricultural Insurance scheme (NAIS) which covered all food crops and annual commercial crops. In this scheme, an element of individual assessment was kept, though on a limited scale, to gain experience and it was used very scarcely. While this scheme was being implemented, AIC also tried revenue based insurance in the form of Farm Income Insurance scheme (FIIS) in 2003-04 with little success in terms of coverage and claims. Weather aspect was introduced from 2003 and

Even a slight deviation of these rains in time and quantity causes great losses in yields of various crops in one or the other part of country every season. Given this uncertainty of weather, crop insurance is very important and relevant for the country.

pilot Weather Based Crop Insurance Scheme (WBCIS) was introduced from Kharif 2007.

This long experience of implementing crop insurance schemes had raised the expectations of farmers and now they expect insurance to provide compensation on their individual experience rather than the 'area approach', in other words the farmers want the 'basis risk' to be minimized or eliminated altogether. Besides this, the losses need to be assessed in a more transparent way and claims are to be paid soon after the harvesting is over. These make the insurers' job more complex and require huge manpower.

The ultimate solution to all these expectations and complexities lies in the usage of technology.

Research & Development

All along, while implementing crop insurance, use of technology in various modes, albeit on experimental basis, had been tried and tested by AIC in collaboration and partnership with various national and international institutes, World Bank, state agricultural universities etc. So, when the present scheme Pradhan Mantri Fasal Bima Yojana (PMFBY) was conceptualized, the results of all these technologies used in crop insurance were available readily which probably gave the confidence to incorporate and advocate the usage of technology for various activities in PMFBY.

There are perpetual shortcomings like over insurance or mis-match of area insured *viz a viz* area sown, yield data reported not being in sync with the overall crop condition or weather conditions that prevailed during the season. AIC has put technology to practical use to counter some of these issues and has demonstrated that it can be effectively used in crop insurance.

Remote Sensing Technology (RST) has been used for Crop acreage estimation, crop health /stress assessment, and development of models for yield estimation. RST has also been used for Crop mapping and assessment of crop condition based on Normalized Difference Vegetation Index (NDVI) analysis. In addition to food crops, it has been successfully used to map tea acreage, tea yield estimation and prediction using vegetation indices and agro meteorological model.

Studies have been carried out to develop and test a sampling methodology using the co-witnessed CCEs and remote sensing to estimate Gram Panchayat (GP) level crop yields from block-level crop yields. Terrestrial Observ ation and Prediction System (TOPS) Technology with empirical/mechanistic models has been used to monitor and predict crop growth profiles, crop stress and yields.

Mobile phones were used to geo tag the experimental plots and record the real time relay of the whole process.

The experience so gained helped in improving and calibrating the technology and provided the much needed confidence that crop insurance products can be further improved with the incorporation of technology .

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Technology should be used on a larger scale for the implementation of PMFBY. Although the Scheme lays emphasis on the use of technology for acreage estimation, crop monitoring, mid-season loss assessment, assessment of losses due to localized calamities like hails, inundation, landslide and post-harvest losses, its use has not picked up because there is no protocol for the usage of technology.

Experiences on use of Technology by AIC

1.Wheat Insurance: Haryana and Punjab

The first practical technology centered insurance product was in the form of NDVI based insurance for wheat crop introduced by AIC in some pockets of Punjab and Haryana. As a precursor to development of this product, correlations between Agro-meteorological parameters and NDVI values for past seasons were established to enable current season yield estimation. The final yield is a reflection of the biomass/ crop vigour. "Normalized Difference Vegetative Index (NDVI)" is a measure of biomass or crop vigour in the plant derived through Remote Sensing Technology. It normally ranges between 0 and 1, but, can be scaled between 0 and 250. The scaled values were adopted for the purpose of insurance. Temperatures above certain degree, particularly during the month of March are likely to reduce wheat yield considerably. Therefore, temperature was used as a second parameter to trigger claim payout under this insurance.

The claims were payable against the likelihood of diminished Wheat output/ yield resulting from **a)** lower crop vigour (biomass) as measured using satellite imagery in terms of NDVI within the specified taluka / block during the month of February (preferably during the 2nd / 3rd week corresponding to peak crop vigour) and / or **b)** high temperature (in degree centigrade) consecutively for specified number of days above specified levels in the 1st and / or 2nd fortnight of March as measured at Reference Weather Station (RWS). The uptake of the insurance product was low as the farmers were not sure about the efficacy of this technology.

2.Area discrepancy: Rajasthan

There was a huge difference in the area insured and the area sown of gram crop, as per government records, during Rabi 2013 in Churu district of Rajasthan. Therefore, area sown under gram crop was estimated through the images obtained from satellite and compared with the area recorded by the state department. The claims were ultimately paid on the basis of area sown under gram crop assessed through satellite imagery.

3. Remote Sensing-Based Information and Insurance for Crops in Emerging Economies (RIICE): Tamil Nadu

An international project, Remote Sensing-Based Information and Insurance for Crops in Emerging Economies (RIICE) in partnership with GIZ, IRRI, SARMAP, TNAU, Allianz Re and AIC as the insurance partner in India was implemented to generate crop yields and crop monitoring using satellite imagery and crop modeling from 2012 onwards. After four years of testing in Cuddalore, Shivgangai, Thanjavur, Nagapattinam and Trichy districts of Tamil Nadu, the State Government found it reliable and ultimately agreed

to use the data generated from this technology for assessing the area sown under paddy crop to arrive at the 'sowing failure / crop failure' under PMFBY during Rabi 2016. It is being extended to other areas of the State and other States are also assessing the idea of using it.

4. Yield data discrepancy: Gujarat

In spite of Kharif 2016 season being good and no adverse reports on crop production, the yield data submitted by the State department for ground nut crop in Gujarat showed losses in some specific districts. This was contested with scientific results i.e. NDVI derived from satellite images and Unmanned Aerial Vehicle (UAV) images initially. The matter was then referred to GoI and the Technical Advisory Committee. Technology played a significant role in establishing that the crop was not as bad as being presented by the yield data of the state department and thus a formula was agreed to arrive at the loss assessment, thereby reducing the claims.

Way forward

Technology should be used on a larger scale for the implementation of PMFBY. Although the Scheme lays emphasis on the use of technology for acreage estimation, crop monitoring, mid-season loss assessment, assessment of losses due to localized calamities like hails, inundation, landslide and post-harvest losses, its use has not picked up because there is no protocol for the usage of technology. MahalanobisNational Crop Forecasting Centre (MNCFC) is developing some protocols for the use of technology for various purposes which will go a long way in adoption of technology in crop insurance.

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AGRICULTURAL / CROP INSURANCE IN INDIA - PROBLEMS AND PROSPECTS

Remote Sensing Applications in Crop Insurance – A success story from Tamilnadu using TNAU-RIICE technology

Dr. S. Pazhanivelan

Monitoring the production of field crops is important for ensuring food security in India. Accurate and consistent information on the area under production is necessary for national and state planning but conventional statistical methods cannot always meet the requirements. This information is vital to the policy decisions related to imports, exports and prices, which directly influence food security. Fluctuations in production of field crops, influenced by extreme weather events viz., variations in onset, progress and withdrawals of monsoons, floods caused by torrential rainfall and uneven distribution, necessiates a proper crop monitoring mechanism on a spatial scale. Further Climate change poses threat to agricultural crops through extreme weather events. To ensure resilience among the resource poor marginal farmers, disaster risk reduction in terms of crop insurance is needed.

Remote sensing has the scope for cost effective precise estimates of crop area. But the technical challenges viz. cloud cover during cropping season, wide range of environments, small land holdings and diverse and mixed cropping systems limits the use of remote sensing as a tool for crop monitoring.

Remote sensing has the scope for cost effective precise estimates of crop area. However, the technical challenges viz. cloud cover during cropping season, wide range of environments, small land holdings and diverse and mixed cropping systems limits the use of remote sensing as a tool for crop monitoring. Synthetic Aperture Radar (SAR) imagery is a promising option to overcome the issue of cloud cover. Recent and planned launches of SAR sensors viz., RISAT (India), Cosmoskymed (Italy), Terra SAR-X (Germany) and Sentinel 1A (ESA) coupled with state-of-the art automated processing provide sustainable solutions to these challenges.

With latest advances in remote sensing and crop yield modeling, it is now possible to provide accurate information on crop acreage, crop health, yields, crop damages and loss during floods and drought. Early estimation of the end of the season yield can help insurers to envisage pay-outs and early claim settlements without waiting for the CCE

Pradhan Mantri Fasal Bima Yojana (PMFBY) is a flagship scheme of the Government of India to provide insurance coverage and financial support to farmers in the event of failure of any of the notified crops, unsown area and damage to harvest produce as a result of natural calamities, pests and diseases to stabilize the income of farmers, and to encourage them to adopt modern agricultural practices.

data. TNAU has demonstrated the efficacy of SAR based rice crop monitoring and information system in Tamil Nadu through the RIICE Programme 'Remote sensing-based Information and Insurance for Crops in Emerging economies' in collaboration with International Rice Research Institute (IRRI), GIZ and Sarmap, Switzerland.

TNAU RIICE aims at reducing the vulnerability of smallholder farmers engaged in rice production by crop insurance. RIICE technology makes use of satellite data to generate information like rice area statistics, mid-season rice yield forecasts and end-of season yield estimates down to the village level. This helps government decision makers, insurers, and relief organizations in better managing domestic rice production during normal growing conditions and during the compensations after natural catastrophes strike.

Initiated in 2012 in the state of Tamil Nadu, India, the project with Tamil Nadu Agricultural University as its lead implementation partner has been actively collaborating with the state Government and the insurance industry towards establishing a successful model of technology leading to sustainable delivery of products and services. This comes at the backdrop of sustained engagement with the Government and creating a policy environment which allows the project based deliverables to be used by both public and private insurers in portfolio monitoring and claim administration in case of imminent losses. Due to the outreach efforts, the Government of Tamil Nadu gave official approval for piloting TNAU-RIICE technology in the year 2016. The ensuing cropping season *i.e.,* Rabi 2016-17 saw the worst drought in Tamil Nadu in last 140 years. RIICE measured the rice area lost to be about 1 million ha. of the sown area covering close to 1 million farmers.

Pradhan Mantri Fasal Bima Yojana (PMFBY) is a flagship scheme of the Government of India to provide insurance coverage and financial support to farmers in the event of failure of any of the notified crops, unsown area and damage to harvest produce as a result of natural calamities, pests and diseases to stabilize the income of farmers, and to encourage them to adopt modern agricultural practices. The scheme is a considerable improvement over all previous insurance schemes in India which aims to cover 50 percent of the farming households within next 3 years. The scheme envisages the use of technologies viz., Remote sensing, Drones and mobile applications. PMFBY has provision for compensation under different clauses *viz.,* Prevented, Failed sowing and total crop failure due to extreme weather events.

Application as per PMFBY Guidelines	Description as per PMFBY	Use of RIICE technology
Prevented Sowing/ Failed SowingRisk	Prevented sowing risk can be defined as the risk of farmers not being able to plan/sow the notified crops in the insured area due to adverse seasonal conditions. A pay-out of up to 25% of the sum insured is foreseen. The insurance policy will be voided thereafter.	RIICE satellite technology can be used to verify the occurrence of the following perils:Flood, drought, inundation as well as their impact on village level. It will only take 10 days post event (in exceptional cases 12 days) to verify the loss.
On Account Payment	PMFBY specifies "on account payment" of up to 25% of the sum insured in case the following two conditions are met: **a)** the expected final season yield is below 50% of threshold yield and **b)** All perils are covered and the payout is at revenue village level.	Prior to the mid-season RIICE can report on loss areas as in the above case. In addition, as from the middle of the season onwards, RIICE can also predict the impact of a certain natural calamity on the expected final yield at the end of the season.
Smart sampling of CCEs	PMFBY outlines the role remote sensing technology can play in the smart sampling of CCEs and can be successfully used to target the CCEs within the Insurance Unit (IU)	Before the end of the season RIICE can prepare a list of vunerable areas showing symptoms of crop stress due to adverse seasonal conditions. This will lead to prioritisation of Insurance Units (IUs) across a homogenous region where more number of CCEs are required.
Acreage Estimation	It has been observed in some instances that the area notified for insurance exceeds the actual planted area in a given insurance unit. Fair crop insurance should ensure correct insurance areas and the PMFBY has provision to address this anomaly thereby avoiding area discrepancy.	In order to present an accurate overview and to avoid over- or underinsurance, a map will be generated to show the location of rice in the monitored season, demarcating rice growing areas from the non-rice growing areas. This can be done at village level, delivering the rice growing area in ha. on village level. This product can be delivered at mid-season at the earliest but during the upcoming season it will be delivered two weeks after the end of the season at the latest.
End of the Season Yield Estimates	Use of proxy indicators. This provides the opportunity to use remote sensing based yield indices to provide an alternate source of yield data apart from the official CCEs.	The remote sensing yield data is generated immediately after the end of season thereby providing sufficient time to identify areas where expected final yield will be lower. This will provide the areas where the official CCE data from claims point of view is critical. The other way is to use the remote sensing based yield data for actual claim settlement.

Methodology

The basic idea behind the generation of rice acreage using radar data is the analysis of changes in the acquired data over time. Measurement of temporal changes of SAR response due to the rice plants phenological status lead to the identification of the areas subject to transplanting. The rice acreage statistics are stored in map format showing the rice extent and, in form of numerical tables, quantifying the dimension of the area at the smallest administrative level - typically village unit- cultivated by rice. These products are linked to district, region, state and country, so that statistics on any of these administrative units can be produced.

Satellite used	**: Sentinel 1A (ESA)**
Spatial resolution	**: 20m**
Temporal resolution	**: 12 days**
Data acquisition	**: 19th Sep 2016 - 17th Jan 2017**
No. of acquisitions	**: 11**

Rice yield prediction is performed by combining remote sensing, in situ, climatic data and an Agro Meteorological Model. Production (I), finally, is simply calculated by combining yield estimation (t/ha) and the acreage (ha) derived from the radar data.

TNAU-RIICE technology resulted in higher accuracies of 89-93% for rice area and 87-90% for rice yield estimation and the salient features of the technology are

- High resolution Synthetic Aperture Radar (SAR) imageries were used to map and monitor Paddy crop area coverage.
- Application of MAPscape-Rice software with automated processing chain.
- Integrating Crop Growth simulation model ORYZA and RiceYES interface for yield estimation.

