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- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

UNPUBLISHED DISSERTATIONS

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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WEBSITES

- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

WEATHER INDEX BASED CROP INSURANCE ASSESSMENT: TECHNOLOGICAL ADVANTAGES IN INDIA

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ABSTRACT
The assessment of Weather Index Based Crop Insurance Programme depends upon its technological support availability in that area. They are three major technological supports which play an indispensable role in assessment of Weather Index Based Crop Insurance; they are Weather Station Technology, Remote Sensing Technology, and Information and Communication Technologies (ICTs). This article shows the arrangement of technologies in the form of Data Flow Diagram and it also supports the induction of crop insurance for the vegetable growers and its technological advantages with the help of data provided by Mahalanobis National Crop Forecast Centre, ISRO Centres (SAC & NRSC), India Meteorological Department State Remote Sensing Centers, State Agriculture Departments, National Agricultural Drought Assessment & Monitoring System (NADAMS).

KEYWORDS
weather index based crop insurance, technology.

I. INTRODUCTION
In 2007, the Weather Based Crop Insurance Scheme (WBCIS) was introduced to provide protection to farmers against adverse weather events including rainfall deficits by basing insurance payouts not on damage, but on a given weather index. The insurance is linked to credit and farmers are requested to 2 obtain credit. Weather index data are generally taken from commercial weather stations approved by the insurance issuers. Feasible trigger and payout rates were developed using weather index models to make the insurance products sustainable and attractive to farmers. Private weather index insurance is also available in India through two main insurance providers: ICICI Lombard and Indian Farmers Fertiliser Cooperative (IFFCO) Tokio General Insurance Company (ITGI). Their products have been distributed through multiple channels including rural corporative banks, input suppliers, and contract farming companies. BASIX, a micro-insuranceprovider, also started selling insurance products in 2008 with 40–50% subsidy, after the government announced that it will start to offer private insurance companies the same subsidies as public companies in certain regions. As the basis of risk, the actual amount of insurance compensation, and the farmers' actual loss are largely influenced by the location of weather stations, WBCIS index insurance product is constrained by limited location of weather stations. The lack of weather data and real-time data transfer were also reported to be significant challenges to the accuracy and efficiency of the settling amount. In order to acquire accurate data and minimize basis risk, it is estimated that India would need an additional 10,000 weather stations, which is a significant financial commitment (IFAD 2010) (ShwetaSinha.et al.2015).

II. LITERATURE REVIEW
Technical limitations: The index insurance product of WBCIS is limited by the location of weather stations. The Agricultural Finance Corporation, in its report on the effectiveness of WBCIS (AFC 2011) found that 77% of farmers were not satisfied with the location of weather stations. This is reasonable as the basis risk, the difference between the actual amount of insurance compensation and the farmers' actual loss, is largely influenced by the location of weather stations. The lack of weather data and real-time data transfer were also reported to be significant challenges to the accuracy and efficiency of the settling amount. In many regions, the provision of daily data was not guaranteed and this made it difficult to design a more accurate model of crop growth and to decide a proper threshold level for payouts. In order to acquire accurate data and minimize basis risk, it is estimated that India would need an additional 10,000 weather stations, which is a significant financial commitment (IFAD 2010). To address this issue, better product design suited to the climate characteristics and nature of crops in the area needs to be implemented (Rao 2014).

