



## Monsoon Watch

Conditions are continue to favourable for advance of southwest monsoon over Andaman Sea and parts of south Bay of Bengal during next 1-2 days.

## Regionwise Salient Advisories

### Northern India

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



- As significant rainfall occurred in Anantnag, Baramula, Doda, Ganderwal districts of Jammu & Kashmir; Chamba, Shimla, Kangra districts of Himachal Pradesh and Uttarkashi district in Uttarakhand, farmers are advised to postpone irrigation to the standing crops in the above mentioned districts. Apply light and frequent irrigation to vegetables, orchard crops in the remaining districts of Jammu & Kashmir; early sown vegetables, summer moong and urad in Uttarakhand and Uttar Pradesh; sugarcane, summer pulses, *Zaid* fodders and evergreen fruits plants in Punjab and summer vegetables in Himachal Pradesh, Delhi and Rajasthan.
- Duststorm / thunderstorm may occur at one or two places over Punjab, Haryana, West Uttar Pradesh and Rajasthan; farmers are advised to give light irrigation to vegetable crops at vegetative / flowering stage in Punjab and summer vegetables, *zaid* fodder crops, Cucurbitaceous crops and small fruit plants in Rajasthan.

### Central India

- **Major crops** : Autumn sugarcane (vegetative / elongation), summer vegetables (vegetative / flowering), sesame (late vegetative / flowering).



- As no significant rainfall occurred during last week and no rainfall is likely to occur and there is chance of rise in temperature therefore rise in daily ET loss, farmers are advised to apply irrigation to sugarcane, summer maize and summer vegetables in the states of the region.
- As heat wave conditions would occur over some parts of West Madhya Pradesh during next 48 hours and there is chance of rise in temperature therefore rise in daily ET loss, farmers are advised to apply light and frequent irrigation to the vegetable crops in West Madhya Pradesh.
- Duststorm / thunderstorm would occur at one or two places over Madhya Pradesh during next 24 hours hence farmers are advised to give light irrigation to vegetable crops at vegetative / flowering stage.

### Northeast India

- **Major crops** : early *ahu* rice (panicle initiation / flowering / grain filling), summer vegetables (vegetative / flowering / fruiting).



- 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. 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.
- 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.

### Eastern India

- **Major crops** : summer vegetables (vegetative / flowering / fruiting), moong, urad (active vegetative / flowering), jute (early vegetative / vegetative)
- As significant rainfall occurred in all districts in Gangetic West Bengal except East Midnapore, Hooghly, Howrah, Purulia, West Midnapore; Sikkim; Sub Himalayan West Bengal except Darjeeling, Malda, North Dinajpur, South Dinajpur; Malkangiri district of Odisha and Araria, Kishanganj and Seikpura districts in Bihar and Giridh and Sahebganj districts of Jharkhand, 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 the standing summer maize, summer vegetable crops, moong, sunflower, onion, autumn and spring season sugarcane.
- 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 and apply irrigation in litchi and mango orchards during evening hours.
- As significant rainfall occurred and rainfall at a few places is expected in Sub Himalayan West Bengal, farmers in Terai Zone are advised to drain out excess water from already planted ginger, turmeric and maize fields.

### Western India

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



- As high temperature is prevailing in some parts of Vidarbha and heat wave conditions is also likely to occur over this region during next 48 hours, farmers are advised to apply light and frequent irrigation in vegetable crops, moderate irrigation to sugarcane and orchard crops and also apply mulch in orchards and newly planted sugarcane to reduce the high rate of evaporation. Farmers in East Vidarbha are advised to cover the cauliflower heads with leaves to protect it from the scorching sun.
- As there was no significant rainfall in Maharashtra and no significant rain is expected during next 3 days, farmers are advised to apply irrigation to late sown summer bajra (grain formation stage in Pune and Nasik region), groundnut (pod development stage), sugarcane and vegetables in morning hours or in the evening to avoid excessive evaporation.
- As high temperature persists (above 40°C) in Marathwada, farmers, having no irrigation facility, are advised to remove the immature oranges and sweet limes and apply mulch and spray 8% kaolin to reduce the rate of evapotranspiration. They are also advised to apply irrigation to sugarcane by alternate furrow method and apply sprinkler / drip irrigation, if there is shortage of water. Apply mulch with thrash or plant waste product to preserve moisture in the field.

### South India

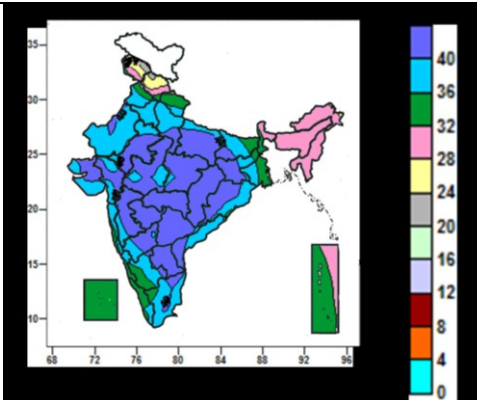
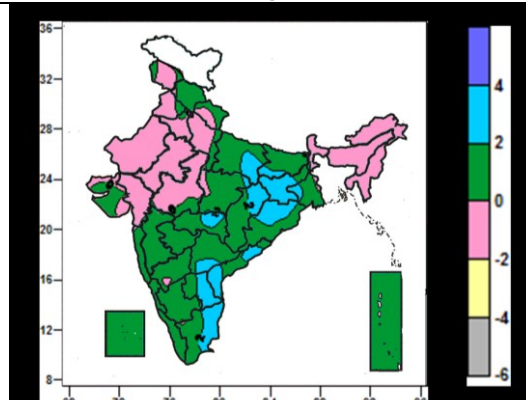
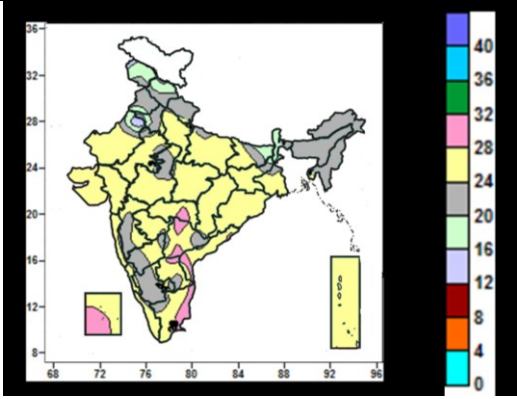
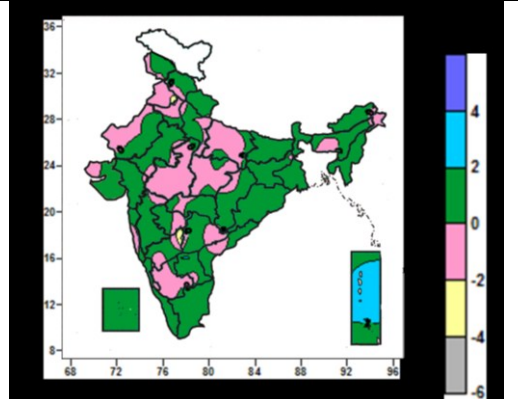
- **Major crops** : Sunflower (maturity), summer pulses (vegetative / flowering), sugarcane (tillering / grand growth), summer groundnut (vegetative / flowering / pegging), maize (vegetative) and summer cotton (vegetative).
- As significant rainfall occurred in Alapuzza, Kollam and Pathanamthitta in Kerala and Bangalore Rural & Urban, Chickmagalur, Chitradurga, Hassan, Kodagu and Ramanagara districts in South Interior Karnataka, farmers are advised to postpone irrigation to the crops in the above mentioned districts. Apply irrigation to groundnut, sugarcane, summer cotton, summer pulses and vegetable crops in the rest of the region, as mainly dry weather prevailed over remaining parts of the region.
- Farmers in the Southern Zone of Kerala are advised to undertake nursery preparation for Viruppu rice utilizing the realized rainfall.