SAR based Remote Sensing Products used in Crop Insurance

Product	Frequency	Description
Rice area maps	Once per season monitored	A detailed map of the rice growing area detected from the analysis of Sentinel 1A data acquired every 12 days through the monitored season.
Date of start of season map	Once per season monitored	The time series of images used to estimate, the start date of the growing season for each pixel. This is a critical input to the crop model that estimates yield. It is also critical for estimating the area that has been planted at a given date.
Production loss estimates	Once event occurred	If the event occurs in a season that is being monitored, the imagery can be interpreted to estimate the area affected. The yield estimates are used to estimate the expected production loss from this damage per mapping unit.
End of Season Modeled Yields	End of season	Yield model incorporates weather and SAR data to produce a yield value for each calibrated spatial unit

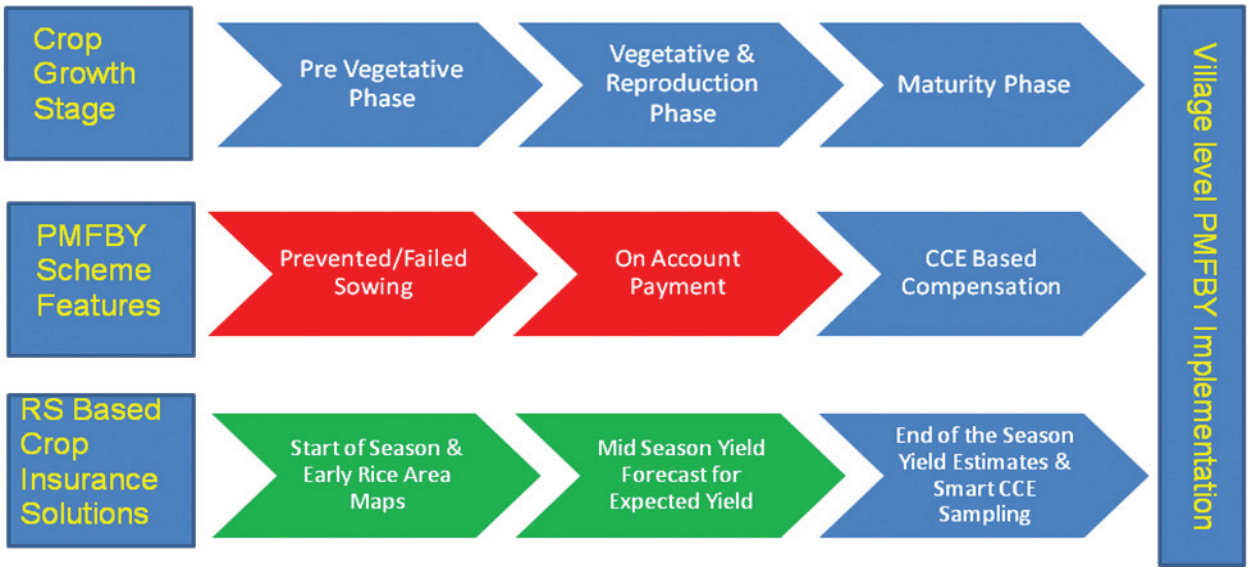
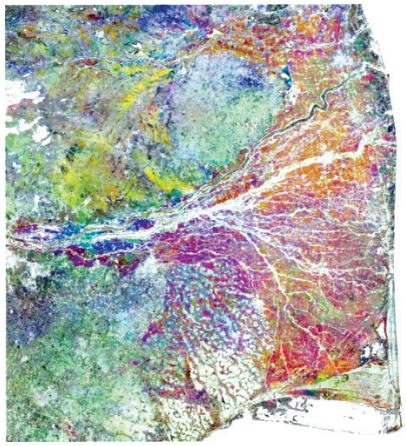
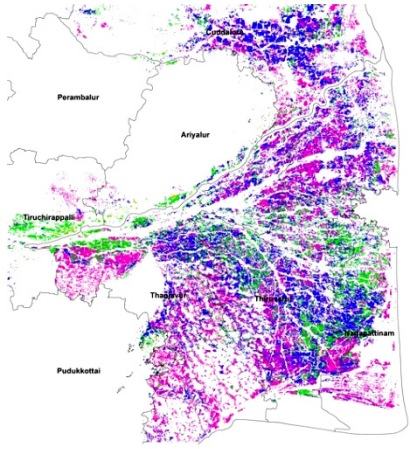


Fig. Utility of TNAU-RIICE technology in PMFBY

Department of Remote Sensing and GIS, Tamilnadu Agricultural University assessed the impact of recent drought during 2016 on crop condition using Sentinel 1A satellite data acquired between September 2016 and January 2017 at 12 days interval. The annual rice area map, seasonality maps and statistics, crop signature and yield information were used to meet the requirements of different features of PMFBY crop insurance scheme.



Assessing Rice crop with Sentinel 1A Satellite

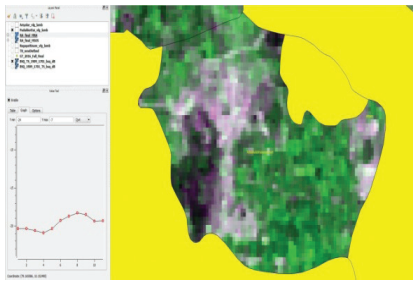


Rice start of the Season map and progression of planting

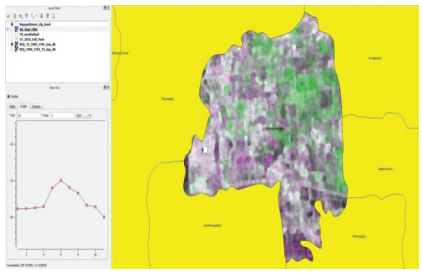
1.Remote sensing for Prevented and Failed sowing

A detailed map of the rice growing area detected from the analysis of Sentinel 1A data acquired during the monitored season was used to generate rice area statistics every 12 days at village level.

Normal area sown figures for the notified villages were compared with the village wise area generated using SAR data and the villages were identified for invoking prevented sowing wherever the area sown was less than 25 % with the reduction caused by delayed onset of monsoon or water release from canal preventing the farmers from sowing or planting.



Failed sowing



Total Crop Failure

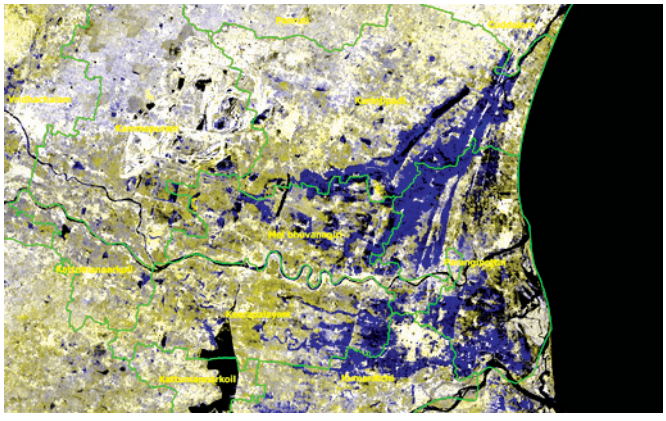
Backscattering signature for crop field were generated using the dB stack derived from 11 date SAR images and the date of crop failure was assessed and the villages were identified for failed sowing (within thirty days after sowing) or total crop failure (beyond 30 days).

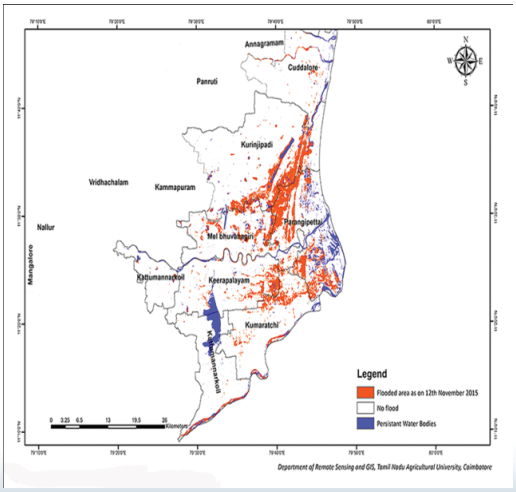
District	Villages Checked	Prevented / Failed Sowing	Total Crop Failure
Pudukottai	193	27	160
Ramnad	51	38	13
Nagapattinam	155	34	112
Tiruvarur	378	26	18
Cuddalore	183	4	179
Ariyalur	31	22	9
Tiruchirapalli	502	210	-
Erode	365	127	-
Tiruvannamalai	1	-	1
Kancheepuram	30	-	30
Tiruvallur	16	-	16
Virudhunagar	318	-	31
Sivaganga	293	41	252
Total	**2516**	**529**	**821**

2. Assessing the impact of Flood and drought using Remote sensing

i. Flood maps from SAR data

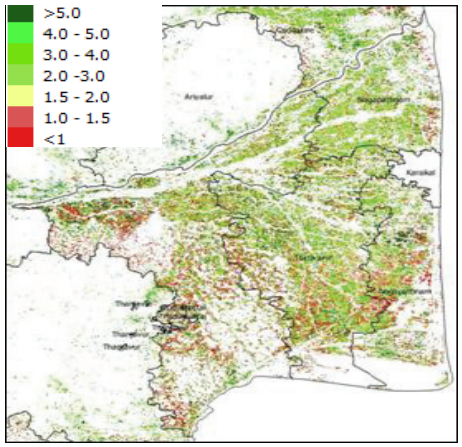
The StateGovernment of Tamil Nadu, India initiated several policy level measures in alleviating the losses in the aftermath of the 2015 devastating floods based on a timely assessment report containing flood maps and statistics provided by TNAU.The deadly depression crossing over the Tamil Nadu coast in early November 2015(as shown in the left image captured by a meteorological satellite), caused heavy rains and subsequent flooding in many districts of Tamil Nadu resulting in severe damage to agricultural land and property. In response to the catastrophe, the RIICE's flood assessment report was delivered as part of the relief and flood rehabilitation efforts to the Government of Tamil Nadu.



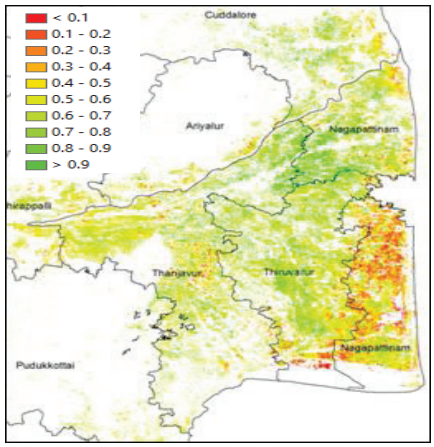


ii. Impact of Drought on crop condition

The impact of recent drought during 2016 on crop condition was monitored by retrieving time series Leaf area Index using Sentinel 1A SAR satellite data and composite NDVI derived from MODIS. The area under the classes of moderate and severe drought was assessed and shared with Insurance companies for possible loss and anticipated claim assessments.



LAI Map of Rice area

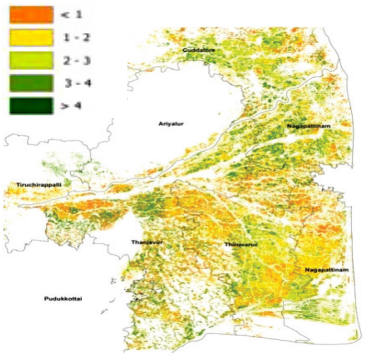


NDVI Map of Rice area

3. Yield loss assessment

Rice yields and hence production at district, block and village level are assessed by integrating remote sensing products viz., Rice area, Start of the Season and dB Stack into the crop growth simulation model ORYZA. Yield loss if any were estimated by comparing satellite derived rice yields with threshold yields for the villages as notified.

Samba rice (Paddy-II) growing villages in Tamilnadu were monitored for crop loss assessment and the remote sensing technology helped in identifying or invoking



prevented/failed sowing in 529 villages and total crop failure in 821 villages. In total 8,80,179 farmers were benefitted from the crop insurance and the payouts were to the tune of Rs. 2,769.15 crores. The satellite technology has helped in getting quicker payouts and also to maximize the compensation which was due for the farmers ensuring the social protection.

Insurance payouts through TNAU-RIICE Technology

Crop Insurance feature	No. of Farmers benefitted	Claim Amount (Rs. In Crores)
Prevented sowing Through RIICE Technology	47,513	60.46
Yield loss claims - RIICE	2,56,190	933.61
Yield loss claims - DES	5,76,179	1,775.08
Total	8,80,179	2,769.15

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Pradhan Mantri Fasal BimaYojana (PMFBY) – Issues inhibiting its big success and probable way forward

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Given the constraints of agrarian landscape of India, as a crop insurance solution, PMFBYis a good blend of **yield index insurance** working on "Unit Area" (village panchayat / block / mandal/ patwari halka/ revenue circle etc.) and **traditional named peril insurance**(landslide, hailstorm and inundation) aiming individual farm-based damage assessment. Farm based damage assessment is also prescribed for post-harvest-on-field losses due to unseasonal or cyclonic rains that damage crops kept on the field for drying. Therefore, PMFBY is a combination that takes care of systemic or covariate risk associated with widespread calamities as well as idiosyncratic losses arising from localised calamities viz hailstorm, landslide and inundation. Farmers are also indemnified in case they are not able to sow, plant or transplant the crop due to early-season adverse weather conditions viz. delayed arrival of monsoon etc. Even in case of the sown seed or seedlings, the seeds do not germinate or fail to survive due to adverse weather conditions, the farmers are eligible for compensation. Whereas the first case is known as prevented sowing, the second one is called failed sowing/ planting.Further in case of mid-season adverse weather conditions, viz. prolonged dry spell after good initiation of crop, which may lead to yield losses, ad-hoc or on-account payments are prescribed so that farmers get some ad-hoc compensation in the interim to let him look for alternative operations.

No scheme previously has offered such a comprehensive protection. However farmers probably also look for compensation against widespread disease and pest attacks that impact many farms simultaneously which sometimes cannot be anticipated or contained. PMFBY as on date do not compensate such losses until and unless they are reflected in the yield estimates of the Insurance Unit Area.

PMFBY is a combination that takes care of systemic or covariate risk associated with widespread calamities as well as idiosyncratic losses arising from localised calamities viz hailstorm, landslide and inundation.Farmers are also indemnified in case they are not able to sow, plant or transplant the crop due to early-season adverse weather conditions viz. delayed arrival of monsoon etc.

