

**Coordinated Horticulture Assessment & Management  
using geoinformatics**

**CHAMAN-Phase-II**



**Work Plan (2018-2020)  
for  
Collaboration between**

**Mahalanobis National Crop Forecast Centre, DAC&FW  
&  
India Meteorological Department (IMD), New Delhi**

## **1. Summary of the Proposed Project**

CHAMAN project, under the Mission for Integrated Development of Horticulture (MIDH), in the first phase (Sept 2014- May, 2018) has made significant progress in the applications of satellite remote sensing and GIS in horticulture sector, which include the i) development & standardization of methodology for area and production estimation of major horticulture crops (Potato, Onion, Chili, Tomato, Mnago, Citrus, Banana) at National/State/districts level, ii) geospatial applications for horticulture development (site suitability, infrastructure development, crop intensification, orchard rejuvenation, GIS database creation & Aqua-horticulture), & iii) research and development studies for signature generation, precision farming, yield modeling, stress detection etc. The CHAMAN Phase-I (Remote Sensing component of the project) was implemented by Mahalanobis National Crop Forecast Centre (MNCFC) in collaboration with ISRO Centres (SAC, NRSC & NESAC) and 12 state horticulture departments, 7 North Eastern Region –State remote sensing centres and horticulture departments, NHRDF, IMD, ICAR-NRCG, and State Remote Sensing Centres.

## **2. CHAMAN Phase -II:**

Based on the success of the CHAMAN-Phase-I, DAC&FW approved the Phase-II of CHAMAN project for the period 2018-19 & 2019-2020. The major objective of the CHAMAN Phase-II is operationalisation of the technologies developed during the Phase-I, taking up new crops and research & development studies, especially the crop yield modelling.

## **3. Organizations**

### **3.1 National Level Agency (NLA):**

Mahalanobis National Crop Forecast Centre (MNCFC), DAC&FW, Ministry of Agriculture & Farmers, Welfare, Govt. of India, New Delhi.

### **3.2 Partner Organizations:**

A large number of organizations i.e. ISRO/DOS (SAC, NRSC & NESAC), ICAR-Crop Centers, IMD, IEG, CDB, State Remote Sensing Centre's & State Horticulture Departments are partners in this programme.

This work plan is for the collaboration between Mahalanobis National Crop Forecast Centre, DAC&FW and India Meteorological Department (IMD), New Delhi

#### 4. Objective:

- Development of Empirical agro-met yield models for CHAMAN crops using weather data and derived products/indices

#### 5. Role & Responsibilities

##### 5.1. Mahalanobis National Crop Forecast Centre (MNCFC)

- Overall coordination of the project
- Funding Support under the CHAMAN project fund
- Final Production estimation of the crop by combining remote sensing (RS)-based area estimate and model-based yield estimate
- Project Progress Review
- Report finalization and submission to DAC&FW

##### 5.2. India Meteorological Department (IMD)

- To develop district and state level yield forecast for Rabi potato in 7 states (**Uttar Pradesh, Bihar, West Bengal, Gujarat, Punjab, Madhya Pradesh and Haryana**)
  - To develop district and state level yield forecast for Late Kharif and Rabi onion in 7 states (**Uttar Pradesh, Bihar, West Bengal, Gujarat, Punjab, Madhya Pradesh and Haryana**)
  - To develop district and state level yield forecast for Late kharif and Rabi tomato in 8 states (**Andhra Pradesh, Odisha, Karnataka, Madhya Pradesh, West Bengal, Bihar, Gujarat and Chhattisgarh**)
  - To develop district and state level yield forecast for chilli in 7 states (**Andhra Pradesh, Telangana, Karnataka, West Bengal, Madhya Pradesh, Odisha and Maharashtra**)
  - To develop district and state level yield forecast model for banana, mango & citrus
  - Providing weather data for the entire cropping season (sowing to harvesting).
  - Submission of crop wise final technical report
  - Submission of Utilization certificate (UC's) in December and February month of financial year
- Crop wise districts and time of forecast have been provided in Annexure

## 6. Time Schedule (2018-19)

Starting date	Nov, 2018
Mid Term Review	Jan, 2019
District/State level Forecast	Dec. 2018-March 2019
Submission of Report	March, 2019

