

# National Agromet Advisory Service Bulletin

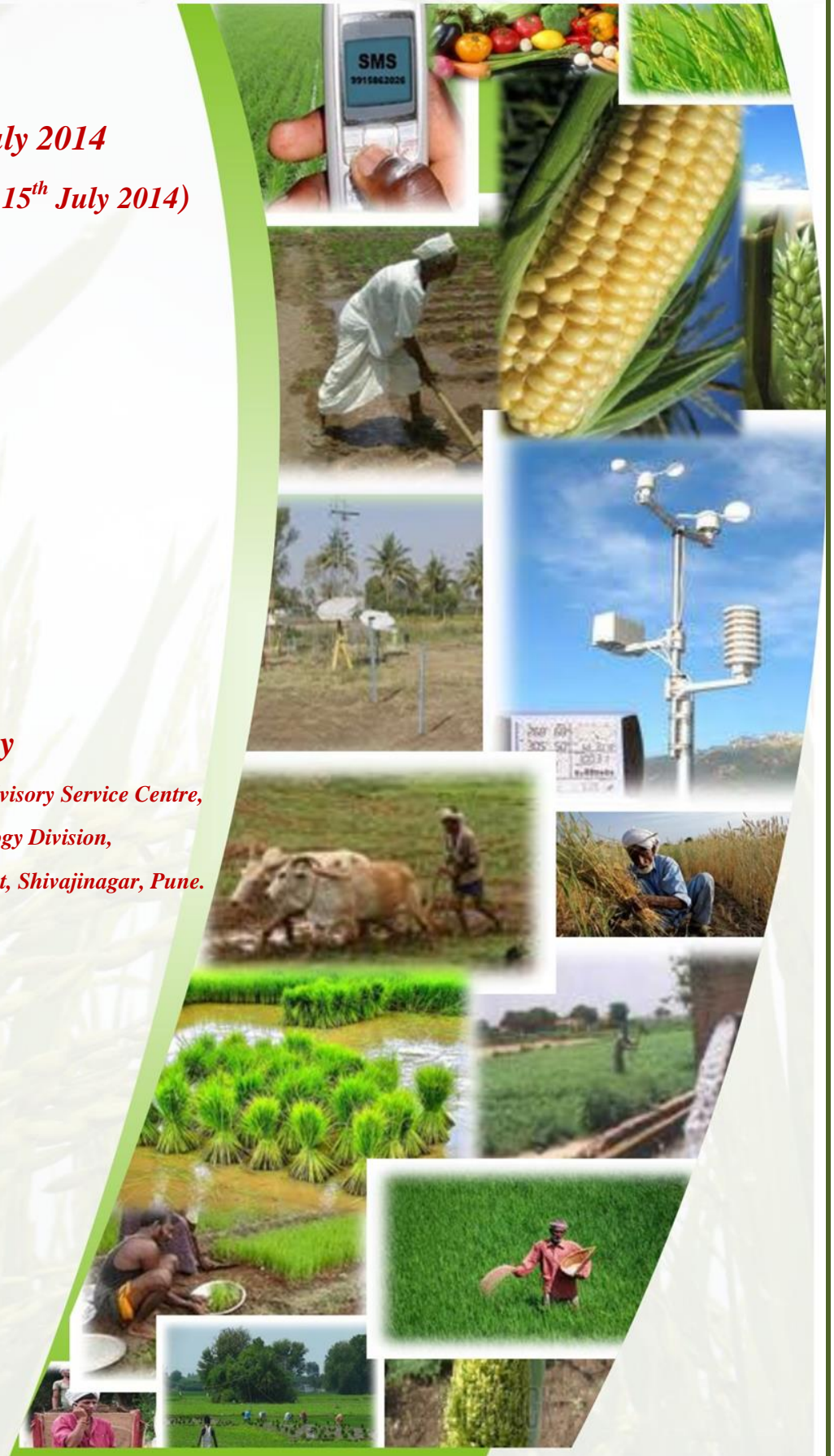
Friday 11<sup>th</sup> July 2014

(For the period 11<sup>th</sup> to 15<sup>th</sup> July 2014)



**Issued by**

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

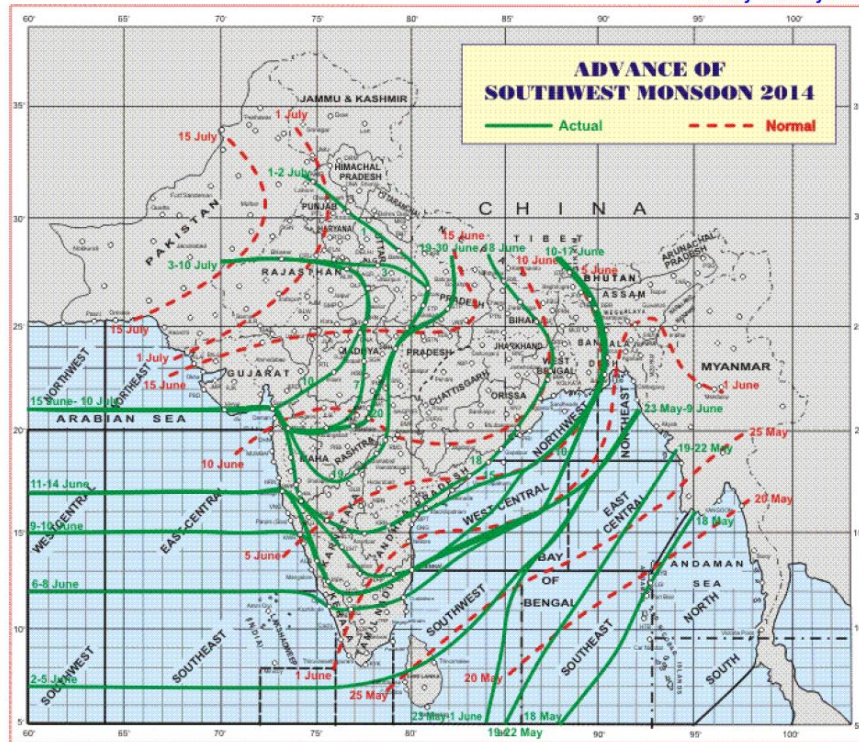




# Monsoon Watch

## Northern Limit of Monsoon

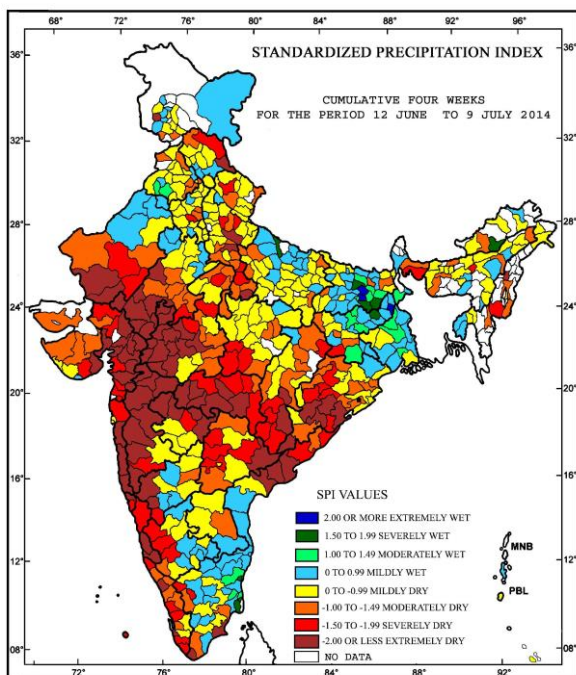
Friday 11 July 2014



- The Northern Limit of Monsoon (NLM) continue to pass through Lat. 21°N / Long. 60°E, Lat.21°N / Long. 65°E, Veraval, Surat, Indore, Shivpuri, Alwar, Bikaner and Lat.28°N / Long. 72°E.
- Conditions are favourable for further advance of Southwest Monsoon into some more parts of Gujarat and east Rajasthan and remaining parts of Madhya Pradesh during next 2-3 days.

## Standardised Precipitation Index Four Weekly for the Period 12<sup>th</sup> June to 9<sup>th</sup> July 2014

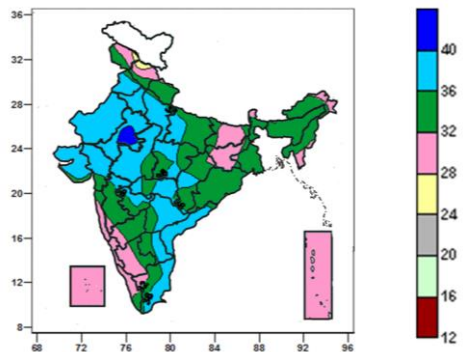
MINISTRY OF EARTH SCIENCES  
INDIA METEOROLOGICAL DEPARTMENT  
HYDROMET SECTION, PUNE



- Extremely/severely wet experienced in Samastipur, Begusarai, Lakhisarai, Banka and Jamui districts of Bihar; Papumpara district of Arunachal Pradesh; Pakur and Deogarh districts of Jharkhand; Bahraich district of Uttar Pradesh and Nagapattinam, Puducherry and Tiruvarur districts of Tamil Nadu.
- Extremely/ moderately/ severely dry conditions experienced in most districts of Rajasthan, Kerala, Gujarat, Chattisgarh, Orissa and Telangana; many districts of Madhya Pradesh; few districts of Uttar Pradesh, North East, Andhra Pradesh, Karnataka and Tamilnadu; Jammu, Udhampur and Poonch districts of Jammu & Kashmir; Lahaul & Spiti, Chamba and Kinnaur districts of Himachal Pradesh; Amritsar, Hoshiarpur, Patiala and Fatehgarh Sahib districts of Punjab; Tehri Garhwal, Pauri Garhwal and Pithorgarh districts of Uttarkhand; Panchkula district of Haryana; Purnea, Saharsa and Buxar districts of Bihar
- Rest of the country experienced mild wet/dry conditions.

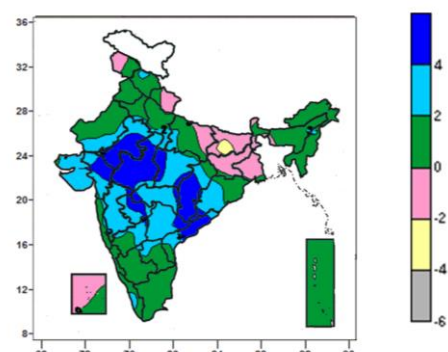
**Contour maps for Mean Maximum and Minimum Temperature and their anomaly for the week ending on 09.07.2014**

**Actual Mean Maximum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 09.07.2014**



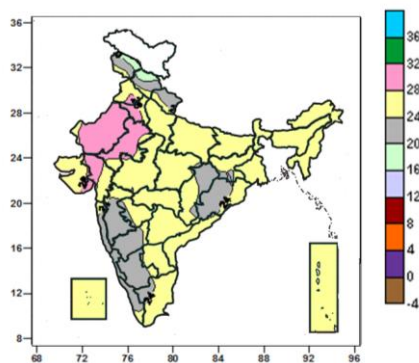
- 40 to 44 $^{\circ}\text{C}$  over some parts of East Rajasthan.
- 36 to 40 $^{\circ}\text{C}$  over many parts of West Uttar Pradesh, Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Tamil Nadu, some parts of East Uttar Pradesh, Chhattisgarh, Madhya Maharashtra, Marathwada, Vidarbha.
- 32 to 36 $^{\circ}\text{C}$  over many parts of Uttarakhand, East Uttar Pradesh, West Bengal, North East India, Odisha, Chhattisgarh, North Interior Karnataka, Madhya Maharashtra, Marathwada, some parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Madhya Pradesh, Vidarbha, Andhra Pradesh, Tamil Nadu, North Interior Karnataka and Kerala.
- 28 to 32 $^{\circ}\text{C}$  over many parts of Bihar, Jharkhand, Sikkim, Konkan & Goa, Coastal & South Interior Karnataka, Kerala, Lakshadweep, Andaman & Nicobar Islands, some parts of Jammu & Kashmir, Himachal Pradesh, Arunachal Pradesh, Manipur, Mizoram, North Interior Karnataka, Madhya Maharashtra and Tamil Nadu.
- 24 to 28 $^{\circ}\text{C}$  over some parts of Jammu & Kashmir, Himachal Pradesh.

**Mean Maximum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 09.07.2014**



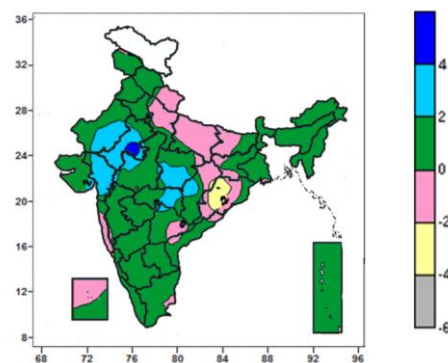
- 4 to 6 $^{\circ}\text{C}$  over many parts of East Rajasthan, West Madhya Pradesh, Chhattisgarh, Gujarat region, some parts of Odisha, East Madhya Pradesh, Coastal Andhra Pradesh, Telangana, Madhya Maharashtra, Marathwada, Vidarbha.
- 2 to 4 $^{\circ}\text{C}$  over many parts of East Madhya Pradesh, Saurashtra & Kutch, Vidarbha, Madhya Maharashtra, Marathwada, Telangana, some parts of Himachal Pradesh, Uttar Pradesh, Rajasthan, Odisha, Chhattisgarh, Coastal Andhra Pradesh, Rayalaseema, North Interior Karnataka, Kerala, Konkan and West Madhya Pradesh.
- 0 to 2 $^{\circ}\text{C}$  over many parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, West Rajasthan, Uttar Pradesh, North East India, Rayalaseema, Tamil Nadu, Kerala, Karnataka, Konkan & Goa, Andaman & Nicobar Islands, some parts of Uttarakhand, Coastal Andhra Pradesh, Odisha, Chhattisgarh, and Lakshadweep.
- -2 to 0 $^{\circ}\text{C}$  over many places over Jammu & Kashmir, Uttarakhand, Bihar, Jharkhand, West Bengal & Sikkim, Lakshadweep Islands, some parts of East Uttar Pradesh and Assam.
- -4 to -1 $^{\circ}\text{C}$  over some parts of Bihar.

**Actual Mean Minimum Temperature ( $^{\circ}\text{C}$ ) in India for the week ending 09.07.2014**



- 28 to 32 $^{\circ}\text{C}$  over many parts of Haryana, Delhi, Rajasthan, Gujarat region, some parts of Punjab, West Madhya Pradesh and Saurashtra.