Given that PMFBY being the most feasible insurance product which purportedly suits the majority stake-holders and that too at the cheapest price for the farmers, what is stopping it to be a landslide success? The

issues are many and multifarious illustrated as under.

1. The critical challenge is in distribution, that is, mostly the **"bad risks**" are getting insured. Areas or crops prone to losses due to lack of irrigation facility or the crops which are too susceptible to adverse weather conditions are usually covered, leaving majority of the **"good risks"** out of the insurance basket. It goes without saying that predominantly-bad-risk-insurance portfolio will attract a high premium rate which in turn will put a strain on State Government'sbudget. This skewed distribution of risk is basically due to administrative slackness.

Huge financial burden on States for running PMFBY is one of the critical limiting factors for sustainability. Given an option, most of the States would like to quit PMFBY and perhaps would like to come back to NAIS for the primary reason being that under PMFBY the money (premium subsidy) has to be paid upfront to the insurance companies without knowing the return.

Crop Insurance in India has always remained a multi-agency program wherein roles of various agencies like, Banks/ PACS (Primary Agriculture Cooperative Societies), State Governments and insurance Companies though well-defined are yet poorly executed as there is no accountability for not performing the assigned duties. For example, for loanee farmers, the scheme is compulsory, but a substantial part of the eligible loans is left un-insured on some pretext or other. Non-compliance of compulsory insurance, particularly from the good risk areas is making the scheme costlier for the Government, as for the farmers the premium rate is capped.

2. The second issue as far as sustainability is concerned is that, even if the good risks are brought in, and compulsory provision is complied fully, the premium subsidy liability of the State Governments will go up in absolute terms at least in the short run. Therefore, State Governmentsmust allocate more budget for PMFBY which most of the time is seen as an expenditure wasted. Only exception, in recent times when States could see value in insurance is during Rabi 2016-17, when the States of Karnataka and Tamil Nadu saw the non-loanee participation soaring exceptionally high, followed by almost 300%loss ratio (the ratio of indemnity paid, and premium collected). In fact, from the insurers' point of view, this is a glaring example of adverse selection in a draught-like situation, a typical moral hazard that got established during NAIS (National Agricultural Insurance Scheme) regime. Insurance Companies raised doubts about **(i)** areas being insured without any crops attempted by the farmers and **(ii)** extensive recording of zero yields without conducting Crop Cutting Experiments (CCEs) by the State Government. This is an issue that plagued crop insurance system in India for a long time and is still posing a problem in putting the PMFBY on a transparent and sustainable footing. **The only solution is advancing the cut-off date for enrolment of farmers to a point of time when the farmers are not aware about the impending losses.**

Huge financial burden on States for running PMFBY is one of the critical limiting factors for sustainability. Given an option, most of the States would like to quit PMFBY and perhaps would like to come back to NAIS

for the primary reason being that under PMFBY the money (premium subsidy) has to be paid upfront to the insurance companies without knowing the return. **States perceive the payment of subsidy is an instant loss and not as a cost for transfer of risk to the insurer.** This view of seeing insurance premium as instant loss rather than cost of risk transfer is all pervading and prevalent across all lines of general insurance business. We are basically an insurance averse society worried about short term losses rather than long term risk management solutions.

3. Thirdly, as mentioned above, huge outgo as advance premium subsidy seen as a costly affair for certain cash strapped States, raising the questions on the sustainability of PMFBY from the political view point. Adding salt to the injury, the data collected from insurance industry shows that all the companies combined made a gross profit of Rs.7000 crore approximately out of first year of operation i.e., during 2016-17, which is roughly 32% of the national premium volume. Insurance industry's view point is diametrically opposite though. Industry feels that having a 32% margin (excluding operating expenses) in a good year like 2016-17 is unsustainable as in a widespread drought situation like that of 2015-16 where losses could go up to Rs 50000 crore against an insured liability of Rs 200000 crore (2016-17 sum insured). Therefore, from either side there are issues of sustainability looming large. To give comfort to the States' finances, premium rates need to come down as quickly as possible and this will be possible, if only the legitimate claims are paid. For area yield index insurance like PMFBY,season-end yield losses overwhelmingly constitute the total claims. Therefore, yield estimation through CCEs assumes a great importance.

Yield data of the past years and for the current insured season is perhaps the single most important element around which the entire mathematics of Indian crop insurance program revolves. Irony is that CCEs through which the yield data is arrived at, is an ill-managed activity of the Indian Crop Insurance program which needs revamping.

4. The fourth issue is about yield estimation or loss estimation. Yield data of the past years and for the current insured season is perhaps the single most important element around which the entire mathematics of Indian crop insurance program revolves. Irony is that CCEs through which the yield data is arrived at, is an ill-managed activity of the Indian Crop Insurance program which needs revamping. In fact, in the sixties when CCE methodology and implemen tation was conceptualised, crop insurance was not there. It was conceptualised only for generating basic agricultural statistics at a district or at sub-district level to assist planning and policy making. The basic statistical data compiled were area, production and yield (APY) in respect of a particular crop in a district. The survey through which this estimate is generated is called GCES (General Crop Estimation Survey). When crop insurance started at country level in 1985, the same GCES data was used for calculating guaranteed yield (threshold yield) and also for estimating actual yield in the insured season. This means that the GCES data collated for APY purposes would also be used for insurance purposes for calculating compensation for

Only solution to the everlasting CCEs issue is, perhaps, the use of remote sensing. Nowa days satellite imagery and remote sensing technology have improved to an extent which can provide crop-area estimation with 85% to 90% accuracy at village/ village panchayat level. As far as yield estimation is concerned, accuracy varies from crop to crop, but it would be safe to say that the latest technology supported by adequate number of ground truthing (field data collection) and collection of other related data like weather data etc.has the potential to produce a good indicative yield.

yield losses. However, unfortunately within two years of implementation of CCIS (Comprehensive Crop Insurance Scheme 1985) some of the States started altering the CCE process which otherwise has sound statistical basis. The states started producing two series of yield estimates one for crop insurance and other one for APY statistics. When NAIS was introduced in 1999 replacing CCIS, it was clearly mandated in the Scheme that only single series of estimate i.e., GCES estimate data would be used for both insurance and for APY statistics to stop producing a separate data series for crop insurance. However, NAIS was having another mandate of lowering the size of insurance unit to village panchayat level for major crops which necessitated an increased number of CCEs at district level. The States could not develop their infrastructure to conduct the increased number of CCEs and gradually the quality declined to an alarming level.

PMFBY, as such, requires as many as 30 to 35 lakhs of CCEs to be conducted during Kharif and Rabi seasons which appears to be an insurmountable task for the States to handle. It may not be possible ever for the States to conduct so many CCEs in such a short time window ensuring quality. To meet the demand many states are going for outsourcing without any capacity building resulting in poor quality of data. Certainly conducting so many CCEs through outsourcing or otherwise is not a sustainable proposition and this practice will eventually lead to large scale disputes involving the insurance companies and farmers.

Only solution to the everlasting CCEs issue is, perhaps, **the use of remote sensing.** Nowa days satellite imagery and remote sensing technology have improved to an extent which can provide crop-area estimation with 85% to 90% accuracy at village/ village panchayat level. As far as yield estimation is concerned, accuracy varies from crop to crop, but it would be safe to say that the latest technology supported by adequate number of ground truthing (field data collection) and collection of other related data like weather data etc.has the potential to produce a good indicative yield. Over the last couple of decades remote sensing scientists working in the field of agriculture have developed many indices based on satellite imagery viz. Normalised Difference Vegetation Index (NDVI), NDWI (Normalised Difference Wetness Index), Standard Precipitation Index (SPI), Vegetation Health Index (VHI), Leaf Area index (LAI) and so on. All these indices attempt to produce a yield forecast or modelled yield at a reasonably acceptable level. The European Space Agency's (www.esa.int) Copernicus Satellite Program has come up with a dozen earth observation

satellites named as Sentinel Series with primary emphasis on studying the impact of climate change and how to mitigate the same to ensure civil security. The best part of ESA's program is that the sentinel data is of very high resolution, good frequency and swath and available free of cost for use by a registered user. Recently many private research and start-up agencies have started using these high-resolution data and started producing good results in terms of crop health monitoring and yield forecast.

It is also worth mentioning that the Honourable PM held a meeting on technology intervention in PMFBY way back in mid-2016 involving DST, ISRO, NRSC and DAC&FW to bring in efficiency, objectivity and sustainability. Subsequent to this NITI Aayog Agriculture vertical constituted a Task Force on Enhancing Technology Intervention in Agriculture Insurance. The Task Force has since submitted its recommendation to DAC& FW almost a year back.

For leveraging the technology intervention in PMFBY what is immediately needed is devising and defining protocols for using remote sensing and data for

Insurance doesn't reduce the chances of drought or flood happening, what it does is, spreading the adverse impact over space and time so that the affected farmers do not get a rude financial shock and their livelihood is reasonably sustained. Therefore, insurance is a necessity particularly for agriculture sector, otherwise 125 countries in the world would not have established agriculture insurance system.

various claim triggers like prevented sowing, mid-season adversity, damage assessment for localised calamities and for post-harvest losses. Until and unless the protocols are defined and notified, there will be a serious lack of standardisation.

The Probable way forward is, therefore, to have a credible independent institutional mechanism to usher in usage of technology in a structured manner. Ideally the agency should be more of a Scientific Agency of national eminence and international access such as National Remote Sensing Centre (https://www.nrsc.gov.in/agriculture) which has a dedicated Agricultural Division that does all kind of necessary remote sensing and capacity building activities thatcan usher in the technology intervention in PMFBY in a time bound manner.

Problem with Weather Based Insurance: The other alternative to yield index insurance is Weather Based Crop Insurance Scheme (WBCIS). WBCIS caught the imagination of the Central and State Governments from 2007 onwards and was an instant success, and it became almost equal to NAIS in 2012-13 in terms of area under insurance. Success of WBCIS is based on the fundamentals of strong crop-weather relationship. With growth of WBCIS, gradually, the fundamentals were compromised, and stakeholders were found to be more inquisitive in finding premium-claim relationship so much so that the pay-out term- sheets were developed assuring sure claims. This led to very high premium rate for WBCIS. At present WBCIS is a poor cousin of PMFBY, only implemented for horticultural crops and in some districts chosen by the State governments.

PMFBY – Probable Way Forward to sustainability

It is not difficult to appreciate the discomfort of the States which have to pay PMFBY premium subsidy that takes a lion's share of State's agriculture budget only to discover later in the year that the money has been made to some of the Insurance Companies. If it happens year after year, one can be sure of criticism pouring in from all quarters. The issue is that nobody would like a commercial company making money out of farmers' plight, given the agrarian distress in the country.

Over last 17 years, starting with the introduction of NAIS in Rabi1999-2000, Government, Centre and the States combined spent approximately an amount of Rs 75000 crore in implementing crop insurance. A question arises whether the amount could have been better utilized in the form of developing long-term capital investment viz., augmenting irrigation facilities in 104 perennially drought-prone districts. There is no doubt that the cost of insurance would have been much lower by de-risking agriculture with more cropped areas covered under permanent irrigation. Perhaps this is the reason why the Central Government has already initiated the PM Krishi Sinchai Yojana, a 5-year-Rs. 50000 cr project in 2015.

Insurance doesn't reduce the chances of drought or flood happening, what it does is, spreading the adverse impact over space and time so that the affected farmers do not get a rude financial shock and their livelihood is reasonably sustained. Therefore, insurance is a necessity particularly for agriculture sector, otherwise 125 countries in the world would not have established agriculture insurance system.It is also to be noted that the agricultural insurance system is better established and gaining strength in most of the high and middle-income countries (where contribution of agriculture to their respective national GDP is in single digit only) than in lower-middle and low-income countries. In many developed and developing countries, the system is codified through proper legislation, so the various agencies involved in the process do their job sincerely. In India an ***Agricultural Insurance Act*** is overdue. Time is ripe that India takes it seriously and goes for it as a substantial part of Central and State funds are involved.

Coming back to the issue of States' discomfort is paying upfront premium subsidy – a different model of financial administration can be thought of where in insurance company will not be allowed to make any large profit. The empanelled Insurance Company will do everything that it is required to do today and will continue to participate in the tendering process to win the districts and clusters. Additionally, they will aslo submit the accounts at the end of the year to the Centre and States. Insurance companies will carry the risks with an overall cap of, say, 120% on its portfolio and a cap of, say, 80%. Which means losses beyond 120%falls on Central and State at a ratio of 40:60, whereas surplus arising out of pure losses below 80% is ploughed back to the Centre and State in the same ratio. Centre and every State will create a separate crop insurance fund account (similar to CCIS regime) which will be used only for crop insurance purposes. Minimum limits of various expenses such as management and publicity expenses etc. to be borne by an insurance company can be prescribed so that insurance companies are bound to incur the minimum service related expenses to keep the service quality at a standard level. Insurance Companies will be free to make their own reinsurance arrangement to protect their

own account.With this arrangement the cost of reinsurance will also come down. As far as upfront premium subsidy is concerned, the sharing pattern between Centre and State may be, 60:40, Centre picking up a greater share i.e., 60% of the premium subsidy leaving 40% to be borne by the State in place of 50:50 at present. This will put less pressure on the State's budget making them more comfortable. On the claims financing side beyond 120% the sharing may be a reverse one i.e., 40% Centre and 60% State – this will make States more vigilant about maintaining quality check on the Crop Cutting Experiments. State Governments may choose for reinsurance protection to protect their own account.

Since insurance companies' losses are capped at 120%, certainly the actuarial premium rate will come down by at least 10% - 20% initially and with greater risk management by insurance companies and States, the premium rate may fall further after some time. Insurance companies will be encouraged to use all scientific tools to authenticate losses. It will be a win-win situation for all, for the Scheme, for the Centre, for the States and for long-term insurers.

Conclusion:

PMFBY is a well-designed insurance solution in the Indian context characterised by large number of small land holdings. It is quite comprehensive in covering the major production risks induced by adverse weather conditions during the entire crop life cycle. The scheme is very cheap for the farmers though perceived as costly by the State governments.

PMFBY, to be a major success needs adequate support services. To facilitate this, following the best practices prevailing elsewhere particularly in high and middle-income countries, a comprehensive legislation on Agriculture Insurance should be put in place. Till that point of time at least an Independent Agency should be set up as a part of strong institutional mechanism to objectively and transparently assess crop losses in the insurance units. Remote sensing technology is a handy tool to objectively assess crop area planted and monitor crop health and to ultimately arrive at an indicative yield or yield losses.