**7.1. Total Duration** : Two year (2018-19 and 2019-20)

**7.2 Budget** : Rs. 20.0 lakh (2018-19)

### Budget Components

SN	Item	Amount (Rs. in Lakh) 2018-19
1	Services	12.00
2	Travel/GT/TA/DA	4.00
3	Contingency	2.50
4	Institutional Charge	1.50
5	Total	20.00

**Table-1 List of states for each crop**

Crop type	Crop	State	No,s of estimates	Estimates Month
Fruit	Banana(6)	Tamil Nadu, Andhra Pradesh, Maharashtra, Gujarat, Karnataka, <b>Uttar Pradesh</b>	1	Dec.-Jan
	Mango(7)	Uttar Pradesh, Gujarat, Karnataka, Andhra Pradesh, Telangana, Bihar, <b>Tamil Nadu.</b>	1	Jan.-Sept
	Citrus(9)	Andhra Pradesh, Telangana, Maharashtra, Punjab, Madhya Pradesh, Gujarat, <b>Rajasthan, Karnataka, Tamil Nadu</b>	1	Oct.-Nov.
Vegetables	Potato (8)	Uttar Pradesh, Bihar, West Bengal, Gujarat, Punjab, Bihar, <b>Madhya Pradesh, Haryana.</b>	2 (State district lev)	Jan.-Feb
	Onion(7)	Maharashtra, Gujarat, MP, Karnataka, <b>Rajasthan, Bihar, Andhra Pradesh.</b>	2 (late kharif and Rabi)	Jan.-April
	Tomato(8)	Andhra Pradesh, Odisha, Karnataka, Madhya Pradesh, West Bengal, Bihar, <b>Gujarat, Chhattisgarh.</b>	1	Dec.-Jan
Spices	Chilli(7)	Andhra Pradesh, Telangana, Karnataka, West Bengal, Madhya Pradesh, Odisha, <b>Maharashtra</b>	1	Oct.-Nov

States marked as bold, are additionally include in Phase II.

**Table 2 Pilot Studies: Technique Development**

<b>Crop type</b>	<b>Crop</b>	<b>State</b>	<b>No's of Districts</b>	<b>Estimate Months/No's</b>
<b>Fruit</b>	Grape	Maharashtra	2-3	March
	Pomegranate	Maharashtra	2-3	April-May
	Apple	Himachal Pradesh	2-3	September
<b>Plantation</b>	Coconut	Kerala	4-5	Febraury
<b>Aromatic Plants</b>	Mentha (Mint)	Uttar Pradesh	8	June
<b>Spices</b>	Coriander	Rajasthan (3), Madhya Pradesh (5)	8	March
	Cumin	Rajasthan (5), Gujarat (6)	11	March

### **Annexure I**

#### **List of Districts under CHAMAN: Inventory Component**

<b>Crop Type</b>	<b>Crop</b>	<b>State (Districts) (Districts are subject to change based on crop area and do-ability)</b>
<b>Fruits</b>	Banana	<b>Tamil Nadu</b> (Trichy, Coimbatore, Erode, Kanyakumari, Vellore, Thanjavur, Theni, Thiruvanamalai, Thirunelveli, Toothikudi)
		<b>Gujarat</b> (Vadodara, Anand, Bharuch)
		<b>Maharashtra</b> (Jalgaon, Ahmadnagar, Dhule, Nanded, Parbhani)
		<b>Andhra Pradesh</b> (East and West Godavari, Kurnool and Cuddapah)
		<b>Karnataka</b> (Chamrajanagar, Mysore, Ramnagar, Bengaluru and Bagalkot)
		<b>Gujarat</b> (Anand, Bharuch, Vadodara)
		<b>Uttar Pradesh</b> (Gorakhpur, Kushi Nagar, Fatehpur, Kaushambi, Mahrajganj, Bahraich)
	Mango	<b>Uttar Pradesh</b> (Saharanpur, Sitapur, Hardoi, Meerut, Bulandshahr, Lucknow, Faizabad, Varanasi)
		<b>Andhra Pradesh</b> (Krishna, East Godavari, West Godavari, Vijayanagar)

