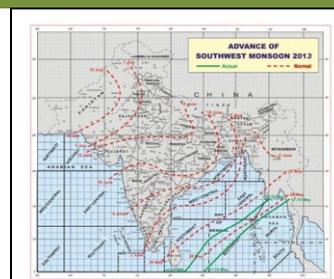


## Monsoon Watch

The northern limit of monsoon (NLM) continues to pass through Lat 5.0°N/Long 82.0°E, Lat. 10.0°N/ Long. 86.0°E, Lat. 13.0° N/Long.91.0° E and Lat.16.0°N/Long.95.0° E.



## Regionwise Salient Advisories

### Northern India

- **Major crops** : Moong, urad (active vegetative/flowering), summer vegetables (active vegetative / flowering/fruited).



- As mainly dry weather prevailed and heat wave to severe heat wave / heat wave conditions would prevail over the region during next 48 hours, farmers are advised to apply light and frequent irrigation to vegetables, orchard crops in Jammu & Kashmir; summer vegetables in Himachal Pradesh, Delhi and Rajasthan, early sown vegetables, summer moong and urad in Uttarakhand and Uttar Pradesh and regular irrigation in sugarcane, summer pulses, *khari*f fodders and evergreen fruits plants in Punjab.
- Dust raising winds may occur at some places over Rajasthan, Haryana and West Uttar Pradesh, farmers are advised to give light irrigation to vegetable crops at active vegetative / flowering stage in Haryana, West Uttar Pradesh and in summer vegetables, *zaid* fodder crops, *Cucurbitaceous* crops and small fruit plants in Rajasthan.

### Central India

- **Major crops** : Autumn sugarcane (active vegetative / elongation), summer vegetables (active vegetative / flowering/fruited), sesame (flowering/capsule formation).



- As no significant rainfall occurred during last week and no rainfall is likely, farmers are advised to apply irrigation to sugarcane, summer maize and summer vegetables in the states of the region.
- As heat wave to severe heat wave conditions would occur over the region during next 48 hours, daily ET loss will increase; farmers are advised to apply light and frequent irrigation in vegetable crops in the morning or evening hours.

### Northeast India

- **Major crops** : early *ahu* rice (flowering / grain filling), summer vegetables (active vegetative / flowering / fruited).



- As significant rainfall occurred in most of the districts of the States of the region during last week and also rainfall is expected at many places over the States of the region during the period, farmers are advised to postpone irrigation, inter-cultural operation and application of plant protection measures and fertilizers to the standing crops. Farmers are also advised to arrange for adequate drainage to avoid water stagnation in the crop fields in these states of the region.
- As thundersquall is likely to occur over the States of the region during next 48 hours, farmers are advised to arrange mechanical support to banana, propping up in sugarcane and staking of vegetables, to prevent the crops from lodging due to strong winds.

### Eastern India

- Major crops : summer vegetables (active vegetative / flowering / fruited), moong, urad (active vegetative / flowering), jute (early vegetative)

- As significant rainfall occurred in all districts of Gangetic West Bengal except East Midnapore, Hooghly, Howrah, Birbhum, Purulia, West Midnapore; Sikkim; in Sub Himalayan West Bengal except Malda, in Sahebganj district of Jharkhand and Araria, Bhagalpur, East Champaran, Kathihar, Kishanganj, Madhepura, Purnea, Saharsha, Sheohar, Supaul districts of Bihar, farmers are advised to postpone irrigation to the standing crops in these districts. As no significant rainfall is likely to occur in remaining parts of the States of the region, farmers are advised to apply irrigation to summer maize, summer vegetable, sugarcane, sunflower, moong, onion.
- As thundersquall would occur at one or two places over West Bengal & Sikkim during next 48 hours and over Odisha, Bihar and Jharkhand during next 24 hours, farmers are advised to arrange mechanical support to banana and propping up in sugarcane/staking of vegetables, to prevent the crops from lodging due to strong winds

### Western India

- Major crops : New sown sugarcane (tillering / elongation), summer groundnut (pod formation), summer bajra (grain formation/maturity), pulses (active vegetative / flowering).



- As there was no significant rainfall in the State and mainly dry weather expected over the State during next 3 days, farmers are advised to apply irrigation to late sown groundnut (pod development stage in North Madhya Maharashtra and Vidarbha), sugarcane and vegetables in morning hours or in the evening to avoid excessive evaporation.
- Due to thundershowers in some parts of Kolhapur, Sangli and Satara districts, banana, grapes and vegetable crops are likely to be affected, farmers are advised to give mechanical support to banana plants. They are also advised to complete the harvesting of already matured summer rice, maize and sunflower at the earliest.
- As very high temperature (above 45°C) is prevailing in Vidarbha and is expected to continue for next 48 hours, farmers are advised to apply light and frequent irrigation to the vegetable crops, moderate irrigation to sugarcane and orchard crops. Apply mulch in orchards and newly planted sugarcane to reduce the high rate of evapotranspiration.

### South India

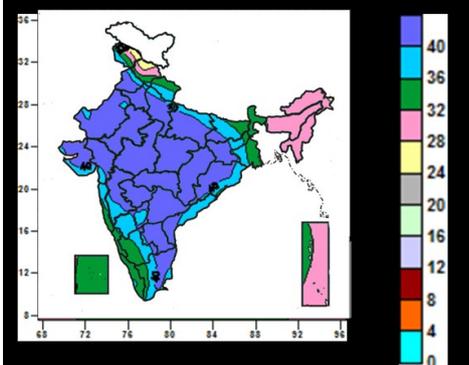
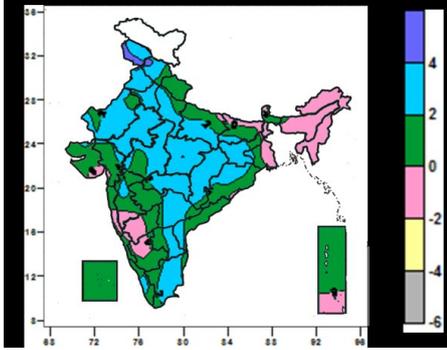
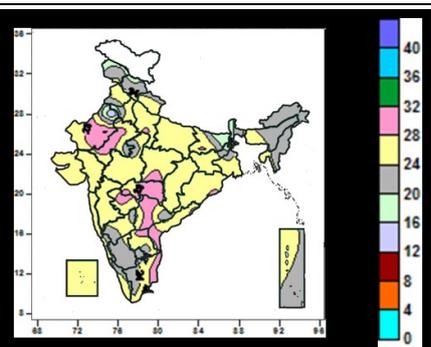
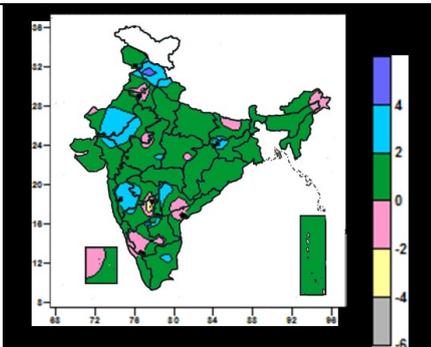
- Major crops : Sunflower (maturity/harvest), summer pulses (active vegetative / flowering), sugarcane (tillering / grand growth), summer groundnut (pod development), maize (active vegetative/flowering) and summer cotton (active vegetative/flowering).
- Significant rainfall occurred in Coimbatore, Dharmapuri, Karur, Nilgiris and Theni of Tamilnadu, Udipi and Dakshin Kannada of Coastal Karnataka, all the districts of South Interior Karnataka except Chamrajnagara, Mysore and Ramanagara and almost all districts of Kerala except Alappuzha, Ernakulam, Kollam, Kottayam, Pathanamthitta and Trivandram. Mainly dry weather prevailed over remaining parts of the region. Farmers are advised to postpone irrigation to the crops in the above mentioned districts and apply irrigation in groundnut, sugarcane, summer cotton, summer pulses and vegetable crops in A.P. and Tamil nadu and in groundnut, sugarcane in Karnataka.
- As onset of monsoon is expected around 3rd June, farmers in the Northern Zone of Kerala are advised to undertake nursery preparation for Viruppu rice.