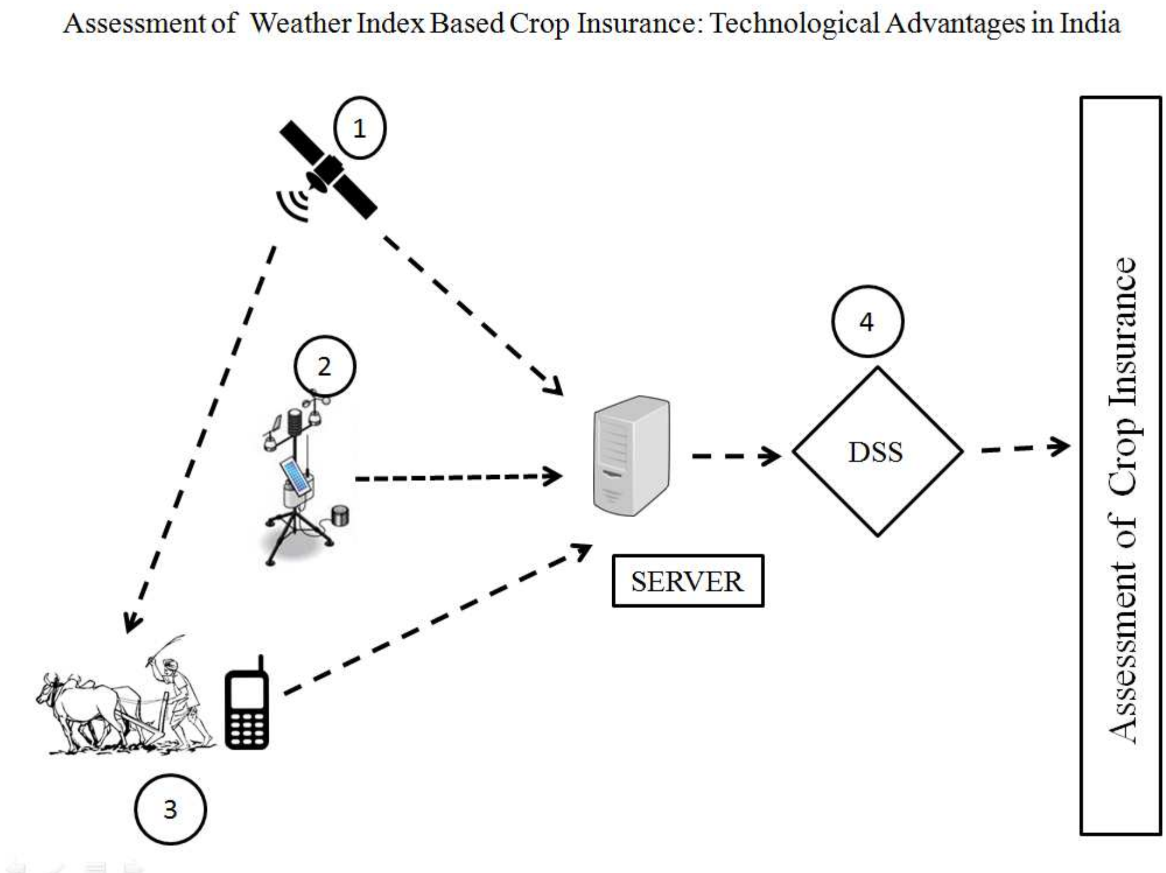
The early experience with weather index insurance in China, India and Thailand provides some good insights into its effectiveness and sustainability as a climate risk management tool. While weather insurance programmes have demonstrated the potential to help farmers protect their investments against recurrent droughts, there are several prerequisites to the success of these programmes:

Raise the awareness of farmers: In all of the cases studied, low awareness of farmers about the potential benefits of weather index based insurance products and their relatively low premiums was an obstacle. Proper marketing and awareness raising campaigns should accompany the introduction of index-based insurance programmes.

Invest in technological innovations: Accurate and timely weather data hold the key to successful index insurance products. The densification of hydrometeorological networks in drought-prone areas, the development of crop-specific disaster loss databases, satellite-based products, and vegetation indexes are examples some of the technological innovations needed to operationalize weather insurance. (Shamika Sirimanne, Sanjay Srivastava. 2015).

III. DATA FLOW DIAGRAM FOR WEATHER INDEX INSURANCE

FIG. 1



1. REMOTE SENSING TECHNOLOGY FOR CROP INSURANCE

KISAN(C[K]rop Insurance using Space Technology and geoiNformatics):

Hon'ble Minister of State for Agriculture & Farmers' Welfare, Dr. Sanjeev Kumar Balyan today launched KISAN Project [C(K)rop Insurance using Space technology And geoiNformatics] of Department of Agriculture, Cooperation & FW, Ministry of Agriculture and FW. The project envisages use of Space Technology and geoinformatics (GIS, GPS and Smartphone) technology along with high resolution data from UAV/Drone based imaging for improvement in yield estimation and better planning of Crop Cutting Experiments (CCEs), needed for crop insurance programme.