		<b>Telangana</b> (Khammam)	
		<b>Karnataka</b> (Kolar, Tumkur, Bengaluru, Ramnagar, Chikballapur, Dharwad)	
		<b>Bihar</b> (Darbhanga, Vaishali, East Champaran, West Champaran, Sitamarhi, Bhagalpur),	
		<b>Gujarat</b> (Bhavnagar, Surat, Valsad, Junagarh, Mehsana, Kheda, Navsari)	
		<b>Tamil Nadu</b> (Krishnagiri, Vellore, Dharmapuri, Dindigul, Thiruvallur)	
	Citrus	<b>Andhra Pradesh</b> (Ananthapur and Prakasham)	
		<b>Telangana</b> (Nalgonda)	
		<b>Maharashtra</b> (Amravati, Nagpur, Akola and Aurangabad)	
		<b>Punjab</b> (Hoshiarpur, Firozpur, Muktsar)	
		<b>Madhya Pradesh</b> (Mandasaur, Shajapur, Chindwara, Agar-Malwa)	
		<b>Gujarat</b> (Ahmedabad, Mehsana, Bhavnagar, Gandhinagar)	
		<b>Karnataka</b> (Bijapur)	
		<b>Tamil Nadu</b> (Tirunelveli)	
		<b>Rajasthan</b> (Jhalawar, Sriganganagar, Hanumangarh, Baran, Sirohi, Chittor)	
	egetables	Potato	<b>UP</b> (Agra, Aligarh, Allahabad, Badaun, Bhimnagar, Etah, Etawah, Farrukhabad, Firozabad, Hardoi, Kannauj, Kanpur, KanshiramNagar, Mahamaya Nagar, Mainpuri, Mathura, Moradabad, Shahjahanpur)
			<b>West Bengal</b> (Bankura, Birbhum, Burdwan, Coochbihar, Dinajpur (North), Hooghly, Howrah, Jalpaiguri, West Midnapur, Murshidabadi)
			<b>Punjab</b> (Amritsar, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Patiala, Moga, Bathinda)
			<b>Bihar</b> (Aurangabad, Begusarai, Bhagalpur, Bhojpur, Darbhanga, Gaya, Katihar, Madhubani, Munger, Muzaffarpur, Nalanda, Patna, Rohtas, Samastipur, Saran, Siwan, Vaishali)
<b>Gujarat</b> (Banaskantha, Gandhinagar, Mahesana, Sabar Kantha, Kheda)			
<b>Madhya Pradesh</b> (5 Districts)			
<b>Haryana</b> (Karnal, Kurukshetra, Yamunanagar, Ambala, Sonapat)			
<b>Onion</b>		<b>Maharashtra</b> (Nasik, Ahmadnagar, Pune, Dhule and Jalgaon)	
		<b>Karnataka</b> (Gadag, Dharwad, Chitradurga, Bijapur)	

		<b>Madhya Pradesh</b> (Indore, Ujjain, Dewas, Khandwa, Shajapur, Ratlam, Dhar, Rajgarh, Agar-Malwa)
		<b>Gujarat</b> (Bhavnagar, Amreli, Morbi, Rajkot, Junagarh, Gir Somnath and Jamnagar)
		<b>Bihar</b> (Patna, Nalanda, Lakhisarai, Sheikhpura)
		<b>Rajasthan</b> (Sikar ,Jodhpur, Alwar, Nagaur)
		<b>Andhra Pradesh</b> (Kurnool, Ananthpur, Kadapa)
	Tomato	<b>Andhra Pradesh</b> (Prakasham, Vishakhapatnam, Chittoor, Ananthpur, Kurnool, Cuddappah, Vijiangaram)
		<b>Karnataka</b> (Belgaum, Devengere, Haveri, Chikballapur, Kolar)
		<b>Odisha</b> (Keonjhar, Khurda, Kalahandi, Mayurbhanj)
		<b>Madhya Pradesh</b> (Chindwara, Khandwa, Khargone, Raisen & Shivpuri)
		<b>West Bengal</b> (West Midnapore, Purulia, Murshidabad, Nadia, Coochbehar)
		<b>Maharashtra</b> (Nasik and Pune)
		<b>Gujarat</b> (Mehsana, Sabarkantha)
		<b>Chhattisgarh</b> (Durg, Bilaspur, Jashpur, Raipur.)