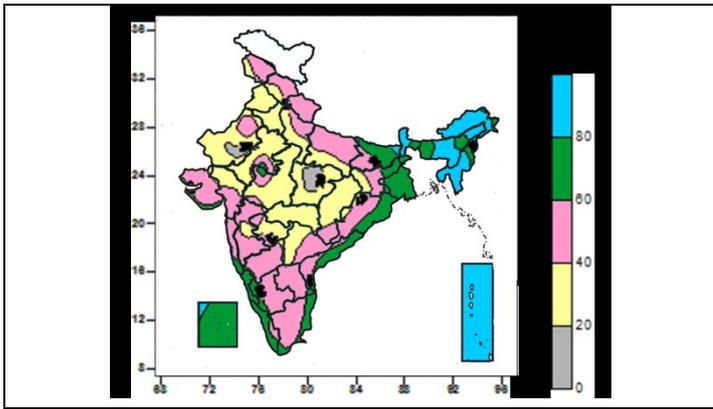
Issued by

National Agrometeorological Advisory Service Centre, Agricultural Meteorology Division,  
India Meteorological Department, Shivajinagar, Pune.

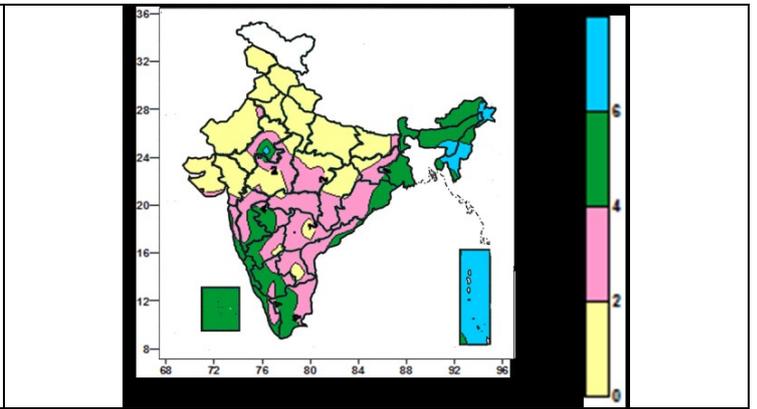
The bulletin is also displayed in the website (<http://www.imdagrimet.gov.in>) of the Division

**Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 22.05.2013**

Actual Mean Maximum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 22.05.2013	Mean Maximum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 22.05.2013
	
<ul style="list-style-type: none"> <li>• 40 <math>^{\circ}\text{C}</math> and above over many parts of the country except Northeast, Jammu Kashmir, Himachal Pradesh West coast, West Bengal and Sikkim some parts of Uttarakhand, Interior Karnataka, Coastal Andhra Pradesh and Orissa</li> <li>• 36 to 40<math>^{\circ}\text{C}</math> over Interior Karnataka, Coastal Andhra Pradesh, some parts of Orissa, Bihar, Jharkhand, Uttar Pradesh, Uttarakhand and Himachal Pradesh</li> <li>• 28 to 36<math>^{\circ}\text{C}</math> over West Coast, Northeast India, Jammu &amp; Kashmir, Himachal Pradesh, Lakshadweep and Andaman and Nicobar Islands.</li> </ul>	<ul style="list-style-type: none"> <li>• 0 to 2<math>^{\circ}\text{C}</math> and above over many parts of the country (except Northeast India, West Bengal &amp; Sikkim, Bihar, Jharkhand, and Madhya Maharashtra, Konkan &amp; Goa).</li> <li>• -2 to 0<math>^{\circ}\text{C}</math> over many parts of Northeast India, North Interior Karnataka, some parts of West Bengal &amp; Sikkim, South Interior Karnataka.</li> </ul>
Actual Mean Minimum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 22.05.2013	Mean Minimum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 22.05.2013
	
<ul style="list-style-type: none"> <li>• 24 to 28<math>^{\circ}\text{C}</math> or more over many parts of the country except Jammu Kashmir, Himachal Pradesh, Northeast India, Coastal &amp; South Interior Karnataka, some parts of North interior Karnataka, Tamil Nadu, West Bengal and Sikkim, Bihar, Jharkhand, Rajasthan, Uttarakhnd where it was between 20-24<math>^{\circ}\text{C}</math></li> </ul>	<ul style="list-style-type: none"> <li>• 0 to 2<math>^{\circ}\text{C}</math> and above over most of the country except some parts of Jammu &amp; Kashmir, Himachal Pradesh, Rajasthan, Madhya Maharashtra, Marathwada, Vidarbha, Tamil Nadu.</li> <li>• -2 to 0<math>^{\circ}\text{C}</math> over some parts of Punjab, Haryana, Rajasthan, Bihar, Arunachal Pradesh, Andhra Pradesh, Kerala, Karnataka, Madhya Maharashtra, Marathwada, Lakshadweep Islands.</li> </ul>
Relative Humidity (%) over India for the week ending 22.05.2013	Cloud amount (okta) over India for the week ending 22.05.2013

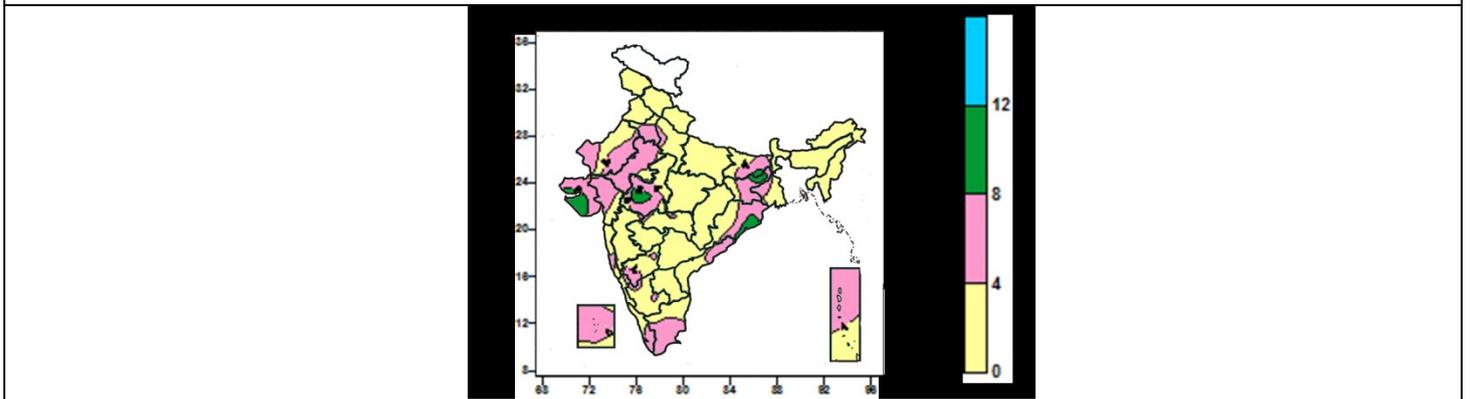


- 60 to 80% and above over many parts of Northeast India, West Bengal & Sikkim, east coast from Orissa to Tamil Nadu, West coast from Saurashtra & Kutch to Kerala, Lakshadweep Islands.
- 40 to 60% over most parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Central Orissa, Telangana, Raylaseema, Tamil Nadu, South & North Interior Karnataka, Maharashtra, Gujarat, Saurashtra & Kutch, some parts of Rajasthan, Bihar, Jharkhand, West Madhya Pradesh, Chhattisgarh.
- 20 to 40 % over many parts of North India (except Jammu & Kashmir, Himachal Pradesh), Central India, Vidarbha, Telangana , some parts of Jammu & Kashmir, Himachal Pradesh, Jharkhand, Gujarat, Madhya Maharashtra.



- 6 okta and above over most parts of Mizoram, Andaman & Nicobar Islands, some parts of Assam & Meghalaya, Arunachal Pradesh, Manipur, Tripura, East Rajasthan.
- 4 to 6 okta over many parts of West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Mizoram, Tripura, Kerala, Karnataka, Tamil Nadu, Madhya Maharashtra, Marathwada, Goa, Lakshadweep Islands, some parts of East Rajasthan, Orissa, Konkan.
- 2 to 4 okta over many parts of East Rajasthan, West Bengal & Sikkim, Central India, Jharkhand, Orissa, Andhra Pradesh, Vidarbha, Tamil Nadu, Lakshadweep Islands, some parts of Karnataka, Maharashtra (except Vidarbha).
- 0 to 2 okta over many parts Northwest India, Bihar, Gujarat, Saurashtra & Kutch, Madhya Pradesh, North Chhattisgarh, some parts of Telangana, Rayalaseema, Marathwada.