2. WEATHER STATION TECHNOLOGY AND INDEX INSURANCE

KilimoSalama's use of technology is the key to the micro-insurance product's affordability and the model's scalability. The 64,000 clients are smallholder farmers scattered throughout rural Africa. In one distribution channel, KilimoSalama works with agricultural microcredit institutions and local agro-vets or stockists who sell farming inputs like seeds, fertilizer, and pesticides. When farmer purchases insurance, the microcredit officer or agro-vet registers the purchase by scanning a quick-response code using a specially-developed mobile phone application. The purchase is transmitted to a cloud-based server, which administers the policies and sends the farmer an automated SMS with the policy number. At the end of each growing season, weather statistics collected from solar-powered weather stations are automatically compared to an index of historical weather data. Rainfall measurements are put in specialized agronomic models to determine the impact and potential loss farmers experienced. Insurance payouts are calculated and sent to the insured farmers via automated mobile payments. There is no claims process.

3. INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs)

Hon'ble Minister of State for Agriculture & Farmers' Welfare, Dr. Sanjeev Kumar Balyan launched an Android App. Designed by ISRO (National Remote Sensing Centre, Hyderabad). This App will help real time data collection about hailstorm occurrences along with photographs and geographical coordinates (longitude and latitude). The Minister informed that App will help Government to get real time data about the Hailstorms which will be collected through the Agriculture Department officials of different States. This will support in deciding the crop loss more objectively and in a very fast manner.

4. DECISION SUPPORTING SYSTEM

TABLE 1

Drought Assessment	Yes/No
Heavy Rain	Yes /No
Crop Condition	Good/bad
Weather Index	Within the Limit /not

IV. TECHNOLOGICAL ADVANTAGES IN INDIA

1. REMOTE SENSING TECHNOLOGY FOR CROP INSURANCE

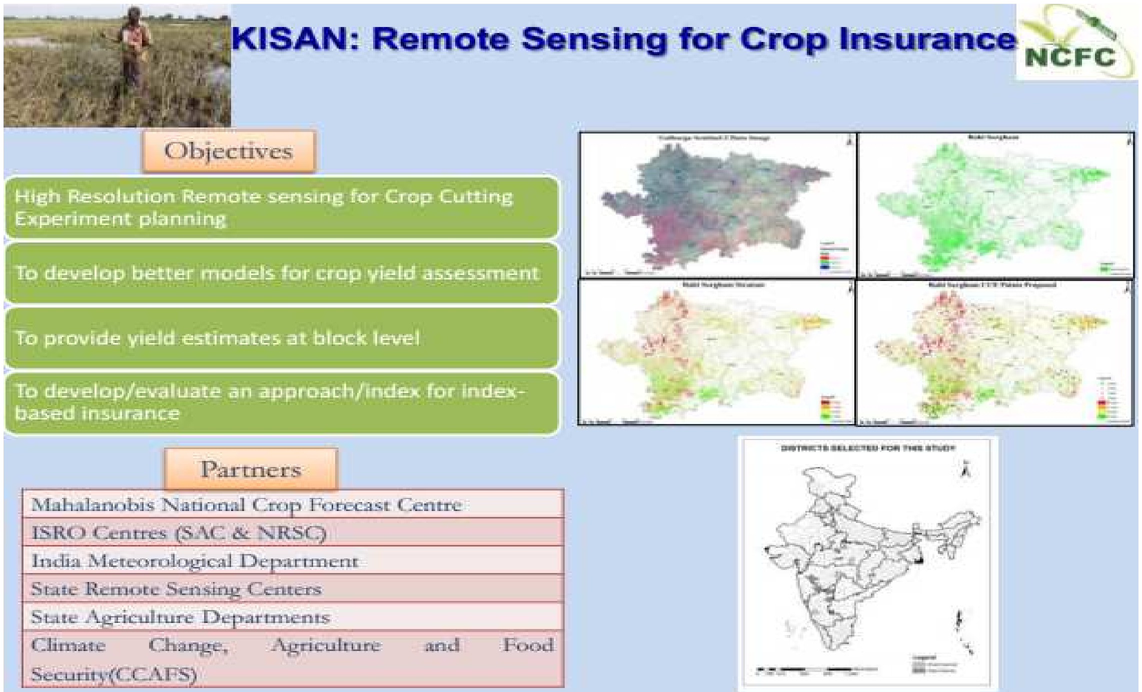
KISAN(C[K]rop Insurance using Space Technology and geoiNformatics):