**Mean Minimum Temperature ( $^{\circ}\text{C}$ ) Anomaly in India for the week ending 09.07.2014**



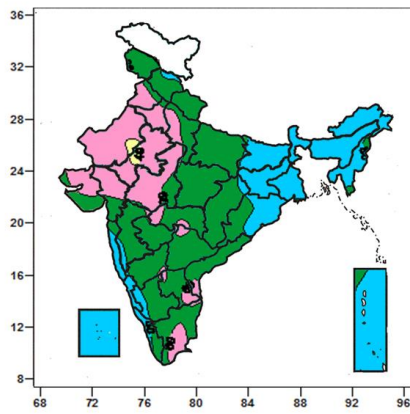
- 4 to 6 $^{\circ}\text{C}$  over some parts of East Rajasthan
- 2 to 4 $^{\circ}\text{C}$  over many parts of Rajasthan, Gujarat region, East Madhya Pradesh, some parts of Central

- 24 to 28<sup>0</sup>C over many parts of Punjab, Uttar Pradesh, Bihar, Jharkhand, West Bengal & Sikkim, Northeast India, Central India, Andhra Pradesh, Gujarat, Marathwada, Vidarbha, Tamil Nadu, Lakshadweep, Andaman & Nicobar Islands, some parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan, Odisha, Madhya Maharashtra, Konkan, Interior Karnataka and Kerala.
- 20 to 24<sup>0</sup>C over many parts of Uttarakhand, Odisha, Karnataka, Konkan & Goa, Madhya Maharashtra, some parts of Jammu & Kashmir, Himachal Pradesh, Jharkhand, Chhattisgarh, Marathwada, Kerala and Tamil Nadu.
- 16 to 20<sup>0</sup>C over some parts of Jammu & Kashmir, Himachal Pradesh.

- India, Vidarbha, Telangana and Saurashtra.
- 0 to 2<sup>0</sup>C over many parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Jharkhand, West Bengal & Sikkim, North East India, Central India, South India, Maharashtra, Saurashtra & Kutch, Andaman & Nicobar Islands, some parts of Uttarakhand, Uttar Pradesh, Bihar, Odisha, Konkan, Gujarat region, Rajasthan and Lakshadweep Islands.
- -2 to 0<sup>0</sup>C over many parts of Uttarakhand, Uttar Pradesh, Bihar, Odisha, Lakshadweep Islands, some parts of Jharkhand, Chhattisgarh, Coastal Andhra Pradesh, Telangana and Tamil Nadu.
- -4 to -2<sup>0</sup>C over some parts of Odisha, Chhattisgarh.

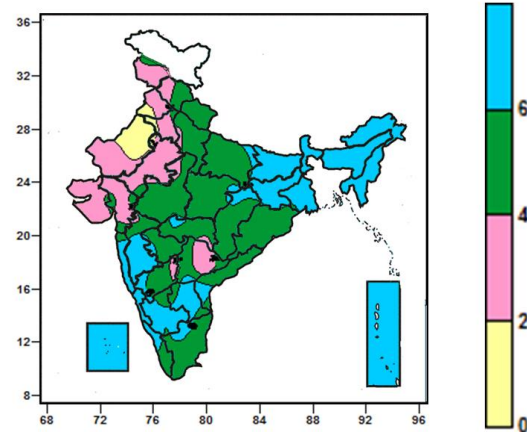
### Contour maps for Relative Humidity, Cloud amount and Wind speed for the week ending on 09.07.2014

**Relative Humidity (%) over India for the week ending 09.07.2014**



- 80 to 100% over many parts of North East India, East India, Coastal Karnataka, Konkan & Goa, Lakshadweep and Andaman & Nicobar Islands, some parts of Himachal Pradesh, Chhattisgarh, South Interior Karnataka, Kerala and Madhya Maharashtra.
- 60 to 80% over many parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Chhattisgarh, East Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Kerala, Interior Karnataka, Madhya Maharashtra, Marathwada, Vidarbha, some parts of Punjab, Haryana, Mizoram, Meghalaya, Gujarat, West Madhya Pradesh and Andaman & Nicobar Islands.
- 40 to 60% over many parts Punjab, Haryana, Delhi, and Rajasthan, West Madhya Pradesh, Gujarat, some parts of West Uttar Pradesh, Vidarbha, Andhra Pradesh, Tamil Nadu and Interior Karnataka.
- 20 to 40% over some parts of Rajasthan.

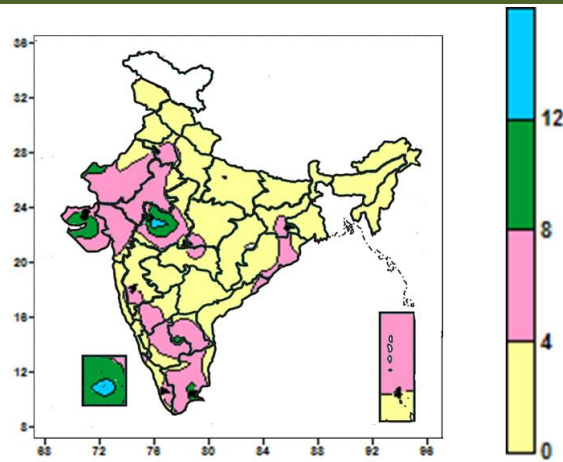
**Cloud amount (okta) over India for the week ending 09.07.2014**



- 6 to 8 okta over many parts of North East India, West Bengal & Sikkim, Bihar, Jharkhand, Rayalaseema, Coastal & South Interior Karnataka, Konkan & Goa, Madhya Maharashtra, Lakshadweep, Andaman & Nicobar Islands, some parts of East Uttar Pradesh, East Madhya Pradesh, Chhattisgarh, Coastal Andhra Pradesh, Telangana, Vidarbha, Tamil Nadu, Kerala, North Interior Karnataka and Marathwada.
- 4 to 6 okta over many parts of Himachal Pradesh, Uttarakhand, Uttar Pradesh, Central India, Andhra Pradesh, Vidarbha, Marathwada, Tamil Nadu, Kerala, North Interior Karnataka, some parts of Jammu & Kashmir, Haryana, Rayalaseema, South Interior Karnataka, Konkan, Madhya Maharashtra, East Rajasthan and Gujarat.
- 2 to 4 okta over many parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Rajasthan, Gujarat, Telangana, some parts of West Uttar Pradesh, North Interior Karnataka, Vidarbha, West Madhya Maharashtra and West Madhya Pradesh.
- 0 to 2 okta over many parts of West Rajasthan, some parts of Punjab and Haryana.



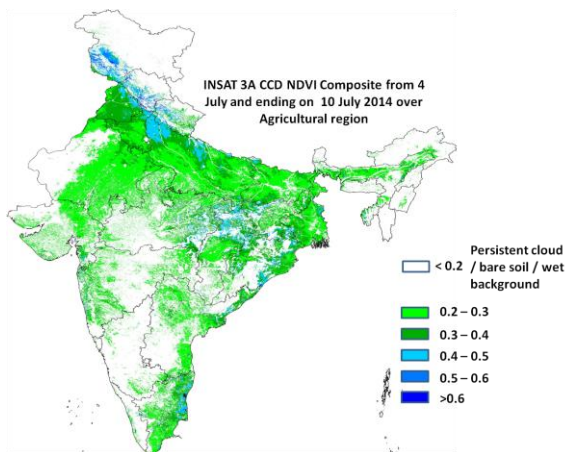
### Wind speed (knots) over India for the week ending 09.07.2014



- 12 to 16 knots over some parts of West Madhya Pradesh and Lakshadweep Islands.
- 8 to 12 knots over many parts of Saurashtra & Kutch, West Madhya Pradesh, Lakshadweep Islands, some parts of West Rajasthan, Rayalaseema, South Interior Karnataka and Tamil Nadu.
- 0 to 8 knots over entire country except many parts of Saurashtra & Kutch, West Madhya Pradesh, Lakshadweep Islands, some parts of West Rajasthan, Rayalaseema, South Interior Karnataka and Tamil Nadu.

### INSAT 3A CCD NDVI COMPOSITE OVER AGRICULTURAL REGION

4<sup>th</sup> - 10<sup>th</sup> July 2014



Source: SAC, Ahmedabad

- Agricultural vigour is moderate over few pockets of western and north Uttar Pradesh, eastern Punjab, coastal Odisha and north Chhattisgarh as NDVI varied between 0.4 to 0.5 upto 10th July 2014. The NDVI over Punjab and part of Haryana showed increase as compared to last week. The NDVI remained within the range of 0.2 to 0.3 over rest of India.

## Weather Forecast

### Weather Forecast for next 3 days (upto 0830 hours IST of 14<sup>th</sup> July, 2014)

- Rain/thundershowers would occur at many places over Andaman & Nicobar Islands during the period.
- Rain/thundershowers would occur at a few places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours and at many places thereafter.
- Rain/thundershowers would occur at a few places over Sub-Himalayan West Bengal & Sikkim and Odisha during next 24 hours and at many places thereafter.
- Rain/thundershowers would occur at isolated places over Gangetic West Bengal during next 24 hours and over Uttarakhand, Jharkhand and Madhya Pradesh during next 48 hours and at a few places thereafter.
- Rain/thundershowers would occur at most places over Konkan & Goa and Coastal Karnataka, at many places over Kerala, at a few places over Marathwada, Interior Karnataka, Telangana and Lakshadweep during the period.
- Rain/thundershowers would occur at a few places over Coastal Andhra Pradesh during next 24 hours and over Madhya Maharashtra during next 48 hours and at many places thereafter.
- Rain/thundershowers would occur at a few places over Chhattisgarh during next 48 hours and at many places thereafter.
- Rain/thundershowers would occur at isolated places over Vidarbha during next 24 hours and increase thereafter.
- Rain/thundershowers would occur at a few places over Gujarat during next 48 hours and at isolated places thereafter.
- Rain/thundershowers would occur at isolated places over Jammu & Kashmir, Himachal Pradesh, East Rajasthan, East Uttar Pradesh, Bihar, Rayalaseema, Tamilnadu & Pudducherry during the period.
- Mainly dry weather would prevail over Punjab, Haryana & Delhi, West Uttar Pradesh and West Rajasthan during the period.
- No significant change in maximum temperatures likely over many parts of the country during next 2-3 days.

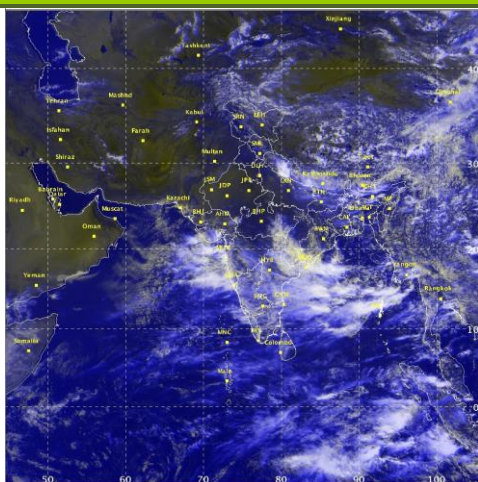
### Weather Warning during next 3 days

- **11 July (Day 1):** Heavy to very heavy rainfall would occur at a few places over Konkan & Goa and at isolated places over Coastal Karnataka. Heavy rainfall would occur at isolated places over Andaman & Nicobar Islands Coastal Odisha, Coastal Andhra Pradesh and Kerala. Heat wave to severe heat wave conditions would occur over some parts of north Madhya Pradesh, Haryana & Delhi, Uttar Pradesh and East Rajasthan.
- **12 July (Day 2):** Heavy to very heavy rainfall would occur at a isolated places over Konkan & Goa. Heavy rainfall would occur at isolated places over Sub-Himalayan West Bengal & Sikkim, Coastal Odisha, Coastal Andhra Pradesh, Coastal Karnataka, Kerala and Andaman & Nicobar Islands. Heat wave conditions would occur at isolated places over Punjab, Haryana & Delhi, east Rajasthan, West Uttar Pradesh and north Madhya Pradesh.
- **13 July (Day 3):** Heavy rainfall would occur at a isolated places over Konkan & Goa, Coastal Karnataka, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.

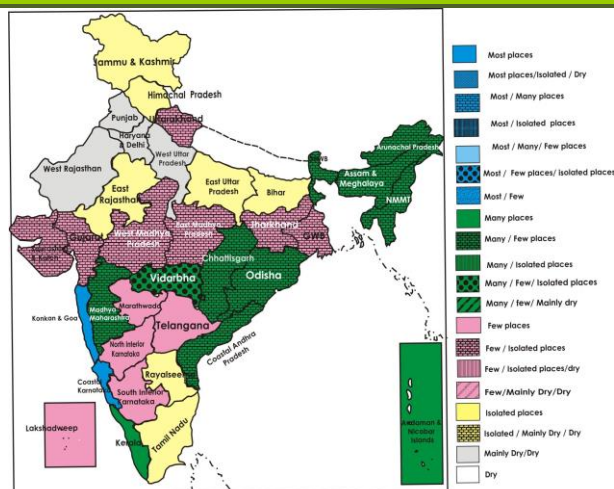
### Weather Outlook for subsequent 4 days from 14<sup>th</sup> July to 18<sup>th</sup> July 2014.

- Rain/thundershowers would occur at many places over northeast, east, central and adjoining peninsular India.
- Rain/thundershowers would also occur at many places over east and northeast India.
- Increase in rainfall activity over Uttar Pradesh, Himachal Pradesh and Utrakhand from 14<sup>th</sup> onwards.
- Rain/thundershowers would occur at isolated places over rest parts of the country.

Satellite image dated 11.07.2014, 0600 UTC



Weather Forecast Map (Valid upto 0830 hours of 14<sup>th</sup> July, 2014)



### Salient Advisories

- Continue transplanting of *Virippu* rice in the Central and Northern Zones of **Kerala**.
- Continue transplanting of *kharif* rice of proper age of seedlings in **Coastal Zone of Karnataka**, continue sowing of *kharif* crops like sorghum, pulses viz., cowpea, green gram, black gram and oilseed crops like sesamum and continue land preparation for transplanting of ragi in the Southern Dry Zone with realised/ expected rainfall.
- Continue land preparation for nursery sowing and direct sowing of rice and planting of rainfed sugarcane in the North Coastal Zone of **Andhra Pradesh**.
- In **Assam and Meghalaya**, undertake nursery sowing and transplanting of *Sali* rice and in **Arunachal Pradesh** continue sowing of *kharif* rice utilizing the realised and expected rainfall. Drain out excess water from rice nursery. Undertake transplanting of *sali* rice with 25-30 day old seedlings.
- Continue transplanting of main *kharif* rice and early cauliflower, sowing of black gram and rice bean in **Manipur**, continue sowing of soybean in **Nagaland** and continue nursery sowing of *aman* rice in **Tripura**.
- In **West Bengal**, continue nursery sowing and transplanting of *aman* rice utilizing the realised and expected rainfall.
- In East and South Eastern Coastal Plain Zone of **Odisha**, undertake transplanting of *kharif* rice under SRI cultivation utilizing the realised and expected rainfall and beushening in 21 days old direct sown rice in low land areas. Also continue sowing of ragi, maize, groundnut and sesame.
- Continue transplanting of rice in low and medium land areas and sowing of maize in **Bihar** and sowing of maize, pigeon pea, urad, moong, groundnut, soybean and sesame in **Jharkhand**.
- Continue direct sowing of *kharif* rice in Sub Montane and Low Hills Sub Humid Zone of **Himachal Pradesh** and undertake transplanting of *kharif* rice in **Uttarakhand**.