**Wind speed (knots) over India for the week ending 22.05.2013**



- 8 to 12 knots over some parts of Saurashtra, West Madhya Pradesh, Bihar, Jharkhand, Orissa.
- 4 to 8 knots over many parts of Haryana, Delhi, Gujarat, Saurashtra & Kutch, Rajasthan, West Madhya Pradesh, Bihar, Jharkhand, Orissa, South Tamil Nadu, South Kerala, Lakshadweep, Andaman & Nicobar Islands, some parts of East Uttar Pradesh, Gangetic West Bengal, Coastal Andhra Pradesh, Interior Karnataka, Konkan & Goa.
- 0 to 4 knots over many parts of the country except Gujarat, Saurashtra & Kutch, Rajasthan, West Madhya Pradesh, Bihar, Jharkhand, Kerala, Tamil Nadu, Lakshadweep & Andaman & Nicobar Islands.

### Significant realized rainfall during last week

Significant rainfall received in most of the districts in Northeast India; many places of West Bengal, Sikkim, Kerala, South Interior and Coastal Karnataka; Araria, Bhaglpur, East Champaran, Khatihar, Kisanganj, Madhepura, Purnea, Saharsa, Seohar and Supaul in Bihar and Coimbatore, Dharmapuri, Karur, Nilgiris & Theni of Tamilnadu. Mainly dry weather prevailed over rest parts of the country.

### Distribution of rainfall of the country during week ending on 22.05.2013

State/Districts	Actual (mm)	% dep.
<b>Arunachal Pradesh</b>		
Anjaw	**	**
Changlang	40.0	-54
Dibang Valley	46.0	-31
East Kameng	10.0	-82
East Siang	58.6	-22
Kurung Kumey	**	**
Lohit	79.2	7
Lower Dibang Valley	20.0	-70
Lower Subansari	12.2	-80
Papumpara	93.3	71
Tawang	17.0	-76
Tirap	53.4	-32
Upper Siang	87.0	-16
Upper Subansari	95.6	188
West Kameng	25.3	-64
West Siang	24.2	-64
<b>Assam</b>		
Baksa	59.1	-31
Barpeta	60.3	-30
Bongaigaon	79.4	-1
Cachar	108.3	20
Chirang	34.1	-57
Darrang	2.0	-97
Dhemaji	60.0	-22
Dhubri	47.1	-47
Dibrugarh	62.8	16
Goalpara	19.9	-79
Golghat	16.1	-68
Hailakandi	67.8	-25
Jorhat	35.1	-43
Kamrup(Rural)	25.2	-60
Kamrup(Metro)	9.2	-85
Karbi Anglong	45.7	8
Karimganj	105.1	-26
Kokrajhar	98.9	12
Lakhimpur	52.0	-33
Morigaon	3.6	-92
N.C.Hills	180.4	139
Nowgong	34.9	6
Nalbari	12.3	-84

Sonitpur	34.9	-39
Sibsagar	53.1	9
Tinsukia	44.0	-21
Udalgiri	64.3	3
<b>Meghalaya</b>		
East Garo Hills	4.0	-94
East Khasi Hills	235.0	55
Jaintia Hills	156.0	16
Ribhoi	78.2	38
South Garo Hills	88.0	-1
West Garo Hills	91.4	3
West Khasi Hills	17.0	-82
<b>Mizoram</b>		
Aizwal	74.3	-11
Champhai	67.0	-15
Chhimituipui	**	**
Kolasib	30.0	-58
Lawngtlai	54.0	-48
Lunglei	0.0	-100
Mamit	6.0	-93
Saiha	35.0	-67
Serchhip	57.0	-31
<b>Manipur</b>		
Bishnupur	**	**
Chandel	0.0	-100
Churachandpur	8.0	-86
Imphal east	48.2	-1
Imphal west	**	**
Senapati	**	**
Tamenglong	**	**
Thoubal	46.0	64
Ukhrul	70.0	295
<b>Nagaland</b>		
Dimapur	20.5	-42
Kephire	3.0	-92
Kohima	73.4	81
Longleng	**	**
Mokokchung	47.0	7
Mon	**	**
Paran	**	**
Phek	49.0	21
Tuensang	**	**
Wokha	1.0	-98

Zunheboto	111.0	193
<b>Tripura</b>		
Dhalai	156.7	67
North tripura	185.5	106
South tripura	128.0	60
West tripura	155.1	91
<b>Bihar</b>		
Araria	36.8	26
Arwal	0.0	-100
Aurangabad	0.0	-100
Banka	**	**
Begusarai	17.3	16
Bhabua	**	**
Bhagalpur	28.0	82
Bhojpur	**	**
Buxar	**	**
Darbhanga	**	**
East Champaran	35.7	200
Gaya	0.0	-100
Gopalganj	0.0	-100
Jahanabad	0.0	-100
Jamui	0.0	-100
Kathihar	25.9	74
Khagadia	4.6	-58
Kishanganj	25.0	-16
Lakhisarai	0.0	-100
Madhepura	45.6	238
Madhubani	**	**
Monghyar	15.6	71
Muzaffarpur	13.6	-5
Nalanda	0.0	-100
Nawada	0.0	-100
Patna	0.0	-100
Purnea	50.6	111
Rohtas	0.0	-100
Saharsa	22.4	-29
Samstipur	0.0	-100
Saran	0.0	-100
Sheikpura	0.0	-100
Sheohar	33.0	134
Sitamarhi	5.4	-62
Siwan	**	**
Supaul	25.9	31

Vaishali	1.4	-79
West Champaran	14.8	6
<b>West Bengal</b>		
GWB		
Bankura	29.9	108
Birbhum	18.1	1
Burdwan	36.2	101
East Midnapore	16.3	-16
Hooghly	14.5	-52
Howrah	8.0	-71
Kolkata	32.7	41
Murshidabad	31.3	103
Nadia	26.0	14
24 Pargana (N)	67.4	164
Purulia	8.8	-32
24 Pargana (S)	39.2	31
West Midnapore	17.3	4
<b>SHWB</b>		
Cooch Behar	35.2	-50
Darjeeling	85.0	38
East Sikkim	44.4	-34
Jalpaiguri	31.7	-52
Malda	14.9	-4
North Dinajpur	22.0	-36
North Sikkim	117.3	41
South Dinajpur	22.3	-34
South Sikkim	27.1	-60
West Sikkim	68.0	-18
<b>Karnataka</b>		
<b>Coastal Karnataka</b>		
Dakshin Kannada	30.3	-36
Udupi	47.5	-13
Uttar Kannada	5.8	-83
<b>N I Karnataka</b>		
Bagalkote	0.9	-93
Belgaum	5.7	-70
Bidar	1.4	-76
Bijapur	5.8	-48

Dharwad	16.9	-20
Gadag	11.6	-35
Gulbarga	6.8	0
Haveri	8.4	-57
Koppal	2.7	-80
Raichur	3.2	-70
Yadgir	1.8	-78
<b>S I Karnataka</b>		
Bangalore Rural	42.0	86
Bangalore Urban	26.7	4
Bellary	19.2	24
Chamarajnagar	10.4	-68
Chichballapur	19.5	9
Chickmagalur	65.0	103
Chitradurga	53.8	226
Davangere	73.7	280
Hassan	30.0	20
Kodagu	30.5	-21
Kolar	19.9	-7
Mandya	24.7	-5
Mysore	9.6	-69
Ramnagara	18.5	-29
Shimoga	26.1	18
Tumkur	26.3	19
<b>Kerala</b>		
Alappuzha	2.5	-97
Kannur	37.6	-43
Ernakulam	10.0	-88
Idukki	26.2	-60
Kasaragod	26.0	-62
Kollam	1.0	-98
Kottayam	14.3	-79
Kozhikode	45.9	-35
Malappuram	43.8	-26
Palakkad	36.4	-20
Pathanamthitta	0.0	-100
Thiruvananthapuram	0.6	-99
Thrissur	27.8	-67

Wyanad	48.6	-1
<b>Tamil Nadu</b>		
Ariyalur	7.5	-56
Chennai	0.0	-100
Coimbatore	34.9	53
Cuddalore	0.1	-99
Dharmapuri	23.3	-10
Dindigul	5.9	-69
Erode	7.8	-63
Kanchipuram	0.0	-100
Kanyakumari	0.6	-98
Karikal	0.0	-100
Karur	19.8	27
Krishnagiri	12.1	-55
Madurai	6.4	-55
Nagapattinam	0.0	-100
Namakkal	10.2	-56
Nilgiris	27.0	-23
Perambalur	1.8	-91
Puducherry	0.1	-99
Pudukottai	0.0	-100
Ramanathapuram	0.0	-100
Salem	2.2	-92
Sivaganga	0.0	-100
Thanjavur	0.9	-93
Theni	23.2	80
Tirunelveli	0.8	-91
Tirupur	12.3	-42
Tiruvallur	0.0	-100
Tiruvannamalai	0.9	-96
Tiruvarur	0.0	-100
Toothukudi	0.7	-88
Trichy	0.0	-100
Vellore	9.5	-57
Villupuram	0.0	-100
Virudhunagar	8.0	-42