Objectives

High Resolution Remote sensing for Crop Cutting Experiment planning

1. To develop better models for crop yield assessment
2. To provide yield estimates at block level
3. To develop/evaluate an approach/index for index based insurance

FIG. 2



NATIONAL AGRICULTURAL DROUGHT ASSESSMENT & MONITORING SYSTEM (NADAMS)

NADAMS project, developed by National Remote Sensing Centre, provides near real-time information on prevalence, severity level and persistence of agricultural drought at state/ district/sub-district level.

Currently, it covers 13 states of India (Andhra Pradesh, Bihar, Chattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, and Uttar Pradesh), which are predominantly agriculture based and prone to drought situation.

In four states (Andhra Pradesh, Karnataka, Haryana and Maharashtra), the assessment is carried out at sub-district level.

The remote sensing data of NOAA AVHRR (for district level), MODIS and Resourcesat-2 Advanced Wide Field Sensor, AWiFS (for sub-district level) along with IMD rainfall data was used for drought assessment.

Various spectral indices, such as Normalized Difference Vegetation Index (NDVI), Normalized Difference Water Index (NDWI) & Shortwave Angle Slope Index (SASI) were computed and integrated with Soil Mosture Index and District Level Rainfall to assess the drought condition.

Agricultural conditions are monitored at state/district level using daily NOAA AVHRR/ MODIS data. AWiFS of Resourcesat 1/2 (56 m resolution) is used for detailed assessment of agricultural drought at district and sub district level Fortnightly/monthly report of drought condition is provided to the Government under NADAMS.

NCFC has started providing Drought Assessment Report from the Kharif season of 2012. Five Monthly drought reports (June to October) have been generated and sent to all the concerned state and national level government agencies.

Operational Drought assessment during Kharif using Remote Sensing (Methodology developed by ISRO)

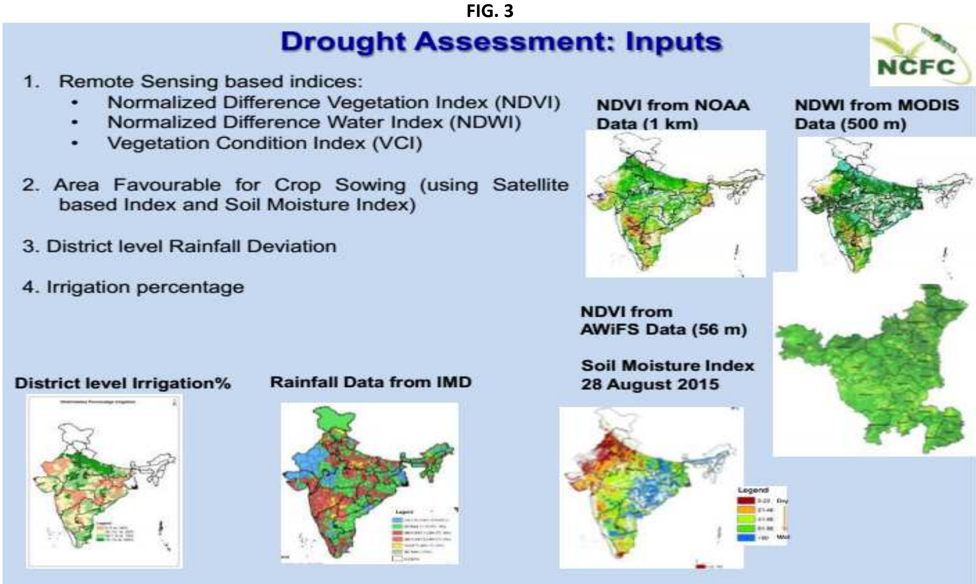
Periodic District/Sub-District level drought assessment for 14 Agriculturally Dominant states of India (5 at Sub District level)