**There is probability of revival of monsoon from second week of July over many parts of the country. The agricultural situation in Gujarat, Interior Karnataka and major parts of Maharashtra, West Madhya Pradesh and Rajasthan needs to be monitored continuously and preparation may be taken up for adoption of contingency plan and arrangements may be made for availability of sufficient seeds and other inputs for agricultural operations.**

## Detailed Zonewise Agromet Advisories

### SOUTH INDIA [TN, AP, KERALA, KARNATAKA, LAKSHADWEEP]



Land preparation/ Sowing

Rice Nursery

Sugarcane

Okra

- **Realised Rainfall:** Rainfall occurred in all the districts of Coastal Andhra Pradesh except Nellore, Srikakulam, Vishakapatnam and Vizianagaram; Chittoor and Kurnool in Rayalaseema; all the districts in Telangana except Khammam, Mahbubnagar and Nizamabad; all the districts of Kerala except Ernakulam, Malappuram, Palakkad and Thiruvananthapuram; all the districts of Coastal Karnataka; all the districts except Dharwad, Belgaum and Haveri districts of North Interior Karnataka; Bellary and Shimoga districts of South Interior Karnataka; Ariyalur, Karaikal, Nagapattinam, Thanjavur, Thiruvallur, Thiruvarur and Vellore districts of Tamil Nadu. Weather was mainly dry over remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at most places over Coastal Karnataka, at many places over Kerala, at a few places over Interior Karnataka and Telangana during the period. Rain/thundershowers would occur at a few places over Coastal Andhra Pradesh during next 24 hours and at many places thereafter. Rain/thundershowers would occur at isolated places over Rayalaseema, Tamilnadu & Pudducherry during the period. No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.
- **Weather Warning:** Heavy to very heavy rainfall would occur at isolated places over Coastal Karnataka on 11<sup>th</sup> July. Heavy rainfall would occur at isolated places over Kerala and Coastal Andhra Pradesh on 11<sup>th</sup> & 12<sup>th</sup> July and over Coastal Karnataka on 12<sup>th</sup> and 13<sup>th</sup> July.
- **Weather Outlook:** Rain/thundershowers would occur at many places over peninsular India adjoining to central India and isolated places over remaining parts of the region.
- **Advisories:**
  - **Karnataka:**
    - Continue transplanting of *kharif* rice of proper age of seedlings in the Coastal Karnataka.
    - Continue sowing of maize and cotton and nursery preparation for lowland and upland rice utilising the realized rainfall and apply basal dose of fertilizer to plantation crops in the Hill Zone of Karnataka.
    - Continue sowing of *kharif* crops like sorghum, pulses viz., cowpea, green gram, black gram and oilseed crops like sesamum and continue land preparation for transplanting of ragi in the Southern Dry Zone with realized and expected rainfall.
    - Undertake sowing of red gram, ragi, groundnut and maize in the Eastern Dry Zone of Karnataka utilizing the realized and expected rainfall.
    - Undertake sowing of red gram and intercropping in places where bajra is grown in Bellary and Raichur districts; undertake sowing of tur, niger, castor, groundnut, bajra, sorghum individually or by intercropping with tur and sowing / dibbling of irrigated cotton in Gulbarga, Koppal and Yadgir districts; Undertake transplanting of chilli and sowing of maize in Bellary district in the North East Dry Zone of Karnataka utilizing the realized and expected rainfall.
    - Undertake sowing of soybean, pigeon pea and jowar in the North East Transition Zone of Karnataka.
    - Undertake sowing of bajra, pigeonpea, groundnut, sesamum, niger, foxtail millet, horsegram, castor, bajra + pigeonpea (2:1), bajra + castor (2:1), groundnut + pigeonpea (4:2) bajra + groundnut (2:4), bajra + pigeonpea (2:1) and moisture conservation measures during July First fortnight in North Dry Zone of Karnataka utilizing the realized and expected rainfall.
  - **Kerala:**
    - As rain/thundershowers would occur at many places along with heavy rainfall at isolated places on 11<sup>th</sup> and 12<sup>th</sup> July, postpone intercultural operations and application of fertilizers and plant protection measures in standing crops. Provide adequate drainage in standing crops to remove excess water.
    - Continue transplanting of *virippu* rice in the Central Zone of Kerala.
    - Continue direct sowing of rice and planting of coconut seedlings in the Problem Area Zone of Kerala. Also continue mat nursery preparation in places where mechanized transplanting can be done, planting of Nendran banana and transplanting of brinjal and chilli.
    - Due to intermittent rain, there is chance of leaf folder and stem borer attack in rice in the Central Zone of Kerala. To



manage them, use Trichogramma cards @ 2CC per acre and apply Quinalphos (2ml per one litre of water) or cartap hydrochloride (25g per one hectare) if the attack is severe after current spells of rain.

▪ **Andhra Pradesh:**

- Continue nursery sowing of rice, direct seeding of rice under aerobic conditions and planting of rainfed sugarcane. Undertake sowing of maize, green gram, black gram and red gram utilizing the expected rainfall in the North Coastal Zone of Andhra Pradesh.
- In Southern Telangana Zone of Andhra Pradesh, take-up sowing of rainfed crops like cotton, maize, groundnut, pulses etc. Continue nursery sowing and transplanting of tomato, brinjal and chilli and direct sowing of cucurbits, beans and bhendi utilizing the realised rainfall.
- Undertake sowing of direct seeded rice and chillies and pulses in upland areas and land preparation for cotton sowing in the Krishna Godavari Zone of Andhra Pradesh,
- Undertake sowing of red gram and groundnut in the rainfed tracts in the Scarce Rainfall Zone of Andhra Pradesh. In rainfed areas in Kurnool district, intercropping of korra + red gram @ 5:1 and Groundnut + red gram 7:1 intercropping can be sown up to 3rd week of July. Continue sowing of castor, raising of onion nursery and planting of medium and long duration varieties of turmeric. Continue sowing of lady's finger and cluster bean under irrigation and sowing of cotton in black soils utilizing realized rainfall in Anantapur district.
- Undertake sowing of groundnut, red gram and nursery sowing of rice in the Southern Zone of Andhra Pradesh.

▪ **Tamil Nadu:**

- Continue transplanting of *kuruvai* rice in the Cauvery Delta Zone of Tamil Nadu with irrigation.
  - Undertake propping up of banana crop of more than five months to prevent lodging due to high wind speed and undertake land preparation for sowing of groundnut in the Western and South Zone of Tamil Nadu.
  - Black gram and green gram at flowering stage are affected with yellow mosaic disease spread by white fly in the North Western Zone of Tamil Nadu. To manage white fly, spray Monocrotophos or Methyldemeton @ 200 ml in 100 lit of water per acre of land.
  - Suitable varieties are given in Annexure III.
- **Animal Husbandry**
- Prevailing weather conditions are congenial for Anthrax in cattles in the Scarce Rainfall Zone of Andhra Pradesh. Vaccinate the animals to prevent the disease.
  - Prevailing high temperature with humidity will create discomfort to the animals. Frequent bathing with cool water is advised in the Western Zone of Tamil Nadu.

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



*Rice Nursery*



*Land preparation/Sowing*



*Okra*



*Jute*

- **Realised Rainfall :** Rainfall occurred in Changlang, East Siang, Lohit, Lower Dibang Valley, Papumpara, Tawang, Upper Siang, Upper Subansari, West Kameng and West Siang districts of Arunachal Pradesh; in all districts of Assam except Darrang, Dibrugarh, Jorhat, Kamrup (Rural), Kamrup (Metro), Morigaon and Sibsagar districts; in East Garo Hills, East Khasi Hills, Ribhoi, South Garo Hills and West Garo Hills districts of Meghalaya; in Saiha district of Mizoram; in Imphal West district of Manipur; in Phek district of Nagaland; in all districts of Tripura except Dhalai. Weather was mainly dry over remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram and Tripura during next 48 hours and at many places thereafter. No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.
- **Weather Warning:** Heavy rainfall would occur at a isolated places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura on 13<sup>th</sup> July.
- **Weather Outlook:** Rain/thundershowers would occur at many places over northeast India.
- **Advisories:**
  - **Assam & Meghalaya, Arunachal Pradesh:**
    - As rain/thundershowers would occur at many places over Assam and Meghalaya along with isolated heavy spells on 13<sup>th</sup> July, postpone intercultural operations, application of plant protection measures and fertilizers in the standing

crops. Provide adequate drainage in crop fields to remove excess water.

- In Assam, complete nursery sowing of *sali* rice. Continue main field preparation and transplanting of *sali* rice.
- In Meghalaya, continue transplanting of *sali* rice and continue sowing of pigeon pea.
- In Arunachal Pradesh, complete transplanting of local varieties of *Kharif* rice utilizing the realized and expected rainfall.
- In Central Brahmaputra Valley Zone, undertake nursery sowing of medium duration (130-135 days) *sali* rice varieties like Satyaranjan, Basundhara, Jaya, IR 36 etc. can be sown upto 20<sup>th</sup> July and 25-30 days old seedlings can be transplanted till 15-20 August.
- Continue sowing of arhar and sesame in Hill Zone and Central Brahmaputra Valley Zone, continue sowing of sesame and groundnut in Lower Brahmaputra Valley Zone of Assam.
- In Meghalaya, continue sowing of pigeon pea utilizing the realized and expected rainfall.
- Due to prevailing humid weather conditions, there is chance of attack of stem borer on maize in Arunachal Pradesh. Spray Quinalphos 25 EC @2ml/litre of water after current spells of rain. Also there is chance of fruit flies in cucurbits, for control, spray Malathion @ 3ml per litre of water after current spells of rain.
- Due to humid weather and increase in humidity, there is chance of attack of blast, Gundhi bug and stem borer in *ahu* rice in Temperate Sub Alpine Zone of Meghalaya. Spray Mancozeb @ 2g/litre of water or Carbendazim @ 1 g/litre of water against blast, spray Malathion 5% dust @ 6.25kg/ha against rice Gandhi bug and Chloropyriphos @ 0.02% or Monocrotophos @ 0.04% or Carbofuran 3G @30 kg/ha for stem borer after current spells of rain.
- **Nagaland, Manipur, Mizoram and Tripura:**
- In Mizoram, continue sowing of cucurbits, okra, nursery raising of brinjal and planting of ginger and turmeric utilizing the realized and expected rainfall.
- In Nagaland, continue sowing of soybean, groundnut and pulses like black gram, green gram utilizing the realized and expected rainfall. Continue nursery preparation of lowland rice.
- Continue transplanting of main *kharif* rice and black gram in Manipur utilizing the realized and expected rainfall. Also undertake land preparation and transplanting of main *Kharif* rice with 25-35 days old seedlings.
- In Mild Tropical Plain Zone of Tripura, undertake transplanting of *aman* rice and continue sowing of vegetables.
- As rain/thundershowers would occur at many places over Nagaland, Manipur, Mizoram and Tripura Meghalaya along with isolated heavy spells on 13<sup>th</sup> July, postpone intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
- Due to cloudy weather and increase in humidity, there is chance of attack of blast disease in *jhum* rice in Mild Tropical Hill Zone of Nagaland. Spray Carbendazim @ 1 g/litre of water after current spells of rain.
- In Tripura, due to cloudy and humid weather there is chance of infestation of sheath blight in *jhum* rice. Spray Surf @ 1g per litre of water. Also monsoon weather is conducive for Panama wilt disease in banana. Drench with Bavistin @1g per litter of water and Trichodermaviride and pseudomonas fluorescence may be incorporated in the soil after current spells of rain.
- Suitable varieties are given in Annexure III.
- **Animal Husbandry**
- In the Northeastern States, animal sheds should be kept dry and avoid dampness during rainy days.
- Monsoon weather could lead to gastrointestinal parasites infection in pigs and poultry in Tripura. Farmers are advised to keep good sanitary conditions in pig and poultry sheds.

## EAST INDIA [JHARKHAND, BIHAR, ODISHA, WEST BENGAL & SIKKIM, ANDAMAN & NICOBAR ISLANDS]



*Sugarcane*



*Jute*



*Onion*



*Land Preparation/Sowing*

- **Realised Rainfall:** Rainfall occurred in all districts of Andaman & Nicobar Islands; all districts of Sub-Himalayan West Bengal; all districts of Gangetic West Bengal except Howrah; all districts of Sikkim except West Sikkim; all districts of Bihar except Buxar; all districts of Jharkhand except Garhwa and Simdega; all districts of Odisha except Balasore, Bhadrak, Gajapati, Kalahandi, Kandhamal, Koraput, Malkangiri and Rayagada.
- **Weather Forecast:** Rain/thundershowers would occur at many places over Andaman & Nicobar Islands during the period. Rain/thundershowers would occur at a few places over Sub-Himalayan West Bengal & Sikkim and Odisha

during next 24 hours and at many places thereafter. Rain/thundershowers would occur at isolated places over Gangetic West Bengal during next 24 hours and over Jharkhand during next 48 hours and at a few places thereafter.

Rain/thundershowers would occur at isolated places over Bihar during the period.

No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.

- **Weather Warning:** Heavy rainfall would occur at isolated places over Andaman & Nicobar Islands, Coastal Odisha on 11<sup>th</sup> and 12<sup>th</sup> July and over Sub-Himalayan West Bengal & Sikkim on 12<sup>th</sup> July.
- **Weather Outlook:** Rain/thundershowers would occur at many places over east India.
- **Advisories:**
  - **West Bengal:**
    - As rain/thundershowers would occur at many places over Sub Himalayan West Bengal and Sikkim during the period along with heavy spells at isolated places on 12<sup>th</sup>, postpone intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
    - In West Bengal, continue nursery sowing and transplanting of *aman* rice utilizing the realised and expected rainfall.
    - Complete sowing of direct seeded *aman* rice in Coastal Saline Zone utilising the realised and expected rainfall. Due to humid weather betel vine plants may be attacked by chital disease in Coastal Saline Zone of West Bengal. Apply 0.5% Bordeaux mixture at 15-20 days interval on a non rainy day.
    - In Red Soil Zone of West Bengal, undertake direct seeding of upland rice and in New Alluvial Zone of West Bengal, undertake planting of banana.
    - Due to humid weather, there is chance of attack of whitefly and Jassid in ladies finger in Laterite and Red Soil Zone of West Bengal. For white-fly, apply Imidachloprid 17.8 S. L. @ 4 ml per 10 litre of water and for Jassid, spray Thiamethoxon @ 1g/10liter of water on a non rainy day.
    - In Old Alluvial Zone of West Bengal, due to cloudy weather and high humidity, there is chance of attack of fruit and stem rot on chilli and brinjal. To manage this disease, spray Copper oxychloride 50WP @4g/litre of water after current spells of rain.
  - **Andaman & Nicobar Islands:**
    - In Andaman & Nicobar Islands, drain out excess water from rice nurseries and vegetable crop fields.
    - In North, South and Middle Andaman, do propping in banana plants having bunches to prevent damage due to high wind speed.
  - **Odisha:**
    - As rain/thundershowers would occur at many places over Odisha along with heavy spells at isolated places over Coastal Odisha on 12<sup>th</sup>, postpone intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
    - In East and South Eastern Coastal Plain Zone of Odisha, undertake transplanting of *kharif* rice under SRI cultivation utilizing the realised and expected rainfall and beushening in 21 days old direct sown rice in low land areas. Also continue sowing of ragi, maize, groundnut and sesame.
    - In Western Undulating Zone of Odisha, continue sowing of maize, arhar and cotton in upland areas taking the advantage of the realised and expected rainfall.
    - In North Eastern Plateau Zone of Odisha, continue sowing of maize, groundnut, green gram and black gram, ragi, arhar, maize and sesame, sowing of okra and cluster bean in North Central Plateau Zone of Odisha. Also continue nursery raising of brinjal, tomato and chilli in upland areas.
    - Due to humid weather there is chance of occurrence of fruit & shoot borer in brinjal and tomato in Mid Central Table Land Zone of Odisha. Install Pheromone trap and spray Sevin WP @ 4g or Malathion @ 2 ml in 1 litre of water after current spells of rain.
    - Fruit and shoot borer in brinjal has been found in East and South Eastern Coastal Plain Zone of Odisha. To control it install Pheromone traps and spray 4 g Sevin WP or 2 ml Malathion in 1 litre water alternatively. Dry ing of fruit and stem of brinjal has been occred. Spray 2 g Saaf or Sixer or Companion in 1 litre water. Root rot of pointed gourd. Spray 10 g Plantomycine along with 20 g Blitox 50 in 10 litre watere. Fruit fly in cucurbit and bitter gourd. Spray 3 ml Sevin WP in 1 litre water after current spells of rain.
  - **Bihar:**
    - In North West Alluvial Plain Zone of Bihar, continue transplanting of rice in low and medium land areas with realised rainfall. Continue transplanting of tomato and brinjal. Undertake sowing of arhar and kulthi in upland areas.
    - Continue nursery sowing of short duration rice varieties in South Bihar Alluvial Zone. Undertake planting of Mango, Litchi, Guava and Papaya.
    - In North East Alluvial Plain Zone of Bihar, undertake transplanting of 20-25 days old paddy seedling in low and medium land areas with realised rainfall. Undertake nursery sowing of Chilli. Prepare drainage channels to drain out excess water from field of vegetables, jute and elephant foot yam.
  - **Jharkhand:**
    - In South Eastern Plateau Zone of Jharkhand, complete sowing of direct seeded upland rice and continue sowing of maize and pigeon pea, urad, moong, groundnut, soybean, sesame and also rainy season. Undertake transplanting of rice in low and medium land areas with realised rainfall.



