

कृषि, सहकारिता एवं किसान कल्याण विभाग  
महलानोबिस राष्ट्रीय फसल पूर्वानुमान केंद्र  
नई दिल्ली  
Dept. of Agrl Coop. & Farmers' Welfare  
MAHALANOBIS NATIONAL CROP FORECAST CENTRE



मासिक प्रगति रिपोर्ट: जुलाई, 2018

Monthly Progress Report: July, 2018

मुख्यविशेषताएं/Highlights

- सूखे संकेतकों, जैसे उपग्रह वनस्पति सूचकांक और मिट्टी नमी सूचकांक, को डाउनलोड करने के लिए पोर्टल लॉन्च किया गया
- रांची, झारखंड में "सैटेलाइट आधारित धान-परती भूमि मैपिंग, मूल्यांकन और विशेषता" पर राज्य स्तरीय कार्यशाला
- 5 राज्यों के लिए राष्ट्रीय / राज्य स्तरीय गन्ना (एफ 1) कृषि और उत्पादन अनुमान
- राष्ट्रीय / राज्य/ जिला स्तर पर तीन राज्यों के लिए पटसन की फसल का क्षेत्रफल और उत्पादन का अनुमान
- तालुक स्तर पर ओडिशा राज्य के लिए वर्ष 2017 के लिए चावल उपज अनुमान
- Launching of a portal for downloading drought indicators, such as satellite vegetation index and soil moisture index
- State level workshop on "Satellite based Rice-Fallow mapping, assessment and characterization" at Ranchi, Jharkhand
- National/State level Sugarcane (F1) acreage and production estimation for 5 states
- National/State/District level Jute acreage and production estimation for 3 states
- Taluk level Rice yield estimation for Odisha state for the year 2017

**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)**

- Sugarcane F1 production forecast, at National/State level, for Gujarat, Haryana, Karnataka, Maharashtra and Uttar Pradesh was finalized and released. State level yield has been estimated at Met-sub division level using weather based regression models. Up to mid-June 2018 weather data (Rainfall, Maximum and Minimum Temperature) have been used.
- National/State/District level Jute production forecast, for 3 states (Assam, Bihar and West Bengal) was finalized and released. District level jute yields have been estimated using Agro-meteorological based correlation-weighted regression models. This is for the first time operational district level yield forecasts were generated at MNCFC, after transfer of technology and database by IMD. The historical weather data (Maximum and Minimum Temperature, Rainfall and Morning & Evening Relative Humidity) from 1995-2018 and yield data from 1995 to recent available were used for yield estimation. For spectral yield estimation MODIS Vegetation Index Database was prepared for March, April and May months from 2006 to 2018.
- Detailed quality check of wheat, mustard, jute, cotton, sugarcane, pulses and Rabi Sorghum crop masks for the year 2017-18 has been done by the Internal Team of Scientist/Officials of MNCFC.
- Data Preparation, downloading & pre-processing of Sentinel-1 microwave data for Kharif Rice for major Rice growing states.
- Ground truth (GT) planning for Kharif rice 2018. GT letter sent to all concerned states.
- Major states and districts for Rabi maize, Rabi groundnut, Soybean, Pigeonpea and Tur crop have been identified based on the analysis of DES data of last four years. Soybean proposal report preparation for starting R&D works for crop area estimation, satellite data planning and ordering of RADARSAT 2 HH, HV data.
- Report preparation of the analysis of Crops and GT & CCE data collected during last 5 years.

**National Agricultural Drought Assessment and Monitoring System  
(NADAMS)**

**(a component under FASAL project of DAC&FW)**

- A portal (<http://14.139.50.199:8080/ncfc/download.html>) was developed and launched for downloading the Drought related indicators, generated by MNCFC. The portal provides NDVI (Normalized Difference Vegetation Index) and NDWI (Normalized Difference Wetness Index) values for Resourcesat 2 AWiFS and MODIS (at district and sub-district level); Rainfall values (from IMD) and Soil Moisture Index (PASM), both in Excel format and graphical form. This

- Drought Indicator Assessment Report was generated for the month of June and circulated among concerned officials.
- District/Taluk wise NDVI statistics were generated for 1<sup>st</sup> Fortnight of July 2018 using AWiFS (56 m) data and district/taluk wise NDVI & NDWI data was processed for the month of July 2018 using MODIS (250 m) data. Weekly IMD Rainfall data was processed and SPI is generated for the month of July 2018. Map for Reservoir storage status was prepared for the month of July 2018 using CWC data. District wise Daily Soil Moisture statistics were generated and uploaded on website for July 2018.
- Soil Moisture (MAI) maps for Karnataka were prepared and shared with Karnataka Remote Sensing Centre on their request for the month of June and July 2018.
- 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)*

- Quality check and updation of mango orchards maps & statistics of Bhagalpur (Bihar), Lucknow (U.P) and Valsad (Gujarat) was completed. Final maps were submitted for uploading on CHAMAN-Bhvan Portal.
- Finalization of area, yield and production of CHAMAN crops (Onion, Tomato, Chilli, Mango, Citrus & Banana) and preparation of crop wise report is under process.
- Resourcesat 2-LISS III data sets for 8 districts of Uttar Pradesh were indented for Mentha analysis.