Satellite based indices, Rainfall data, Ground information on sowing progression and Irrigation Statistics are used for drought assessment

Drought Warning (Normal, Watch & Alert) is given in June July & August, while Drought Declaration (Mild, Moderate & Severe) in September & October

DROUGHT ASSESSMENT: INPUTS

FIG. 3



MAHALANOBIS NATIONAL CROP FORECAST CENTRE RECOMMENDATIONS

IMPROVING SAMPLING STRATEGY

Need to reduce the sample size and simultaneously improve the accuracy by incorporating other data such as agricultural census data. (Action – NSSO/IASRI)
NSSO jointly with IASRI would organize a one-day training Programme for crop cutting experiments

WEATHER BASED INDICES

• There is a need to develop a composite Weather index which can be representative, stable and easily available. There is scope of including Remote Sensing based indices in developing the composite index (Action – IMD)

REMOTE SENSING TECHNOLOGY FOR CCE & CROP YIELD

It has been shown that remote sensing data is very useful for assessing crop condition and generating sampling plan to improve CCE.
It is planned that Crop cutting Experiments need to be carried out for Rice crop in the Kharif Season and Wheat crop in Rabi Season (2014-15) in the selected states (selected districts) using remote sensing based sampling. State governments and Insurance companies will carry out the CCE using GPS (Action: SAC, MNCFC, Insurance Companies & State Govts.)
NRSC would generate the Android based Application for CCE and would provide support of Bhuvan platform for field data collection.
Spatial yield model need to be developed by using weather, CCE and remote sensing data (Action: SAC, IMD & MNCFC)
The pilot studies would be reviewed after crop seasons of 2014-15 and then the study can be extended to more major crops and states.
General • All expenditure related to these pilot studies would be borne by the Credit Division of DAC.

MOBILE SERVICES AND WEATHER FORECASTS [DANIELE TRICARICO, NICOLE DARABIAN. (2016)].

- The need of smallholder farmers in the developing world for accurate weather forecasts is made greater by the dependency on rain-fed agriculture, and by the global impact of climate change.
- To date, smallholder farmers largely rely on national meteorological agencies with low capacity for the provision of weather services that are distributed over radio, TV and mobile.
- MNOs can play a key role not only in disseminating weather forecasts but also in improving weather services by catalysing new content and technology providers.
- As a dynamic service component, weather forecasting presents an opportunity to drive stickiness of the overall mobile agriculture (mAgri) proposition, provided that services are of high quality and locally relevant.
- To exploit the potential of weather services, MNOs need to release their unique strategic assets, primarily the network intelligence to geo locate users, which in the absence of smartphones equipped with Global Positioning System (GPS) allows the provision of localised services.
- Besides information services, the digitisation of weather index insurance presents an opportunity for MNOs to use core capabilities (geo location and mobile money) to enable agricultural mobile financial services (Agri MFS), starting from insurance and extending to tailored credit and savings products.
- MNOs also have the ability to use their network for weather monitoring, either by rolling out weather stations or by analysing signal propagation from cell sites, but to release this opportunity they need to establish new partnerships at ecosystem level.
- By increasing their focus on weather services, MNOs can evolve the value proposition of their rural services towards more holistic bundles including dynamic agronomic advice linked to localised weather forecasts, climate smart agronomic advice, and mobile money enabled Agri MFS.
- A user centric approach in service design can help all mAgri providers to develop better weather services for smallholders. User centric design is also beneficial to mobile financial services such as mobile weather index insurance.