**Legends**

	(20% or more) excess rainfall		(-60 to -99 %) scanty rainfall
	(-19 to +19%) normal rainfall		(-100%) no rainfall
	(-20 to -59%) deficient rainfall	**	Data not available

# Weather Forecast

## Major Feature of Weather Forecast up to 0830 hours IST of 27<sup>th</sup> May, 2013

- Rain/thundershowers would occur at a few places over SubHimalayan West Bengal & Sikkim, Arunachal Pradesh and at many places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- Rain/thundershowers would occur at most places over Andaman & Nicobar Islands.
- Rain/thundershowers would occur at one or two places over Bihar, Jharkhand, Odisha and Gangetic West Bengal.
- Rain/thundershowers would occur at one or two places over Jammu & Kashmir and Himachal Pradesh during next 24 hours and increase over Jammu & Kashmir thereafter.
- Dust raising winds would occur at some places over Rajasthan, Haryana, west Uttar Pradesh during next 48 hours.
- Rain/thundershowers would occur at a few places over Kerala and Lakshadweep and at one or two places over south Karnataka, south Konkan & Goa, Rayalaseema and Tamilnadu.
- No significant change in maximum temperature over northwest, west, central and adjoining east India during next 24 hours, however, it may fall by 2-3°C over northwest and adjoining central India.
- Weather would be mainly dry over rest parts of the country of western Himalayan region, Jharkhand.

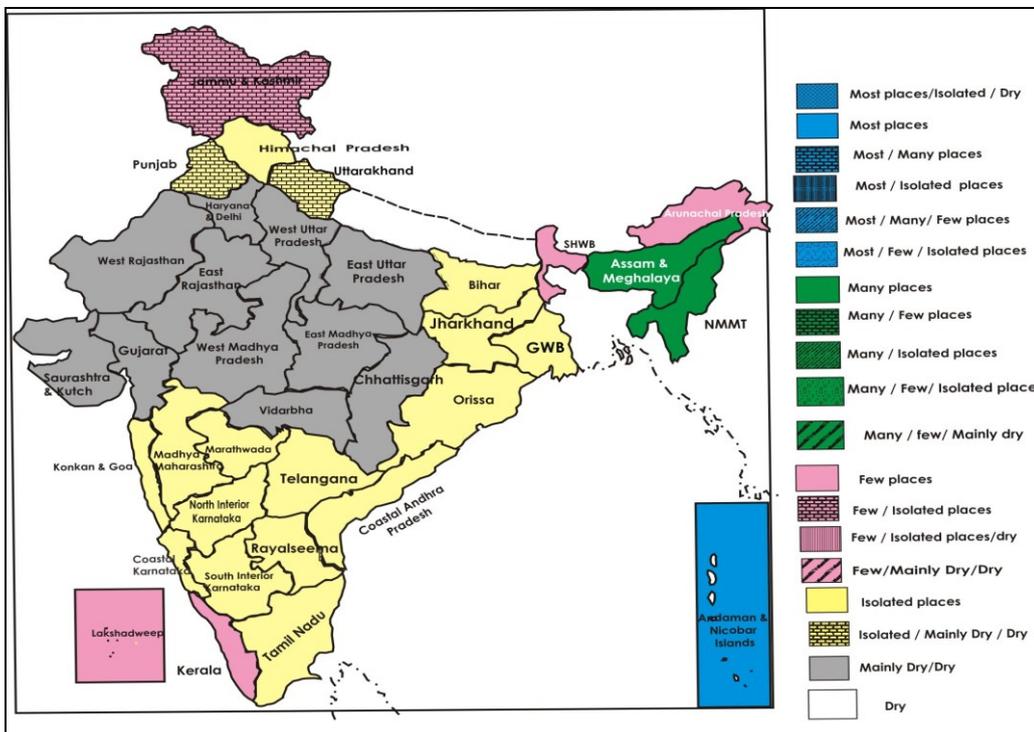
## Weather Warning during next 3 days

- Thundersquall would occur at one or two places over Bihar, Jharkhand, Odisha, West Bengal & Sikkim, Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours.
- Heat wave to severe heat wave conditions would prevail over some parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Rajasthan, Vidarbha and Madhya Pradesh during next 48 hours. Heat wave would also prevail over some parts of south Uttar Pradesh, east Madhya Pradesh, Marathawada, interior Odisha, Chhattisgarh, Telangana and coastal Andhra Pradesh during next 48 hours.
- Heavy rainfall would occur at one or two places over Andaman & Nicobar Islands, Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours.

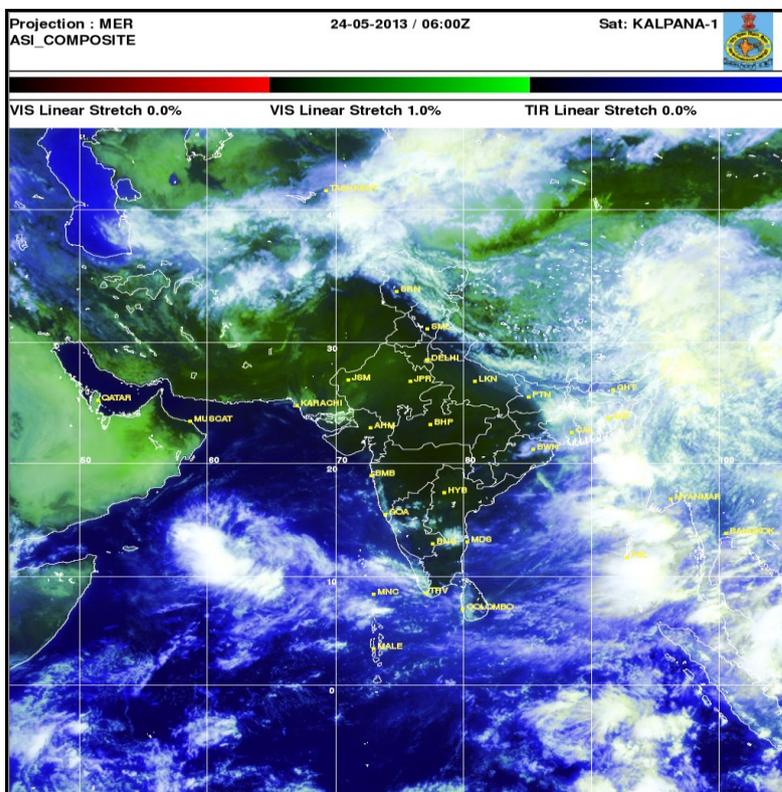
## Weather Outlook for subsequent 4 days from 27<sup>th</sup> to 31<sup>st</sup> May, 2013

- Rain/thundershowers would occur at many places over northeastern states, SubHimalayan West Bengal & Sikkim and Andaman & Nicobar Islands.
- Rain/thundershowers would occur at a few places over Jammu & Kashmir and at one or two places over Himachal Pradesh on 26th and decrease thereafter.
- Increase in rainfall activity over south peninsular India and Lakshadweep.
- Rain/ thundershowers would occur at a few places over Gangetic West Bengal and Bihar and at one or two places over Jharkhand and Odisha along west coast and Lakshadweep..

## Weather Forecast Map (Valid upto 0830 hours of 27<sup>th</sup> May, 2013)



## Satellite image 0600 UTC dated 24<sup>th</sup> May, 2013



## Zonewise Agromet Advisories

**NORTH INDIA** [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]

- **Realised Rainfall:** Weather remained mainly dry over the region.
- **Weather Forecast:** Rain/thundershowers would occur at one or two places over Jammu & Kashmir and Himachal Pradesh during next 24 hours and increase over Jammu & Kashmir thereafter. Dust raising winds would occur at some places over Rajasthan, Haryana, west Uttar Pradesh during next 48 hours. No significant change in maximum temperature over northwest India.
- **Weather Warning:** Heat wave to severe heat wave conditions would prevail over some parts of J&K, Himachal Pradesh, Punjab, Haryana, Delhi, Rajasthan during next 48 hours. Heat wave would also prevail over some parts of south Uttar Pradesh, during next 48 hours.