Further to strike a win-win situation for all the stakeholders the existing risk sharing between Insurance companies, Central and State Governments and Reinsurers may be reviewed as suggested above.

Views expressed in this paper are author's personal only and not of the affiliating organisations

A Closer Look at Agriculture Insurance of India

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With weather being its greatest ally as well as its greatest adversary, agriculture is one of the most elemental form of activities where a farmer toils the ground, and reaps the reward – an occupation vital for the very sustenance of human life on earth. In a country like India, where agriculture and allied sectors account for around 14% of the GDP and employ about 50% of the workforce, is ranked top in a list of populations most at risk from natural disasters, adequate solutions need to be implemented to render the economy less exposed.

Crop insurance was hence devised by Indian policy makers to make good the financial losses incurred by the agrarian community of India. While the first ever crop insurance scheme got implemented in 1972, the credit for pioneering the idea goes to J. S. Chakarvarti, who as early as in 1915, had proposed rainfall based agricultural insurance schemes.

The Schemes as of Today

Fast forward to today, the Pradhan Mantri Fasal Bima Yojna, implemented from Kharif 2016 onwards works on the principle of – "One Season, One Crop, One Premium Rate".

Under this scheme the states are divided into homogeneous clusters based on their risk profile, premium potential and agro-climatic zones and each cluster is allotted to a single insurance company based on competitive bidding. There is no capping on rates, hence, insurance companies will be able to charge actuarial premium for the clusters, but the farmer's share is limited to 2% of the total premium in Kharif and 1.5% of the total premium in Rabi for food grain and oil seed crops and 5% of the total premium for commercial and horticulture crops. The claims are a function of Crop cutting experiments done by revenue departments across the country.

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The scheme is spread across an area of 57 million hectares covering 5.71 crore farmers in its first year of operations itself, as against 4.85 crore in 2015-16. Crop insurance witnessed an 18% spike in penetration in the very first year of the scheme's implementation. Assuming a similar rate of growth, the

penetration of scheme should soon reach 50% in next couple of years.

Another existing scheme that has been restructured and re-implemented is the WBCIS – the Weather Based Crop Insurance Scheme. This scheme provides protection to the insured cultivators in the event of loss in crops yields resulting from the adverse weather incidences, like un-seasonal/excess rainfall, heat (temperature), frost, relative humidity etc. Claims arise when there is a certain adverse deviation in Actual Weather Parameter Incidence in Reference Unit Areas (RUA) (as per the weather data measured at Reference Weather Stations), e.g. its "Actual temperature" within the time period specified in the Benefit Table is either less or more compared to the specified " temperature Trigger", leading to crop losses. In such case, subject to the terms and conditions of the Scheme, all insured cultivators under a particular crop shall be deemed to have suffered the same "adverse deviation" in temperature and become eligible for claims.

A Closer Look

On face, with numbers supporting it, the scheme look successful, however, certain challenges in its implementation still remain. A deep analysis of the same reveal the problem areas that continue to hinder a smooth functioning of the crop insurance schemes of India. A few have been broadly analyzed and discussed through this article:

1. Delay in Transfer of Data: Since the actual losses are determined basis Crop Cutting Experiments conducted by State Governments, the claim payments highly rely on correct and timely flow of yield data. Often this data takes a lot of time to get transferred from the farms to the insurer's data base. Instead of manual processes of data keeping, the State Governments need to start using technology to capture results of crop cutting experiments. An application has already been developed by Central Government for this purpose, which ensures timely submission of yield data to Government and Insurance companies so as to enable a faster claim settlement. Efforts also, need to be taken to enable Direct Bank Transfers(DBT) so that farmers get the claim payment directly in their account. This can be done once AADHAR number is linked to all bank accounts which will make DBT easier and errorless.

2. Low Insurance Penetration: For the purpose of insurance, farmers are usually classified as Loanee and Non Loanee farmers basis their credit usage through banks. The scheme guidelines suggests that Loanee farmers are to be covered compulsorily through their banks. However, the number of loanee farmers covered under the scheme is abysmal as compared to the Kisan Credit Cards (KCC) issued. Significant efforts need to be taken to improve the insurance outreach to the loanee farmers. One such enabler would be linking of AADHAR numbers with bank accounts which will make it easier to identify defaulting branches.

The non loanee farmers also receive the same premium subsidy as the loanee farmers. However, they are not mandatorily covered under the scheme. A non loanee farmer can use his Bank, Agent or Common Service Centre as well for enrolment under the scheme. Interesting to note, IRDAI has authorized all Village Level Entrepreneurs (Common Service Center), numbering up to an approximate of 2.4 lakhs, to sell crop insurance. Never before was such a huge channel was opened up overnight to increase penetration of insurance. Though, in the first year of the scheme's implementation, around 1.37 crore farmers were insured under the non loanee category, still, the non loanee coverage has a huge scope of improvement.

3. Low Levels of Insurance Awareness: The biggest selling point for any product is its timely adoption by its targeted customers. This has been one of the chink in the armour of the crop insurance schemes of India. This is a main challenge area as a lot of farmers need to be still made cognizant of the benefits of having their crops covered by an insurance policy. They need to be educated on the coverage offered and on what's covered and what's not covered by the various schemes. The insurers and the Government. together can hence do wide range outreach programmes aiming towards simplification of the policy clauses and conditions to the farming grassroots. This would also help to build a positive image about these schemes which despite having a claims ratio of around 70% are often doubted for their reliability in protecting a farmer's financial interest.

4. Delayed Claims Settlement: Claims are an insurance scheme's moment of truth and a delay in claims dissemination can cause sufficient discomfort. To address the issue, the use of technology in claims assessment is being thought off from a long time. A lot of work is being done on remote sensing technology, wherein the crop health can be assessed to a great extent using NDVI (Normalized Difference Vegetation Index) signatures. Stakeholders should sit together to decide how to use this data to decrease the number of Crop Cutting Experiments (CCEs). This will reduce the financial burden on states and insurance companies, improve efficiency and will enable timely claim settlement.

Large scale awareness and education programs on insurance need to be conducted at the grassroots levels so that the benefits seep down to even small scale and tenant farmers. The infusion of technology, at all levels of the scheme implementation from issuance to claims payout is another pre-requisite to a smooth deployment.

Conclusion

There needs to be a paradigm shift in how we look at insurance in India, where it is historically viewed as an investment rather than a risk mitigation tool. The lack of awareness amongst the farmers or other consumers in general, is rather a big caveat of the financial education system of the country which triggers awareness deficit on the various financial tools and limits the opening of bank accounts and linking them with Unique IDs. It hence becomes the collective responsibility of insurance companies along with Governments to restore faith of farmers in insurance as a concept.

Large scale awareness and education programs on insurance need to be conducted at the grassroots levels so that the benefits seep down to even small scale and tenant farmers. The infusion of technology, at all levels of the scheme implementation from issuance to claims payout is another pre-requisite to a smooth deployment. Finally a robust cooperation amongst the various stake holders – from Union and State Government, to banks to the insurance companies is further required to ensure that the third largest crop insurance market after USA and China, builds and maintains a successful business model. Such a business model shall build up the farmer's confidence in insurers and will then not limit itself to only crop insurance. Rather, in the long term, this shall then cascade into cross selling of various other offerings from the insurance companies, serving as a greater tool for farmers against any financial uncertainties they might face.

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First Year Premium of Life Insurers for the Period ended 30th June, 2018 **(Premium in Rs.Crore)**

Sl No.	Insurer	Premium							No. of Policies / Schemes						
		For June, 2017	For June, 2018	Growth in %	Up to 30th June, 2017	Up to 30th June, 2018	Growth in %	Market Share	For June, 2017	For June, 2018	Growth in %	Up to 30th June, 2017	Up to 30th June, 2018	Growth in %	Market Share
1	**Aditya Birla Sun Life**	**179.32**	**354.66**	**97.78**	**420.01**	**641.09**	**52.64**	**1.75**	**24182**	**24214**	**0.13**	**51259**	**49590**	**-3.26**	**1.03**
	Individual Single Premium	2.39	8.33	247.75	7.62	23.37	206.56	0.47	76	228	200.00	234	710	203.42	0.28
	Individual Non-Single Premium	80.60	112.86	40.03	161.55	224.81	39.15	2.08	24045	23908	-0.57	50863	48630	-4.39	1.07
	Group Single Premium	91.43	219.82	140.42	224.69	355.41	58.18	1.78	6	9	50.00	13	18	38.46	5.92
	Group Non-Single Premium	0.60	9.38	1452.47	7.93	19.80	149.55	7.63	10	1	-90.00	11	1	-90.91	0.14
	Group Yearly Renewable Premium	4.30	4.28	-0.37	18.20	17.71	-2.73	2.47	45	68	51.11	138	231	67.39	4.52
2	**Aegon Life**	**10.68**	**6.98**	**-34.63**	**21.08**	**20.59**	**-2.32**	**0.06**	**3984**	**3590**	**-9.89**	**10743**	**10398**	**-3.21**	**0.22**
	Individual Single Premium	0.40	0.14	-65.51	0.60	0.30	-50.08	0.01	15	262	1646.67	27	488	1707.41	0.19
	Individual Non-Single Premium	10.28	6.56	-36.18	20.48	17.00	-16.99	0.16	3968	3322	-16.28	10715	9891	-7.69	0.22
	Group Single Premium	0.00	0.00	NA	0.00	0.39	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	0.01	0.00	-100.00	0.01	0.00	-100.00	0.00	1	0	-100.00	1	0	-100.00	0.00
	Group Yearly Renewable Premium	0.00	0.29	NA	0.00	2.90	NA	0.41	0	6	NA	0	19	NA	0.37
3	**Aviva Life**	**19.33**	**20.36**	**5.33**	**39.79**	**52.49**	**31.91**	**0.14**	**2215**	**2705**	**22.12**	**6892**	**5813**	**-15.66**	**0.12**
	Individual Single Premium	0.35	0.49	41.43	1.18	1.49	25.92	0.03	76	20	-73.68	2012	108	-94.63	0.04
	Individual Non-Single Premium	12.04	14.29	18.66	25.34	30.32	19.69	0.28	2131	2674	25.48	4844	5667	16.99	0.13
	Group Single Premium	0.26	0.43	67.42	0.38	1.26	228.16	0.01	1	2	100.00	2	2	0.00	0.66
	Group Non-Single Premium	0.07	0.31	335.76	0.09	0.77	757.98	0.30	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	6.61	4.84	-26.74	12.80	18.65	45.66	2.60	7	9	28.57	34	36	5.88	0.70
4	**Bajaj Allianz Life**	**222.12**	**309.81**	**39.48**	**682.20**	**720.39**	**5.60**	**1.96**	**20053**	**21308**	**6.26**	**67971**	**59205**	**-12.90**	**1.23**
	Individual Single Premium	5.07	4.50	-11.11	15.30	14.34	-6.29	0.29	170	180	5.88	567	609	7.41	0.24
	Individual Non-Single Premium	87.05	103.39	18.76	276.36	281.37	1.81	2.60	19870	21121	6.30	67362	58581	-13.04	1.29
	Group Single Premium	101.15	185.89	83.78	299.54	356.83	19.13	1.79	7	4	-42.86	16	7	-56.25	2.30
	Group Non-Single Premium	0.45	0.00	-99.44	0.85	0.67	-20.98	0.26	0	0	NA	1	0	-100.00	0.00
	Group Yearly Renewable Premium	28.40	16.04	-43.55	90.15	67.18	-25.47	9.38	6	3	-50.00	25	8	-68.00	0.16
5	**Bharti Axa Life**	**50.58**	**67.45**	**33.37**	**110.16**	**174.37**	**58.29**	**0.47**	**7777**	**11408**	**46.69**	**16225**	**27402**	**68.89**	**0.57**
	Individual Single Premium	0.67	2.29	240.36	1.58	8.67	447.91	0.17	13	24	84.62	44	64	45.45	0.02
	Individual Non-Single Premium	30.31	41.61	37.29	61.37	101.94	66.10	0.94	7763	11384	46.64	16180	27338	68.96	0.60
	Group Single Premium	19.60	23.55	20.19	47.20	63.76	35.08	0.32	1	0	-100.00	1	0	-100.00	0.00
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
6	**Canara HSBC OBC Life**	**106.73**	**190.93**	**78.89**	**212.92**	**280.29**	**31.64**	**0.76**	**8949**	**8747**	**-2.26**	**17597**	**17281**	**-1.80**	**0.36**
	Individual Single Premium	0.43	0.98	129.25	1.51	2.51	66.13	0.05	14	25	78.57	31	51	64.52	0.02
	Individual Non-Single Premium	63.66	65.33	2.62	125.76	137.38	9.24	1.27	8932	8719	-2.38	17552	17226	-1.86	0.38
	Group Single Premium	7.50	73.74	882.96	50.16	88.44	76.31	0.44	0	0	NA	7	1	-85.71	0.33
	Group Non-Single Premium	0.43	0.33	-23.08	0.76	1.05	37.10	0.40	0	0	NA	2	0	-100.00	0.00
	Group Yearly Renewable Premium	34.72	50.55	45.63	34.72	50.91	46.62	7.11	3	3	0.00	5	3	-40.00	0.06
7	**DHFL Pramerica Life**	**131.51**	**138.27**	**5.14**	**293.29**	**375.10**	**27.89**	**1.02**	**6938**	**8358**	**20.47**	**15401**	**19496**	**26.59**	**0.41**
	Individual Single Premium	3.11	1.90	-38.88	6.72	6.75	0.37	0.14	86	148	72.09	273	562	105.86	0.22
	Individual Non-Single Premium	22.35	32.25	44.30	55.49	81.78	47.37	0.76	6774	8135	20.09	14933	18729	25.42	0.41
	Group Single Premium	106.05	68.73	-35.19	231.07	184.69	-20.07	0.92	78	0	-100.00	195	0	-100.00	0.00
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	0.00	35.39	NA	0.00	101.88	NA	14.22	0	75	NA	0	205	NA	4.01
8	**Edleweiss Tokio Life**	**14.55**	**30.19**	**107.43**	**39.13**	**70.17**	**79.36**	**0.19**	**3366**	**5445**	**61.76**	**7502**	**13463**	**79.46**	**0.28**
	Individual Single Premium	0.69	1.35	95.60	3.29	3.85	17.10	0.08	29	48	65.52	532	2157	305.45	0.84
	Individual Non-Single Premium	10.46	23.17	121.56	24.34	47.54	95.30	0.44	3329	5396	62.09	6946	11291	62.55	0.25
	Group Single Premium	2.27	4.79	110.84	4.21	9.34	121.84	0.05	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	0.00	0.62	NA	0.05	0.72	1341.69	0.28	0	0	NA	1	0	-100.00	0.00
	Group Yearly Renewable Premium	1.14	0.26	-77.02	7.24	8.73	20.58	1.22	8	1	-87.50	23	15	-34.78	0.29
9	**Exide Life**	**54.75**	**56.58**	**3.34**	**145.95**	**156.71**	**7.38**	**0.43**	**15702**	**14712**	**-6.30**	**37194**	**37542**	**0.94**	**0.78**
	Individual Single Premium	1.96	1.64	-16.27	7.32	8.60	17.53	0.17	50	28	-44.00	126	109	-13.49	0.04