Issued by

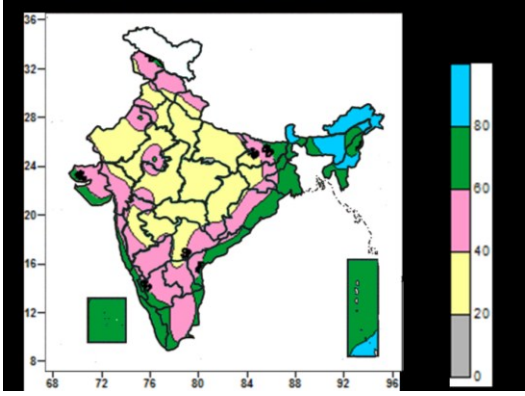
National Agrometeorological Advisory Service Centre, Agricultural Meteorology Division,  
India Meteorological Department, Shivajinagar, Pune.

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

## Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 15.05.2013

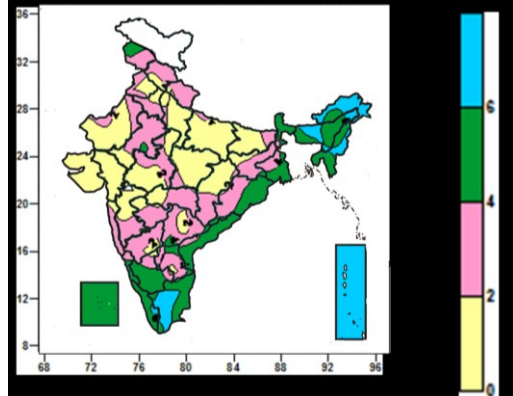
Actual Mean Maximum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 15.05.2013	Mean Maximum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 15.05.2013
	
<ul style="list-style-type: none"> <li>• 36 to 40<math>^{\circ}\text{C}</math> and above over many parts of the Country (except Jammu &amp; Kashmir, Himachal Pradesh, West Coast from Goa to Kerala, Northeast India, Sub-Himalayan West Bengal &amp; Sikkim, some parts of Bihar, Jharkhand, South Interior Karnataka).</li> <li>• 32 to 36<math>^{\circ}\text{C}</math> over many parts of Uttarakhand, West Bengal, West Coast of India from Goa to Kerala, Lakshadweep, Andaman &amp; Nicobar Islands, some parts of Himachal Pradesh, Punjab, Bihar, Jharkhand, South Interior Karnataka, Tamil Nadu.</li> <li>• 28 to 32<math>^{\circ}\text{C}</math> over most parts of Northeast India, Sikkim, some parts of Jammu &amp; Kashmir, Himachal Pradesh, Sub_himalayan West Bengal, Andaman &amp; Nicobar Islands.</li> <li>• 24 to 28<math>^{\circ}\text{C}</math> over some parts of Himachal Pradesh and Arunachal Pradesh.</li> <li>• 20 to 24<math>^{\circ}\text{C}</math> over some parts of Jammu &amp; Kashmir and Himachal Pradesh.</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, Sub-Himalayan West Bengal &amp; Sikkim, Punjab, Haryana, Delhi, Jammu &amp; Kashmir, West Uttar Pradesh, Rajasthan, West Madhya Pradesh, Gujarat, some parts Saurashtra &amp; Kutch, Sub-Himalayan West Bengal).</li> <li>• -2 to 0<math>^{\circ}\text{C}</math> over many parts of Northeast India, Sub-Himalayan West Bengal &amp; Sikkim, Punjab, Haryana, Delhi, Jammu &amp; Kashmir, West Uttar Pradesh, Rajasthan, West Madhya Pradesh, Gujarat, some parts Saurashtra &amp; Kutch, Gangetic West Bengal.</li> </ul>
Actual Mean Minimum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 15.05.2013	Mean Minimum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 15.05.2013
	
<ul style="list-style-type: none"> <li>• 28 to 32 over some parts of Vidarbha, Andhra Pradesh, Tamil Nadu, Lakshadweep Islands.</li> <li>• 24 to 28<math>^{\circ}\text{C}</math> over many parts of Rajasthan, Uttar Pradesh, East India (except East Bihar, Sub-Himalayan West Bengal, Sikkim), Central India, West India (except Madhya Maharashtra), South India (except Interior Karnataka), Lakshadweep, Andaman &amp; Nicobar Islands.</li> <li>• 20 to 24<math>^{\circ}\text{C}</math> over many parts of Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Northeast India, Madhya Maharashtra, Interior Karnataka, some parts of Rajasthan, West Bengal, West Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Kerala.</li> <li>• 16 to 20<math>^{\circ}\text{C}</math> over many parts of Jammu &amp; Kashmir, Himachal Pradesh, Sub-Himalayan West Bengal &amp; Sikkim, some parts of Punjab, Haryana, West Rajasthan, Bihar.</li> <li>• 12 to 16<math>^{\circ}\text{C}</math> over some parts of Jammu &amp; Kashmir, Haryana, West Rajasthan.</li> </ul>	<ul style="list-style-type: none"> <li>• 2 to 4<math>^{\circ}\text{C}</math> over most parts of Andaman &amp; Nicobar Islands.</li> <li>• 0 to 2<math>^{\circ}\text{C}</math> and above many parts of the country (except Punjab, Haryana, Delhi, East Uttar Pradesh, Madhya Pradesh, South Interior Karnataka, some parts of Jammu &amp; Kashmir, Himachal Pradesh, West Uttar Pradesh, Rajasthan, Assam, Arunachal Pradesh, West India, Andhra Pradesh, Coastal &amp; North Interior Karnataka).</li> <li>• -2 to 0<math>^{\circ}\text{C}</math> over many parts of Punjab, Haryana, Delhi, East Uttar Pradesh, Madhya Pradesh, South Interior Karnataka, some parts of Jammu &amp; Kashmir, Himachal Pradesh, West Uttar Pradesh, Rajasthan, Assam, Arunachal Pradesh, Nagaland, West India, Andhra Pradesh, Coastal &amp; North Interior Karnataka.</li> <li>• -4 to -2<math>^{\circ}\text{C}</math> over some parts of Punjab, North Interior Karnataka.</li> </ul>