- In Western Plateau Zone of Jharkhand, undertake transplanting of rice in low and medium land areas with realised rainfall. Also undertake transplanting of finger millet.
- In Central & North Eastern Plateau Zone of Jharkhand, continue sowing of urad and til with realised rainfall. Undertake transplanting of rice and planting of mango, guava and litchi.
- Suitable varieties are given in Annexure III.
- **Animal Husbandry**
- Keep the cattle in the sheds during heavy rainfall periods in Sub-Himalayan West Bengal.
- In South Bihar Alluvial Zone, to carry out vaccination of animals against *Anthrax*, *Black Quarter (Dakaha)*, *Galgotu* disease to protect them during rainy season.
- Provide dry and clean shelter to dairy animals in Old Alluvial Zone of West Bengal. Clean and hygienic water should be provided to dairy animals.
- **Poultry**
- In Nicobar Island and South, North and Middle Andaman, to prevent the rain water going into the poultry sheds an overhang of 3feet is necessary and it should be 9-12 inch above the surrounding area with good drainage facilities.

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



**Sugarcane**

**Land Preparation/Sowing**

**Okra**

**Green Gram**

- **Realised Rainfall:** Rainfall occurred in Betul, Bhopal, Harda, Khandwa and Shivpuri districts of West Madhya Pradesh, Anuppur, Balaghat, Chhatarpur, Katni, Rewa, Satna and Sidhi districts of East Madhya Pradesh; in Bastar, Bijapur, Bilaspur, Durg, Janjgir, Kanker and Koriya districts of Chhattisgarh. Weather was mainly dry over remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Madhya Pradesh during next 48 hours and at a few places thereafter. Rain/thundershowers would occur at a few places over Chhattisgarh during next 48 hours and at many places thereafter.  
No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.
- **Weather Warning:** Heat wave to severe heat wave condition would occur over some parts of north Madhya Pradesh on 11<sup>th</sup> and 12<sup>th</sup> July.
- **Weather Outlook:** Rain/thundershowers would occur at many places over the region.
- **Advisories:**
  - **Madhya Pradesh:**
    - Continue nursery sowing of rice and sowing of maize, soybean in east Madhya Pradesh utilizing the realized rainfall.
    - Continue sowing of early maturing varieties of maize and soybean in Jhabua Hill Zone and in Gird Zone in west Madhya Pradesh utilizing the realized rainfall. Also undertake nursery sowing of *kharif* vegetables in Grid Zone of west Madhya Pradesh.
    - Undertake transplanting of rice with irrigation in Bundelkhand Zone and continue sowing of cotton in Nimar Valley Zone of Madhya Pradesh utilizing the realized rainfall.
    - Due to partly cloudy weather, there is possibility of attack of fruit and stem borer in brinjal and tomato in Bundelkhand Zone of Madhya Pradesh. For control, spray Malathion 50 E.C. @ 1.0 ml per litre of water on a non rainy day.
    - If soybean, maize and sorghum could not be sown due to subdued rainfall in West Madhya Pradesh undertake the contingency crops given in Annexure I.
    - Suitable varieties are given in Annexure III.
  - **Chhattisgarh:**
    - In Chhattisgarh Plain Zone, continue nursery sowing of rice and sowing of maize, soybean, moong and urad utilizing the realized and expected rainfall and also undertake nursery sowing of *kharif* vegetables.
    - Continue nursery sowing of rice, line sowing of rice and transplanting of tomato, brinjal, cauliflower, cabbage and chilli in North Hill Zone and continue nursery sowing of rice, sowing of maize and urad in Bastar Plateau Zone of Chhattisgarh utilizing the realized and expected rainfall.

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



**Land Preparation**

**Sugarcane**

**Bottle Gourd**

**Onion**

- **Realised Rainfall:** Rainfall occurred in Badgam, Srinagar districts of Jammu & Kashmir; Bilaspur, Kangra, Solan districts of Himachal Pradesh; Bhatinda and Muktesar districts of Punjab; Gurgaon district of Haryana; Central & North Delhi districts of New Delhi, all the districts of East Uttar Pradesh except Banda, Farrukhabad, Hardoi, Kannauj, Kanpur City, Kanpur Dehat, Sahuji Maharaj Nagar, Sonbhadra, Unnao; in Pilibhit, Shahjahanpur districts of West Uttar Pradesh; Bharatpur district of East Rajasthan, Chamoli, Champawat, Dehradun, Rudraprayag, Udham Singh Nagar, Uttarkashi districts of Uttarakhand. Weather was mainly dry over remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Uttarakhand during next 48 hours and at a few places thereafter. Rain/thundershowers would occur at isolated places over Jammu & Kashmir, Himachal Pradesh, East Uttar Pradesh and East Rajasthan during the period. Mainly dry weather would prevail over Punjab, Haryana & Delhi, West Uttar Pradesh and West Rajasthan during the period.  
No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.
- **Weather Warning:** Heat wave to severe heat wave conditions would occur over some parts of Haryana & Delhi, Uttar Pradesh and east Rajasthan on 11<sup>th</sup> July. Heat wave conditions would occur at isolated places over Punjab, Haryana & Delhi, East Rajasthan and West Uttar Pradesh on 12<sup>th</sup> July.
- **Weather Outlook:** Increase in rainfall activity over Uttar Pradesh, Himachal Pradesh and Uttarakhand from 14<sup>th</sup> onwards. Rain/thundershowers would occur at isolated places over rest parts of the region.
- **Advisories:**
  - **Jammu & Kashmir:**
    - Undertake sowing of carrot, transplanting of knol-khol, cabbage and continue transplanting of rice and sowing of maize in Intermediate Zone of Jammu & Kashmir and apply irrigation to vegetables viz. tomato, brinjal, chilli, capsicum, cucurbits, beans, bhindi etc. at regular intervals to avoid flower and fruit dropping. Also continue sowing of moong, sunflower in Valley Temperate Zone of Jammu & Kashmir.
    - Continue nursery sowing of basmati rice, direct sowing of maize in Sub Tropical Zone of Jammu & Kashmir utilising the realised rainfall. Remove weeds from turmeric, chillies and other standing crops.
    - Due to prevailing humid weather conditions, there are chances of fruit borer in tomato, fruit and shoot borer in brinjal in Sub Tropical Zone of Jammu & Kashmir. Apply Malathion @ 0.05% or Cabaryl 0.1%. For downey mildew of cucurbits spray any systemic fungicide like Ridomol M-Z @ 2.5gm/litre of in severe cases and Dithane M-45 @ 2.5gm/lit at 10 days interval.
  - **Himachal Pradesh:**
    - Continue nursery sowing/ transplanting of rice and sowing of cucurbits like cucumber, bitter gourd, bottle guard and summer squash; tomato, chilli, *capsicum* and brinjal in Mid-Hills Sub-Humid Zone and Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh utilizing the realised rainfall. Complete direct sowing of rice and sowing of moong, mash and kulthi.
    - Due to prevailing humid weather conditions, there are chances of attack of cut worms and white grubs in maize in Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh. Apply Chloropyriphos 20 EC @ 2 litres mixed with 25 kg of sand per hectare.
    - Due to prevailing humid weather conditions, there are chances of attack of red pumpkin beetle and fruit fly in cucurbits in Mid-Hills Sub-Humid Zone and Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh. Spray Malathion 50EC @ 1ml per litre of water.
  - **Uttarakhand:**
    - Continue transplanting of rice and sowing of sorghum, millets, groundnut, soybean and pigeon pea in Bhabar & Tarai Zone of Uttarakhand utilizing the realised rainfall.
    - Complete transplanting of rice and continue sowing of palak, methi, coriander, okra and French bean in Hill Zone of Uttarakhand.
    - Continue sowing of direct seeded rice with short duration varieties like Pant-4, Narendra-359, and Saket-4 etc. in Sub Humid Sub tropic Zone of Uttarakhand utilizing the realised rainfall.
    - Due to humid weather conditions there are chances of fruit borer in vegetables, spray Neem oil @ 20-25ml in 5

litres of water every after 10 to 15 days in Hill Zone of Uttarakhand on a non rainy day.

▪ **Punjab, Haryana and Delhi:**

- In Western Plain Zone of Punjab, it is advised to complete transplanting of rice with irrigation. Give first dose of Nitrogen to counteract the high temperature and to minimize the burning of cotton seedlings. Save the young fruit trees from high temperature by erecting thatches of sarkanda or rice straw. If rain is not sufficient, apply irrigation at regular basis and increase the frequency of irrigation at critical growth stages of crops.
- In Western Zone of Punjab complete transplanting of rice with 25 to 30 days old seedlings utilizing realised rainfall during last week. Undertake nursery sowing of basmati rice, sowing of okra and cow pea.
- In Undulating Plain Zone of Punjab, continue transplanting of rice and complete sowing of maize with irrigation. Undertake land preparation for sowing of mung, mash and til..
- In Central Plain Zone and in Western Plain Zone of Punjab, complete transplanting of rice with irrigation and undertake sowing of okra, radish and cucurbits.
- In Sub-Montane Undulating Zone of Punjab, undertake transplanting of rice and sowing of maize and okra with irrigation. To avoid fruit drop in Kinnow orchards, apply irrigation at 3-4 days interval (with Basin irrigation system) or 6-7 hours/day in drip irrigation system.
- Due to partly cloudy weather, there are chances to occurrence of sucking pest viz. white fly and jassid in cotton in Western Zone of Punjab. Monitor the crops and if pest population reaches ETL level, then spray Oberon @200ml/acre for white fly and Ulala @80g/acre for the management of jassid.
- In Eastern Zone of Haryana, transplant one month old rice seedlings with irrigation. Undertake sowing of guar, bajra and pulses with certified seeds after receipt of sufficient rain.
- In Western Zone of Haryana, undertake sowing of guar, bajra,pulses, fodder crops such as jowar mixed with cowpea to increase the nutritive value for continuous supply of green fodder and transplanting of rice with irrigation, cultivate less area for paddy.
- In Delhi, continue nursery preparation of rice, early cauliflower and brinjal with irrigation facilities. Undertake transplanting of brinjal, chilli and early cauliflower if the seedlings are ready. Undertake sowing of pigeon pea, maize, guar, bajra, cluster bean, spinach, amaranths, okra and cucurbits during the week with irrigation facilities. Where irrigation facility is limited, it is advised to cultivate crops such as arhar, pearl millet, guar, pulses etc. which require less water.

▪ **Uttar Pradesh:**

- In Central Plain Zone of Uttar Pradesh, continue nursery sowing of short duration varieties of rice, early variety of brinjal, chilli and cauliflower and sowing of maize, urad, mung, cucurbits like bottle guard, cucumber, bitter guard, tinda and planting of fruit crops utilizing the realized rainfall. Undertake transplanting of rice, sowing of lobia, sorghum, barley and maize as fodder crops, land preparation for sowing arhar and soybean.
- In Western Plain Zone of Uttar Pradesh, continue direct sowing of rice in lowland areas and undertake sowing of guar, bajra, jowar and moong as fodder crops in uplands utilizing the realized rainfall.
- Due to humid weather condition, there are chances of attack of shoot/fruit borer in ladies finger in Central Plain Zone of Uttar Pradesh. Remove the infected stem/fruits from the plants and spray Quinolphos @ 2 ml per litre of water or Carbryl @ 4 g per litre of water.
- Due to humid weather condition, there are chances of attack of aphids in Anola orchard in Central Plain Zone of Uttar Pradesh. Spray Monocrotophos 0.04% for control.

▪ **Rajasthan:**

- As there is delay in onset of monsoon, undertake land preparation for sowing of short duration varieties of *khariif* crops like pearl millet, cowpea, green gram, moth bean and urad bean etc. in Semi Arid Eastern Plain Zone of Rajasthan after receipt of sufficient rain. Undertake sowing of green gram and sesame in Flood Prone Eastern Plain Zone of Rajasthan, after receipt of sufficient rain. Arrange for seeds and fertilizers in advance so that sowing of these crops may be undertaken as soon as there is onset of monsoon.
- Continue land preparation for sowing of maize, jowar, soybean, moong, urad, til, groundnut and arhar in southern humid Plain Zone and maize, moong, urad, cow pea in Sub Humid Southern Plain and Aravali Hill Zone of Rajasthan after receipt of sufficient rain.
  - Continue land preparation for sowing of bajra, moong, moth, guar and groundnut in Arid Western Plain Zone and bajra, moong, moth, guar and til in Irrigated North Western Plain Zone of Rajasthan after receipt of sufficient rain.
  - Detailed contingency measures given in Annexure I.
  - Suitable short duration varieties are given in Annexure III.

• **Floriculture**

- Due to prevailing humid weather condition there are chances of incidence of gladiolus bilght in gladiolus in Mid-Hills Sub-Humid Zone and Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh. Spray Dithane M45 (Mancozeb) @ 25 g in 10 litres of water on a non rainy day.

• **Horticulture**

- Due to prevailing humid weather condition, there are chances of attack of citrus canker in horticultural crops like peach, pear, plum, almonds, apricot and apple in Mid-Hills Sub-Humid Zone of Himachal Pradesh. Spray Malathion



@ 10 ml or Metasystox @ 10 ml per 10 litres of water on a non rainy day.