	Individual Non-Single Premium	44.30	49.67	12.12	105.18	128.29	21.97	1.19	15629	14672	-6.12	37000	37378	1.02	0.82
	Group Single Premium	0.02	0.04	75.97	0.06	0.16	144.07	0.00	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	2.98	1.63	-45.11	25.65	13.79	-46.24	5.31	23	12	-47.83	68	55	-19.12	7.75
	Group Yearly Renewable Premium	5.49	3.59	-34.55	7.73	5.88	-23.96	0.82	0	0	NA	0	0	NA	0.00
10	**Future Generali Life**	**27.95**	**37.75**	**35.09**	**77.90**	**96.33**	**23.66**	**0.26**	**4272**	**4608**	**7.87**	**10036**	**11313**	**12.72**	**0.24**
	Individual Single Premium	0.71	0.52	-26.46	1.81	0.84	-53.63	0.02	59	26	-55.93	363	54	-85.12	0.02
	Individual Non-Single Premium	11.60	17.09	47.25	31.17	43.02	38.02	0.40	4205	4576	8.82	9655	11243	16.45	0.25
	Group Single Premium	4.04	4.98	23.38	7.79	11.73	50.61	0.06	3	5	66.67	5	5	0.00	1.64
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	11.59	15.16	30.78	37.13	40.74	9.72	5.69	5	1	-80.00	13	11	-15.38	0.22
11	**HDFC Standard Life**	**685.31**	**1122.71**	**63.82**	**1618.78**	**2677.59**	**65.41**	**7.29**	**77495**	**77490**	**-0.01**	**184009**	**202665**	**10.14**	**4.23**
	Individual Single Premium	51.29	178.22	247.45	113.46	470.91	315.06	9.50	1009	3356	232.61	2518	9042	259.09	3.51
	Individual Non-Single Premium	298.38	296.91	-0.49	675.22	764.47	13.22	7.06	76397	74088	-3.02	181342	193491	6.70	4.27
	Group Single Premium	322.50	631.86	95.93	788.59	1394.30	76.81	6.98	18	24	33.33	30	64	113.33	21.05
	Group Non-Single Premium	2.01	0.00	-100.00	11.68	0.00	-100.00	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	11.13	15.72	41.28	29.83	47.91	60.63	6.69	71	22	-69.01	119	68	-42.86	1.33
12	**ICICI Prudential Life**	**668.69**	**711.99**	**6.48**	**1973.85**	**1724.90**	**-12.61**	**4.70**	**66582**	**58503**	**-12.13**	**181923**	**161632**	**-11.15**	**3.37**
	Individual Single Premium	73.20	67.73	-7.47	207.08	232.62	12.33	4.69	3819	3976	4.11	9940	11940	20.12	4.63
	Individual Non-Single Premium	565.38	536.73	-5.07	1614.82	1258.78	-22.05	11.63	62698	54410	-13.22	171867	149473	-13.03	3.30
	Group Single Premium	11.02	69.65	532.13	32.32	136.88	323.51	0.69	3	7	133.33	4	29	625.00	9.54
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	19.09	37.88	98.43	119.63	96.62	-19.24	13.49	62	110	77.42	112	190	69.64	3.72
13	**IDBI Federal Life**	**73.17**	**47.99**	**-34.41**	**162.54**	**121.88**	**-25.02**	**0.33**	**11133**	**7710**	**-30.75**	**25858**	**17530**	**-32.21**	**0.37**
	Individual Single Premium	25.66	12.01	-53.20	56.35	41.84	-25.74	0.84	1351	477	-64.69	3056	2062	-32.53	0.80
	Individual Non-Single Premium	36.74	29.82	-18.82	86.57	62.21	-28.14	0.57	9780	7233	-26.04	22799	15468	-32.15	0.34
	Group Single Premium	7.03	6.05	-13.98	15.37	17.46	13.61	0.09	1	0	-100.00	2	0	-100.00	0.00
	Group Non-Single Premium	0.07	0.10	54.02	0.23	0.37	59.71	0.14	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	3.67	0.00	-100.00	4.02	0.00	-100.00	0.00	1	0	-100.00	1	0	-100.00	0.00
14	**India First Life**	**66.86**	**256.76**	**284.03**	**229.80**	**387.25**	**68.52**	**1.05**	**12579**	**14454**	**14.91**	**27681**	**30169**	**8.99**	**0.63**
	Individual Single Premium	2.90	2.08	-28.34	4.22	5.59	32.52	0.11	499	2428	386.57	754	4003	430.90	1.55
	Individual Non-Single Premium	42.89	42.35	-1.25	99.81	99.73	-0.08	0.92	12080	12010	-0.58	26894	26133	-2.83	0.58
	Group Single Premium	20.47	212.32	937.44	125.16	281.92	125.25	1.41	0	16	NA	33	33	0.00	10.86
	Group Non-Single Premium	0.00	0.01	NA	0.00	0.01	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	0.61	0.00	-100.00	0.61	0.00	-100.00	0.00	0	0	NA	0	0	NA	0.00
15	**Kotak Mahindra Old Mutual Lif**	**195.63**	**270.81**	**38.43**	**482.18**	**659.11**	**36.70**	**1.79**	**21893**	**20993**	**-4.11**	**45306**	**43357**	**-4.30**	**0.90**
	Individual Single Premium	14.79	19.87	34.30	60.77	78.08	28.48	1.58	3844	3390	-11.81	7652	6139	-19.77	2.38
	Individual Non-Single Premium	79.57	81.96	3.01	179.61	199.77	11.22	1.85	18006	17543	-2.57	37554	36997	-1.48	0.82
	Group Single Premium	79.79	72.50	-9.14	157.63	221.84	40.74	1.11	15	8	-46.67	25	25	0.00	8.22
	Group Non-Single Premium	1.50	1.57	4.77	3.79	7.31	92.65	2.82	2	3	50.00	8	9	12.50	1.27
	Group Yearly Renewable Premium	19.97	94.91	375.16	80.38	152.12	89.25	21.24	26	49	88.46	67	187	179.10	3.66
16	**Max Life**	**308.76**	**364.22**	**17.96**	**663.90**	**765.38**	**15.29**	**2.08**	**45426**	**48301**	**6.33**	**97690**	**103668**	**6.12**	**2.16**
	Individual Single Premium	67.13	74.55	11.07	148.06	166.94	12.75	3.37	63	99	57.14	138	218	57.97	0.08
	Individual Non-Single Premium	210.69	252.84	20.01	442.77	508.92	14.94	4.70	45336	48131	6.17	97376	103105	5.88	2.28
	Group Single Premium	29.00	28.56	-1.52	63.64	63.41	-0.36	0.32	4	10	150.00	26	55	111.54	18.09
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	1.95	8.26	323.23	9.43	26.11	176.95	3.64	23	61	165.22	150	290	93.33	5.67
17	**PNB Met Life**	**96.37**	**114.75**	**19.07**	**230.26**	**267.89**	**16.34**	**0.73**	**16098**	**15832**	**-1.65**	**40023**	**37678**	**-5.86**	**0.79**
	Individual Single Premium	6.43	2.84	-55.79	9.06	7.67	-15.40	0.15	78	98	25.64	156	257	64.74	0.10
	Individual Non-Single Premium	79.32	97.59	23.03	190.54	223.76	17.43	2.07	16012	15720	-1.82	39845	37379	-6.19	0.82
	Group Single Premium	9.08	11.38	25.40	20.67	28.07	35.82	0.14	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	0.01	0.13	1133.56	0.44	0.36	-18.98	0.14	8	14	75.00	22	42	90.91	5.92
	Group Yearly Renewable Premium	1.53	2.79	82.89	9.55	8.03	-15.92	1.12	0	0	NA	0	0	NA	0.00
18	**Reliance Nippon Life**	**71.16**	**71.71**	**0.78**	**182.84**	**207.33**	**13.39**	**0.56**	**17970**	**18020**	**0.28**	**46809**	**47924**	**2.38**	**1.00**
	Individual Single Premium	1.49	2.40	61.41	4.83	6.43	33.10	0.13	61	108	77.05	204	264	29.41	0.10
	Individual Non-Single Premium	53.99	62.71	16.16	137.84	170.17	23.45	1.57	17895	17907	0.07	46569	47643	2.31	1.05
	Group Single Premium	2.55	0.92	-63.89	6.17	5.12	-16.97	0.03	2	0	-100.00	2	1	-50.00	0.33
	Group Non-Single Premium	9.07	4.42	-51.26	26.08	20.99	-19.51	8.09	5	1	-80.00	13	4	-69.23	0.56

	Group Yearly Renewable Premium	4.06	1.26	-69.08	7.91	4.61	-41.76	0.64	7	4	-42.86	21	12	-42.86	0.23
19	**Sahara Life**	**1.82**	**0.01**	**-99.59**	**3.35**	**0.04**	**-98.95**	**0.00**	**970**	**0**	**-100.00**	**1635**	**0**	**-100.00**	**0.00**
	Individual Single Premium	1.10	0.00	-100.00	1.98	0.00	-100.00	0.00	223	0	-100.00	374	0	-100.00	0.00
	Individual Non-Single Premium	0.72	0.01	-98.98	1.37	0.04	-97.43	0.00	747	0	-100.00	1261	0	-100.00	0.00
	Group Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
20	**SBI Life**	**805.55**	**1022.35**	**26.91**	**1798.29**	**2074.61**	**15.37**	**5.65**	**99846**	**93808**	**-6.05**	**231274**	**228302**	**-1.29**	**4.76**
	Individual Single Premium	50.48	61.04	20.92	119.26	134.26	12.58	2.71	1546	1592	2.98	4625	3876	-16.19	1.50
	Individual Non-Single Premium	491.48	530.52	7.94	1095.96	1190.18	8.60	11.00	98235	92177	-6.17	226430	224299	-0.94	4.95
	Group Single Premium	244.01	424.58	74.00	508.94	732.41	43.91	3.67	6	3	-50.00	16	14	-12.50	4.61
	Group Non-Single Premium	13.63	1.13	-91.71	37.40	1.76	-95.28	0.68	0	0	NA	6	0	-100.00	0.00
	Group Yearly Renewable Premium	5.96	5.08	-14.79	36.73	16.00	-56.45	2.23	59	36	-38.98	197	113	-42.64	2.21
21	**Shriram Life**	**82.66**	**75.76**	**-8.35**	**178.02**	**158.23**	**-11.12**	**0.43**	**19987**	**28157**	**40.88**	**43182**	**61288**	**41.93**	**1.28**
	Individual Single Premium	4.54	3.71	-18.22	11.18	7.10	-36.55	0.14	259	234	-9.65	669	463	-30.79	0.18
	Individual Non-Single Premium	39.88	43.18	8.27	79.16	83.62	5.64	0.77	19689	27921	41.81	42452	60818	43.26	1.34
	Group Single Premium	25.03	25.31	1.12	63.99	57.18	-10.65	0.29	4	0	-100.00	6	0	-100.00	0.00
	Group Non-Single Premium	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	13.21	3.56	-73.06	23.69	10.33	-56.39	1.44	35	2	-94.29	55	7	-87.27	0.14
22	**Star Union-Diachi Life**	**52.96**	**35.60**	**-32.78**	**99.77**	**81.40**	**-18.41**	**0.22**	**9802**	**5940**	**-39.40**	**18774**	**14560**	**-22.45**	**0.30**
	Individual Single Premium	4.70	3.17	-32.62	11.77	8.29	-29.57	0.17	172	70	-59.30	377	255	-32.36	0.10
	Individual Non-Single Premium	42.40	28.20	-33.49	76.03	61.98	-18.49	0.57	9629	5869	-39.05	18391	14303	-22.23	0.32
	Group Single Premium	2.60	3.92	50.91	5.25	9.64	83.64	0.05	0	0	NA	0	0	NA	0.00
	Group Non-Single Premium	0.10	0.23	136.47	0.15	0.52	248.35	0.20	0	0	NA	0	0	NA	0.00
	Group Yearly Renewable Premium	3.16	0.08	-97.59	6.56	0.97	-85.25	0.14	1	1	0.00	6	2	-66.67	0.04
23	**Tata AIA Life**	**89.19**	**136.10**	**52.59**	**206.06**	**288.67**	**40.09**	**0.79**	**14254**	**22284**	**56.34**	**32387**	**44318**	**36.84**	**0.92**
	Individual Single Premium	0.22	0.41	85.53	0.88	1.18	33.91	0.02	10	23	130.00	36	50	38.89	0.02
	Individual Non-Single Premium	85.71	132.97	55.15	193.93	264.97	36.63	2.45	14240	22248	56.24	32310	44223	36.87	0.98
	Group Single Premium	0.00	0.22	24260.17	0.00	0.22	-16940.19	0.00	0	2	NA	0	2	NA	0.66
	Group Non-Single Premium	3.24	2.48	-23.40	11.13	22.17	99.21	8.54	4	8	100.00	38	35	-7.89	4.93
	Group Yearly Renewable Premium	0.02	0.01	-56.24	0.12	0.12	1.12	0.02	0	3	NA	3	8	166.67	0.16
	Private Total	**4015.65**	**5443.75**	**35.56**	**9872.06**	**12001.82**	**21.57**	**32.68**	**511473**	**516587**	**1.00**	**1217371**	**1244594**	**2.24**	**25.95**
	Individual Single Premium	319.70	450.18	40.81	795.85	1231.62	54.76	24.86	13522	16840	24.54	34708	43481	25.28	16.86
	Individual Non-Single Premium	2399.81	2602.02	8.43	5760.68	5982.04	3.84	55.27	497390	499164	0.36	1181140	1199306	1.54	26.46
	Group Single Premium	1085.38	2069.24	90.65	2652.84	4020.47	51.55	20.13	149	90	-39.60	383	256	-33.16	84.21
	Group Non-Single Premium	34.16	22.36	-34.54	126.25	90.29	-28.48	34.79	53	39	-26.42	171	146	-14.62	20.56
	Group Yearly Renewable Premium	176.61	299.94	69.84	536.44	677.40	26.28	94.58	359	454	26.46	969	1405	44.99	27.48
24	**LIC**	**10450.47**	**11167.82**	**6.86**	**23284.10**	**24727.97**	**6.20**	**67.32**	**1541675**	**1451330**	**-5.86**	**3665949**	**3551298**	**-3.13**	**74.05**
	Individual Single Premium	1906.29	1433.72	-24.79	3803.92	3723.12	-2.12	75.14	93063	83649	-10.12	198035	214461	8.29	83.14
	Individual Non-Single Premium	1922.69	1942.80	1.05	4497.14	4840.39	7.63	44.73	1445036	1365868	-5.48	3461702	3332518	-3.73	73.54
	Group Single Premium	6357.20	7743.26	21.80	14463.99	15956.37	10.32	79.87	122	28	-77.05	157	48	-69.43	15.79
	Group Non-Single Premium	225.58	37.32	-83.45	448.99	169.25	-62.30	65.21	361	244	-32.41	674	564	-16.32	79.44
	Group Yearly Renewable Premium	38.71	10.71	-72.32	70.07	38.84	-44.57	5.42	3093	1541	-50.18	5381	3707	-31.11	72.52
	Grand Total	**14466.13**	**16611.57**	**14.83**	**33156.16**	**36729.79**	**10.78**	**100.00**	**2053148**	**1967917**	**-4.15**	**4883320**	**4795892**	**-1.79**	**100.00**
	Individual Single Premium	2226.00	1883.90	-15.37	4599.77	4954.74	7.72	100.00	106585	100489	-5.72	232743	257942	10.83	100.00
	Individual Non-Single Premium	4322.49	4544.82	5.14	10257.82	10822.44	5.50	100.00	1942426	1865032	-3.98	4642842	4531824	-2.39	100.00
	Group Single Premium	7442.59	9812.51	31.84	17116.83	19976.84	16.71	100.00	271	118	-56.46	540	304	-43.70	100.00
	Group Non-Single Premium	259.74	59.68	-77.02	575.23	259.54	-54.88	100.00	414	283	-31.64	845	710	-15.98	100.00
	Group Yearly Renewable Premium	215.31	310.66	44.28	606.50	716.23	18.09	100.00	3452	1995	-42.21	6350	5112	-19.50	100.00