### **Crop Insurance (KISAN)**

*(Support to PMFBY)*

- Taluk level Rice yield was estimated for Odisha state for the year 2017 using MODIS (250 m) NDVI and NDWI data from the period of June 1<sup>st</sup> fortnight to October 2<sup>nd</sup> fortnight.
- Yield estimation preparatory analysis was carried out for 14 crops in 936 Talukas of Karnataka. NDVI and NDWI based models were developed for Rabi Rice and Sorghum. For the remaining crops like Bengal gram, Green gram, Horse gram, Maize, Linseed, Onion, Potato, Ragi, Sunflower, Safflower, Tomato and Wheat, database was created for developing weather based (Rainfall, Maximum and Minimum Temperature, Maximum and Minimum Relative Humidity) models.
- With the approval of the Department, letters were issued to 9 Organizations/Agencies (both Government and Private sector) to carry out the pilot study on optimization of Crop Cutting Experiments. A portal was developed for participating agencies, where they can fill all the details like study area, crop type etc. and submit their monthly progress report which can be accessed by MNCFC.

### **Crop Intensification: Rice fallow**

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

- Quality checking of Assam *kharif* rice map 2016-17 and Jharkhand rabi cropped area map 2016-17 were done using satellite images of Landsat-8 OLI (30m), Sentinel-1 A (20m), Land Use Land Cover map and Google Earth images.
- Generation of *kharif* rice area using Sentinel-1A (20m, July to September 2017) and *rabi* cropped area using Landsat-8 OLI (Nov, 2017 to April 2018) were carried out for Baloda Bazar district of Chhattisgarh. Surface water bodies and LSWI (Land surface Wetness Index) extraction was done using Landsat-8 OLI. Temperature data (IMD daily gridded data) and SRTM DEM data were processed for further procedures.
- NOAA- CPC rainfall data (10 km spatial resolution) of last 4 years was processed to check the trend of rain fall in Dumka district of Jharkhand
- A half day state level workshop on “*Satellite Rice-Fallow mapping assessment and Characterization*” was organised to discuss the Jharkhand rice fallow area statistics, jointly with NRSC, Hyderabad, NFSM Jharkhand and Department of Agriculture, Animal Husbandry & Co-operative, Govt of Jharkhand held on 25<sup>th</sup> July 2018 at Krishi Bhawan, Ranchi, Jharkhand.

### **SCATSAT-1 Utilization Program**

**(A SAC (ISRO) R&D Project)**

- A software tool is being developed for Rice Crop Phenology identification using temporal behaviour of Scatterometer data under which following modules are completed.
  - Reading of multi-temporal data
  - Averaging based on the user defined number of days
  - Computing pixel wise date of maxima (maximum backscatter)

### **Other Activities**

- 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.
- 5 days training on ERDAS Professional 2018 was held from 9<sup>th</sup> -11<sup>th</sup> and then on 16<sup>th</sup> -17<sup>th</sup> July 2018. The training was mostly concentrated on the advanced classifiers and machine learning tools (Random Forest, CART & SVM classification Modeler) available with this new version.
- A special presentation was given to the Additional Secretary, Sh Jalaj Srivastava (Hort) on ‘The Programmes at MNCFC: Current Status and Future Plans’, on 19<sup>th</sup> July, 2016, which was attended by the officials of all concerned divisions.
- A meeting was conducted at MNCFC, along with representatives of State Remote Sensing Centre of Punjab, Haryana and Uttar Pradesh and the IIRS to discuss a proposed project proposal on Crop Residue Burning.

- Four Assistant Secretaries visited MNCFC and briefed about the various activities.

### Publications

- FASAL (2018) Jute Production Forecast, 2018-19. MNCFC/FASAL/2018-19/01. Mahalanobis National Crop Forecast Centre, New Delhi – 110012, July, 2018. 27p.
- Neetu, Kumar, Y.P., Chkravarthi, P. K., Yadav, S.K. and Ray, S. S. (2018) Multi-Date RISAT-1 FRS 2 Quad Polarization Data Analysis for Various Crop Discrimination. Journal of Agricultural Physics (in press).
- Ray, S.S., Singh, J.P., and Parihar, J. S. (2018) Soil Discrimination and Parameter Estimation using Hyperspectral Data and Multivariate Analysis Techniques. Journal of Agricultural Physics (in press)
- Ray, S.S., Miglani, Anshu, Singh, J.P., and Parihar, J. S. (2018) Evaluation of narrowband indices for rice crop parameter retrieval and discrimination between different nitrogen treatments using ground-based hyperspectral data. Journal of Agricultural Physics (in press)

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

### MEETING/WORKSHOP/SEMINAR ATTENDED

Date & Venue	Meeting/Conference	Participated by	Participation
19-20, July 2018 Space Applications Centre, Ahmedabad	SCATSAT Review Meeting	Mr. Pushkar Gaur, Analyst	Participated & provided inputs



Half day workshop on “Satellite based Rice-Fallow Mapping, Assessment and Characterization” on 25<sup>th</sup> July 2018 in Ranchi, Jharkhand

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