TABLE 2

mFarmer services, weather forecast providers

Service	Forecast	Weather Provider	Provider Category
Airtel Kilimo	7-day forecast	Kenyan Meteorological Department	Government
Tigo Kilimo	1,3 or 5-day forecasts	Tanzanian Meteorological Agency	Government
mKisan	1,3 or 5-day forecasts	Indian Meteorological Division, Agricultural Meteorology Department	Government

V. INDUCTION OF CROP INSURANCE FOR VEGETABLE GROWERS

CHAMAN (Coordinated Horticulture Assessment and MAnagement using geoiNformatics)**:**
Considering the importance of Horticulture for the national economy and nutrient security, the Department of Agriculture & Cooperation, Ministry of Agriculture has launched a national level programme on horticulture assessment and development, called CHAMAN (Coordinated Horticulture Assessment and Management using geo-informatics). CHAMAN was launched during September, 2014.
This programme envisages use of satellite remote sensing data for area and production estimation of 7 horticultural crops (Potato, Onion, Tomato, Chili, Mango, Banana and Citrus) in selected districts of major producing States. The programme also uses GIS (Geographical Information System) tools along with remote sensing data for generating action plans for horticultural development (site suitability, infrastructure development, crop intensification, orchard rejuvenation, aqua-horticulture, etc.). Another component of CHAMAN is to carry out research activities on horticultural crop condition studies, diseases assessment and preci-sion farming.
Two National Level Agencies have been identified for implementing this programme i.e. Mahalanobis National Crop Forecast Centre (MNCFC) of Department of Agriculture & Cooperation for the remote sensing component and the Indian Agricultural Statistical Research Institute (IASRI) for the field survey component. The programme is jointly implemented through Space Applications Centre, Ahmedabad; National Remote Sensing Centre, Hyderabad; State Horticulture Departments; State Remote Sensing Centres, National Horticulture Research & Development Foundation, Nasik; India Meteorological Department and ICAR Centres. The three-year duration project has a total outlay of Rs.1338.4 lakh.