Note: 1.Cumulative premium upto the month is net of cancellations which may occur during the free look period.
2. Compiled on the basis of data submitted by the Insurance companies

३० जून २०१८ माह जीवन बीमा कंपनियोंका प्रथम वार्षिक प्रीमियम

(Premium in Rs.Crore)

Sl No.	Insurer	Premium							No. of Policies / Schemes						
		जून २०१७ माह के लिये	जून २०१८ माह के लिये	वृद्धि दर %	३० जून २०१७ तक	३० जून २०१८ तक	वृद्धि दर %	मार्केट शेयर %	जून २०१७ माह के लिये	जून २०१८ माह के लिये	वृद्धि दर %	३० जून २०१७ तक	३० जून २०१८ तक	वृद्धि दर %	मार्केट शेयर %
1	**आदित्य बिरला सन लाइफ**	**179.32**	**354.66**	**97.78**	**420.01**	**641.09**	**52.64**	**1.75**	**24182**	**24214**	**0.13**	**51259**	**49590**	**-3.26**	**1.03**
	एकल प्रीमियम (व्यक्तिगत)	2.39	8.33	247.75	7.62	23.37	206.56	0.47	76	228	200.00	234	710	203.42	0.28
	नियमितप्रीमियम (व्यक्तिगत)	80.60	112.86	40.03	161.55	224.81	39.15	2.08	24045	23908	-0.57	50863	48630	-4.39	1.07
	एकल प्रीमियम (समूहबीमा)	91.43	219.82	140.42	224.69	355.41	58.18	1.78	6	9	50.00	13	18	38.46	5.92
	नियमितप्रीमियम(समूहबीमा)	0.60	9.38	1452.47	7.93	19.80	149.55	7.63	10	1	-90.00	11	1	-90.91	0.14
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	4.30	4.28	-0.37	18.20	17.71	-2.73	2.47	45	68	51.11	138	231	67.39	4.52
2	**एईगॉन लाइफ**	**10.68**	**6.98**	**-34.63**	**21.08**	**20.59**	**-2.32**	**0.06**	**3984**	**3590**	**-9.89**	**10743**	**10398**	**-3.21**	**0.22**
	एकल प्रीमियम (व्यक्तिगत)	0.40	0.14	-65.51	0.60	0.30	-50.08	0.01	15	262	1646.67	27	488	1707.41	0.19
	नियमितप्रीमियम (व्यक्तिगत)	10.28	6.56	-36.18	20.48	17.00	-16.99	0.16	3968	3322	-16.28	10715	9891	-7.69	0.22
	एकल प्रीमियम (समूहबीमा)	0.00	0.00	NA	0.00	0.39	NA	0.00	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	0.01	0.00	-100.00	0.01	0.00	-100.00	0.00	1	0	-100.00	1	0	-100.00	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.00	0.29	NA	0.00	2.90	NA	0.41	0	6	NA	0	19	NA	0.37
3	**अवीवा लाइफ**	**19.33**	**20.36**	**5.33**	**39.79**	**52.49**	**31.91**	**0.14**	**2215**	**2705**	**22.12**	**6892**	**5813**	**-15.66**	**0.12**
	एकल प्रीमियम (व्यक्तिगत)	0.35	0.49	41.43	1.18	1.49	25.92	0.03	76	20	-73.68	2012	108	-94.63	0.04
	नियमितप्रीमियम (व्यक्तिगत)	12.04	14.29	18.66	25.34	30.32	19.69	0.28	2131	2674	25.48	4844	5667	16.99	0.13
	एकल प्रीमियम (समूहबीमा)	0.26	0.43	67.42	0.38	1.26	228.16	0.01	1	2	100.00	2	2	0.00	0.66
	नियमितप्रीमियम(समूहबीमा)	0.07	0.31	335.76	0.09	0.77	757.98	0.30	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	6.61	4.84	-26.74	12.80	18.65	45.66	2.60	7	9	28.57	34	36	5.88	0.70
4	**बजाज आल्लियांज़ लाइफ**	**222.12**	**309.81**	**39.48**	**682.20**	**720.39**	**5.60**	**1.96**	**20053**	**21308**	**6.26**	**67971**	**59205**	**-12.90**	**1.23**
	एकल प्रीमियम (व्यक्तिगत)	5.07	4.50	-11.11	15.30	14.34	-6.29	0.29	170	180	5.88	567	609	7.41	0.24
	नियमितप्रीमियम (व्यक्तिगत)	87.05	103.39	18.76	276.36	281.37	1.81	2.60	19870	21121	6.30	67362	58581	-13.04	1.29
	एकल प्रीमियम (समूहबीमा)	101.15	185.89	83.78	299.54	356.83	19.13	1.79	7	4	-42.86	16	7	-56.25	2.30
	नियमितप्रीमियम(समूहबीमा)	0.45	0.00	-99.44	0.85	0.67	-20.98	0.26	0	0	NA	1	0	-100.00	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	28.40	16.04	-43.55	90.15	67.18	-25.47	9.38	6	3	-50.00	25	8	-68.00	0.16
5	**भारती आक्सा लाइफ**	**50.58**	**67.45**	**33.37**	**110.16**	**174.37**	**58.29**	**0.47**	**7777**	**11408**	**46.69**	**16225**	**27402**	**68.89**	**0.57**
	एकल प्रीमियम (व्यक्तिगत)	0.67	2.29	240.36	1.58	8.67	447.91	0.17	13	24	84.62	44	64	45.45	0.02
	नियमितप्रीमियम (व्यक्तिगत)	30.31	41.61	37.29	61.37	101.94	66.10	0.94	7763	11384	46.64	16180	27338	68.96	0.60
	एकल प्रीमियम (समूहबीमा)	19.60	23.55	20.19	47.20	63.76	35.08	0.32	1	0	-100.00	1	0	-100.00	0.00
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
6	**केनेरा एचएसबीसी ओबीसी लाइफ**	**106.73**	**190.93**	**78.89**	**212.92**	**280.29**	**31.64**	**0.76**	**8949**	**8747**	**-2.26**	**17597**	**17281**	**-1.80**	**0.36**
	एकल प्रीमियम (व्यक्तिगत)	0.43	0.98	129.25	1.51	2.51	66.13	0.05	14	25	78.57	31	51	64.52	0.02
	नियमितप्रीमियम (व्यक्तिगत)	63.66	65.33	2.62	125.76	137.38	9.24	1.27	8932	8719	-2.38	17552	17226	-1.86	0.38
	एकल प्रीमियम (समूहबीमा)	7.50	73.74	882.96	50.16	88.44	76.31	0.44	0	0	NA	7	1	-85.71	0.33
	नियमितप्रीमियम(समूहबीमा)	0.43	0.33	-23.08	0.76	1.05	37.10	0.40	0	0	NA	2	0	-100.00	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	34.72	50.55	45.63	34.72	50.91	46.62	7.11	3	3	0.00	5	3	-40.00	0.06
7	**डीएचएफएल प्रामेरिका लाइफ**	**131.51**	**138.27**	**5.14**	**293.29**	**375.10**	**27.89**	**1.02**	**6938**	**8358**	**20.47**	**15401**	**19496**	**26.59**	**0.41**
	एकल प्रीमियम (व्यक्तिगत)	3.11	1.90	-38.88	6.72	6.75	0.37	0.14	86	148	72.09	273	562	105.86	0.22
	नियमितप्रीमियम (व्यक्तिगत)	22.35	32.25	44.30	55.49	81.78	47.37	0.76	6774	8135	20.09	14933	18729	25.42	0.41
	एकल प्रीमियम (समूहबीमा)	106.05	68.73	-35.19	231.07	184.69	-20.07	0.92	78	0	-100.00	195	0	-100.00	0.00
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.00	35.39	NA	0.00	101.88	NA	14.22	0	75	NA	0	205	NA	4.01
8	**एडेलवेइस्स टोकिओ लाइफ**	**14.55**	**30.19**	**107.43**	**39.13**	**70.17**	**79.36**	**0.19**	**3366**	**5445**	**61.76**	**7502**	**13463**	**79.46**	**0.28**
	एकल प्रीमियम (व्यक्तिगत)	0.69	1.35	95.60	3.29	3.85	17.10	0.08	29	48	65.52	532	2157	305.45	0.84
	नियमितप्रीमियम (व्यक्तिगत)	10.46	23.17	121.56	24.34	47.54	95.30	0.44	3329	5396	62.09	6946	11291	62.55	0.25
	एकल प्रीमियम (समूहबीमा)	2.27	4.79	110.84	4.21	9.34	121.84	0.05	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	0.00	0.62	NA	0.05	0.72	1341.69	0.28	0	0	NA	1	0	-100.00	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	1.14	0.26	-77.02	7.24	8.73	20.58	1.22	8	1	-87.50	23	15	-34.78	0.29
9	**एक्साइड लाइफ**	**54.75**	**56.58**	**3.34**	**145.95**	**156.71**	**7.38**	**0.43**	**15702**	**14712**	**-6.30**	**37194**	**37542**	**0.94**	**0.78**