**Relative Humidity (%) over India for the week ending 15.05.2013**



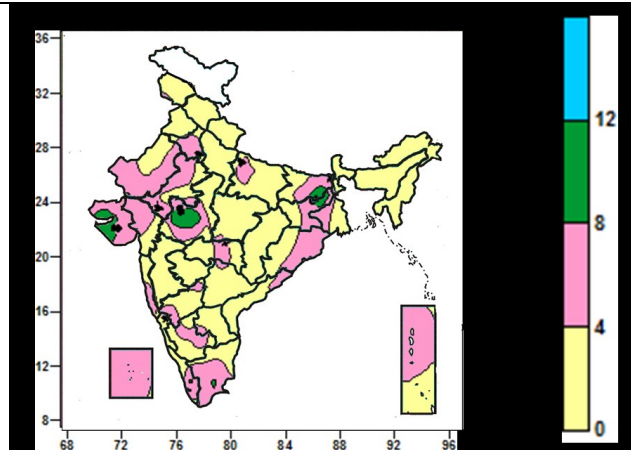
- 60 to 80% and above over many parts of Northeast India, West Bengal & Sikkim, east coast from Orissa to Tamil Nadu, West coast from Saurashtra & Kutch to Kerala, Lakshadweep, Andaman & Nicobar Islands.
- 40 to 60% over most parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Central Orissa, Telangana,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

**Cloud amount (okta) over India for the week ending 15.05.2013**



- 6 okta and above over most parts of Arunachal Pradesh, Nagaland, Manipur, Tamil Nadu, Andaman & Nicobar Islands, some parts of Assam & Meghalaya, Mizoram, Kerala,
- 4 to 6 okta over many parts of West Bengal & Sikkim, Assam & Meghalaya, Mizoram, Tripura, East coast from Orissa to Tamil Nadu, Kerala, Coastal & South Interior Karnataka, Lakshadweep Islands, some parts of Jammu & Kashmir, East Rajasthan
- 2 to 4 okta over many parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Haryana, Delhi, East Rajasthan, Jharkhand, Orissa, Telangana, Raylaseema, North Interior Karnataka, Maharashtra, Konkan & Goa, some parts of Punjab, Uttar Pradesh, West Rajasthan, West Bengal, Bihar, Coastal & South Interior Karnataka.
- 0 to 2 okta over many parts of Punjab, Uttar Pradesh, West Rajasthan, Bihar, Gujarat, Saurashtra & Kutch, Northern parts of Maharashtra, Madhya Pradesh, North Chhattisgarh, some parts of Himachal Pradesh, Uttarakhand, Haryana, Telangana, Rayalaseema, Interior Karnataka.

**Wind speed (knots) over India for the week ending 15.05.2013**



- 8 to 12 knots over some parts of Saurashtra, West Madhya Pradesh, Bihar, Jharkhand.
- 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, Andhra Pradesh, Interior Karnataka, Konkan & Goa.
- 0 to 4 knots over many parts of the country except North 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 districts of Northeast India; many places of West Bengal, Sikkim; Chamba, Kangra, Shimla districts of Himachal Pradesh; Anantnag, Baramula, Doda, Ganderwal districts of Jammu & Kashmir; Uttarkashi district of Uttarakhand; Araria, Kishanganj, Sheikpura districts of Bihar; Giridih, Sahebganj districts of Jharkhand; Malkangiri district of Orissa; Bangalore Rural, Bangalore Urban, Chickmagalur, Chitradurga, Hassan, Kodagu, Ramnagara districts of South Interior Karnataka; Alappuzha, Kollam, Pathanamthitta districts of Kerala. Mainly dry weather prevailed over rest parts of the country.

### Distribution of rainfall of the country during week ending on 15.05.2013

State/Districts	Actual (mm)	% dep.
<b>Arunachal Pradesh</b>		
Changlang	117.7	66
Dibang Valley	115.0	130
East Kameng	38.0	-34
East Siang	82.2	33
Kurung Kumey	**	**
Lohit	58.3	-1
Lower Dibang Valley	12.0	-76
Lower Subansari	14.0	-83
Papumpara	73.8	-37
Tawang	90.0	24
Tirap	151.6	152
Upper Siang	128.3	75
Upper Subansari	54.2	123
West Kameng	60.4	-16
West Siang	81.5	109
<b>Assam</b>		
Baksa	46.7	-41
Barpeta	75.5	-4
Bongaigaon	103.0	14
Cachar	170.0	105
Chirang	79.2	-12
Darrang	8.0	-88
Dhemaji	95.0	39
Dhubri	97.8	14
Dibrugarh	161.6	142
Goalpara	190.9	166
Golghat	104.6	89
Hailakandi	238.7	216
Jorhat	99.7	60
Kamrup(Rural)	74.8	15
Kamrup(Metro)	113.2	73
Karbi Anglong	139.1	644
Karimganj	175.2	26
Kokrajhar	80.2	20
Lakhimpur	61.2	-11
Morigaon	135.8	334
N.C.Hills	43.5	-36
Nowgong	90.9	145
Nalbari	124.7	41
Sonitpur	118.2	101