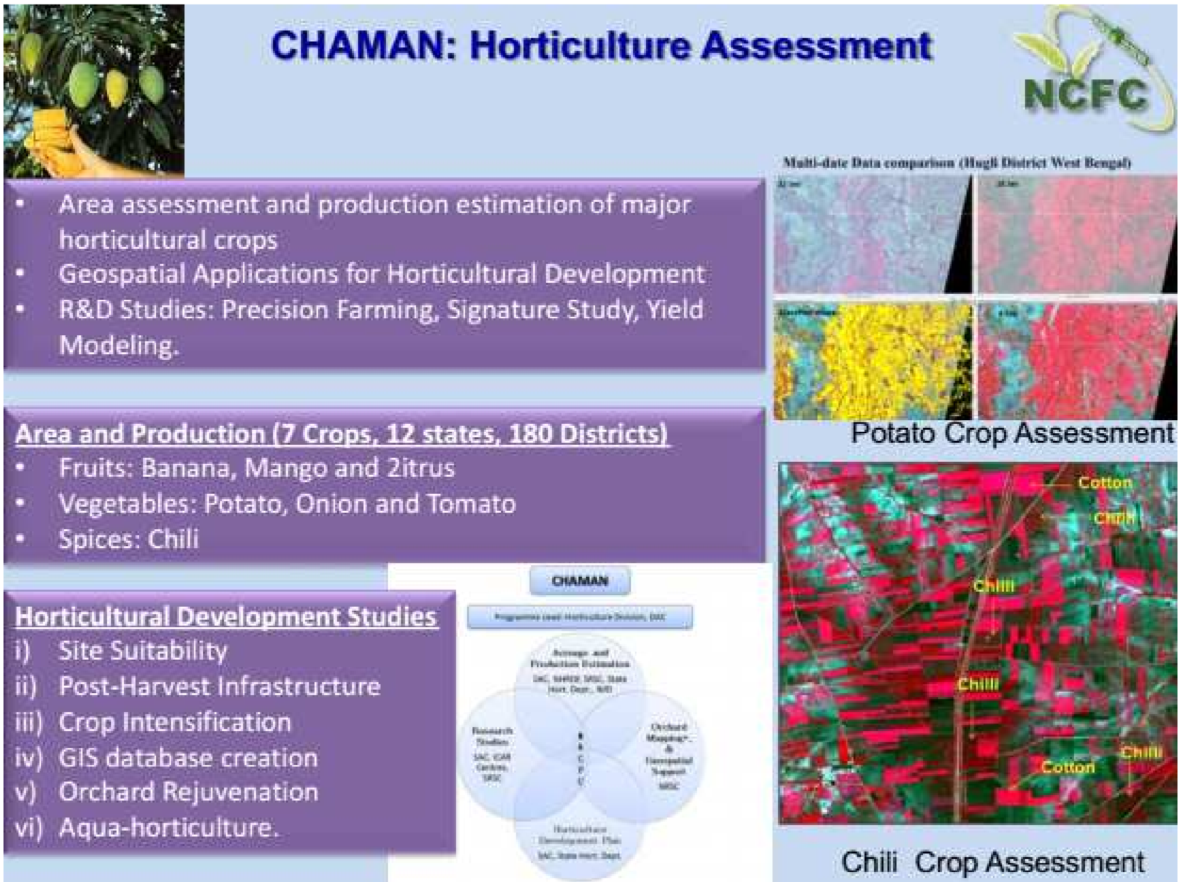
HORTICULTURE ASSESSMENT

- Area assessment and production estimation of major horticultural crops
- Geospatial Applications for Horticultural Development
- R&D Studies: Precision Farming, Signature Study Yield Modeling. Area and Production (7 Crops, 12 states, 180 Districts)
- Fruits: Banana, Mango and 2itrus
- Vegetables: Potato, Onion and Tomato
- Spices: Chili

Horticultural Development Studies

i) Site Suitability
ii) Post-Harvest Infrastructure
iii) Crop Intensification
iv) GIS database creation
v) Orchard Rejuvenation
vi) Aqua-horticulture

FIG. 4



VI. CONCLUSION

Help from Progress in Technology. Progress in technology and communications will significantly influence the development of the weather market. The quality of satellite imagery has made so much progress that, as mentioned above, some agricultural insurance deals already make use of vegetative indexes as insurance triggers. Weather station technology combined with better telecommunications allows continuous transmission of weather data through mobile phone technology at a reasonable price. Soil humidity measurements, an important factor in plant growth, can be taken at low cost and again be transmitted to the trader's screen. Minuscule temperature gages can be placed in farmers' fields and can transmit data at regular intervals. All these examples show that the weather market industry greatly benefits from specific progress in various hi tech applications. However, it must be also noted that the progressive improvement of weather forecasting ability could lead to potential sources of asymmetric information.

REFERENCES

1. Daniele Tricarico, Nicole Darabian. (2016). mAgri Weather forecasting and monitoring: Mobile solutions for climate resilience
2. J. Welte, A. Ault, C. Bowman, A. Layton, S. Noel, J. Krogmeier, D. Buckmaster. (2013). "Autogenic Mobile Computing Technologies in Agriculture: Applications and Sensor Networking for Smart Phones and Tablets". EFITA-WCCA-CIGR Conference "Sustainable Agriculture through ICT Innovation", Turin, Italy, 24-27 June 2013
3. Shamika Sirimanne, Sanjay Srivastava, Sung Eun Kim, Ho Miu David Li, Axel Firer, and Shweta Sinha. (2015). Building Resilience to Droughts: Scaling up Weather Insurance in China, India, and ThailandUnited Nation Economic and Social Commission for Asia and the Pacific (ESCAP)
4. Shibendu S. Ray. (2016). Remote Sensing for Agricultural Applications, Mahalanobis National Crop Forecast Centre, Department of Agriculture, Cooperation & Farmers Welfare, New Delhi
5. shibendu.ncfc@gov.in

REPORTS

6. Crop Insurance Options for Vegetable Growers, United States Department of Agriculture
7. Kilimo Salama (Safe Farming) Weather Index Insurance in Kenya: Early Market Success
8. Risk Management Agency
9. Soham Sen (World bank) and Vikas Choudhary (World bank). ICT Applications for Agricultural Risk Management

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