### Advisory:

- As mainly dry weather prevailed and heat wave to severe heat wave / heat wave conditions would prevail over the region during next 48 hours, farmers are advised to apply light and frequent irrigation to summer vegetables in Himachal Pradesh, Delhi and Rajasthan and Jammu & Kashmir, moderate irrigation in orchard crops in Jammu & Kashmir; Himachal Pradesh, Delhi and in summer moong and urad in Uttarakhand, Uttar Pradesh Rajasthan and regular irrigation in sugarcane, *kharif* fodders and evergreen fruits plants in Punjab.
- Dust raising winds may occur at some places over Rajasthan, Haryana and West Uttar Pradesh, farmers are advised to give light and frequent irrigation to vegetable crops at active vegetative / flowering stage in Haryana, West Uttar Pradesh and in summer vegetables, *zaid* fodder crops, *Cucurbitaceous* crops and small fruit plants in Rajasthan.
- Due to high temperature condition in Rajasthan and in East Uttar Pradesh, farmers are advised to apply light and frequent irrigation to vegetable crops.
- Due to fluctuation in temperature in Valley Temperate Zone of Jammu & Kashmir, farmers are advised to use protected rice nursery technology and also to remove water during sunny days twice a week and keep nursery water level 5 cm during night hours.
- In view of dry weather condition in Eastern Plain Zone of Uttar Pradesh, farmers are advised to apply irrigation in spring sugarcane. Also in Bundelkhand Zone of Uttar Pradesh, farmers are advised to apply irrigation to fruit plants and vegetables.
- Due to increase in maximum temperature in Delhi, farmers are advised to give frequent irrigation in vegetables crops. Farmers are also advised to protect banana, citrus, mango and kinoo orchards against hot winds by physical barrier and frequent irrigation.
- Farmers in Eastern Zone in Haryana are advised to continue sowing of rice nursery of recommended varieties and undertake sowing of fodder crops such as jowar mixed with cowpea to increase the nutritive value. Also advised to apply irrigation to sugarcane crop at 10 days interval.
- Due to increase in temperatures in Babar and Tarai zone of Uttarakhand, there are chances of incidence of yellow mosaic in moong crop. If leaves are turning yellow, then spray Metasystox @ 400 ml per 400 liters of water per acre over the affected crop.
- Due to rise in temperature in Semi Arid Eastern Plain Zone of Rajasthan, chilli crop is affected by leaf curl & mosaic disease, to control further spread of disease uproot & burn affected plants and spray Dimethoate 30EC @ 1.0 ml per litre in water. Also to prevent blight disease incidence in tomato, spray Mencozeb @ 2 gm or copper oxychloride @ 3 gm per litre water.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
  - In Sub-Tropical Zone of Jammu & Kashmir, farmers are advised to provide clean water for drinking to the animals at frequent interval to save animals from heat stroke. Vaccinate cows and buffaloes against foot and mouth diseases.
  - In Semi Arid Eastern Plain Zone of Rajasthan, farmers are advised to protect animals from heat stroke, keep animal in shade & give them cold water for drinking & tie the animal in such a manner that their head remain towards wall.
  - Due to increase in temperature in Uttar Pradesh, farmers are advised to protect the animals from heat; make arrangement for shade near the poultry house and provide clean water for drink.

## CENTRAL INDIA [M.P., CHHATTISGARH]

- **Realised Rainfall:** Weather was mainly dry over the region.
- **Weather forecast:** Weather would be mainly dry over the region.
- **Weather Warning:** Heat wave to severe heat wave conditions would prevail over Madhya Pradesh and heat wave would prevail over Chhattisgarh during next 48 hours.
- **Advisories:**
  - As no significant rainfall occurred during last week and no rainfall is likely, farmers are advised to apply irrigation to sugarcane, summer maize and summer vegetables in the states of the region.
  - As heat wave to severe heat wave conditions would occur over the region during next 48 hours, daily ET loss will increase; farmers are advised to apply light and frequent irrigation in vegetable crops in the morning or evening hours.
  - Dry weather and no rainfall is expected in Kymore Plateau and Satpura Hills Zone and Gird Zone of Madhya Pradesh hence farmers are advised to irrigate summer moong, vegetables and fodder (sorghum and maize) crops during evening hours regularly.
  - Due to dry weather and high temperature farmers in Satpura Plateau Zone and Bundelkhand Zone of Madhya Pradesh, are advised to apply light irrigation in the evening time to standing crops like vegetables, maize and sugarcane.
  - Due to prevailing hot weather in Chhattisgarh Plain Zone, farmers are advised to apply light and frequent irrigation in summer vegetables, in sunflower and in groundnut at pod filling stage.
  - Due to high temperature there is chance of attack white fly on lemon trees in Northern Hill Zone of Chhattisgarh, farmers are advised to spray Prophenophas @2.5ml/l for its control and spray Metasystox @ 0.04% for the control measure of yellow vein mosaic on lady finger.
  - Other advisories are mentioned in Annexure – I.
  - Stages of major crops are mentioned in Annexure II.
- **ANIMAL HUSBANDRY & POULTRY**
  - Farmers of Madhya Pradesh are advised to provide clean water, balanced and mineral rich feed etc. to the animals. Also protect the animal from heat.
  - Due to prevailing hot weather conditions in Chhattisgarh, farmers are advised to keep their poultry farm cool with gunny bag curtains and keep them wet regularly.
- Stages of major crops are mentioned in Annexure I.

## EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL & SIKKIM]

- **Realised Rainfall:** : Significant rainfall occurred in all districts of Gangetic West Bengal except East Midnapore, Hooghly, Howrah, Birbhum, Purulia, West Midnapore; Sikkim; in Sub Himalayan West Bengal except Malda, in Sahebganj district of Jharkhand and Araria, Bhagalpur, East Champaran, Kathihar, Kishanganj, Madhepura, Purnea, Saharsha, Sheohar, Supaul districts of Bihar . Mainly dry weather prevailed over the remaining part of the region during last week.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Sub-Himalayan West Bengal & Sikkim and at one or two places over Bihar, Jharkhand, Odisha and Gangetic West Bengal.
- **Weather Warning during next 3 days:** Thundersquall would occur at one or two places over West Bengal & Sikkim, Odisha, Bihar and Jharkhand during next 48 hours.  
Heat wave would also prevail over some parts of interior Odisha during next 48 hours.
- **Advisories:**
  - As significant rainfall occurred in all districts of Gangetic West Bengal except East Midnapore, Hooghly, Howrah, Birbhum, Purulia, West Midnapore; Sikkim; in Sub Himalayan West Bengal except Malda, in Sahebganj district of Jharkhand and Araria, Bhagalpur, East Champaran, Kathihar, Kishanganj, Madhepura, Purnea, Saharsha, Sheohar, Supaul districts of Bihar, farmers are advised to postpone irrigation to the standing crops in these districts. As no significant rainfall is likely to occur in remaining parts of the States of the region, farmers are advised to apply irrigation to summer maize, summer vegetable, sugarcane, sunflower, moong, onion.
  - As thundersquall would occur at one or two places over West Bengal & Sikkim during next 48 hours and over Odisha, Bihar and Jharkhand during next 24 hours, farmers are advised to arrange mechanical support to banana and propping up in sugarcane/staking of vegetables, to prevent the crops from lodging due to strong winds.