	एकल प्रीमियम (व्यक्तिगत)	1.96	1.64	-16.27	7.32	8.60	17.53	0.17	50	28	-44.00	126	109	-13.49	0.04
	नियमितप्रीमियम (व्यक्तिगत)	44.30	49.67	12.12	105.18	128.29	21.97	1.19	15629	14672	-6.12	37000	37378	1.02	0.82
	एकल प्रीमियम (समूहबीमा)	0.02	0.04	75.97	0.06	0.16	144.07	0.00	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	2.98	1.63	-45.11	25.65	13.79	-46.24	5.31	23	12	-47.83	68	55	-19.12	7.75
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	5.49	3.59	-34.55	7.73	5.88	-23.96	0.82	0	0	NA	0	0	NA	0.00
10	**फ्यूचर जनराली लाइफ**	**27.95**	**37.75**	**35.09**	**77.90**	**96.33**	**23.66**	**0.26**	**4272**	**4608**	**7.87**	**10036**	**11313**	**12.72**	**0.24**
	एकल प्रीमियम (व्यक्तिगत)	0.71	0.52	-26.46	1.81	0.84	-53.63	0.02	59	26	-55.93	363	54	-85.12	0.02
	नियमितप्रीमियम (व्यक्तिगत)	11.60	17.09	47.25	31.17	43.02	38.02	0.40	4205	4576	8.82	9655	11243	16.45	0.25
	एकल प्रीमियम (समूहबीमा)	4.04	4.98	23.38	7.79	11.73	50.61	0.06	3	5	66.67	5	5	0.00	1.64
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	11.59	15.16	30.78	37.13	40.74	9.72	5.69	5	1	-80.00	13	11	-15.38	0.22
11	**एचडीएफसी स्टांदर्द लाइफ**	**685.31**	**1122.71**	**63.82**	**1618.78**	**2677.59**	**65.41**	**7.29**	**77495**	**77490**	**-0.01**	**184009**	**202665**	**10.14**	**4.23**
	एकल प्रीमियम (व्यक्तिगत)	51.29	178.22	247.45	113.46	470.91	315.06	9.50	1009	3356	232.61	2518	9042	259.09	3.51
	नियमितप्रीमियम (व्यक्तिगत)	298.38	296.91	-0.49	675.22	764.47	13.22	7.06	76397	74088	-3.02	181342	193491	6.70	4.27
	एकल प्रीमियम (समूहबीमा)	322.50	631.86	95.93	788.59	1394.30	76.81	6.98	18	24	33.33	30	64	113.33	21.05
	नियमितप्रीमियम(समूहबीमा)	2.01	0.00	-100.00	11.68	0.00	-100.00	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	11.13	15.72	41.28	29.83	47.91	60.63	6.69	71	22	-69.01	119	68	-42.86	1.33
12	**आइ सी आइ सी आइ प्रूडेन्शियल लाइफ**	**668.69**	**711.99**	**6.48**	**1973.85**	**1724.90**	**-12.61**	**4.70**	**66582**	**58503**	**-12.13**	**181923**	**161632**	**-11.15**	**3.37**
	एकल प्रीमियम (व्यक्तिगत)	73.20	67.73	-7.47	207.08	232.62	12.33	4.69	3819	3976	4.11	9940	11940	20.12	4.63
	नियमितप्रीमियम (व्यक्तिगत)	565.38	536.73	-5.07	1614.82	1258.78	-22.05	11.63	62698	54410	-13.22	171867	149473	-13.03	3.30
	एकल प्रीमियम (समूहबीमा)	11.02	69.65	532.13	32.32	136.88	323.51	0.69	3	7	133.33	4	29	625.00	9.54
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	19.09	37.88	98.43	119.63	96.62	-19.24	13.49	62	110	77.42	112	190	69.64	3.72
13	**आइ डी बी आइ फेडरल लाइफ**	**73.17**	**47.99**	**-34.41**	**162.54**	**121.88**	**-25.02**	**0.33**	**11133**	**7710**	**-30.75**	**25858**	**17530**	**-32.21**	**0.37**
	एकल प्रीमियम (व्यक्तिगत)	25.66	12.01	-53.20	56.35	41.84	-25.74	0.84	1351	477	-64.69	3056	2062	-32.53	0.80
	नियमितप्रीमियम (व्यक्तिगत)	36.74	29.82	-18.82	86.57	62.21	-28.14	0.57	9780	7233	-26.04	22799	15468	-32.15	0.34
	एकल प्रीमियम (समूहबीमा)	7.03	6.05	-13.98	15.37	17.46	13.61	0.09	1	0	-100.00	2	0	-100.00	0.00
	नियमितप्रीमियम(समूहबीमा)	0.07	0.10	54.02	0.23	0.37	59.71	0.14	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	3.67	0.00	-100.00	4.02	0.00	-100.00	0.00	1	0	-100.00	1	0	-100.00	0.00
14	**इंडिया फर्स्ट लाइफ**	**66.86**	**256.76**	**284.03**	**229.80**	**387.25**	**68.52**	**1.05**	**12579**	**14454**	**14.91**	**27681**	**30169**	**8.99**	**0.63**
	एकल प्रीमियम (व्यक्तिगत)	2.90	2.08	-28.34	4.22	5.59	32.52	0.11	499	2428	386.57	754	4003	430.90	1.55
	नियमितप्रीमियम (व्यक्तिगत)	42.89	42.35	-1.25	99.81	99.73	-0.08	0.92	12080	12010	-0.58	26894	26133	-2.83	0.58
	एकल प्रीमियम (समूहबीमा)	20.47	212.32	937.44	125.16	281.92	125.25	1.41	0	16	NA	33	33	0.00	10.86
	नियमितप्रीमियम(समूहबीमा)	0.00	0.01	NA	0.00	0.01	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.61	0.00	-100.00	0.61	0.00	-100.00	0.00	0	0	NA	0	0	NA	0.00
15	**कोटक महिन्द्रा लाइफ**	**195.63**	**270.81**	**38.43**	**482.18**	**659.11**	**36.70**	**1.79**	**21893**	**20993**	**-4.11**	**45306**	**43357**	**-4.30**	**0.90**
	एकल प्रीमियम (व्यक्तिगत)	14.79	19.87	34.30	60.77	78.08	28.48	1.58	3844	3390	-11.81	7652	6139	-19.77	2.38
	नियमितप्रीमियम (व्यक्तिगत)	79.57	81.96	3.01	179.61	199.77	11.22	1.85	18006	17543	-2.57	37554	36997	-1.48	0.82
	एकल प्रीमियम (समूहबीमा)	79.79	72.50	-9.14	157.63	221.84	40.74	1.11	15	8	-46.67	25	25	0.00	8.22
	नियमितप्रीमियम(समूहबीमा)	1.50	1.57	4.77	3.79	7.31	92.65	2.82	2	3	50.00	8	9	12.50	1.27
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	19.97	94.91	375.16	80.38	152.12	89.25	21.24	26	49	88.46	67	187	179.10	3.66
16	**मॅक्स लाइफ**	**308.76**	**364.22**	**17.96**	**663.90**	**765.38**	**15.29**	**2.08**	**45426**	**48301**	**6.33**	**97690**	**103668**	**6.12**	**2.16**
	एकल प्रीमियम (व्यक्तिगत)	67.13	74.55	11.07	148.06	166.94	12.75	3.37	63	99	57.14	138	218	57.97	0.08
	नियमितप्रीमियम (व्यक्तिगत)	210.69	252.84	20.01	442.77	508.92	14.94	4.70	45336	48131	6.17	97376	103105	5.88	2.28
	एकल प्रीमियम (समूहबीमा)	29.00	28.56	-1.52	63.64	63.41	-0.36	0.32	4	10	150.00	26	55	111.54	18.09
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	1.95	8.26	323.23	9.43	26.11	176.95	3.64	23	61	165.22	150	290	93.33	5.67
17	**पी एन बी मेट लाइफ**	**96.37**	**114.75**	**19.07**	**230.26**	**267.89**	**16.34**	**0.73**	**16098**	**15832**	**-1.65**	**40023**	**37678**	**-5.86**	**0.79**
	एकल प्रीमियम (व्यक्तिगत)	6.43	2.84	-55.79	9.06	7.67	-15.40	0.15	78	98	25.64	156	257	64.74	0.10
	नियमितप्रीमियम (व्यक्तिगत)	79.32	97.59	23.03	190.54	223.76	17.43	2.07	16012	15720	-1.82	39845	37379	-6.19	0.82
	एकल प्रीमियम (समूहबीमा)	9.08	11.38	25.40	20.67	28.07	35.82	0.14	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	0.01	0.13	1133.56	0.44	0.36	-18.98	0.14	8	14	75.00	22	42	90.91	5.92
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	1.53	2.79	82.89	9.55	8.03	-15.92	1.12	0	0	NA	0	0	NA	0.00
18	**रिलायंस निप्पॉन लाइफ**	**71.16**	**71.71**	**0.78**	**182.84**	**207.33**	**13.39**	**0.56**	**17970**	**18020**	**0.28**	**46809**	**47924**	**2.38**	**1.00**
	एकल प्रीमियम (व्यक्तिगत)	1.49	2.40	61.41	4.83	6.43	33.10	0.13	61	108	77.05	204	264	29.41	0.10

	नियमितप्रीमियम (व्यक्तिगत)	53.99	62.71	16.16	137.84	170.17	23.45	1.57	17895	17907	0.07	46569	47643	2.31	1.05
	एकल प्रीमियम (समूहबीमा)	2.55	0.92	-63.89	6.17	5.12	-16.97	0.03	2	0	-100.00	2	1	-50.00	0.33
	नियमितप्रीमियम(समूहबीमा)	9.07	4.42	-51.26	26.08	20.99	-19.51	8.09	5	1	-80.00	13	4	-69.23	0.56
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	4.06	1.26	-69.08	7.91	4.61	-41.76	0.64	7	4	-42.86	21	12	-42.86	0.23
19	**सहारा लाइफ**	**1.82**	**0.01**	**-99.59**	**3.35**	**0.04**	**-98.95**	**0.00**	**970**	**0**	**-100.00**	**1635**	**0**	**-100.00**	**0.00**
	एकल प्रीमियम (व्यक्तिगत)	1.10	0.00	-100.00	1.98	0.00	-100.00	0.00	223	0	-100.00	374	0	-100.00	0.00
	नियमितप्रीमियम (व्यक्तिगत)	0.72	0.01	-98.98	1.37	0.04	-97.43	0.00	747	0	-100.00	1261	0	-100.00	0.00
	एकल प्रीमियम (समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
20	**एस बी आइ लाइफ**	**805.55**	**1022.35**	**26.91**	**1798.29**	**2074.61**	**15.37**	**5.65**	**99846**	**93808**	**-6.05**	**231274**	**228302**	**-1.29**	**4.76**
	एकल प्रीमियम (व्यक्तिगत)	50.48	61.04	20.92	119.26	134.26	12.58	2.71	1546	1592	2.98	4625	3876	-16.19	1.50
	नियमितप्रीमियम (व्यक्तिगत)	491.48	530.52	7.94	1095.96	1190.18	8.60	11.00	98235	92177	-6.17	226430	224299	-0.94	4.95
	एकल प्रीमियम (समूहबीमा)	244.01	424.58	74.00	508.94	732.41	43.91	3.67	6	3	-50.00	16	14	-12.50	4.61
	नियमितप्रीमियम(समूहबीमा)	13.63	1.13	-91.71	37.40	1.76	-95.28	0.68	0	0	NA	6	0	-100.00	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	5.96	5.08	-14.79	36.73	16.00	-56.45	2.23	59	36	-38.98	197	113	-42.64	2.21
21	**श्रीराम लाइफ**	**82.66**	**75.76**	**-8.35**	**178.02**	**158.23**	**-11.12**	**0.43**	**19987**	**28157**	**40.88**	**43182**	**61288**	**41.93**	**1.28**
	एकल प्रीमियम (व्यक्तिगत)	4.54	3.71	-18.22	11.18	7.10	-36.55	0.14	259	234	-9.65	669	463	-30.79	0.18
	नियमितप्रीमियम (व्यक्तिगत)	39.88	43.18	8.27	79.16	83.62	5.64	0.77	19689	27921	41.81	42452	60818	43.26	1.34
	एकल प्रीमियम (समूहबीमा)	25.03	25.31	1.12	63.99	57.18	-10.65	0.29	4	0	-100.00	6	0	-100.00	0.00
	नियमितप्रीमियम(समूहबीमा)	0.00	0.00	NA	0.00	0.00	NA	0.00	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	13.21	3.56	-73.06	23.69	10.33	-56.39	1.44	35	2	-94.29	55	7	-87.27	0.14
22	**स्टार यूनियन दाई ईछी लाइफ**	**52.96**	**35.60**	**-32.78**	**99.77**	**81.40**	**-18.41**	**0.22**	**9802**	**5940**	**-39.40**	**18774**	**14560**	**-22.45**	**0.30**
	एकल प्रीमियम (व्यक्तिगत)	4.70	3.17	-32.62	11.77	8.29	-29.57	0.17	172	70	-59.30	377	255	-32.36	0.10
	नियमितप्रीमियम (व्यक्तिगत)	42.40	28.20	-33.49	76.03	61.98	-18.49	0.57	9629	5869	-39.05	18391	14303	-22.23	0.32
	एकल प्रीमियम (समूहबीमा)	2.60	3.92	50.91	5.25	9.64	83.64	0.05	0	0	NA	0	0	NA	0.00
	नियमितप्रीमियम(समूहबीमा)	0.10	0.23	136.47	0.15	0.52	248.35	0.20	0	0	NA	0	0	NA	0.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	3.16	0.08	-97.59	6.56	0.97	-85.25	0.14	1	1	0.00	6	2	-66.67	0.04
23	**टाटा ए आइ ए लाइफ**	**89.19**	**136.10**	**52.59**	**206.06**	**288.67**	**40.09**	**0.79**	**14254**	**22284**	**56.34**	**32387**	**44318**	**36.84**	**0.92**
	एकल प्रीमियम (व्यक्तिगत)	0.22	0.41	85.53	0.88	1.18	33.91	0.02	10	23	130.00	36	50	38.89	0.02
	नियमितप्रीमियम (व्यक्तिगत)	85.71	132.97	55.15	193.93	264.97	36.63	2.45	14240	22248	56.24	32310	44223	36.87	0.98
	एकल प्रीमियम (समूहबीमा)	0.00	0.22	24260.17	0.00	0.22	-16940.19	0.00	0	2	NA	0	2	NA	0.66
	नियमितप्रीमियम(समूहबीमा)	3.24	2.48	-23.40	11.13	22.17	99.21	8.54	4	8	100.00	38	35	-7.89	4.93
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	0.02	0.01	-56.24	0.12	0.12	1.12	0.02	0	3	NA	3	8	166.67	0.16
	निजी कुल	**4015.65**	**5443.75**	**35.56**	**9872.06**	**12001.82**	**21.57**	**32.68**	**511473**	**516587**	**1.00**	**1217371**	**1244594**	**2.24**	**25.95**
	एकल प्रीमियम (व्यक्तिगत)	319.70	450.18	40.81	795.85	1231.62	54.76	24.86	13522	16840	24.54	34708	43481	25.28	16.86
	नियमितप्रीमियम (व्यक्तिगत)	2399.81	2602.02	8.43	5760.68	5982.04	3.84	55.27	497390	499164	0.36	1181140	1199306	1.54	26.46
	एकल प्रीमियम (समूहबीमा)	1085.38	2069.24	90.65	2652.84	4020.47	51.55	20.13	149	90	-39.60	383	256	-33.16	84.21
	नियमितप्रीमियम(समूहबीमा)	34.16	22.36	-34.54	126.25	90.29	-28.48	34.79	53	39	-26.42	171	146	-14.62	20.56
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	176.61	299.94	69.84	536.44	677.40	26.28	94.58	359	454	26.46	969	1405	44.99	27.48
24	**एल आइ सी**	**10450.47**	**11167.82**	**6.86**	**23284.10**	**24727.97**	**6.20**	**67.32**	**1541675**	**1451330**	**-5.86**	**3665949**	**3551298**	**-3.13**	**74.05**
	एकल प्रीमियम (व्यक्तिगत)	1906.29	1433.72	-24.79	3803.92	3723.12	-2.12	75.14	93063	83649	-10.12	198035	214461	8.29	83.14
	नियमितप्रीमियम (व्यक्तिगत)	1922.69	1942.80	1.05	4497.14	4840.39	7.63	44.73	1445036	1365868	-5.48	3461702	3332518	-3.73	73.54
	एकल प्रीमियम (समूहबीमा)	6357.20	7743.26	21.80	14463.99	15956.37	10.32	79.87	122	28	-77.05	157	48	-69.43	15.79
	नियमितप्रीमियम(समूहबीमा)	225.58	37.32	-83.45	448.99	169.25	-62.30	65.21	361	244	-32.41	674	564	-16.32	79.44
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	38.71	10.71	-72.32	70.07	38.84	-44.57	5.42	3093	1541	-50.18	5381	3707	-31.11	72.52
	कुल योग	**14466.13**	**16611.57**	**14.83**	**33156.16**	**36729.79**	**10.78**	**100.00**	**2053148**	**1967917**	**-4.15**	**4883320**	**4795892**	**-1.79**	**100.00**
	एकल प्रीमियम (व्यक्तिगत)	2226.00	1883.90	-15.37	4599.77	4954.74	7.72	100.00	106585	100489	-5.72	232743	257942	10.83	100.00
	नियमितप्रीमियम (व्यक्तिगत)	4322.49	4544.82	5.14	10257.82	10822.44	5.50	100.00	1942426	1865032	-3.98	4642842	4531824	-2.39	100.00
	एकल प्रीमियम (समूहबीमा)	7442.59	9812.51	31.84	17116.83	19976.84	16.71	100.00	271	118	-56.46	540	304	-43.70	100.00
	नियमितप्रीमियम(समूहबीमा)	259.74	59.68	-77.02	575.23	259.54	-54.88	100.00	414	283	-31.64	845	710	-15.98	100.00
	ओ वाइआरजीटीए प्रीमियम (समूहबीमा)	215.31	310.66	44.28	606.50	716.23	18.09	100.00	3452	1995	-42.21	6350	5112	-19.50	100.00