State/Districts	Actual (mm)	% dep.
Sibsagar	142.5	126
Tinsukia	95.7	47
Udalgiri	76.1	11
<b>Meghalaya</b>		
East Garo Hills	1.0	-99
East Khasi Hills	147.6	-12
Jaintia Hills	27.0	-71
Ribhoi	112.9	78
South Garo Hills	96.0	21
West Garo Hills	159.8	102
West Khasi Hills	116.0	72
<b>Mizoram</b>		
Aizwal	214.7	230
Champhai	253.0	526
Chhimitupui	**	**
Kolasib	61.0	1
Lawngtlai	119.0	93
Lunglei	70.0	20
Mamit	213.0	227
Saiha	175.0	206
Serchhip	131.0	143
<b>Manipur</b>		
Bishnupur	1.0	-97
Chandel	2.0	-91
Churachandpur	28.0	-42
Imphal east	93.9	106
Imphal west	**	**
Senapati	**	**
Tamenglong	**	**
Thoubal	78.0	71
Ukhrul	54.0	105
<b>Nagaland</b>		
Dimapur	158.0	278
Kephire	4.0	-93
Kohima	111.6	257
Longleng	**	**
Mokokchung	201.0	135
Mon	**	**
Paran	**	**
Phek	66.1	111
Wokha	1.0	-98

State/Districts	Actual (mm)	% dep.
Zunheboto	147.0	150
<b>Tripura</b>		
Dhalai	242.3	150
North tripura	181.3	95
South tripura	174.1	122
West tripura	139.5	70
<b>Himachal Pradesh</b>		
Bilaspur	7.8	-40
Chamba	27.2	23
Hamirpur	13.5	17
Kangra	20.7	77
Kinnaur	10.4	-52
Kullu	10.4	-46
Lahaul and Spiti	1.5	-95
Mandi	12.2	-38
Shimla	20.5	3
Sirmaur	12.6	46
Solan	13.5	-17
Una	5.3	-17
<b>Jammu &amp; Kashmir</b>		
Anantnag	20.4	-38
Badgam	15.0	-35
Baramula	22.9	-38
Doda	20.6	-24
Ganderwal	29.1	41
Jammu	1.8	-77
Kargil	0.0	-100
Kathua	0.9	-80
Kulgam	7.1	-78
Kupwara	16.5	-45
Ladakh(Leh)	0.0	-100
Poonch	0.0	-100
Pulwama	6.3	-76
Rajouri	7.9	-5
Ramban	13.4	-50
Reasi	1.6	-91
Samba	0.7	-91
Shopian	3.0	-88
Srinagar	14.1	-32
Udhampur	4.9	-74
<b>Bihar</b>		



State/Districts	Actual (mm)	% dep.
Araria	77.1	227
Arwal	4.5	80
Aurangabad	0.0	-100
Begusarai	0.0	-100
Bhagalpur	0.0	-100
East Champaran	0.4	-96
Gaya	0.0	-100
Gopalganj	0.0	-100
Jahanabad	0.0	-100
Jamui	0.0	-100
Kathihar	0.0	-100
Khagadia	0.0	-100
Kishanganj	70.0	185
Lakhisarai	3.6	-70
Madhepura	0.0	-100
Monghyar	0.2	-98
Muzaffarpur	0.0	-100
Nalanda	1.6	-70
Nawada	0.0	-100
Patna	6.6	3
Purnea	0.4	-98
Rohtas	0.0	-100
Saharsha	0.0	-100
Samstipur	0.0	-100
Saran	0.0	-100
Sheikpura	27.0	309
Sheohar	0.0	-100
Sitamarhi	0.0	-100
Siwan	**	**
Supaul	0.0	-100
Vaishali	3.6	-35
West Champaran	4.6	-61
<b>Jharkhand</b>		
Bokaro	8.3	-14
Deoghar	0.0	-100
Dhanbad	12.6	-1
East Singbhum	1.5	-91
Garhwa	**	**
Giridih	22.7	77
Hazaribagh	0.4	-96
Jamtara	17.3	8
Palamau	0.0	-100
Ramgarh	0.0	-100
Ranchi	0.9	-93
Sahebganj	52.2	284

West Singbhum	0.0	-100
<b>Odisha</b>		
Angul	4.1	-75
Balasore	18.1	-42
Bargarh	0.0	-100
Bhadrak	2.5	-93
Bolangir	0.0	-100
Boudh	8.0	-68
Cuttack	7.8	-63
Deogarh	0.0	-100
Dhenkanal	5.0	-72
Gajapati	13.8	-75
Ganjam	3.2	-91
Jagsingpur	5.9	-84
Jajpur	16.9	-38
Jharsuguda	0.0	-99
Kalahandi	0.4	-98
Kandhamal	6.6	-74
Kendrapara	3.8	-82
Keonjhar	19.5	-33
Khurda	9.8	-57
Koraput	0.0	-100
Malkangiri	48.0	134
Mayurbhanj	7.7	-75
Nawapara	0.0	-100
Nawarangpur	0.0	-100
Nayagarh	6.9	-38
Puri	4.1	-86
Rayagada	18.5	-52
Sambalpur	0.9	-90
Sonepur	1.5	-83
Sundargarh	0.0	-99
<b>West Bengal</b>		
<b>GWB</b>		
Bankura	33.9	142
Birbhum	42.6	126
Burdwan	36.5	103
East Midnapore	11.1	-48
Hooghly	4.2	-79
Howrah	3.0	-90
Kolkata	49.4	98
Murshidabad	112.0	596
Nadia	25.0	23
24 Pargana (N)	22.2	21
Purulia	10.7	-24
24 Pargana (S)	29.9	-14
West Midnapore	17.7	-33

<b>SHWB</b>		
Cooch Behar	84.7	23
Darjeeling	19.9	-61
East Sikkim	63.1	-11
Jalpaiguri	73.0	10
Malda	2.4	-90
North Dinajpur	14.0	-60
North Sikkim	198.3	187
South Dinajpur	10.7	-70
South Sikkim	24.0	-66
West Sikkim	41.0	-41
<b>Karnataka</b>		
<b>S I Karnataka</b>		
Bangalore Rural	35.7	85
Bangalore Urban	35.9	44
Bellary	12.9	33
Chamarajnaragar	13.2	-58
Chichballapur	17.1	15
Chickmagalur	22.6	16
Chitradurga	30.0	105
Davangere	10.0	-39
Hassan	26.0	9
Kodagu	30.0	-4
Kolar	8.3	-49
Mandya	18.8	-22
Mysore	19.4	-38
Ramnagara	41.5	55
Shimoga	2.7	-81
Tumkur	16.7	-15
<b>Kerala</b>		
Alappuzha	27.1	-49
Kannur	1.0	-97
Ernakulam	7.4	-86
Idukki	14.8	-67
Kasaragod	0.0	-100
Kollam	29.7	-45
Kottayam	9.5	-81
Kozhikode	0.0	-100
Malappuram	4.3	-91
Palakkad	0.0	-100
Pathanamthitta	30.0	-47
Thiruvananthapuram	3.3	-91
Thrissur	0.0	-100
Wyanad	10.5	-68

