कृषि, सहकारिता एवं किसान कल्याण विभाग

महलानोबिस राष्ट्रीय फसल पूर्वानुमान केंद्र

नई दिल्ली

Dept. of Agriculture, Cooperation & Farmers' Welfare

MAHALANOBIS NATIONAL CROP FORECAST CENTRE

New Delhi

मासिक प्रगति रिपोर्ट: जून, 2018

Monthly Progress Report: June, 2018

मुख्य विशेषताएं/Highlights

- 6 राज्यों के लिए राष्ट्रीय / राज्य स्तरीय रबी दालें (एफ 1) एकड़ / क्षेत्रफल और उत्पादन अनुमान
- खरीफ, 2018 की गन्ना और जूट फसलके लिए सैटेलाइट छवि विश्लेषण
- पश्चिम बंगाल के धान परती क्षेत्रों में दालें उपयुक्तता के मानचित्रण पर कृषि अधिकारी कार्यशाला
- फसल कटाई प्रयोग, मौसम विज्ञान और रिमोट सेंसिंग डेटा का उपयोग करते हुए कर्नाटक में फसल बीमा के लिए उपज अनुमान
- चावल की उपज नक्शा सीसीई डेटा से उत्पन्न किया गया
- प्रोफेसर पी सी महलानोबिस की 150 वीं जयंती मनाई गई

- National/State level rabi pulses F1 acreage and production estimation for 6 states.
- Satellite Image analysis for Sugarcane and Jute crop of Kharif, 2018.
- Agricultural officers' workshop on Mapping of Pulses suitability in Rice-Fallow Areas of West Bengal.
- Yield estimation for crop insurance in Karnataka, using crop cutting experiment, meteorology and remote sensing data.
- Rice yield map was generated from CCE data.
- 150th Birth Anniversary of Prof. P. C. Mahalanobis was observed.

Forecasting Agricultural output using Space, Agro-meteorology and Land based observations(FASAL)

(a sub-scheme under Integrated scheme on Agriculture Census, Economics and Statistics of DAC&FW)

- National/State level rabi Pulses (F1) acreage and production estimation was carried out using Resourcesat- 2 AWiFS NDVI products. State level yield was estimated for rabi pulses using meteorological sub-division wise weather data from October 2017 to March 2018.
- National/State/District level rabi Pulses (F2) acreage estimation was carried out using Resourcesat- 2 LISS-III, Sentinel-2 MSI and Landsat-8 OLI data.
- National/State/District level Jute Area estimation was carried out in three states (i.e. Assam, Bihar and West Bengal) using Resourcesat- 2 (AWiFS NDVI product, LISS-III), Sentinel-2 MSI, Landsat-8 OLI data and ground-truth collected by State Agriculture Departments and Jute Corporation of India. District level yield estimation of Jute crop were carried out using weather data from March to June, 2018 and district level Agromet yield models.
- National/State level Sugarcane area estimation was carried out in five states (i.e. Gujarat, Haryana, Karnataka, and Maharashtra and Uttar Pradesh) using Resourcesat- 2 AWiFS NDVI product. Resourcesat- 2 AWiFS and Landsat-8 OLI images were used as reference data to verify sugarcane area. State level Sugarcane yield estimation was carried out using meteorological sub-division wise weather data from October 2017 to June 2018.
- Scientists from State Remote sensing centers of Assam participated in Jute digital analysis and scientists/officials from Haryana, Karnataka, Gujarat, Maharashtra and Uttar Pradesh participated in the Sugarcane analysis.
- MODIS, Gridded temperature data are being preprocessed regularly for semi-physical yield based forecasting.
- An analysis of the forecasts issued under FASAL project for 7 crops (kharif & rabi rice, jute, cotton, sugarcane, wheat, rapeseed & mustard and rabi sorghum) during last 5 years was carried out by doing statistical comparison, with the DES statistics, in terms of tests of significance, relative deviation and correlation coefficients.
- State wise Ground truth and Crop Cutting experiment (CCEs) data collected in last 4-5 years using Smartphones (and available on Bhuvan portal) were analysed to understand the cropping pattern and yield attributes of rice and wheat in different states.
- Inputs (i.e Rainfall, NDVI and Temperature) were prepared for the GEOGLAM Crop Monitor for the month of June 2018. MNCFC participated in the monthly Telecon.
- A meeting was conducted with IMD officials for streamlining the technology transfer of yield modeling component to MNCFC.