- Due to prevailing humid weather condition there be chance of Black tip disease in mango crop, to control spray borax @ 1 % or other alkaline solutions like caustic 0.8 % or washing soda 0.5 % regularly at 10 days interval in Sub Humid Sub Tropic Zone of Uttarakhand.

## WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



### Land Preparation/ Sowing

### Sugarcane

### Rice Nursery

### Okra

- **Realised Rainfall:** Rainfall occurred in all districts of Konkan & Goa, Solapur district of Madhya Maharashtra, Beed, Latur, Osmanabad and Parbhani districts of Marathwada and in Gadchiroli district of Vidarbha. Rainfall occurred in Navsari and Valsad districts of Gujarat region. Weather was mainly dry over remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at most places over Konkan & Goa, at a few places over Marathwada during the period. Rain/thundershowers would occur at a few places over Madhya Maharashtra during next 48 hours and at many places thereafter. Rain/thundershowers would occur at isolated places over Vidarbha during next 24 hours and increase thereafter. Rain/thundershowers would occur at a few places over Gujarat during next 48 hours and at isolated places thereafter  
No significant change in maximum temperatures likely over many parts of the region during next 2-3 days.
- **Weather Warning:** Heavy to very heavy rainfall would occur at a few places over Konkan & Goa on 11<sup>th</sup> and at isolated places on 12<sup>th</sup> July and heavy rainfall would occur at isolated places over Konkan & Goa on 13<sup>th</sup> July.
- **Weather Outlook:** Rain/thundershowers would occur at isolated places over the region.
- **Advisories:**
  - **Maharashtra:**
    - In Konkan, continue transplanting of rice with 20-22 days old seedlings of rice and finger millet. Provide adequate drainage in crop fields to remove excess water. Undertake sowing of early maturing variety of rice in upland areas.
    - As rainfall would occur at many places in Madhya Maharashtra on 13<sup>th</sup> July, undertake transplanting of rice in Western parts of Kolhapur, Pune and Nasik districts. Sowing of sunflower, soybean, cotton, hybrid jowar, hybrid pearl millet, red gram, bean and sesame may be undertaken. It is also advised to take up intercropping of pearl millet+red gram in 2:1, sunflower+red gram in 2:1, soy bean+red gram in 3:1 and guar+red gram in 2:1 ratios. For sowing of red gram, use Vipula variety.
    - In Marathwada, undertake sowing of *kharif* crops like cotton, soybean, red gram, jowar, sunflower and maize in Beed, Latur, Osmanabad, Aurangabad and Parbhani.
    - As rainfall is expected in Vidarbha, undertake sowing of cotton, red gram, soybean and sunflower.
    - Due to subdued rain during last week in East Vidarbha, there may be attack of army worm in rice seedlings, spray Cypermethrin 10 % @ 6 ml per 10 litres of water after spells of rain.
  - **Gujarat:**
    - Due to non-receipt of rainfall during June, in the districts like Ahmedabad, Anand, Dahod, Kheda, Panachmahal, and Vadodara, cotton and other crops could not be sown. Under this situation and expected rainfall during the period, contingent crops like cotton (Desi Hybrid: Deshi hybrid-7, Deshi hybrid-9, Guj. Cot-13, Guj. Cot-21, Anand Deshi Cot-1), and recommended varieties of maize, paddy, soybean, black gram, green gram, cowpea, pigeon pea, castor, pearl millet etc. (see the Annexure I) could be sown. In the rest of the districts of the region, still there is time to sow the normal crops.
    - **Gujarat region:**
      - Undertake nursery sowing of mid / late maturing varieties of rice, sowing of pearl millet, groundnut and pigeon pea utilising the expected rainfall; select short duration and late sowing crop varieties for sowing of *kharif* crops; carryout mulching and weeding to conserve soil moisture in Middle Gujarat Zone.
      - Undertake sowing of rainfed *kharif* crops like bajra with irrigation, if sufficient rain does not occur, carry out inter-cultural operations, weeding and gap filling in earlier sown groundnut and cotton to conserve soil moisture; carry out sowing of vegetables in North Gujarat Zone.
      - Prepare the nursery for *kharif* vegetables like brinjal, tomato, chilli etc.; carryout weeding, inter-cultural operation and mulching in cotton to conserve soil moisture in Bhal and Coastal Zone and in cotton and early sown groundnut in North Gujarat Zone.
      - As there was rainfall in Navsari and Valsad districts in South Gujarat Heavy Rainfall Zone, undertake transplanting

of tomato, brinjal, chilli and transplanting of rice seedlings at 4-5 leaves stage. Undertake inter cultural operations and hand weeding in pulses and maize in Navsari, Dangs districts and in groundnut and cotton after vapsa condition in Valsad district.

- Due to prevailing mainly dry weather conditions in Gujarat Region, detailed contingency measures and moisture conservation measures for alternate crops recommended for July first fortnight is given in Annexure I.
- **Saurashtra & Kutch:**
- In North West Zone, sowing of groundnut is recommended with varieties like GAU-10, GG-20, GG- 11,12,13, prefer downey mildew resistant variety & high yielding varieties of Bajra like GHB-15, 235, 316, MH-169, GHB-27. Carry out sowing of castor and sowing of maize, sorghum, lucern –bajara and cowpea for green fodder after receipt of sufficient rain.
- Due to prevailing mainly dry conditions in North Saurashtra Zone, detailed contingency measures and moisture conservation measures for alternate crops recommended for July first fortnight is given in Annexure I.
- Cloudy and humid weather are conducive for the incidence of sigatoka leaf spot in banana in South Gujarat Zone; spray Carbendazim @1 g / 1 liter of water, if incidence is noticed.
- Detailed contingency measures given in Annexure I.
- Suitable varieties are given in Annexure III.
- **Animal Husbandry**
- In Gujarat, HF vaccination is recommended in cattle if not done earlier during the season.

**Districtwise realised rainfall and % departure for past three weeks is given below in Annexure II.**

### Annexure I Contingency measures for the meteorological subdivisions

#### 1. North Interior Karnataka

- Bajra, Pigeonpea, Groundnut, Sesamum, Niger, Fاختail millet, Horsegram, , Castor, Bajra + Pigeonpea (2:1), Bajra + castor (2:1), Groundnut + pigeonpea ( 4:2) Bajra + groundnut ( 2:4), Bajra + pigeonpea (2:1). Sow the crops across the slope.
- Soak the seeds for recommended time in Calcium Chloride solution before sowing.
- Select short duration, drought resistant crops and variety.
- Take up sowing of crops in wider rows to overcome moisture stress and to get higher yields

#### Contingency planning for North Interior Karnataka

Meteorological subdivision	Districts	Major crops	District wise Contingency planning for crops if monsoon delayed by 4 weeks
North Interior Karnataka	Bidar	Jowar, red gram, soybean, black gram	Red gram, soybean and bajra.
	Bagalkote	Sorghum, sugarcane, maize, greengram, groundnut	Pearl millet, sunflower
	Dharwad	Maize, rice, soybean, groundnut , cotton	Maize+Redgram (4:2), Groundnut + Redgram (4:2)
	Belgaum	Sugarcane, maize, cotton, soybean, groundnut	Short duration varieties of Groundnut
	Bellary	Rice, maize, sorghum, sunflower, groundnut	Bajra, pigeonpea, groundnut or sunflower
	Koppal	Sunflower, rice, bajra, sorghum, groundnut	Sesamum and castor

## 2. Gujarat Region and Saurashtra & Kutch

Region	Crops	Varieties	
South and Middle Gujarat	Cotton	(Deshi Hybrid: Deshi hybrid-7, Deshi hybrid-9, Guj. Cot-13, Guj. Cot-21, Anand Deshi Cot-1)	
	Paddy	Early	GURJARI. GR-5, 8
		Medium	GR-3, 4, 7, 9, GNR-2, IR-64, NAUR-1, GNR-3, IR-28
		Late	GR-12, 11, GAR-13, JAYA, MASURI, GR-101, 102, 103 & 104 and Narmada
		Drilled paddy	Sathi-34-36, Sukhvel-20, GR-5, GR-8, GR-9, GR-12, Ashoka-200F, I.R.-28, ADR-1
	Soybean	Gujarat Soybean-1, 2, JS-335, NRC-37	
	Greengram	K-851, GM-4, Meha	
	Blackgram	T-9, Guj.Urd-1	
	Cowpea	Gujarat cowpea-1, Gujarat cowpea-2, Gujarat cowpea-4	
	Pigeonpea	BDN-2, ICPL-87, GT-100,GT-101, Guj.AnandTur-102, AGT-2, Vaishali	
	Castor	GAUC-1, GCH-2, GCH-4, GCH-5, GCH-7	
Pearl millet	GHB-577, GHB-558 and MH-179		
sunflower	(cv. Modern and EC-68414 and Guj-1),		
Saurashtra region	groundnut	erect types groundnut (GG-2,5,7)	

## 3. Maharashtra

### Contingency planning for Madhya Maharashtra, Marathwada and Vidarbha

Subdivision	District	Contingency crops if monsoon is delayed by 6-8 weeks
Madhya Maharashtra	Madhya Maharashtra except Western Ghat Region	Sunflower, Soybean, Cotton, hybrid Jowar, hybrid pearl millet, Red gram short duration, Groundnut short duration variety. intercropping of pearl millet+redgram in 2:1, sunflower+redgram in 2:1, soybean+redgram in 3:1 and guar+redgram in 2:1 ratios.
Marathwada	Marathwada	Soybean + tur 4:2 Cotton + tur 6:2 Jowar + tur 4:2 Same/Soybean + tur 4:2 Soybean + tur 4:2
Vidarbha	East Vidarbha	Drilled rice with early maturing variety Instead of soybean, cotton and red gram, take early rabi jowar, sesamum, linseed, maize
	West Vidarbha	Three tier intercropping of cotton:sorghum:pigeonpea:sorghum in 6:1:1:1 or 3:1:1:1 ratio is recommended. Red gram



#### **4. Madhya Pradesh**

If soybean, maize and sorghum could not be sown due to subdued rainfall in West Madhya Pradesh, sowing of pigeonpea, greengram, blackgram, sesame in place of soybean, maize and Sorghum may be undertaken. Recommended varieties for Pigeonpea- Pragati , Jagriti, Asha, Number-148, JKM-7, JA-4, Type-21-Pusa- 855, ICPL-85063 (Laxmi), JKM-189, for Greengram- Pusa vishal,K851,JM721,Jawahar 99 -37,Hum-1, Hum-2, Tarme-1 L.G.450, T.M.98-50,JM-98-90, PDM 11, 54 and 139, for Blackgram – JU-2,JU-3,JU-86,T- 9,JBG-623,LBG684,TAU- 1, Berkha and for Sesame - TKG -306, TKG-35, JGS-8, JT-21, JT-22, JT-55,PKTS-11, PKTS-12,JT-1

#### **5. Rajasthan**

Undertake following improved short duration varieties of the crops.

##### **East Rajasthan**

Maize: Navjot, GM-6, Mahi Kanchan, Pratap Hybrid Maize-1, Pratap Hybrid Maize-2, PEHM-1 and PEHM-2.

Sorghum: CSV-17, SPV-837

Soybean: PK-472, JS-71-05, Pratap Soya-1, Pratap Soya-2, Pratap Raj Soya-24

Pearl millet: Raj-171, Hybrid: RHB-173, RHB-177, ICMH-356, HHB-60, HHB-67(improved)

Green gram:RMG-492, RMG-268, SML-668 and RMG-344

Cowpea:C-152, RS-9, FS-68, RC-19 and RC-101.

Mothbean:improved varieties are: RMO-40, RMO-225, RMO-435, IPCMO-912.

Urad bean improved varieties are: Pant U-19, Krishna, T-19.

##### **West Rajasthan**

Bajra:HHB-60, RHB-121, HHB-67, RHB-90 and ICMH-356.

Moong :SML-668, MUM-2, RMG-62, RMG-268 and K-851.

Moth: RMO-257, 225, 435, 423 and 40.

Guar RGC-936, 197,986, 1002 and 1003. Groundnut HNG-10, Chandra, M-13, T.G. 37A and T.B.G.-39.

**Annexure II**  
**Week by week Rainfall Distribution**

Sub-Divisions	25.06.14		02.07.14		09.07.14	
	Actual (mm)	% dep.	Actual (mm)	% dep.	Actual (mm)	% dep.
<b>Arunachal Pradesh</b>						
Anjaw	**	**	**	**	**	**
Changlang	79.7	-49	44.9	-63	122.0	16
Dibang Valley	4.0	-96	10.0	-91	0.0	-100
East Kameng	196.6	149	13.2	-85	18.3	-77
East Siang	78.6	-60	287.8	44	287.5	37
Kurung Kumey	**	**	**	**	**	**
Lohit	86.0	-24	91.0	-37	83.2	-34
Lower Dibang Valley	103.7	13	205.5	94	204.6	153
Lower Subansari	**	**	**	**	**	**
Papumpara	350.4	116	286.2	63	118.4	-31
Tawang	138.0	-23	97.0	-45	85.0	-50
Tirap	52.4	-70	64.6	-63	11.0	-93
Upper Siang	143.0	-33	307.6	85	160.5	1
Upper Subansari	137.6	174	47.8	-52	51.0	-10
West Kameng	212.8	18	75.6	-57	129.0	-24
West Siang	130.3	57	89.7	-35	92.7	-7
<b>Assam&amp;Meghalaya</b>						
<b>Assam</b>						
Baksa	116.0	-29	44.0	-75	42.0	-81
Barpeta	264.7	62	34.6	-80	97.3	-57
Bongaigaon	256.7	101	70.4	-61	221.8	-2
Cachar	149.5	15	101.2	-20	83.3	-26
Chirang	521.3	309	84.9	-53	217.9	-4
Darrang	155.0	33	44.0	-51	24.0	-71
Dhemaji	96.0	-28	135.0	-3	157.0	5
Dhubri	193.0	23	38.6	-67	84.6	-23
Dibrugarh	130.1	18	88.4	-20	26.3	-77
Goalpara	238.5	71	13.7	-91	99.2	-18
Golghat	81.7	38	64.1	0	30.1	-58
Hailakandi	178.4	76	121.6	27	51.7	-38
Jorhat	181.4	186	111.0	38	22.3	-77
Kamrup(Rural)	188.8	81	106.4	39	11.0	-88
Kamrup(Metro)	185.1	77	74.3	-3	28.1	-68
Karbi Anglong	37.0	-36	117.8	167	54.5	-1
Karimganj	237.3	50	91.6	-36	153.3	-1
Kokrajhar	252.4	39	104.3	-58	98.4	-62
Lakhimpur	141.7	7	161.5	16	113.3	-25
Morigaon	82.6	-11	60.6	-29	16.0	-82
N.C.Hills	83.6	3	118.2	65	63.3	34
Nowgong	61.3	-23	124.9	91	39.3	-36
Nalbari	157.3	3	25.4	-75	108.0	-9
Sonitpur	96.4	12	36.6	-60	52.5	-41
Sibsagar	144.7	114	134.0	68	24.0	-75