**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 20<sup>th</sup> May, 2013

- Rain/thundershowers would occur at many places over northeastern states and at a few places over Sub-Himalayan West Bengal & Sikkim.
- Rain/thundershowers would occur at many places over Andaman & Nicobar Islands.
- Rain/thundershowers would occur at one or two places over Gangetic West Bengal and Odisha during next 24 hours and mainly dry thereafter.
- Duststorm thunderstorm would occur at one or two places over Punjab, Haryana, west Uttar Pradesh,
- Rajasthan and Madhya Pradesh during next 24 hours.
- Rain/thundershowers would occur at one or two places over Madhya Maharashtra, Marathwada, Chhattisgarh, Jharkhand and Andhra Pradesh during next 24 hours.
- Rain/thundershowers would occur at one or two places over Kerala, Karnataka, Lakshadweep and Tamilnadu.
- Maximum temperature would rise by 1-2°C over northwest, central and east India during next 48 hours.
- Weather would be mainly dry over rest parts of the country.

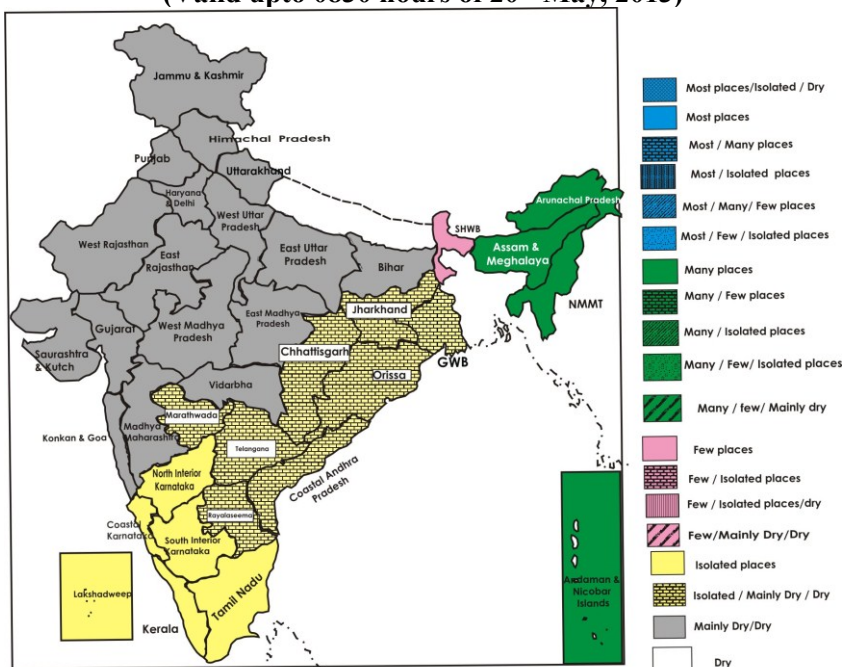
## Weather Warning during next 3 days

- Thundersquall would occur at one or two places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura during next 48 hours.
- Heat wave conditions would occur over some parts of Rajasthan, west Madhya Pradesh, east Uttar Pradesh and Vidarbha during next 48 hours.

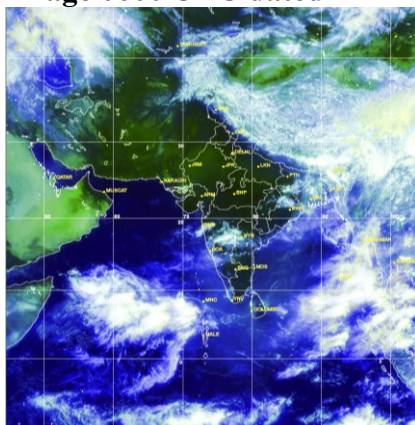
## Weather Outlook for subsequent 4 days from 20<sup>th</sup> to 24<sup>th</sup> May, 2013

- Rain/thundershowers would occur at many places over northeastern states and Andaman & Nicobar Islands.
- Rain/ thundershowers would occur at one or two places over south peninsular India.
- Rain/ thundershowers would occur at one or two places over Jammu & Kashmir and Himachal Pradesh.
- Weather would be mainly dry over rest parts of the country.