सूचना: माह अंतकेसंचयी प्रीमियम फ्रीलुक अवधि में निरस्त पॉलिसियों के प्रीमियम घट कर दिखाया गया है

INSURANCE REGULATORY AND DEVELOPMENT AUTHORITY OF INDIA

FLASH FIGURES -- NON LIFE INSURERS (Provisional & Unaudited)

GROSS DIRECT PREMIUM UNDERWRITTEN FOR AND UPTO THE MONTH OF JUNE, 2018

(Rs. in crores)

S.No.	INSURER	For The Month of JUNE		Upto JUNE 2018		MARKET SHARE UPTO the Month Of June , 2018 (%)	GROWTH OVER THE CORRESPONDING PERIOD OF PREVIOUS YEAR (%)
		2018-19	2017-18	2018-19	2017-18		
1	Acko General Insurance Limited	3.31	NA	7.18	NA	0.02	NA
2	Bajaj Allianz General Insurance Company Limited	759.87	665.96	2,418.16	1,963.71	6.47	23.14
3	Bharti AXA General Insurance Company Limited	128.73	104.10	385.38	316.38	1.03	21.81
4	Cholamandalam MS General Insurance Company Limited	320.02	291.45	950.91	873.81	2.55	8.82
5	DHFL General Insurance Limited	34.03	NA	98.05	NA	0.26	NA
6	Edelweiss General Insurance Limited	2.38	NA	7.37	NA	0.02	NA
7	Future Generali India Insurance Company Limited	153.92	143.92	515.10	503.23	1.38	2.36
8	Go Digit General Insurance Limited	41.61	NA	102.25	NA	0.27	NA
9	HDFC Ergo General insurance Company Limited	603.27	570.46	1,691.73	1,749.71	4.53	-3.31
10	ICICI Lombard General Insurance Company Limited	1,309.00	1,174.00	3,774.00	3,321.00	10.10	13.64
11	IFFCO Tokio General Insurance Company Limited	720.53	418.42	1,618.43	1,216.18	4.33	33.07
12	Kotak Mahindra General Insurance Company Limited	20.51	14.50	49.60	35.98	0.13	37.85
13	Liberty Videocon General Insurance Company Limited	76.65	64.83	260.74	214.14	0.70	21.76
14	Magma HDI General Insurance Company Limited	65.53	38.86	171.82	110.98	0.46	54.82
15	National Insurance Company Limited	1,116.49	1,265.18	3,549.02	3,833.67	9.50	-7.43
16	Raheja QBE General Insurance Company Limited	7.14	7.10	22.32	17.46	0.06	27.84
17	Reliance General Insurance Company Limited	481.01	436.99	1,560.59	1,268.75	4.18	23.00
18	Royal Sundaram General Insurance Company Limited	232.22	211.10	749.86	658.70	2.01	13.84
19	SBI General Insurance Company Limited	236.58	201.09	1,009.26	666.13	2.70	51.51
20	Shriram General Insurance Company Limited	191.52	179.29	516.67	478.67	1.38	7.94
21	Tata AIG General Insurance Company Limited	477.50	364.28	1,585.06	1,291.60	4.24	22.72
22	The New India Assurance Company Limited	2,187.77	2,023.90	6,283.09	5,671.23	16.82	10.79
23	The Oriental Insurance Company Limited	1,104.90	946.17	3,232.04	2,759.36	8.65	17.13
24	United India Insurance Company Limited	1,139.05	1,624.29	3,611.31	4,270.76	9.67	-15.44
25	Universal Sompo General Insurance Company Limited	134.17	107.03	321.13	284.79	0.86	12.76
	General Insurers Total	**11,547.71**	**10,852.92**	**34,491.07**	**31,506.24**	**92.35**	**9.47**
26	Aditya Birla Health Insurance Company Limited	23.42	11.70	75.68	61.82	0.20	22.42
27	Apollo Munich Health Insurance Company Limited	130.04	104.40	348.98	265.26	0.93	31.56
28	Cigna TTK Health Insurance Company Limited	43.62	22.89	125.31	61.12	0.34	105.02
29	Max Bupa Health Insurance Company Limited	65.77	54.77	185.59	158.58	0.50	17.03
30	Religare Health Insurance Company Limited	111.37	78.84	332.58	230.46	0.89	44.31
31	Star Health & Allied Insurance Company Limited	336.28	249.03	909.70	673.79	2.44	35.01
	Stand-alone Pvt Health Insurers	**710.50**	**521.63**	**1,977.84**	**1,451.03**	**5.30**	**36.31**
32	Agricultural Insurance Company of India Limited	588.22	15.90	614.26	40.00	1.64	1435.65
33	Export Credit Guaranteed Corporation of India Limited	101.07	105.38	266.23	289.77	0.71	-8.12
	Specialized PSU Insurers	**689.29**	**121.28**	**880.49**	**329.77**	**2.36**	**167.00**
	GRAND TOTAL	**12,947.50**	**11,495.83**	**37,349.40**	**33,287.04**	**100.00**	**12.20**

Note: Compiled on the basis of data submitted by the Insurance companies

NA: Not Applicable

भारतीय बीमा विनियामक और विकास प्राधिकरण
फ्लैश ऑकड़े - गैर जीवन बीमाकर्ता (अनंतिम और बिना लेखा परीक्षा)'
जून, 2018 माह और तक के लिए सकल प्रत्यक्ष प्रीमियम अधिग्रहण'
(रुपये करोड़ में)

क्रम सं.	बीमाकर्ता	जून 2018 माह के लिए		जून 2018 माह तक		जून 2018 माह तक बाजार शेयर (%)	पिछले वर्ष की इसी अवधि के मुकाबले वृद्धि दर (%)
		2018-19	2017-18	2018-19	2017-18		
1	एको जनरल इंश्योरेंस लिमिटेड	3.31	अप्रयोज्य	7.18	अप्रयोज्य	0.02	अप्रयोज्य
2	बजाज अलियांज जनरल इंश्योरेंस कंपनी लिमिटेड	759.87	665.96	2,418.16	1,963.71	6.47	23.14
3	भारती एक्सा जनरल इंश्योरेंस कंपनी लिमिटेड	128.73	104.10	385.38	316.38	1.03	21.81
4	चोलामंडलम एमएस जनरल इंश्योरेंस कंपनी लिमिटेड	320.02	291.45	950.91	873.81	2.55	8.82
5	डीएचएफएल जनरल इंश्योरेंस लिमिटेड	34.03	अप्रयोज्य	98.05	अप्रयोज्य	0.26	अप्रयोज्य
6	एडलवाइज जनरल इंश्योरेंस लिमिटेड	2.38	अप्रयोज्य	7.37	अप्रयोज्य	0.02	अप्रयोज्य
7	फ्यूचर जनराली इंडिया इंश्योरेंस कंपनी लिमिटेड	153.92	143.92	515.10	503.23	1.38	2.36
8	गो डिजिट जनरल इंश्योरेंस लिमिटेड	41.61	अप्रयोज्य	102.25	अप्रयोज्य	0.27	अप्रयोज्य
9	एचडीएफसी एर्गो जनरल इंश्योरेंस कंपनी लिमिटेड	603.27	570.46	1,691.73	1,749.71	4.53	-3.31
10	आईसीआईसीआई लोम्बार्ड जनरल इंश्योरेंस कंपनी लिमिटेड	1,309.00	1,174.00	3,774.00	3,321.00	10.10	13.64
11	इफको-टोकियो जनरल इंश्योरेंस कंपनी लिमिटेड	720.53	418.42	1,618.43	1,216.18	4.33	33.07
12	कोटक महिंद्रा जनरल इंश्योरेंस कंपनी लिमिटेड	20.51	14.50	49.60	35.98	0.13	37.85
13	लिबर्टी वीडियोकॉन जनरल इंश्योरेंस कंपनी लिमिटेड	76.65	64.83	260.74	214.14	0.70	21.76
14	मेग्मा एचडीआई जनरल इंश्योरेंस कंपनी लिमिटेड	65.53	38.86	171.82	110.98	0.46	54.82
15	नेशनल इंश्योरेंस कंपनी लिमिटेड	1,116.49	1,265.18	3,549.02	3,833.67	9.50	-7.43
16	रहेजा क्यूबीई जनरल इंश्योरेंस कंपनी लिमिटेड	7.14	7.10	22.32	17.46	0.06	27.84
17	रिलायंस जनरल इंश्योरेंस कंपनी लिमिटेड	481.01	436.99	1,560.59	1,268.75	4.18	23.00
18	रॉयल सुंदरम जनरल इंश्योरेंस कंपनी लिमिटेड	232.22	211.10	749.86	658.70	2.01	13.84
19	एसबीआई जनरल इंश्योरेंस कंपनी लिमिटेड	236.58	201.09	1,009.26	666.13	2.70	51.51
20	श्रीराम जनरल इंश्योरेंस कंपनी लिमिटेड	191.52	179.29	516.67	478.67	1.38	7.94
21	टाटा-एआईजी जनरल इंश्योरेंस कंपनी लिमिटेड	477.50	364.28	1,585.06	1,291.60	4.24	22.72
22	द न्यू इंडिया एश्योरेंस कंपनी लिमिटेड	2,187.77	2,023.90	6,283.09	5,671.23	16.82	10.79
23	द ओरियंटल इंश्योरेंस कंपनी लिमिटेड	1,104.90	946.17	3,232.04	2,759.36	8.65	17.13
24	युनाइटेड इंडिया इंश्योरेंस कंपनी लिमिटेड	1,139.05	1,624.29	3,611.31	4,270.76	9.67	-15.44
25	यूनिवर्सल सोम्पो जनरल इंश्योरेंस कंपनी लिमिटेड	134.17	107.03	321.13	284.79	0.86	12.76
	साधारण बीमाकर्ता कुल	**11,547.71**	**10,852.92**	**34,491.07**	**31,506.24**	**92.35**	**9.47**
26	आदित्य बिड़ला हेल्थ इंश्योरेंस कंपनी लिमिटेड	23.42	11.70	75.68	61.82	0.20	22.42
27	अपोलो म्यूनिख इंश्योरेंस कंपनी लिमिटेड	130.04	104.40	348.98	265.26	0.93	31.56
28	सिग्ना टीटीके इंश्योरेंस कंपनी लिमिटेड	43.62	22.89	125.31	61.12	0.34	105.02
29	मैक्स बूपा इंश्योरेंस कंपनी लिमिटेड	65.77	54.77	185.59	158.58	0.50	17.03
30	रेलिगेयर इंश्योरेंस कंपनी लिमिटेड	111.37	78.84	332.58	230.46	0.89	44.31
31	स्टार हेल्थ & एलाइड इंश्योरेंस कंपनी लिमिटेड	336.28	249.03	909.70	673.79	2.44	35.01
	स्टैंडालोन स्वास्थ्य बीमाकर्ता	**710.50**	**521.63**	**1,977.84**	**1,451.03**	**5.30**	**36.31**
32	एग्रीकल्चर इंश्योरेंस कम्पनी ऑफ इंडिया लिमिटेड	588.22	15.90	614.26	40.00	1.64	1435.65
33	भारतीय निर्यात ऋण गारंटी निगम लिमिटेड	101.07	105.38	266.23	289.77	0.71	-8.12
	विशेषीकृत बीमाकर्ता	**689.29**	**121.28**	**880.49**	**329.77**	**2.36**	**167.00**
	कुल योग	**12,947.50**	**11,495.83**	**37,349.40**	**33,287.04**	**100.00**	**12.20**

नोट: बीमा कंपनियों द्वारा प्रस्तुत आंकड़ों के आधार पर संकलित ।

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Processing of Proposal and communication of decisions including requirements/ issue of Policy/Cancellations	15 days
Issuing copy of proposal form	30 days
Response by the insurer on post policy issue service related requests such as change in address/nomination/ assignment of policy etc.	10 days
LIFE INSURANCE	
Surrender value/Annuity/Pension processing	10 days
Maturity Claim/Survival Benefit/Death claim without investigation	30 days
Raising claim requirements after lodging the claim	15 days
Death Claim Settlement / Repudiation with investigation requirements	6 months
GENERAL INSURANCE	
Appointment of Surveyor	3 days
Survey Report Submission	30 days
Insurer seeking addendum report	15 days
Offer of settlement/rejection of claim after receiving first / addendum survey report	30 days
GRIEVANCES	
Acknowledging a Grievance	3 days
Resolving a Grievance	15 days

Some Important Insurance Related Websites

	Insurance Related Links	
1	Insurance Regulatory and Development Authority of India (IRDAI)	www.irdai.gov.in
2	IRDAI Consumer Education Website	www.policyholder.gov.in
3	Insurance Information Bureau of India	www.iib.gov.in
4	IRDAI Agency Licensing Portal	www.irdaonline.org
5	Integrated Grievance Management System (IGMS)	www.igms.irda.gov.in
6	Mobile Application to Compare ULIPs	www.m.irda.gov.in
	Insurance Education Institutions	
1	Institute of Insurance and Risk Management (IIRM)	www.iirmworld.org.in
2	Insurance Institute of India (III)	www.insuranceinstituteofindia.com
3	Institute of Actuaries of India (IAI)	www.actuariesindia.org
4	National Insurance Academy (NIA)	www.niapune.com
	International Links	
1	International Association of Insurance Supervisors	www.iaisweb.org
2	National Association of Insurance Commissioners	www.naic.org
3	International Gateway for Financial Education	www.financial-education.org
	Other Links	
1	Governing Body of Insurance Council (GBIC)	www.gbic.co.in
2	General Insurance Council	www.gicouncil.in
3	Life Insurance Council	www.lifeinscouncil.org
4	Insurance Brokers Association of India (IBAI)	www.ibai.org

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