Tinsukia	91.8	-7	82.7	-20	59.2	-44
Udalgiri	134.6	16	86.3	-3	56.6	-31
<b>Meghalaya</b>						
East Garo Hills	228.1	100	115.6	22	429.7	381
East Khasi Hills	753.4	83	258.5	-28	676.5	85
Jaintia Hills	**	**	**	**	**	**
Ribhoi	83.3	-18	37.9	-64	51.7	-47
South Garo Hills	204.0	87	134.0	15	167.0	62
West Garo Hills	167.0	53	42.4	-64	48.0	-53
West Khasi Hills	**	**	**	**	**	**
<b>NMMT</b>						
<b>Mizoram</b>						
Aizwal	100.2	-9	131.5	21	8.1	-90
Champhai	1.0	-99	**	**	**	**
Kolasib	1.0	-99	**	**	**	**
Lawngtlai	**	**	**	**	**	**
Lunglei	1.0	-99	**	**	**	**
Mamit	**	**	22.0	-80	4.0	-95
Saiha	162.0	79	85.0	-16	39.0	-58
Serchhip	86.0	-18	29.0	-69	12.0	-88
<b>Manipur</b>						
Bishnupur	**	**	**	**	**	**
Chandel	49.0	-70	12.0	-87	12.0	-91
Churachandpur	2.0	-98	1.0	-99	17.0	-80
Imphal east	74.2	-10	16.1	-81	20.5	-75
Imphal west	95.7	27	74.9	5	103.0	79
Senapati	57.0	-38	46.0	-53	17.0	-78
Tamenglong	**	**	**	**	**	**
Thoubal	10.0	-79	11.0	-80	3.0	-91
Ukhrul	**	**	**	**	**	**
<b>Nagaland</b>						
Dimapur	32.7	2	15.8	-46	23.4	-44
Kephire	**	**	**	**	**	**
Kohima	29.7	-54	40.3	-51	24.8	-68
Longleng	**	**	**	**	**	**
Mokokchung	22.0	-72	49.0	-63	24.0	-88
Mon	**	**	**	**	**	**
Paren	**	**	**	**	**	**
Phek	22	-66	16	-81	43	-44
Tuensang	**	**	**	**	**	**
Wokha	0.0	-100	**	**	**	**
Zunheboto	**	**	**	**	**	**
<b>Tripura</b>						
Dhalai	204.6	116	34.0	-56	0.0	-100
North tripura	150.5	63	62.2	-29	37.3	-55
South tripura	269.5	160	57.0	-47	77.3	-37
West tripura	265.8	208	57.1	-33	66.6	-25
<b>Himachal Pradesh</b>						
Bilaspur	22.1	-26	99.1	104	35.9	-45



Chamba	9.8	-78	16.3	-72	21.5	-73
Hamirpur	31.1	-32	61.4	-13	24.7	-60
Kangra	21.0	-51	50.3	-34	35.8	-62
Kinnaur	0.0	-100	0.7	-93	0.0	-100
Kullu	15.4	-43	16.2	-31	13.1	-58
Lahaul and Spiti	0.0	-100	4.0	-78	3.2	-89
Mandi	29.9	-33	76.2	12	23.2	-66
Shimla	26.4	-8	60.5	73	25.4	-38
Sirmaur	15.5	-67	77.1	7	25.2	-73
Solan	35.5	-6	105.1	88	42.1	-42
Una	24.7	44	62.9	43	10.8	-86
<b>Punjab</b>						
Amritsar	1.6	-88	21.7	-3	0.8	-98
Barnala	5.1	-25	9.6	-47	0.0	-100
Bhatinda	38.0	313	10.0	-50	41.0	161
Faridkot	27.0	103	24.0	49	17.5	-8
Fatehgarh Saheb	3.0	-71	16.3	-29	0.0	-100
Ferozpur	8.8	-26	18.4	27	7.3	-67
Gurdaspur	6.1	-64	44.4	24	11.6	-77
Hoshiarpur	0.3	-98	36.5	-12	1.5	-97
Jalandhar	1.6	-90	48.9	84	0.0	-100
Kapurthala	1.5	-88	41.1	90	0.2	-99
Ludhiana	4.9	-68	34.8	35	9.1	-78
Mansa	6.4	-43	1.5	-87	9.5	-46
Moga	13.1	-17	24.2	114	2.1	-91
Muktesar	35.3	224	1.0	-93	57.7	224
Nawashahar	0.0	-100	51.9	16	11.9	-84
Patiala	0.0	-100	22.9	-11	0.0	-100
Ropar	4.6	-75	49.2	25	8.8	-82
Sangrur	3.1	-67	9.7	-63	0.5	-98
Mohali	0.7	-97	65.2	114	6.7	-87
TarnTaran	4.4	-50	18.8	57	0.3	-99
<b>Haryana,Chd,Delhi</b>						
<b>Haryana</b>						
Ambala	0.0	-100	41.6	-1	12.0	-81
Bhiwani	5.9	-32	0.2	-98	8.3	-59
Chandigarh	2.3	-93	62.2	27	9.7	-87
Faridabad	4.1	-76	4.0	-76	10.5	-69
Fatehabad	12.8	44	6.0	-65	6.5	-64
Gurgaon	2.4	-82	10.4	-43	33.2	9
Hissar	5.3	-50	0.0	-100	13.4	-36
Jhajar	2.3	-69	0.6	-97	21.6	-9
Jind	9.2	-7	0.7	-97	14.2	-41
Katihah	9.5	-34	22.9	82	4.9	-76
Karnal	0.7	-96	45.6	64	7.2	-84
Kurukshetra	0.0	-100	16.4	-31	5.5	-87
Mahendragarh	16.8	35	4.3	-76	7.9	-65
Mewat	6.4	-62	0.0	-100	13.9	-46
Palwal	9.3	17	0.0	-100	8.8	-72

Panchkkula	0.3	-99	21.0	-59	6.5	-90
Panipat	0.4	-98	6.9	-69	2.4	-92
Rewari	16.8	66	0.0	-100	28.6	51
Rohtak	1.2	-88	0.0	-100	1.8	-94
Sirsa	0.4	-94	10.8	-4	21.8	35
Sonepat	0.4	-97	4.6	-80	8.6	-72
Yamunanagar	2.2	-95	36.5	-27	3.5	-93
<b>Delhi</b>						
Central Delhi	3.0	-81	24.0	-16	30.0	-29
East Delhi	1.0	-94	6.0	-79	5.0	-88
New Delhi	4.7	-71	30.8	7	20.5	-51
North Delhi	0.0	-100	10.2	-64	41.9	0
North East Delhi	1.0	-94	8.0	-72	5.0	-88
North West Delhi	0.0	-100	15.3	-47	15.7	-63
South Delhi	1.0	-94	24.6	-14	12.2	-71
South West Delhi	6.5	-59	4.4	-85	16.0	-62
West Delhi	5.0	-68	1.0	-97	28.0	-33
<b>Jammu &amp; Kashmir</b>						
Anantnag	5.4	-44	6.8	-53	20.3	37
Badgam	5.9	4	7.4	-10	36.0	480
Bandipore	**	**	**	**	**	**
Baramula	18.4	48	14.7	10	17.5	2
Doda	8.6	-4	18.6	35	2.8	-86
Ganderbal	5.9	13	7.6	-4	19.8	96
Jammu	5.1	-70	14.6	-45	2.7	-95
Kargil	0.0	-100	0.0	-100	**	**
Kathua	2.6	-82	90.0	144	7.8	-89
Kistwar	**	**	**	**	**	**
Kulgam	8.0	-17	8.5	-41	15.2	3
Kupwara	5.4	-25	15.3	70	25.0	58
Ladakh(Leh)	0.2	-75	0.0	-100	4.3	77
Poonch	4.5	-71	1.6	-95	0.0	-100
Pulwama	0.3	-91	3.1	-64	12.7	10
Rajouri	15.6	126	32.3	55	20.4	-56
Ramban	10.2	14	4.0	-71	13.1	-35
Reasi	10.7	-58	47.8	-3	29.4	-62
Samba	1.2	-93	32.5	23	28.9	-44
Shopian	4.0	3	18.0	109	20.0	74
Srinagar	0.7	-87	10.0	27	37.7	273
Udhampur	14.7	-43	29.3	-40	5.2	-93
<b>East Madhya Pradesh</b>						
Anuppur	88.2	43	10.2	-85	36.5	-62
Balaghat	71.7	-3	14.0	-83	34.4	-66
Chhatarpur	13.4	-57	1.4	-97	32.2	-53
Chindwara	20.6	-57	24.5	-59	14.8	-80
Damoh	57.7	45	21.5	-69	16.2	-77
Dindori	11.0	-84	**	**	6.3	-94
Jabalpur	23.2	-43	2.3	-96	2.5	-97
Katni	35.0	-11	0.5	-99	68.5	-9

Mandla	94.8	68	53.3	-29	8.0	-92
Narsingpur	27.0	-33	3.6	-93	28.0	-66
Panna	45.4	23	0.0	-100	21.3	-73
Rewa	47.6	25	47.0	-28	63.4	11
Sagar	34.9	-24	23.0	-62	24.1	-69
Satna	3.1	-93	8.2	-88	64.1	1
Seoni	32.4	-47	23.6	-63	15.8	-81
Shahdol	59.0	26	8.0	-86	21.0	-74
Sidhi	55.8	38	11.2	-81	68.6	-7
Singrauli	30.5	-22	0.8	-99	18.0	-61
Tikamgarh	52.0	142	7.0	-88	10.1	-82
Umariya	14.7	-69	2.5	-96	19.5	-74
<b>West Madhya Pradesh</b>						
Alirajpur	0.0	-100	0.0	-100	0.0	-100
Asoknagar	19.5	-4	0.0	-100	12.0	-81
Badwani	3.1	-88	0.0	-100	0.0	-100
Betul	2.6	-95	6.0	-89	40.4	-37
Bhind	3.3	-79	9.4	-71	5.0	-89
Bhopal	5.2	-85	0.0	-100	42.4	-43
Burhanpur	0.0	-100	0.0	-100	25.8	-46
Datia	20.0	-5	1.8	-95	8.3	-83
Dewas	0.0	-100	0.0	-100	0.0	-100
Dhar	0.8	-98	0.0	-100	0.0	-100
Guna	3.0	-87	0.0	-100	7.9	-89
Gwalior	0.1	-99	8.4	-79	13.3	-74
Harda	0.0	-100	0.3	-99	64.9	-6
Hosangabad	18.9	-60	14.7	-80	27.5	-70
Indore	0.0	-100	0.0	-100	0.9	-98
Jhabua	0.4	-99	0.0	-100	0.3	-99
Khandwa	0.0	-100	0.0	-100	98.0	72
Khargone	0.0	-100	0.0	-100	5.4	-88
Mandsaur	0.0	-100	0.0	-100	1.1	-98
Morena	13.5	-9	14.3	-60	6.3	-84
Neemuch	0.0	-100	0.0	-100	0.0	-100
Raisen	16.6	-63	10.8	-82	12.7	-85
Rajgarh	2.6	-91	0.0	-100	1.1	-98
Ratlam	0.0	-100	0.0	-100	0.0	-100
Sehore	7.3	-82	3.2	-94	23.9	-65
Shajapur	0.8	-98	0.0	-100	11.5	-81
Sheopur Kalani	45.5	172	0.0	-100	7.0	-85
Shivpuri	9.5	-54	5.5	-88	38.3	-26
Ujjain	0.0	-100	0.0	-100	0.0	-100
Vidisha	42.7	12	17.1	-67	12.6	-84
<b>Chhattisgarh</b>						
Bastar	7.3	-90	80.6	9	31.2	-59
Bijapur	65.3	-6	3.2	-95	32.9	-67
Bilaspur	115.0	86	9.7	-88	55.8	-30
Dantewara	31.2	-51	25.4	-61	19.3	-78
Dhamtari	2.8	-95	11.8	-84	2.8	-96



Durg	38.2	-39	33.4	-58	57.0	-31
Janjgir	41.0	-22	30.0	-63	32.7	-63
Jashpurnagar	23.4	-67	85.9	-4	20.2	-82
Kanker	10.8	-85	12.7	-85	80.7	3
Korba	46.4	-20	26.7	-70	24.3	-75
Koriya	116.6	123	24.3	-70	61.9	-28
Kawardha	63.2	14	23.4	-56	18.7	-70
Mahasumund	41.3	-30	72.9	17	4.8	-94
Narayanpur	33.0	-49	17.0	-76	18.7	-77
Raigarh	66.8	11	59.8	-13	26.8	-71
Raipur	37.5	-37	51.1	-31	14.6	-82
Rajandgaon	46.4	-27	31.2	-55	25.2	-67
Surguja	35.4	-49	36.6	-53	29.3	-65
<b>East Uttar Pradesh</b>						
Allahabad	26.4	36	0.8	-98	48.5	-5
Ambedkar Nagar	4.3	-86	80.0	91	134.3	138
Azamgarh	30.4	19	4.7	-91	40.2	-42
Bahraich	13.8	-66	27.3	-56	378.5	516
Ballia	38.9	39	22.6	-52	65.2	14
Balrampur	60.1	36	12.7	-77	122.9	119
Banda	18.6	-30	4.3	-92	6.2	-89
Barabanki	13.2	-38	11.9	-78	195.2	243
Basti	72.3	105	85.3	55	120.7	96
Chandauli	0.0	-100	5.0	-87	36.4	-35
Deoria	49.5	46	50.0	-18	34.5	-40
Faizabad	9.7	-74	21.8	-61	89.1	41
Farrukhabad	5.1	-77	0.3	-99	12.0	-74
Fatehpur	15.0	-31	0.0	-100	32.4	-39
Gazipur	62.1	136	28.8	-32	58.6	5
Gonda	37.4	-23	9.1	-84	95.9	69
Gorakhpur	93.0	81	41.3	-37	67.6	2
Hardoi	3.2	-86	5.6	-89	16.8	-65
Jaunpur	11.6	-43	3.0	-94	58.9	-6
Kannauj	2.7	-80	0.0	-100	8.5	-82
Kanpur City	6.4	-55	4.8	-88	15.8	-59
Kanpur Dehat	5.0	-80	1.5	-96	2.0	-94
Kaushambi	6.9	-61	0.0	-100	41.2	-19
Kheri	22.4	-46	20.1	-57	155.1	115
Kushi nagar	29.0	-43	46.0	-34	32.8	-53
Lucknow	7.6	-65	15.5	-68	64.1	33
Maharajganj	46.5	-7	52.5	-28	36.0	-53
Mau	45.0	45	15.0	-71	32.0	-44
Mirzapur	46.1	83	5.3	-88	74.7	23
Pratapgarh	18.7	-1	10.7	-79	66.7	8
RaiBareilly	17.7	8	3.3	-92	140.6	166
Sahuji Maharajnagar	14.5	-40	8.0	-87	16.7	-72
Sant Kabirnagar	4.0	-92	109.5	120	97.0	57
Sant Ravidas Nagar	15.0	-34	0.0	-100	50.0	-10
Shrawasti	44.1	7	36.4	-42	287.0	367