National Agricultural Drought Assessment and Monitoring System (NADAMS)

(a component under FASAL project of DAC&FW)

- Weekly IMD Rainfall, satellite based vegetation indices (NDVI & NDWI) from Resourcesat 2 AWiFS and MODIS data were processed for June 2018. NDVI & NDWI statistics were generated at District & Taluk Level for the month of June (past and current year).
- Based on a request by Drought Management division, Resourcesat 2 AWiFS data was analysed for the 5 districts of Uttar Pradesh state for the Rabi 2017-18 for assessing the Severity of Drought and providing comments on the Memorandum submitted by the state government.
- MNCFC scientists regularly participated in the weekly meetings of Crop Weather Watch Group and Crop Weather Watch Group for Drought Monitoring and provided inputs related to crop condition.

Co-ordinated Horticulture Assessment and Management using geo-iNformatics (CHAMAN)

(a project under Mission for Integrated Development of Horticulture, DAC&FW)

- At the request of Coconut Development Board (CDB), DAC&FW, Govt. of India, a discussion meeting on the feasibility of satellite based coconut inventory and mapping was held on 14th June 2018, at MNCFC, which was attended by officials of CDB, DAC&FW and MNCFC.
- To identify coconut plantation, a preliminary analysis was carried out for the Kozhikode district, Kerala, using multi-temporal Sentinel -2A data of 2017 and Google Earth image.
- Satellite data (Resourcesat 2 LISS III/LISS IV, Cartosat-1/2 and Sentinel) were checked for district level analysis of Mentha crop in Utter Pradesh and ground truth collection was initiated with the involvement of State Horticulture Department.
- Mango crop maps of 3 districts i.e. Bhagalpur (Bihar), Lucknow (UP) and Valsad (Gujarat) were updated, with the support of NHRDF, for Bhuvan: CHAMAN portal
- CHAMAN Phase-I final report was prepared and is under review process.

Crop Insurance (KISAN)

(Support to PMFBY)

- Analysis for CCE based yield, weather based yield and remote sensing based yield were carried out for Cotton crop claims settlement under PMFBY for Karnataka. The yield dispute was in 27 Taluks of five districts (Chitardurga, Dharwad, Kopal, Mysuru and Yadgiri).
- Factor based yield estimation was done in case where the minimum required number of Crop Cutting Experiments (CCEs) have been conducted with at least 5 CCEs with optimum number of pickings.
- In addition to this Remote sensing based yield estimation was done using fortnightly NDVI (Normalized Difference Vegetation Index) and NDWI (Normalized Difference Wetness Index) values from MODIS (250 m) long term data (2006-2016), after overlaying Cotton crop map derived from FASAL project.

- Further, the agro-meteorology based yield models were also developed using fortnightly taluk level rainfall data and yield data. Stepwise regression technique was used for deriving the best-fit models. The final estimated yield report was submitted to the Technical Advisory Committee (TAC) of DAC&FW.
- Inputs were submitted to TAC on issues related to the settlement of claims for Rabi 2012-13 under WBCIS in Bihar.

Crop Intensification: Rice fallow

(a project under National Food Security Mission, DAC&FW)

- A state level workshop was carried at BCKV, Kalyani, West Bengal to present the results of the study on site suitability for growing pulses in rice-fallow areas of West Bengal on 12th June, 2018. The workshop was attended by the state, district and block level officials of West Bengal Agriculture Department, Scientists of NRSC & MNCFC, the Agriculture Commissioner to Government of India and the Advisor to the West Bengal Chief Minister.
- Quality checking of district wise *kharif* rice map for the year 2016-17 was carried out for Jharkhand and Bihar states using LANDSAT-8 OLI and Sentinel-2 MSI satellite data. District wise DES estimates were used to verify the rice area.
- West Bengal kharif rice map 2016-17 was rechecked using LANDSAT-8 OLI, Sentinel-2 MSI satellite images. Google Earth and Land use land cover map were used to discriminate rice area with other land features.
- Digitization of soil pH and phosphorus maps for the Dumka district of Jharkhand was done.