## Weather Forecast Map (Valid upto 0830 hours of 20<sup>th</sup> May, 2013)



**Satellite image 0600 UTC dated 17<sup>th</sup> May, 2013**



# Zonewise Agromet Advisories

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

- **Realised Rainfall:** Significant rainfall occurred in Anantnag, Baramula, Doda, Ganderwal districts of Jammu & Kashmir; Chamba, Shimla, Kangra districts of Himachal Pradesh and Uttarkashi district in Uttarakhand. Weather remained mainly dry over rest parts of the region.
- **Weather Forecast:** Duststorm / thunderstorm would occur at one or two places over Punjab, Haryana, West Uttar Pradesh and Rajasthan during next 24 hours. Maximum temperature would rise by 1-2°C over the region during next 48 hours.
- **Weather Warning:** Heat wave conditions would occur over some parts of Rajasthan and east Uttar Pradesh during next 48 hours.
- **Advisory:**
  - As significant rainfall occurred in Anantnag, Baramula, Doda, Ganderwal districts of Jammu & Kashmir; Chamba, Shimla, Kangra districts of Himachal Pradesh and Uttarkashi district in Uttarakhand, farmers are advised to postpone irrigation to the standing crops in the above mentioned districts. Apply light and frequent irrigation to vegetables, orchard crops in the remaining districts of Jammu & Kashmir; early sown vegetables, summer moong and urad in Uttarakhand and Uttar Pradesh; sugarcane, summer pulses, *Zaid* fodders and evergreen fruits plants in Punjab and summer vegetables in Himachal Pradesh, Delhi and Rajasthan.
  - Duststorm / thunderstorm may occur at one or two places over Punjab, Haryana, West Uttar Pradesh and Rajasthan, farmers are advised to give light irrigation to vegetable crops at vegetative / flowering stage in Punjab and summer vegetables, *zaid* fodder crops, *Cucurbitaceous* crops and small fruit plants in Rajasthan.
  - Due to high temperature condition in Rajasthan and east Uttar Pradesh, farmers are advised to apply light and frequent irrigation in vegetables.
  - Due to fluctuation in temperature in Valley Temperate Zone of Jammu & Kashmir, farmers are advised to use protected rice nursery technology. Remove water during sunny days twice a week and keep nursery water level 5 cm during night hours.
  - In view of prevailing dry weather condition in Central Plain Zone and Eastern Zone of Uttar Pradesh and with rise in temperature; daily ET loss will be more, hence farmers are advised to apply irrigation in maize, fodder crops and also in early sown vegetables
  - In Sub Humid Sub-Tropic of Uttarakhand, farmers are advised to apply irrigation in ratoon sugarcane crop after ploughing and apply mulch in between the line to prevent moisture and also irrigate bottle guard, cucurbits, bhindi and other summer vegetable as well as newly planted, tomato and chilly crops in this week.
  - Farmers in Sub-mountain Undulating Zone and Central Plain Zone in Punjab are advised to undertake sowing of rice in nursery of dwarf varieties. Give irrigation to sugarcane, summer pulses, *khari* fodders and evergreen fruits plants.
  - In view of rise in maximum temperature in Delhi, farmers are advised to give light and frequent irrigation in *Cucurbitaceous* crops to keep optimum moisture level as dry conditions may lead to poor pollination and will reduce the yield of the crop.
  - In Barbar and Tarai Zone of Uttarakhand, due to high humid and temperature conditions, there are chances of fruit borer damaging the crops like tomato, capsicum etc., farmers are advised to spray 50 EC Prophenophas @ 1 ml per liter of water on these crops if insect population is more than 10%.
  - In Flood Prone Eastern Plain Zone of Rajasthan, due to rise in temperature, there are chances of fruit fly attack in cucurbits. Farmers are advised to spray Melathion 50 EC @ 15 ml/ 10 litre water during morning or evening hours at 15 days interval. Prepare trap by mixing 10 ml Melathion 50 EC in 1 litre sugar solution. Keep several traps at random places in field. It is also advised to drench soil with Carbendazim @ 2g/ litre water to control wilt in okra. Spray a solution of 1 g Acephate 70 SP or 3 ml Profenophos per litre water to control mealybug in okra.
  - 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 FMD.
  - In Semi Arid Eastern Plain Zone of Rajasthan farmers are advised to protect animals from heat stroke, keep animal in shade and provide cold water for drinking.
  - 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:** Rain/thundershowers would occur at one or two places over Chhattisgarh, during next 24 hours. Weather would be mainly dry over rest parts of the region. Duststorm / thunderstorm would occur at one

or two places over Madhya Pradesh during next 24 hours. Maximum temperature would rise by 1-2°C over the region.

- **Weather Warning:** Heat wave conditions would occur over some parts of west Madhya Pradesh during next 48 hours.
- **Advisories:**
  - As no significant rainfall occurred during last week and no rainfall is likely to occur and there is chance of rise in temperature therefore rise in daily ET loss, farmers are advised to apply irrigation to sugarcane, summer maize and summer vegetables in the states of the region.
  - As heat wave conditions would occur over some parts of West Madhya Pradesh during next 48 hours and there is chance of rise in temperature therefore rise in daily ET loss, farmers are advised to apply light and frequent irrigation to the vegetable crops in West Madhya Pradesh.
  - Duststorm / thunderstorm would occur at one or two places over Madhya Pradesh during next 24 hours hence farmers are advised to give light irrigation to vegetable crops at vegetative / flowering stage.
  - Dry weather and no rainfall expected in Kymore Plateau and Satpura Hills Zone, Gird Zone and Satpura Plateau Zone of Madhya Pradesh hence farmers are advised to irrigate summer moong, vegetables and fodder (sorghum and maize) crops during evening hours regularly.
  - In view of dry weather and high temperature in Bundelkhand Zone of Madhya Pradesh, farmers are advised to give irrigation in all vegetable crops, including orchards.
  - Clear sky and no rainfall is expected in Jhabua Hills Zone of Madhya Pradesh, farmers are advised to irrigate vegetables like tomato, brinjal, chilli & okra, water melon and musk melon along with recommended dose of fertilizers.
  - Due to dry weather and high temperature, farmers in Malwa Plateau Zone are advised to protect the fruits of cucurbitaceous plants like watermelon, bottle gourd, cucumber, sponge gourd by covering with the leaf of the plant, also irrigate the plants in the morning or evening hours. To prevent dropping of fruits in mango irrigate by making the thala.
  - 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.
  - Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry & Poultry**
  - Farmers of Madhya Pradesh are advised to vaccinate the cattles for H.S and B.Q. Provide cool drinking water three times a day to cattle. Also provide 35-40g mineral mixture per animal for supplement the nutrient requirement.
  - 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.

#### **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, Purulia, West Midnapore; Sikkim; Sub Himalayan West Bengal except Darjeeling, Malda, North Dinajpur, South Dinajpur; Malkangiri district of Odisha: Araria, Kishanganj and Seikpura districts in Bihar and Giridih and Sahebganj districts of Jharkhand. 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 Gangetic West Bengal, Jharkhand, Odisha during next 24 hours and mainly dry thereafter. Mainly dry weather would occur over Bihar. Maximum temperature would rise by 1-2°C over the region during next 48 hours.
- **Advisories:**
  - As significant rainfall occurred in all districts in Gangetic West Bengal except East Midnapore, Hooghly, Howrah, Purulia, West Midnapore; Sikkim; Sub Himalayan West Bengal except Darjeeling, Malda, North Dinajpur, South Dinajpur; Malkangiri district of Odisha and Araria, Kishanganj and Seikpura districts in Bihar and Giridih and Sahebganj districts of Jharkhand, 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 the standing summer maize, summer vegetable crops, moong, sunflower, onion, autumn and spring season sugarcane.
  - 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 and apply irrigation in litchi and mango orchards during evening hours.
  - As significant rainfall occurred and rainfall at a few places is expected in Sub Himalayan West Bengal, farmers in Terai Zone are advised to drain out excess water from already planted ginger, turmeric and maize fields.