Sidharthnagar	97.9	123	47.8	-3	70.5	18
Sitapur	7.8	-77	7.9	-83	136.8	146
Sonbhadra	12.9	-67	21.9	-64	24.2	-61
Sultanpur	42.1	91	6.1	-86	71.6	11
Unnao	13.3	-27	2.3	-95	26.8	-41
Varanasi	16.5	-17	8.3	-85	74.7	21
<b>West Uttar Pradesh</b>						
Agra	9.0	-36	0.0	-100	9.4	-75
Aligarh	11.8	-12	0.0	-100	13.2	-69
Auraiya	3.5	-77	0.0	-100	0.0	-100
Badaun	2.0	-90	12.6	-63	2.2	-96
Baghpat	2.5	-78	48.7	115	13.2	-65
Bareilly	2.9	-90	43.1	1	21.8	-61
Bijnor	0.0	-100	53.9	25	3.6	-94
Bulandsahar	3.7	-73	8.5	-72	0.0	-100
Etah	2.3	-84	0.0	-100	0.5	-99
Etawah	0.3	-98	0.7	-98	0.5	-99
Firozabad	23.1	23	0.0	-100	10.0	-73
GBNagar	0.0	-100	0.0	-100	12.0	-64
Ghaziabad	0.0	-100	39.3	72	0.0	-100
Hamirpur	1.1	-95	0.3	-99	9.0	-80
Jalaun	5.5	-69	2.8	-93	4.2	-91
Jhansi	19.7	-16	3.7	-93	8.4	-86
Jotiba Phule Nagar	0.0	-100	7.0	-77	0.5	-99
Kanshiramnagar	0.0	-100	6.0	-80	0.0	-100
Lalitpur	4.0	-78	0.0	-100	29.5	-52
Mahamaya Nagar	5.5	-57	1.0	-96	11.5	-69
Mahoba	0.0	-100	0.0	-100	3.0	-94
Mainpuri	3.0	-84	0.0	-100	1.5	-97
Mathura	14.3	48	2.2	-92	1.0	-97
Meerut	0.0	-100	27.8	-14	2.8	-95
Moradabad	4.0	-84	34.7	-19	8.9	-86
Muzzaffarnagar	2.1	-88	35.8	1	1.0	-98
Pilibhit	22.4	-31	7.4	-85	41.7	-39
Rampur	0.8	-96	25.6	-37	2.4	-97
Saharanpur	0.0	-100	47.0	-7	1.7	-97
Shahjahanpur	0.0	-100	10.5	-78	55.3	-12
<b>Uttarakhand</b>						
Almora	23.5	-45	20.9	-46	3.3	-95
Bageshwar	6.8	-84	20.0	-49	8.0	-87
Chamoli	12.3	-60	22.0	-51	35.9	-32
Champawat	34.5	-47	10.5	-88	45.5	-51
Dehradun	11.5	-81	25.7	-73	66.5	-45
Garhwal Pauri	0.8	-98	26.9	-60	1.9	-98
Garhwal Tehri	13.3	-67	6.5	-89	16.5	-74
Haridwar	1.7	-95	141.7	200	4.9	-93
Nainital	28.1	-58	60.5	-25	25.8	-75
Pithorgarh	47.1	-44	21.8	-80	27.3	-76
Rudraprayag	14.7	-79	40.7	-52	42.1	-59

Udham Sing Nagar	36.8	-17	13.2	-75	70.5	-17
Uttarkashi	24.6	-49	38.1	-31	45.1	-39
<b>Bihar</b>						
Araria	46.6	-36	82.6	-13	67.7	-18
Arwal	15.1	-37	7.5	-88	67.2	49
Aurangabad	45.3	32	14.2	-72	107.3	79
Banka	32.0	-15	89.6	63	236.8	325
Begusarai	138.5	148	209.4	270	285.0	338
Bhabua	13.5	-61	31.0	-49	41.5	-34
Bhagalpur	50.3	-21	63.6	-15	242.2	260
Bhojpur	31.3	22	20.9	-64	168.8	160
Buxar	13.7	-53	6.6	-87	27.3	-51
Darbhanga	89.4	119	62.6	-11	122.3	92
East Champaran	71.5	71	40.6	-42	81.4	23
Gaya	41.3	27	21.3	-68	161.0	167
Gopalganj	63.6	55	27.1	-59	73.1	6
Jahanabad	20.0	-35	21.9	-52	103.5	84
Jamui	69.1	42	63.9	-20	238.4	238
Kathihar	94.7	70	48.1	-42	47.7	-40
Khagadia	69.9	29	105.9	38	207.5	202
Kishanganj	68.7	-25	144.9	10	90.3	-32
Lakhisarai	152.0	220	101.0	50	290.0	320
Madhepura	111.8	99	47.9	-29	108.3	14
Madhubani	57.1	30	67.3	-16	130.4	53
Monghyar	15.4	-68	111.4	65	238.8	246
Muzaffarpur	66.8	43	50.7	-31	124.7	92
Nalanda	60.9	60	33.4	-44	143.3	147
Nawada	69.1	64	42.5	-40	146.4	98
Patna	69.3	146	34.3	-45	112.6	58
Purnea	64.0	8	9.2	-89	46.4	-49
Rohtas	46.1	82	13.7	-71	52.1	1
Saharsha	12.5	-82	9.4	-92	138.0	10
Samstipur	136.0	109	113.3	58	170.4	187
Saran	40.8	33	35.3	-46	92.7	13
Sheikpura	102.4	161	48.6	-36	210.9	238
Sheohar	57.6	13	69.2	-23	126.6	45
Sitamarhi	79.6	56	25.6	-71	75.0	-14
Siwan	72.8	113	65.3	-10	101.8	42
Supaul	70.1	57	56.6	-14	98.8	22
Vaishali	64.5	108	45.1	-34	111.5	40
West Champaran	43.9	-30	57.5	-39	67.4	-22
<b>Jharkhand</b>						
Bokaro	106.3	67	16.3	-72	197.5	210
Chatra	101.6	153	46.1	-42	103.5	46
Deoghar	54.0	6	92.3	56	247.5	275
Dhanbad	69.8	27	49.8	-34	109.9	37
Dumka	72.5	18	137.1	89	118.6	72
East Singbhum	135.3	109	71.8	-3	76.6	20
Garhwa	35.4	19	21.0	-67	26.8	-48



Giridih	78.1	20	23.5	-70	206.0	184
Godda	59.9	8	36.2	-40	160.2	150
Gumla	79.1	12	138.9	80	40.6	-56
Hazaribagh	34.8	-13	38.2	-49	236.8	272
Jamtara	94.5	59	78.5	0	110.7	24
Khunti	43.0	-45	17.5	-79	56.0	-38
Koderrna	76.4	54	31.5	-46	272.9	297
Latehar	38.4	-26	37.4	-41	86.9	26
Lohardagga	29.7	-54	46.5	-31	44.4	-19
Pakur	117.5	59	155.3	139	222.3	179
Palamau	31.4	-19	14.5	-75	82.1	38
Ramgarh	105.4	76	14.4	-80	107.6	59
Ranchi	70.5	9	37.7	-55	95.2	15
Sahebganj	39.8	-50	152.8	49	183.6	95
Saraikela	137.7	89	39.0	-50	110.4	54
Simdega	37.1	-56	45.0	-46	15.5	-84
West Singhbhum	124.4	105	119.2	75	65.2	-19
<b>East Rajasthan</b>						
Ajmer	4.3	-64	0.0	-100	0.0	-100
Alwar	11.6	-14	13.6	-39	21.6	-31
Banswara	0.0	-100	0.0	-100	0.0	-100
Baran	6.6	-69	3.4	-91	3.7	-93
Bharatpur	38.5	232	24.9	9	36.2	23
Bhilwara	11.6	-29	0.0	-100	0.3	-99
Bundi	9.0	-53	0.2	-99	0.0	-100
Chittorgarh	1.2	-95	0.0	-100	1.2	-97
Dausa	13.6	-1	5.8	-82	16.8	-47
Dholpur	20.9	41	2.3	-93	13.7	-62
Dungarpur	0.0	-100	0.0	-100	0.0	-100
Jaipur	11.9	-15	1.9	-93	9.1	-64
Jhalawar	1.0	-96	0.0	-100	1.6	-97
Jhunjhunu	21.1	31	4.5	-76	23.3	12
Karauli	44.7	204	6.7	-76	9.2	-67
Kota	5.4	-73	0.8	-98	0.8	-98
Pratapgarh	0.0	-100	0.0	-100	0.0	-100
Rajsamand	0.4	-98	0.0	-100	0.0	-100
Sawai Madhopur	24.6	82	2.4	-92	2.9	-93
Sikar	11.4	-20	9.9	-55	24.3	0
Sirohi	0.0	-100	0.0	-100	0.0	-100
Tonk	4.4	-71	4.6	-85	2.1	-94
Udaipur	0.0	-100	0.0	-100	0.0	-100
<b>West Rajasthan</b>						
Barmer	0.0	-100	0.0	-100	0.0	-100
Bikaner	24.7	190	11.1	0	5.2	-64
Churu	14.1	12	9.0	-39	13.4	-38
Hanumangarh	4.9	-54	24.6	71	13.9	-21
Jaisalmer	0.6	-89	0.0	-100	0.0	-100
Jalore	0.0	-100	0.0	-100	0.0	-100
Jodhpur	6.0	-17	0.0	-100	0.0	-100

Nagaur	6.3	-54	1.7	-91	5.9	-73
Pali	6.2	-48	0.0	-100	0.0	-100
Sri Ganganagar	19.2	195	12.3	8	1.5	-89
<b>Gujarat Region</b>						
Ahmedabad	0.9	-97	0.0	-100	0.0	-100
Anand	0.0	-100	0.0	-100	0.0	-100
Banaskantha	0.0	-100	0.3	-99	0.0	-100
Baroda	0.9	-98	0.0	-100	3.1	-96
Broach	0.5	-99	0.2	-99	0.1	-99
DNH	8.2	-94	6.9	-95	70.6	-64
Dahod	0.0	-100	0.0	-100	0.0	-100
Daman	0.8	-99	1.5	-99	74.6	-62
Dangs	12.5	-83	0.0	-100	19.0	-88
Gandhinagar	0.0	-100	0.3	-99	0.0	-100
Kheda	0.0	-100	0.0	-100	0.0	-100
Mehsana	0.2	-99	0.0	-100	0.0	-100
Narmada	0.2	-99	0.0	-100	1.4	-98
Navsari	2.5	-98	0.0	-100	49.8	-71
Panchmahal	0.0	-100	0.0	-100	0.0	-100
Patan	0.0	-100	0.0	-100	0.0	-100
Sabarkantha	0.0	-100	0.0	-100	0.0	-100
Surat	4.9	-94	0.8	-99	6.0	-95
Tapi	13.3	-82	0.0	-100	10.8	-92
Valsad	13.2	-90	2.8	-98	52.3	-68
<b>S K &amp; Diu region</b>						
Amreli	0.4	-99	0.2	-99	1.2	-97
Bhavnagar	0.1	-99	0.0	-100	0.3	-99
Diu	5.3	-92	0.0	-100	1.8	-98
Jamnagar	0.0	-100	0.0	-99	0.0	-99
Junagarh	2.8	-97	0.5	-99	4.8	-94
Kutch	0.0	-100	0.2	-99	0.2	-99
Porbandar	0.0	-100	1.3	-98	0.0	-100
Rajkot	1.1	-97	0.2	-99	0.2	-99
Surendranagar	3.3	-92	0.3	-99	0.0	-100
<b>Maharashtra &amp; Goa</b>						
<b>Konkan &amp; Goa</b>						
Mumbai City	0.7	-99	25.0	-88	366.9	91
Mumbai Suburban	6.9	-96	13.9	-93	403.9	110
North Goa	132.9	-49	10.8	-97	149.5	-40
Raigad	36.5	-83	22.7	-92	144.0	-49
Ratnagiri	88.9	-65	8.8	-97	160.4	-43
Sindhudurg	78.5	-71	21.7	-92	168.4	-30
South Goa	184.2	-20	11.1	-96	164.7	-21
Thane	23.8	-85	10.1	-95	111.4	-50
<b>Madhya Maharashtra</b>						
Ahmednagar	4.1	-85	2.3	-90	22.1	-2
Dhule	0.6	-98	0.0	-100	0.0	-100
Jalgaon	2.4	-94	0.0	-100	7.6	-81
Kolhapur	54.5	-48	1.8	-99	27.5	-84

Nandurbar	0.0	-100	0.0	-100	0.0	-100
Nasik	5.9	-87	1.6	-97	17.8	-74
Pune	15.1	-65	4.3	-93	13.2	-82
Sangli	8.1	-70	1.1	-97	23.0	-36
Satara	9.8	-75	1.7	-97	12.1	-79
Solapur	10.3	-53	2.7	-86	47.9	175
<b>Marathwada</b>						
Aurangabad	2.9	-92	0.0	-100	26.8	-11
Beed	12.3	-62	0.7	-97	60.6	121
Hingoli	2.2	-97	0.1	-99	12.7	-75
Jalna	10.7	-73	1.0	-97	23.8	-27
Latur	14.8	-68	4.4	-89	66.7	51
Nanded	8.6	-81	4.4	-92	17.8	-64
Usmanabad	6.3	-80	4.1	-86	73.7	135
Parbhani	16.8	-62	2.3	-95	31.5	-29
<b>Vidarbha</b>						
Akola	0.0	-100	4.6	-91	22.5	-49
Amraoti	0.4	-99	7.1	-86	21.2	-60
Bhandara	24.6	-60	13.5	-82	25.6	-70
Buldhana	2.8	-94	2.3	-95	11.9	-69
Chandrapur	0.0	-100	14.5	-82	25.6	-70
Gadchiroli	7.0	-90	10.5	-88	32.0	-66
Gondia	45.0	-25	7.9	-91	20.9	-79
Nagpur	14.3	-74	21.5	-66	11.3	-84
Wardha	0.6	-99	3.1	-95	11.3	-81
Washim	15.4	-74	0.3	-99	24.0	-53
Yeotmal	0.7	-99	6.0	-90	13.6	-76
<b>Odisha</b>						
Angul	19.2	-68	42.0	-23	67.4	-4
Balasore	41.1	-35	91.1	30	29.4	-46
Bargarh	56.8	-2	35.9	-49	32.3	-60
Bhadrak	8.1	-86	76.4	39	28.0	-53
Bolangir	32.1	-57	34.6	-54	30.4	-63
Boudh	21.7	-60	17.8	-73	49.9	-33
Cuttack	7.0	-90	72.7	10	45.9	-38
Deogarh	28.1	-66	46.7	-44	52.7	-47
Dhenkanal	12.2	-84	51.8	-24	78.9	33
Gajapati	23.1	-44	26.9	-33	25.7	-24
Ganjam	6.0	-85	19.5	-53	32.5	2
Jagatsingpur	17.0	-75	101.1	79	48.7	9
Jajpur	1.5	-98	113.1	79	30.1	-41
Jharsuguda	30.0	-65	65.1	-1	32.2	-67
Kalahandi	26.0	-71	21.0	-74	8.8	-89
Kandhamal	10.2	-81	16.9	-74	19.2	-74
Kendrapara	0.0	-100	143.5	154	14.3	-76
Keonjhar	41.2	-35	87.3	50	36.1	-32
Khurda	10.4	-83	49.1	-4	60.1	4
Koraput	37.7	-34	65.8	-11	19.4	-75
Malkangiri	16.2	-75	25.0	-71	5.0	-94