SCATSAT-1 Utilization Program

(A SAC (ISRO) R&D Project)

- The rice yield values derived from FASAL CCE data were extrapolated using IDW technique and maps and statistics were generated for the states of Assam, Bihar, Chhattisgarh, Jharkhand, Karnataka, Odisha, Punjab, U.P. and W.B. The extrapolated maps were shared with SAC (ISRO).
- Software is being developed to identify crop phenology using SCATSAT temporal behaviour. This tool will have various configurable options for analysing the optimum averaging factor (no. of dates to be averaged), application of rice mask /GT etc.

M.Tech Dissertation Work

- Two students of Symbiosis Institute Geoinformatics, Pune carried out their M. Tech. dissertation work at MNCFC and submitted the thesis to their institute. The details are given below.

Student's Name	**Thesis Title**	**Guides**
Supriya J Nayak	Agricultural Drought Assessment using Agricultural Stress Index System (ASIS) and the components of the Vegetative Drought Response Index (VegDRI)	Preeti Tahlani & Karan Choudhary
Sheetal Bhadauriya	Role of Rice Residue Burning in Air Pollution of North West India	S. Mamatha & S. S. Ray

Publication

- Ray, S. S.; Dubey, Sunil; Gavli, A. S.; Kanti, Prabha; Meshram, Pritam; Patidar, Arvind and Mandloi Divyani (2018). Cotton Yield Dispute Analysis for Karnataka State (Kharif 2017-18). Report No. MNCFC/PMFBY/SN/04/2018, 15p.
- Ray, S. S. (2018) Use of Satellite Remote Sensing for Crop Insurance. SmartAgriPost, 4(1):28-31.

Web related Activities

- A facility was developed to upload daily progress report of analysts on MNCFC intranet portal InSight. Other facilities which were developed on the intranet portal, include Leave management, File Register Index Facility and download of IMD Real time daily weather data.
- Maps related to Crop and Weather Conditions for 1st fortnight of June were uploaded on the website.

Foreign Visit

- Dr. S. S. Ray, Director participated and made a presentation in the "Land Cover/Land Use Changes (LC/LUC) and Impacts on Environment in South/Southeast Asia - International Regional Science Meeting, 28-30th May, 2018, Manila, Philippines. He also visited the International Rice Research Institute, Los Banos for technical discussion.
- Mr. Karan Choudhary, Assistant Director participated and made a presentation in the Workshop on "Earth Observation Data and Applications for Official Statistics", organized by UNSD and UNESCAP during 18-22 June 2018, Bangkok- Thailand.

❖ **The Scientists of MNCFC participated in the following Meetings/Workshops/ Conferences.**

Date & Venue	Meeting/Workshop/Conference	Participated by	Participation
12th June, 2018, BCKV Kalyani	Workshop on "Satellite Mapping of Rice-Fallow Areas of West Bengal"	Dr. S. S. Ray, Dir Dr Shalini Saxena, AD	Presentation
23rd June 2018, New Delhi	Stakeholders meeting on Natural Fibre, chaired by Hon'ble Minister of Textiles	Dr. S. S. Ray, Dir Dr. Shalini Saxena, AD	Participation
25th June 2018, New Delhi	Meeting on building robust information system on sugarcane, chaired by Secretary (Food & PD)	Dr. S. S. Ray, Dir Dr. Shalini Saxena, AD	Participation
29th June, 2018 Bhubaneswar	Meeting on "Smart Sampling" for selection of plots for conduct of CCE under PMFBY.	Dr. Sunil Dubey, AD	Discussion
29th June, World Bank, New Delhi	1st Meeting of Technical Working Group on Crop Cutting Experiment	Dr. S. S. Ray, Dir	Discussion

Events

A Half day workshop on satellite mapping of rice fallow area in West Bengal State was organised at BCKV, Kalyani on 12 June 2018

Mr. Karan Choudhary attended the United Nations' Workshop on Earth Observation Data and Applications for Official Statistics, Bangkok, Thailand, 18-22 June 2018

Dr. S. S. Ray, Director participated in the "Land Cover/Land Use Changes (LC/LUC) and Impacts on Environment in South/Southeast Asia", International Regional Science Meeting, 28-30th May, 2018 at Manila, Philippines

4th International Yoga day was observed at MNCFC on 21st June 2018

150th Birth Anniversary of Prof. P. C. Mahalanobis was observed at MNCFC on 29th June, 2018 with a lecture by Prof. Bharat Ramaswami of ISI, Delhi

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