- In view of the prevailing dry weather condition in South and North West Alluvial Zone of Bihar, farmers are advised to apply irrigation to summer vegetables and moong during evening hours.
- As significant rainfall occurred during last week and also rainfall is expected at a few places is expected in Sub Himalayan West Bengal, farmers in Terai Zone are advised to drain out excess water from ginger, turmeric, maize and vegetable seedbed.
- As dry weather is prevailing, farmers in East and South Eastern Coastal Plain Zone of Odisha are advised to undertake digging of pits for gap filling/ new planting of fruit crops such as mango, coconut, citrus, guava, sapota, papaya, banana, litchi and pineapple in uplands including marginal lands. Also undertake sowing of maize with assured irrigation.
- Due to prevailing high temperature in Jharkhand, farmers are advised to irrigate summer moong and vegetables at regular interval and maintain optimum water level in summer rice field as the crop is in milking to grain maturity stage.
- In New Alluvial Zone of West Bengal, stem-rot may occur in pointed gourd due to high humidity, apply Bavistin or Benlate (1 g per litre of water).
- Farmers in Western Plateau Zone of Jharkhand are advised to spray Trizophos or Profanaphos @ 1 ml per litre of water during evening to control the attack of thrips in timely sown summer moong crops which are at flowering stage.
- In Jharkhand, farmers are advised to prepare the field and undertake planting of ginger and turmeric with irrigation facilities.
- Stages of major crops are mentioned in Annexure I.
- Animal Husbandry
- In view of the prevailing high temperature, farmers in Bihar are advised to keep livestock in shade and provide plenty of drinking water.
- As high temperature and dry weather is likely to continue for next five days, farmers of West Central Table Land Zone of Odisha are advised that care should be taken for avoiding heat stress in animals. Animals should not be allowed outside grazing between 12 noon to 3 pm, salt lick and sufficient clean drinking water should be provided to animals.
- In Jharkhand, there is possibility of attack of heat stroke in animals due to prevailing high day temperature. Hence, animals should be kept in shade during noon hours and give plenty of fresh water for drinking. To keep the shed cool, jute bag may be hanged as curtain in the windows and it should be wetted time to time.
- Poultry
- In Jharkhand, due to high temperature, preventive measure should be taken by giving mixture of Vitamin and spraying of cool water during noon time to poultry birds. Roof of asbestos sheet should be painted with white, supply sufficient amount of wet poultry feed.
- Pisciculture
- Farmers in Coastal Saline Zone of West Bengal are advised to check aeration of the fish pond by false netting during morning hours.

#### **NORTHEAST INDIA [ARUNACHAL PRADESH, NMM&T, ASSAM, MEGHALAYA]**

- **Realised Rainfall:** Significant rainfall occurred in all districts of the States of the region except Darrang, Goalpara, Golghat, Morigaon, Nalbari, Kamrup (Metro) districts of Assam, East Kameng, Lower Subansari, Tawang districts of Arunachal Pradesh, West Khasi Hills, East Garo Hills districts of Meghalaya, Chandel and Churachandpur districts of Manipur, Kephire and Wokha districts of Nagaland, Lunglei, Mamit districts of Mizoram.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Arunachal Pradesh and at many places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- **Weather warning:** Thundersquall would occur at one or two places over Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours. Heavy rainfall would occur at one or two places over Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours.
- **Outlook:** Rain/thundershowers would occur at many places over the States of the region.
- **Advisories:**
  - As significant rainfall occurred in most of the districts of the States of the region during last week and also rainfall is expected at many places over the States of the region during the period, farmers are advised to postpone irrigation, intercultural operation and application of plant protection measures and fertilizers to the standing crops. Also Heavy rainfall would occur at one or two places over the State of

the region, farmers are advised to arrange for adequate drainage to avoid water stagnation in the crop fields especially in already planted ginger crops in these states of the region.

- As thundersquall is likely to occur over the States of the region during next 48 hours, farmers are advised to arrange mechanical support to banana, propping up in sugarcane and staking of vegetables, to prevent the crops from lodging due to strong winds.
  - As there is possibility of occurrence of thunderstorm during afternoon hours, farmers are advised not to stand in open field during that period to avoid thunder related accidents.
  - Farmers in Mild Tropical Hill Zone of Nagaland are advised to provide proper drainage in maize, especially during cob development and maturity stage as the crop is highly susceptible to water logging. Harvest matured maize-cobs on bright sunny days.
  - Farmers in Barak Valley Zone of Assam are advised to drain out excess water from the fields of summer gourd, okra and cucurbits and not to allow excess water in already planted ginger.
  - Farmers in Sub-Tropical Hill Zone of Arunachal Pradesh are advised to continue planting of banana. Undertake nursery raising of WRC rice
  - Farmers in Sub Tropical Plain Zone of Manipur are advised to drain out excess water from crops field of maize, soybean, groundnut, cucurbits and summer vegetable. Also, drain out excess water from the rice field and maintain water depth of 5-8 cm.
  - Farmers in Temperate Sub Alpine Zone of Meghalaya are advised to drain out excess water from fields of *boro* rice and arrange for adequate drainage to avoid water stagnation in vegetable crop fields.
  - Farmers in North Bank Plain Zone, Upper Brahmaputra Valley Zone and Lower Brahmaputra Valley Zone of Assam are advised to prepare nursery bed of *sali* rice. Select long duration varieties in lowland rice area, medium duration rice varieties in medium lowland area. Farmers in Sub Tropical Plain Zone of Manipur are advised to continue seed bed preparation and sowing for *kharif* rice. Also, continue land preparation and sowing of groundnut, soybean, black gram and rice bean
  - Due to prevailing weather conditions in Barak Valley Zone of Assam, there is chance of attack of beetles and fruit and shoot borer in summer gourd, vegetables and okra; farmers are advised to spray Malathion 50 EC @ 1.5 litres / ha mixed in 500 – 700 liters of water after the current spells of rain.
  - Due to increase in relative humidity and probable increase in temperature in Central Brahmaputra Valley Zone of Assam, there is chance of attack of blast in *ahu* rice. Spray Bavistin @ 1 gm per litre of water during fair weather.
  - Due to cloudy weather in Mild Tropical Plain Zone of Tripura, there may be attack of gundhi bug in *boro* rice, apply Imidacloprid 2 ml per litre of water.
  - Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
    - In Mild Tropical Plain Zone of Tripura and in Mild Tropical Hill Zone of Nagaland, damp litter and high moisture due to continuous rain may lead to *Coccidiosis* in the chicken; so avoid dampness in the shed. Piglets are susceptible for swine fever due to change in weather and feed. The disease may be controlled by Furazolidone, streptomycin etc.

#### WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- **Realised Rainfall:** No significant rainfall occurred over the States of the region.
  - **Weather Forecast:** Rain / thundershower would occur at one or two places over South Konkan & Goa. Mainly dry weather would prevail over rest part of the region.
- **Weather Warning:** Heat wave to severe heat wave conditions would prevail over Vidarbha and heat wave would also prevail over some parts of Marathawada during next 48 hours.
- **Advisories:**
  - As there was no significant rainfall in the State and mainly dry weather expected over the State during next 3 days, farmers are advised to apply irrigation to late sown groundnut (pod development stage in North Madhya Maharashtra and Vidarbha), sugarcane and vegetables in morning hours or in the evening to avoid excessive evaporation.
  - Due to thundershowers in some parts of Kolhapur, Sangli and Satara districts, banana, grapes and vegetable crops are likely to be affected, farmers are advised to give mechanical support to banana plants. They are also advised to complete the harvesting of already matured summer rice, maize and sunflower at the earliest.
  - As very high temperature (above 45°C) is prevailing in Vidarbha and is expected to continue for next 48 hours, farmers are advised to apply light and frequent irrigation to the vegetable crops, moderate

irrigation to sugarcane and orchard crops. Apply mulch of straw in orchards and newly planted sugarcane to reduce the high rate of evapotranspiration.

- Considering high temperature (above 40°C), farmers in North Madhya Maharashtra are advised to apply 20 litres of water to each banana plant / day by pit method of irrigation and apply 13-14 litres water / dripper / day (plantation at 1.5 x 1.5 m) and 15 – 16 litres / dripper / day (plantation at 1.8 x1.5 m). Cover banana bunch with porous gunny bags to protect them from scorching sun. Apply either drip / sprinkler irrigation or flood irrigation in alternate furrow to sugarcane and apply trash mulch @ 5 tons / ha in furrows to conserve soil moisture.
- Farmers in Konkan and Western Ghat region are advised to prepare raised beds for nursery sowing of *kharif* rice and finger millet. Farmers in Kolhapur, Marathwada and East Vidarbha region are advised to complete the preparatory tillage for the planting of turmeric and ginger.
- As dry weather is prevailing, farmers are advised to complete harvesting of summer bajra in Nasik, Pune region and groundnut in Madhya Maharashtra and Central Vidarbha Zone in the early morning and late evening hours.
- Due to prevailing high temperature, farmers are advised to apply light irrigation in groundnut at pod development stage in North Saurashtra Zone and North Gujarat Zone; in green gram at pod development stage in Bhal and Coastal Zone of Gujarat and in summer bajra at seed setting stage in North West Zone of Gujarat. Light irrigation is advised in Middle Gujarat Zone in late sown groundnut.
- In South Gujarat Zone, farmers are advised to protect banana bunches from high temperature by covering with plastic sheet and apply mulching in sugarcane to avoid moisture stress due to high temperature.
- Rise in maximum and minimum temperature (2-3°C above normal) is congenial for attack of early shoot borer in newly planted sugarcane in Pune and Kolhapur region; use 2 Phule Trichocard per acre at 10 days interval for 2-3 times.
- Due to cloudy weather, there may be infestation of mango fruit fly in Sindhudurg district, farmers are advised to install Rakshak traps @ 4 traps per hectare. To avoid further spread of pest, collect and destroy the fallen infested fruits in the orchard.
- Due to high temperature and partly cloudy weather there may be increase in incidence of white fly, aphids, jassids and red spider mite in summer okra in Western Maharashtra Scarcity zone, spray Imidachloprid @ 4 ml or Thiamethoxam @ 4 g in 10 litres of water.
- Stages of the crops are mentioned in Annexure I.