- Due to mainly dry weather prevailed in the State, farmers in Western Undulating Zone of Odisha are advised to apply irrigation in sugarcane.
- Due to hot and dry conditions, banana and papaya fruits may be damaged because of sun scorching, farmers of North Eastern Plateau Zone of Odisha are advised to cover the fruits by using leaves or jute bags to protect the fruits from sun scorching.
- 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.
- Due to humid weather condition, damping off may occur in vegetable nursery in Terai Zone of West Bengal, to control this disease spray Carbendazim 12%+ Mancozeb 64 @ 2 g/litre of water on a non rainy day.
- Farmers in Western Plateau Zone of Jharkhand are advised to spray Trizophos or Profanaphos during evening @ 1 ml per litre of water to control the attack of thrips in timely sown summer moong crops which are at flowering stage.
- 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.
  - Due to high temperature, poultry birds may be affected from heat stroke. Farmers in North West Alluvial Zone of Bihar are advised to providing ventilation in the shed and enough drinking water mixed with minerals.
- **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 district of Assam, Lower Dibang Valley and Lower Subansiri districts of Arunachal Pradesh, East Garo Hills district of Meghalaya, Bishnupur and Chandel districts of Manipur, Kephire and Wokha districts of Nagaland.
- **Weather Forecast:** Rain / thundershowers would occur at many places over the States of the region during the period.
- **Weather warning:** Thundersquall would occur at one or two places over the States of the region 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. 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.
  - 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 ginger and also in maize, especially during flowering and cob development stage as the crop is highly susceptible to water logging.
  - Farmers in Barak Valley Zone of Assam are advised to drain out excess water from the fields of summer gourd, okra and cucurbits.
  - In Sub-Tropical Hill Zone of Arunachal Pradesh, farmers are advised to arrange for adequate drainage to avoid water stagnation in the fields of soybean and vegetables. Provide proper support for healthy trailing to cucurbits.

- 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.
- 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.
- Stages of major crops are mentioned in Annexure I.
- **Animal Husbandry**
  - In Mild Tropical Plain Zone of Tripura, damp litter and high moisture due to heavy rain may lead to Coccidiosis in the chicken; so avoid dampness in the shed. Change the litter periodically. 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:** Mainly dry weather prevailed over the States of the region.
- **Weather Forecast:** Rain / thundershower would occur at one or two places over Madhya Maharashtra and Marathwada during next 24 hours. Mainly dry weather would prevail over rest of the region.
- **Weather Warning:** Heat wave conditions would occur over Vidarbha during next 48 hours.
- **Outlook:** Mainly dry weather would prevail over the States of the region.
- **Advisories:**
  - As high temperature is prevailing in some parts of Vidarbha and heat wave conditions is also likely to occur over this region during next 48 hours, farmers are advised to apply light and frequent irrigation in vegetable crops, moderate irrigation to sugarcane and orchard crops and also apply mulch in orchards and newly planted sugarcane to reduce the high rate of evaporation. Farmers in East Vidarbha are advised to cover the cauliflower heads with leaves to protect it from the scorching sun.
  - As there was no significant rainfall in Maharashtra and no significant rain is expected during next 3 days, farmers are advised to apply irrigation to late sown summer bajra (grain formation stage in Pune and Nasik region), groundnut (pod development stage), sugarcane and vegetables in morning hours or in the evening to avoid excessive evaporation.
  - As high temperature persists (above 40<sup>0</sup>C) in Marathwada, farmers, having no irrigation facility, are advised to remove the immature oranges and sweet limes and apply mulch and spray 8% kaolin to reduce the rate of evapotranspiration. They are also advised to apply irrigation to sugarcane by alternate furrow method and apply sprinkler / drip irrigation, if there is shortage of water. Apply mulch with trash or plant waste product to preserve moisture in the field.
  - Considering the high temperature (around 40<sup>0</sup>C) in North Madhya Maharashtra, farmers are advised to cover the banana bunch with porous gunny bags to protect them from scorching sun. Also apply either drip / sprinkler irrigation or irrigation in alternate furrows to sugarcane and apply mulch @ 5 tons trash / ha in furrows to conserve soil moisture.
  - Due to prevailing high temperature, farmers are advised to apply irrigation in groundnut at pegging and pod development stage in North Saurashtra Zone, South Saurashtra Zone and North Gujarat Zone and in green gram at pod development stage in North Gujarat Zone and Bhal and Coastal Zone of Gujarat.
  - In South Gujarat Zone and South Gujarat Heavy Rainfall Zone, farmers are advised to protect banana bunches from high temperature by covering with plastic sheet and carry out mulching in sugarcane to avoid moisture stress due to high temperature.
  - In South Gujarat Zone, due to high temperature farmers are advised to provide shadow with shade net or coconut leaves for young mango plants. Also give drip irrigation for 2 to 3 hrs.
  - 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.
  - Due to partly cloudy weather in Pune region, the infestation of powdery mildew is likely to increase in summer okra and guar; spray Sulphur 80% @ 2 g per litre of water after plucking of matured okra / guar beans.
  - In North West Zone of Gujarat, due to high temperature there is a chance of attack of shoot and fruit borer in brinjal and okra; spray Monocrotophos 0.04% @ 12 ml in 10 liters of water for their effective control.
  - In North West Zone of Gujarat, due to high temperature, outbreak of mango hopper in mango orchard has been observed and is likely to continue; farmers are advised to spray Carbaryl 50% wettable powder @ 40g in 10 liters of water to control it.
  - Stages of the crops are mentioned in Annexure I.
- **Animal Husbandry**
  - As high maximum temperature is persisting and also predicted 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 Alapuzha, Kollam and Pathanamthitta districts in Kerala and Bangalore Rural & Urban, Chickmagalur, Chitradurga, Hassan, Kodagu and Ramanagara districts in South Interior Karnataka. Mainly dry weather prevailed over remaining parts of the region.
- **Rainfall Forecast:** Rain/thundershowers would occur at one or two places over Andhra Pradesh during next 24 hours and at one or two places over Kerala, Karnataka and Tamil Nadu. Weather would be mainly dry over rest parts of the region.
- **Advisories:**
  - As significant rainfall occurred in Alapuzha, Kollam and Pathanamthitta districts in Kerala and Bangalore Rural & Urban, Chickmagalur, Chitradurga, Hassan, Kodagu and Ramanagara districts in South Interior Karnataka, farmers are advised to postpone irrigation to the crops in the above mentioned districts. Apply irrigation to groundnut, sugarcane, summer cotton, summer pulses and vegetable crops in the rest of the region, as mainly dry weather prevailed over remaining parts of the region.
  - Farmers in the Southern Zone of Kerala are advised to undertake nursery preparation for *Viruppu* rice utilizing the realized rainfall.
  - Farmers in the Southern Dry Zone of Karnataka are advised to undertake up sowing of green manure crops and pulses like cowpea, greengram, blackgram, horsegram, field bean etc. utilizing the recent rainfall.
  - Due to prevailing dry weather conditions in Cauvery Delta Zone of Tamil Nadu, farmers are advised to provide irrigation to sesame, black gram, sugarcane and rice fallow cotton.
  - Farmers in South Zone of Tamil Nadu are advised to spray Methyl Demeton 30 EC @ 2 ml/ litre or Dimethoate @ 2 ml/ litre to control incidence of vector pest leaf hopper causing little leaf disease in brinjal as rainfall would occur over one or two places.
  - Prevailing high day temperature are favorable for incidence of fruit borer and *Anthracnose* in mango, bacterial leaf spot in pomegranate and sucking pests in Bt. cotton in Scarce Rainfall Zone of Rayalaseema. Farmers are advised to spray Chlorpyrifos @2.5 ml or Dichlorovos @1.5 ml or neem oil @ 3.0 ml + chlorpyrifos @ 2.5 ml /litre of water to control fruit borer; Blitox @3g per litre of water to control *Anthracnose*; also spray Blitox @3g or Agrimycin 200 mg per litre of water to control bacterial leaf spot and stem painting with Monocrotophos+water @1:20 after 20, 40, 60 and 80 DAS to control sucking pests in Bt. cotton.
  - 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 protect the animals from exposure to extreme hot weather especially in the day time by housing them in sheds with thatched roofing and by not allowing to graze between 11.00 a.m to 4.00 p.m. Provide animals with mineral mixture along with salt regularly and grains like sorghum, bajra and jaggery etc. @ 10-20% in the daily ration due to prevailing high temperature to meet the energy requirement of animals and ensure periodic vaccination of animals against FMD, Brucellosis, Haemorrhagic, Septicaemia, Anthrax and small ruminants against Peste- des-Pepits Ruminants (PPR) and Sheep and Goat Pox.
  - 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.
  - Due to prevailing high temperature, farmers in North East transition zone of Karnataka are advised to maintain optimum temperature in poultry sheds by applying 4-6 inch thick hay thatch as a roofing material, spray water on the floor and roof of shelter periodically during peak hot hours which lowers the temperature in poultry sheds.