#### • **Animal Husbandry**

- As high maximum temperature is persisting in Gujarat, keep animals under shade during noon hours and provide clean drinking water. Increase the green fodder quantity for feeding. Put curtains on west side of poultry house and sprinkle water on curtains during noon time. Vaccinate animals against FMD and BQ to avoid disease outbreak.
- Considering high temperature in the Maharashtra State, it is advised to make arrangement of curtains for poultry house and maintain cool temperature in the poultry shed by sprinkling water on the curtains. To reduce the effect of prevailing high temperature in animal sheds, cover the roof of the shed with grass or dried *jowar* straw, provide clean cold water with mineral for drinking and green fodder for animals and keep proper ventilation in animal shed.

#### **SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]**

- **Realised Rainfall:** Significant rainfall occurred in Coimbatore, Dharmapuri, Karur, Nilgiris and Theni of Tamilnadu, Udupi and Dakshin Kannada of Coastal Karnataka, all the districts of South Interior Karnataka except Chamrajnagara, Mysore and Ramanagara and almost all districts of Kerala except Alappuzha, Ernakulam, Kollam, Kottayam, Pathanamthitta and Trivandram. Mainly dry weather prevailed over remaining parts of the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at a few places over Kerala and Lakshadweep and at one or two places over south interior Karnataka, Tamilnadu and Rayalseema.
- **Weather Warning:** Heat wave would also prevail over some parts Telangana and coastal Andhra Pradesh during next 48 hours.
- **Advisories:**

- Significant rainfall occurred in Coimbatore, Dharmapuri, Karur, Nilgiris and Theni of Tamilnadu, Udupi and Dakshin Kannada of Coastal Karnataka, all the districts of South Interior Karnataka except Chamrajnagara, Mysore and Ramanagara and almost all districts of Kerala except Alappuzha, Ernakulam, Kollam, Kottayam, Pathanamthitta and Trivandram. Mainly dry weather prevailed over remaining parts of the region. Farmers are advised to postpone irrigation to the crops in the above mentioned districts and apply irrigation in groundnut, sugarcane, summer cotton, summer pulses and vegetable crops in A.P. and Tamil nadu and in groundnut, sugarcane in Karnataka.
- As onset of monsoon is expected around 3<sup>rd</sup> June, farmers in the Northern Zone of Kerala are advised to undertake nursery preparation for *Viruppu* rice.
- Utilizing the realised rainfall during this week, farmers in South Interior Karnataka are advised to undertake ploughing of the land after harvest of summer crops. Rice is at maturity to harvesting stage and rainfall is likely at a few places, farmers are advised to drain out the excess water in the field. Due to expected rainfall, avoid harvesting of rice. Take up summer ploughing in mango orchards to expose the soil to kill the different stages of insect pests. Due to receipt of sufficient rains, dry land farmers may take up land preparation across the land slope and keep ready the land for pre-monsoon crop sowing.
- Farmers in Coastal Karnataka are advised to prepare field for *kharif* rice nursery utilizing realized rainfall.
- Farmers in the Western Zone of Tamilnadu are advised to provide support to banana and sugarcane crop to avoid lodging due to high wind speed.
- Farmers in the Scarce Rainfall Zone of Andhra Pradesh are advised to undertake deep summer ploughing with the realised rains to reduce the soil borne pests and diseases, to reduce the weeds and to increase the rate of water intake into the soil.
- Prevailing high temperatures and warm night are favourable for incidence of early shoot borer in sugarcane in the North Coastal Zone of Andhra Pradesh, spray Chlorpyrifos @ 2.5 ml or Monocrotophos @1.6 ml per litre of water. Farmers are advised to irrigate the crop at frequent intervals.
- Due to high temperatures prevailing in the Southern Zone of Andhra Pradesh are favourable for incidence of stem borer on rice. Farmers are advised to spray Hexachlorozol @ 2.0 ml or Propochronozol @ 1ml per litre of water.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry:**
  - Farmers in the Scarce Rainfall Zone of Rayalaseema in Andhra Pradesh are advised to ensure periodic vaccination of animals against FMD, Brucellosis, Haemorrhagic, Septicaemia, Anthrax and small ruminants against ) PPR ( *Peste- des-Pepits* )Ruminants and Sheep and Goat Pox.
  - Prevailing dry weather is conducive for the viral attack on vegetables in Problem area zone in Kerala, farmers are advised to control insect vectors by chemical control or using yellow sticky traps.
  - Due to onset of monsoon over Kerala, farmers in the Problem Area Zone of Kerala are advised to vaccinate the animals against haemorrhagic septicaemia.
  - Farmers in the Cauvery Delta of Tamil Nadu are advised to vaccinate sheep and goats against sheep pox and provide highly reflective aluminum roofs to cattle shed to reduce the heat stress to the cattle.

## Annexure I Stages of Major Crops

### NORTH INDIA [JAMMU & KASHMIR, HIMACHAL PRADESH, UTTARAKHAND, PUNJAB, HARYANA, DELHI, UTTAR PRADESH & RAJASTHAN]

- Pome and stone fruits (flowering), onion (vegetative), potato, cabbage, cauliflower (maturity/harvesting), *Capsicum*, tomato, brinjal (vegetative), cucurbits, okra, French bean, fodder crops (chari, bajra) (early vegetative), rice (nursery sowing), peas, maize, fodder maize + legume (vegetative) in Himachal Pradesh.
- Late onion (vegetative), French bean, cluster bean, amaranthus, summer radish, summer green gram (flowering / fruiting), vegetable lobia, bottle gourd, cucumber, ridge gourd (sowing / early vegetative), chilli, tomato, brinjal and cucurbits (active vegetative / fruiting), Gwar, maize, Bajra, cluster bean as fodder crops (sowing), pigeon (sowing), cotton (sowing) in Delhi.
- Wheat (milk/dough), pulses (pea and lentil) (early maturity/harvesting), vegetables (vegetative/active vegetative), rice (nursery raising), maize (sowing), fruit crops (nursery bed preparation) in Valley Temperate Zone (Srinagar)), sunflower (early vegetative / vegetative), garlic, cucurbits, okra (seedling / early vegetative), radish, spinach (sowing), carrot, turnip (sowing), onion, cole crops (nursery sowing / transplanting), oat, berseem (vegetative), summer moong & mash (sowing), dhaincha (sowing), fodder jower, summer fodder (Maize + Cowpea+Jowar) (sowing/seedling), fruit crops (nursery bed preparation), brinjal, chilli (nursery sowing/transplanting), *kharif* pulses (field preparation) in Jammu & Kashmir.
- Rice (nursery sowing), ginger (vegetative), garlic (harvesting), autumn sugarcane (vegetative), oat (tillering / ear head emergence), moong, urd (active vegetative / flowering), okra (active vegetative/flowering), sugarcane, cucurbits (planting / seedling), fodder jowar (sowing/seedling) in Uttarakhand.
- Wheat (end harvesting), *rabi* maize (milk to dough), spring maize (tasseling), tomato, brinjal and cucurbits (flowering/fruiting), linseed, jai (pod maturity), onion, garlic (maturity/harvesting), moong, urad (active vegetative), summer vegetables, spring sugarcane (seedling/vegetative), summer green fodder like maize, lobia, sunhemp, dhaincha (vegetative/tillering) in Uttar Pradesh.
- New sugarcane (tillering), cotton (sowing/germination), cucurbits (sowing), berseem (vegetative / cutting), rice (nursery raising) in Punjab.
- New sugarcane (early vegetative), barseem (vegetative / cutting), other fodder crops (bajra, lobia, Sudan grass and Napier grass) (germination/tillering), cotton (sowing/germination), rice(nursery raising) in Haryana.
- Rice (nursery preparation), Irrigated groundnut (field preparation), cotton (field preparation / sowing), *Zaid* crops (moong, groundnut, fodder crops) (sowing / germination / early vegetative), sugarcane (maturity / harvesting), new sugarcane (field preparation/sowing), maize (maturity/harvesting), capsicum, guar, water melon, muskmelon (maturity / harvesting), vegetables (tinda, pumpkin, cucumber, coriander, bhindi, ridge gourd) (seedling / vegetative), opium poppy (pre-flowering / flowering) in Rajasthan.

### CENTRAL INDIA [M.P., CHHATTISGARH]

- Ladies finger (flowering / fruiting / harvesting), sugarcane (elongation), lobia, cowpea, jowar, maize (early vegetative / vegetative), summer vegetables (vegetative / flowering / fruiting) in Madhya Pradesh.
- Sugarcane (planting/early vegetative), pigeon pea, groundnut (pod filling/maturity), sesame (late vegetative / flowering), ginger, turmeric, papaya (vegetative), onion (vegetative), vegetable crops (vegetative/ flowering), millet (flowering), rice (grain filling), niger, kulthi (maturity/harvesting) in Chhattisgarh.

### EAST INDIA [JHARKHAND, BIHAR, ORISSA, WEST BENGAL &SIKKIM]

- Sunflower (head formation/ seed formation), sugarcane (early vegetative/tillering), summer vegetables (vegetative/flowering), moong, urad (vegetative /flowering), yam (vegetative) in Bihar.
- Pigeon pea (pod formation), onion (transplanting), vegetables (vegetative / flowering / fruiting), ginger and turmeric (planting), rice (grain maturity) and maize (vegetative to cob formation) in Jharkhand.
- Jute (early vegetative), summer rice (maturity/harvesting), sugarcane (tillering), banana (vegetative), cowpea (pod maturity/harvesting), tomato (flowering / fruiting), summer vegetables (vegetative/flowering), sunflower (maturity/harvesting) in Odisha.
- *Aus rice*(active vegetative/panicle initiation), sesame (capsule maturity), summer vegetables (vegetative/flowering), jute (early vegetative), ginger, turmeric (planting), maize (flowering), tomato (flowering / fruiting), brinjal, bitter gourd, pointed gourd, ladies finger (flowering / fruiting), sunflower (flowering), groundnut (pegging to pod formation), chilli (flowering / fruiting) in West Bengal.
- Ginger (early vegetative/vegetative), large cardamom (secondary flowering), summer vegetables (vegetative /flowering), rice (maturity/harvesting) in Sikkim.

## **NORTHEAST INDIA [ARUNACHAL PRADESH, NMM&T, ASSAM, MEGHALAYA]**

- Sugarcane (active vegetative /elongation), *boro* rice (harvesting), transplanted early *ahu* rice (panicle initiation / flowering / grain filling), transplanted normal *ahu* rice (active tillering), early *ahu* (direct seeded) (panicle initiation / heading), *sali* rice (nursery bed preparation), maize (vegetative/flowering/cob formation), jute (sowing/early vegetative), summer pulses (flowering/ pod formation), okra, cucurbits (active vegetative/flowering/fruited), ginger, turmeric, banana, papaya (planting) and summer vegetables (vegetative/flowering / fruited) in Assam.
- *Jhum* rice (vegetative), WRC rice (nursery raising), maize (vegetative/ cob formation), soybean (vegetative), green gram, black gram (vegetative), French bean (flowering/pod formation), okra (vegetative/ flowering) and cucurbits (flowering/fruited), potato (tuber formation), banana (planting) in Arunachal Pradesh.
- *Pre-kharif* rice (tillering / panicle initiation), *kharif* rice (nursery sowing), maize (silking / tasseling / cob formation/ cob maturity), groundnut and soybean (sowing/ early vegetative), tomato, brinjal, chilli (flowering / fruited), cucurbits (flowering / fruited), turmeric, ginger (planting/ early vegetative), black gram, rice bean (sowing) in Manipur.
- *Kharif* maize (vegetative), *boro* rice (grain filling/grain maturity), jute (vegetative), black gram, green gram (vegetative), okra (fruiting/maturity/ harvesting), bottle gourd, ash gourd (vegetative), tomato (planting / vegetative), brinjal (vegetative), potato (vegetative/ tuberization), turmeric, ginger (planting) in Meghalaya.
- Maize (early vegetative), banana (vegetative / fruited / harvesting), okra, cucurbits, French bean (sowing), chilli, brinjal, ginger and turmeric (nursery raising / planting) in Mizoram.
- Maize (cob formation/ maturity), upland rice (vegetative), lowland rice (nursery raising), cucurbits (vegetative), chilli (vegetative), okra (flowering /fruited), ginger (planting/germination) and brinjal (transplanting) in Nagaland.
- *Jhum* rice (seedling/early tillering), *boro* rice (harvesting), summer brinjal, tomato (fruit maturity/ harvesting), summer green gram and black gram (pod formation/ pod maturity/harvesting), okra (fruiting /harvesting), cucurbits (seedling/vegetative), summer maize (tasseling/ cob formation) and summer sesamum (capsule formation / maturity) in Tripura.

## **WEST INDIA [GOA, MAHARASHTRA, GUJARAT]**

- Sugarcane (New *adsali*) (tillering / elongation), sugarcane (tillering), new *suru* sugarcane (early tillering), summer rice (grain formation / maturity in Western Ghat region and East Vidarbha), summer groundnut (pod formation / pod maturity in Madhya Maharashtra, Marathwada and Vidarbha), Summer bajra (grain formation / maturity in Pune and Nasik region) in Maharashtra.
- Pearl millet (grain filling), pulses (vegetative / flowering), summer groundnut (pod formation/maturity), mango (fruit maturity), summer rice (grain formation), summer vegetables (vegetative / flowering / fruited), sugarcane (elongation / grand growth) in Gujarat.

## **SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP, ANDAMAN & NICOBAR ISLANDS]**

- Summer groundnut (active vegetative /pod development),cotton (active vegetative/ flowering) sunflower (maturity/harvest), summer rice (grain formation), Bt. cotton (active vegetative to flowering stage/boll development), green gram (harvest), cowpea (pod maturity/harvest), sesame (flowering /capsule formation), sugarcane (elongation), mango (harvesting) and vegetables (vegetative/ flowering) in Andhra Pradesh.
- Black gram (active vegetative/flowering), summer cotton (flowering/boll formation), sesame (capsule formation/maturity), sugarcane (active vegetative/grand growth), pearl millet (vegetative), maize (vegetative/flowering), groundnut (vegetative/flowering/pegging), sorghum (vegetative) and vegetables (all stages) in Tamil Nadu.
- *Viruppu* rice (nursery preparation), arecanut (flowering), mango (harvesting), sugarcane (tillering), banana (planting/vegetative), rubber (tapping), vegetables (flowering/fruited), pepper, ginger and cardamom (early vegetative) in Kerala.
- Mango (harvesting), summer green gram/ black gram (pod development/pod maturity), sugarcane (elongation), arecanut (flowering/nut formation), banana (fruit development) and vegetables (all stages) in Karnataka.

## **Annexure II**

### **List of Varieties**

#### **Punjab**

**Rice:** PR 121, PR 122, PR 118, PR 116, PR 114, PR 113, PR 111, PR 115 etc.

#### **Delhi**

**Cotton:** H-777, H-974, H-1098.

**Pigeonpea varieties:** Pusa 2001, Pusa991, Pusa992, Paras manak, UPAS 120

#### **Odisha**

**Ginger:** Suprava, Suruchi, Surabhi

**Turmeric:** Roma, Surama, Rang, Rashm

**Maize:** Navjot, Shakti, Decan-107, Decan-109

#### **Assam**

**Ginger:** Nadia, Karkai, Maran, Jorhat, Chaina.

**Turmeric:** Shillong Type, CL-24, PTS-38, PCT-13, VK-145.

**Banana:** Dwarf variety: Jahaji. Medium tall variety: Chenichampa, Malbhog, Barjahaji.

**Papaya:** Ranchi, Washington, Halflong, Coorg Honeydew, Solo papayas.

**Maize:** Ganga 5, Ganga 101, Hi-starch, Kisan, Vijay, Vikram, Diara

**Sali rice:**

Long duration high yielding varieties: Ranjit, Bahadur, Peoli, Moniram, Pankaj, Kushal .

Medium duration rice varietie: Satya, Basundhara.