## Annexure I Stages of Major Crops

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

- Wheat (harvesting), pome and stone fruits (flowering), onion (vegetative), potato, cabbage, cauliflower (maturity/harvesting), Capsicum, tomato, brinjal (sowing / transplanting), cucurbits, okra, French bean, fodder crops (chari, bajra) (sowing/early vegetative), rice, maize (nursery sowing) in Himachal Pradesh.
- Onion (bulb formation /maturity), French bean, cluster bean, amaranthus, summer radish, summer green gram (vegetative / flowering / fruiting), vegetable lobia, bottle gourd, cucumber, ridge gourd (sowing / early vegetative), chilli, tomato, brinjal and cucurbits (vegetative / fruiting), Guar, maize, Bajra, cluster bean as fodder crops (sowing), pigeon pea (sowing), cotton (sowing) in Delhi.
- Wheat (flowering), pulses (pea and lentil) (early maturity), vegetables (sowing / planting / transplanting), 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), fruit crops (nursery bed preparation), brinjal, chilli (nursery sowing), *kharif* pulses (field preparation) in Jammu & Kashmir.
- Wheat (harvesting), ginger (vegetative), garlic (harvesting), autumn sugarcane (vegetative), oat (tillering / ear head emergence), moong, urd (vegetative / flowering), okra (seedling / vegetative), sugarcane, cucurbits (planting / seedling), fodder jowar (sowing/seedling), rice (nursery sowing) in Uttarakhand.
- Wheat (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 (vegetative), summer vegetables, spring sugarcane (seedling/vegetative), summer green fodder like maize, lobia, sunhemp, dhaincha (sowing/seedling) in Uttar Pradesh.
- New sugarcane (tillering), cotton (sowing/germination), cucurbits (sowing), berseem (vegetative / cutting), cotton (sowing/germination), 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), 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 (germination / early 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), millet (flowering), rice (grain filling), niger, kulthi (maturity/harvesting) in Chhattisgarh.

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

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



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

- Sugarcane (vegetative), *boro* rice (harvesting), transplanted early *ahu* rice (panicle initiation / flowering / grain filling), transplanted normal *ahu* rice (transplanting / tillering), early *ahu* (direct seeded) (tillering / panicle initiation / heading), maize (vegetative/flowering/cob formation), jute (early vegetative), summer pulses (flowering/ pod formation), okra, cucurbits (vegetative/flowering/fruitleing), ginger, turmeric, banana, papaya (planting) and summer vegetables (vegetative/flowering / fruitleing) in Assam.
- *Jhum* rice (vegetative), WRC rice (nursery raising), maize (vegetative/ cob formation), soybean (vegetative), green gram, black gram (vegetative), French bean (vegetative/ flowering/pod formation), okra (vegetative/ flowering) and cucurbits (vegetative/flowering/fruitleing), banana (planting) in Arunachal Pradesh.
- *Pre-kharif* rice (tillering / panicle initiation), *kharif* rice (nursery sowing), maize (vegetative / silking / tasseling / cob formation), groundnut and soybean (sowing/ early vegetative), tomato, brinjal, chilli (flowering / fruitleing), cucurbits (flowering / fruitleing), 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 (fruitleing/maturity/ harvesting), bottle gourd, ash gourd (vegetative), tomato (planting / vegetative), brinjal (vegetative), potato (vegetative/ tuberization), turmeric, ginger (planting) in Meghalaya.
- Maize (sowing/early vegetative), banana (vegetative / fruitleing / harvesting), okra, cucurbits, French bean (sowing), chilli, brinjal, ginger and turmeric (nursery raising / planting) in Mizoram.
- Maize (silking/tasseling / cob formation), upland rice (vegetative), lowland rice (nursery raising), cucurbits (vegetative), chilli (vegetative), okra (early vegetative/ vegetative), ginger (planting/germination) and brinjal (transplanting) in Nagaland.
- *Jhum* rice (seedling/early tillering), *boro* rice (maturity / harvesting), summer brinjal, tomato (fruit maturity/ harvesting), summer green gram and black gram (pod formation/ pod maturity/harvesting), okra (fruitleing /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 (new pre seasonal) (tillering), new *suru* sugarcane (early tillering), summer rice (grain formation 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 (pegging / pod formation), mango (fruit maturity), summer rice (grain formation), summer vegetables (vegetative / flowering / fruitleing), sugarcane (elongation / grand growth) in Gujarat.

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

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