Mayurbhanj	45.9	-40	102.6	29	72.1	20
Nawapara	36.4	-42	62.2	-13	46.4	-49
Nawarangpur	42.5	-33	105.6	25	52.9	-50
Nayagarh	5.2	-92	32.0	-34	72.9	7
Puri	16.9	-67	92.1	103	48.0	-20
Rayagada	31.7	-30	25.7	-44	8.3	-83
Sambalpur	39.3	-53	35.3	-57	34.7	-65
Sonepur	36.3	-33	5.8	-92	46.7	-42
Sundargarh	44.0	-42	44.7	-35	35.6	-56
<b>West Bengal &amp; Andaman Nicobar Islands</b>						
<b>A &amp; N ISLAND</b>						
Nicobar	8.5	-88	22.3	-66	116.1	117
North & Middle Andaman	77.6	-32	33.8	-65	87.8	-12
South Andaman	14.1	-87	12.1	-87	138.8	71
<b>GWB</b>						
Bankura	28.3	-53	38.7	-44	116.4	53
Birbhum	124.7	91	97.2	28	120.1	81
Burdwan	116.5	113	124.4	92	80.1	31
East Midnapore	81.0	19	88.9	29	80.8	8
Hooghly	99.4	42	105.0	32	40.4	-44
Howrah	36.7	-40	110.5	37	16.5	-79
Kolkata	59.7	-9	225.8	185	66.7	-18
Murshidabad	82.0	35	92.1	11	88.4	19
Nadia	128.2	97	54.7	-22	53.4	-12
24 Pargana (N)	94.6	43	158.2	123	66.1	-12
Purulia	85.1	45	22.6	-69	72.4	-12
24 Pargana (S)	108.7	23	61.7	-30	54.6	-53
West Midnapore	63.3	-10	108.3	51	97.1	32
<b>SHWB &amp; Sikkim</b>						
Cooch Behar	163.4	5	55.4	-72	143.4	-35
Darjeeling	197.1	40	314.1	87	130.0	-11
East Sikkim	162.4	25	105.4	-8	89.3	-10
Jalpaiguri	210.6	31	113.4	-46	141.5	-41
Malda	93.6	40	209.0	195	122.8	60
North Dinajpur	91.1	-16	30.5	-65	93.2	2
North Sikkim	182.7	37	160.3	36	212.7	106
South Dinajpur	142.4	137	72.2	-10	79.7	-9
South Sikkim	150.4	15	64.6	-43	82.7	-17
West Sikkim	302.3	127	53.3	-55	12.0	-88
<b>Karnataka</b>						
<b>Coastal Karnataka</b>						
Dakshin Kannada	140.2	-47	61.6	-80	101.0	-62
Udupi	187.9	-37	80.1	-75	115.1	-63
Uttar Kannada	210.9	5	12.5	-95	71.9	-69
<b>N I Karnataka</b>						
Bagalkote	9.5	-36	0.0	-100	33.8	132
Belgaum	17.5	-46	1.0	-98	19.0	-61
Bidar	8.6	-75	19.3	-50	51.2	27






Bijapur	4.5	-75	3.6	-81	63.6	292
Dharwad	12.4	-47	0.0	-99	5.9	-82
Gadag	5.0	-65	16.3	-9	51.9	293
Gulbarga	8.4	-68	5.5	-82	54.4	81
Haveri	29.3	14	0.0	-100	2.4	-94
Koppal	10.9	-18	2.6	-79	45.6	297
Raichur	7.7	-64	4.5	-74	42.7	111
Yadgir	3.4	-90	4.3	-84	34.2	32
<b>S I Karnataka</b>						
Bangalore Rural	5.2	-51	29.1	242	26.9	86
Bangalore Urban	1.5	-86	54.2	502	7.1	-61
Bellary	7.4	-46	5.5	-60	34.3	150
Chamarajnanagar	2.6	-74	11.4	-11	12.2	-30
Chichballapur	3.5	-66	12.9	31	15.4	-11
Chickmagalur	92.4	-14	7.5	-95	22.7	-86
Chitradurga	4.1	-43	2.4	-74	15.0	31
Davangere	11.5	-25	5.4	-75	18.7	-7
Hassan	28.4	-10	15.8	-64	11.6	-77
Kodagu	189.8	29	44.6	-80	23.9	-89
Kolar	1.4	-85	31.9	314	10.8	-31
Mandya	0.6	-93	19.5	315	16.2	52
Mysore	12.2	-28	24.6	29	26.0	6
Ramnagara	0.0	-100	15.0	89	16.8	-5
Shimoga	190.4	95	15.0	-90	36.4	-75
Tumkur	1.2	-87	14.1	66	18.2	35
<b>Kerala</b>						
Alappuzha	52.6	-55	51.7	-64	43.8	-70
Kannur	206.2	-2	70.1	-75	54.3	-80
Ernakulam	147.1	2	66.4	-65	25.7	-84
Idukki	256.2	63	96.7	-53	42.5	-78
Kasaragod	127.8	-50	70.2	-75	62.1	-75
Kollam	92.4	-6	54.0	-50	33.9	-67
Kottayam	93.1	-33	125.4	-25	35.7	-76
Kozhikode	78.9	-61	41.3	-84	52.5	-77
Malappuram	294.5	95	57.5	-73	17.9	-91
Palakkad	193.1	71	16.4	-90	12.2	-92
Pathanamthitta	128.4	8	71.4	-48	65.6	-54
Thiruvananthapuram	34.7	-42	20.3	-71	13.1	-79
Thrissur	107.7	-31	72.8	-65	32.1	-84
Wayanad	324.1	78	35.0	-88	41.6	-86
<b>Tamil Nadu</b>						
Ariyalur	0.0	-100	31.3	366	49.3	307
Chennai	12.3	-41	84.7	500	5.4	-74
Coimbatore	67.5	923	16.1	85	6.4	-49
Cuddalore	5.4	-38	23.9	199	25.7	81
Dharmapuri	0.0	-100	38.1	486	2.5	-85
Dindigul	0.1	-99	18.9	190	4.9	-62
Erode	0.0	-100	11.3	213	23.0	164
Kanchipuram	5.9	-71	65.7	457	28.1	51

Kanyakumari	20.5	-45	4.3	-88	2.1	-94
Karikal	0.0	-100	7.3	356	106.7	989
Karur	0.0	-100	5.4	239	3.7	-53
Krishnagiri	0.2	-98	40.6	588	3.6	-80
Madurai	0.0	-100	24.9	168	5.7	-57
Nagapattinam	0.0	-100	31.1	402	31.9	203
Namakkal	1.0	-88	6.1	22	27.9	105
Nilgiris	46.1	3	31.9	-47	21.3	-68
Perambalur	0.0	-100	39.4	1026	10.3	26
Puducherry	8.1	-7	97.6	2069	0.1	-99
Pudukottai	1.7	-79	1.3	-84	11.0	-31
Ramanathapuram	0.0	-100	0.0	-100	0.0	-100
Salem	13.9	9	30.9	143	2.6	-88
Sivaganga	1.1	-88	16.5	126	10.0	-31
Thanjavur	0.0	-99	17.5	317	33.3	114
Theni	11.2	221	9.6	75	7.3	-11
Tirunelveli	4.4	-49	1.9	-82	0.1	-99
Tirupur	0.5	-85	0.0	-100	0.2	-98
Tiruvallur	3.2	-83	34.7	131	34.9	54
Tiruvannamalai	0.0	-100	62.1	590	22.4	30
Tiruvarur	0.0	-100	43.0	778	76.4	450
Toothukudi	0.0	-100	4.7	365	0.9	-70
Trichy	0.0	-100	10.4	226	8.9	-24
Vellore	0.9	-93	55.8	422	37.3	74
Villupuram	1.0	-91	66.5	631	11.1	-22
Virudhunagar	0.0	-100	10.8	441	2.2	-73
<b>Andhra Pradesh</b>						
<b>Coastal Andhra Pradesh</b>						
East Godavari	0.6	-98	10.4	-78	42.1	-6
Guntur	0.0	-100	12.1	-57	42.7	31
Krishna	1.9	-93	7.9	-83	30.7	-37
Nellore	1.2	-92	22.0	55	26.3	41
Prakasam	0.5	-96	8.5	-49	56.8	152
Sirkakulam	14.7	-61	29.5	-35	13.0	-60
Visakhapatnam	3.6	-88	17.7	-55	20.8	-39
Vizianagram	12.7	-61	37.0	-18	25.7	-31
West Godavari	1.4	-95	7.2	-86	43.9	-15
<b>Telangana</b>						
Adilabad	4.0	-93	3.3	-95	43.4	-32
Hyderabad	0.0	-99	9.8	-72	82.9	141
Karimnagar	48.4	20	3.4	-94	47.1	-17
Khammam	5.8	-87	6.5	-86	14.5	-76
Mehabubnagar	4.0	-82	13.0	-55	22.1	-30
Medak	1.1	-97	7.2	-84	38.4	-15
Nalgonda	1.5	-93	13.6	-58	44.3	47
Nizamabad	20.1	-51	4.7	-92	27.4	-55
Rangareddy	1.3	-95	10.2	-72	39.8	-3
Warangal	12.3	-69	8.8	-83	34.3	-41



<b>Rayalaseema</b>						
Anantapur	<b>1.5</b>	<b>-83</b>	<b>8.4</b>	<b>10</b>	<b>8.9</b>	<b>-35</b>
Chittoor	<b>0.9</b>	<b>-93</b>	<b>26.8</b>	<b>139</b>	<b>34.4</b>	<b>73</b>
Cuddapah	<b>0.1</b>	<b>-99</b>	<b>3.9</b>	<b>-65</b>	<b>19.4</b>	<b>-4</b>
Kurnool	<b>3.2</b>	<b>-81</b>	<b>13.7</b>	<b>-23</b>	<b>36.7</b>	<b>47</b>

### 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

### **Annexure III**

#### **List of varieties**

#### **Andhra Pradesh:**

**Castor:** PCH-111, PCH-222, Kranti, GCH-4, Haritha

**Irrigated groundnut:** Kadiri-6, Kadiri-9, Narayani and dharani

**Red gram:** black soils LRG-41, ICPL-85063 and for red soils PRG-158, PRG-100.

#### **Tamil Nadu:**

**Kuruvai rice :** ADT 36, ADT 43, ADT 45 and ADT 47

#### **Karnataka:**

**Redgram :** TTB -7, BRG -01, BRG- 02, HYD -3C, BSMR 736, TS-3R

**Medium to Long Duration Varieties of redgram:** PT-221, GS-1, ICP-8863 (Maruti), ICPL-87119 (Asha) WRP-1, **Short Duration Varieties of redgram:** ICPL-87(Pragati), Selection-31(irrigated areas ), GCS-11-39

**Ragi:** GPU- 28,MR -01, 02 and 06, KMR-301

**Green gram :** Selection – 4, BGS-9, China mung, Pusa bisaki

**Black gram :** TAU – 1, DU – 1

**Soybean :** JS – 335

**Jowar :** DSV – 2, CSV-15, DSV-3, and DSV-6

**Maize:** Hybrid – DMH-2 and Arjun

**Groundnut:**

Bunch type – GPBD-4, JL-24 and TMV-2

Spreading type – DSG-1 and JSP-39

**Cotton:** DHH-11, NCH-145, NHH-44, DHB-105 and Sahana

**Irrigated green gram:** VBN 2, VBN 3 and CO (Gg) 7

#### **Assam:**

**Sali rice:** Ranjit, Bahadur, Vasundhara, Kushal, Piyoli, Moniram, Rangali, Bhogali, Ketkijah

**Long duration varieties:** Pankaj, Mashuri, Manohar Sali and other tall varieties.

**Short duration varieties :** Vivek Dhan 82

**Groundnut :** TG-1A, JL-24

**Pigeon pea :** T-21

**Seasame :** SP1181, GOURI, VINAYAK

#### **Meghalaya:**

**Red gram :** UPAS-120, ICPL 87 (short duration), WB 20, Pusa 9 & Sarita (long duration)

#### **Odisha**

**Rice:** Heera, ZHU-11-26, Pathara, Vandana, Khandagiri and Parijat

**Ragi:** Dibyasingh, Godavari, Subhra, Vairabi, Neelachala, Chilika

**Maize:** Navjot, Sakti-1, Decan-103, Ganga-5, Kargil

**Groundnut:** Smruti, TAG-26, TAG-24, ICGS-11, JL-24

**Sesame:** Kanak, Kalika, Uma, Usha, Tilotama, Nilima, Prachi

**Greengram:** K-851, PDM-11, PDM-54, OUM-11-5

**Blackgram:** T-9, Pant U-11, Pant U-19, Pant U-30

**Cowpea:** SEB-2, Pusa Barsati Niger: Deomali, Niger-1 and for Okra: Utkal Gourav.

#### **West Bengal**

**Aman rice:** BCC-17, BCC-33, BCC-02, BCC-01, BCC-09

**Onion:** Rupsa, Sukhsagar.

**Sunflower:** Surya (90-95days), Pack(104days)KBSH(90-95 days).

**Green Gram:** Sonali, T44,Samrat,PDM-84, Basanti.

**Sesame:** Tilottoma, B-64, B-14.

**Mango:** Himsagar, Mallicka, Langra.

**Coconut:** Eastcoastal, Hazari.

**Moong :** Sonali (B-1), Panna (B-105), Pusa-Baishakhi.

#### **Bihar**

**Khari Maize:** Shaktiman 1, 2. Pusa agat sankar makka-3and ganga, hybrid: Shaktiman-1, Shaktiman-2, Pusa early hybrid maize-3, Ganga-11, and composite: Suawan and Devki.

**Rice:**short duration rice:Turanta, Prabhat, Richhariya, Saroj, Dhanlakshmi, Saketwork. Scented rice var. Sugandha, Kamini, Rajendra suwasini, Rajendra kasturi and Rajendra bhagwati

**Kharif finger millet:** GPU 45, 67, 28 and RAU 8

### **Jharkhand:**

**Rice:** short duration: Birsa Dhan - 108, Birsa Vikas Dhan 109 & 110, Vandana etc.

**Maize:** short duration: Birsa maize-1, Birsa Vikas maize-2 etc

**Pigeon Pea:** Birsa Arhar-1, Narendra Arhar-1, Bahar, ICPH-2671

**Groundnut:** short duration: A.K.-12-24, Birsa Bol

### **Madhya Pradesh**

**Rice:** Short duration-JR-201, JRH -4, JRH-5, JRH -8

Medium- IR-36, IR-64, Pusa sugandha-5, MTU-1001, MTU-1010, MTU-81, Mahamaya

Late-Mahsuri, Safari-17, Syamla, Swarna

**Maize:** Short duration-JVM- 421, JM-12, JM-13, JM- 216, JS-20-29, JS-20-34.

Medium- Navjot, Arun, H-216, JM-13, Sartaj, Daccan 107

Late-Ganga-11, Prabhat, Trisulta, Daccan 103, Daccan 105

**Soybean:** Short duration-JS 95-60 (85 days), JS- 93-05(95 days), JS-97-52, JS-335,JS-20-29, JS-20-34

Medium-JS 335 (105 days), NRC 37( 110 days)

**Black gram:** JU 86, JU- 3, T- 9

**Jowar:** Jawahar- 741, Jawahar -938, Jawahar- 1022

**Arhar:** Early: TJT-501, JKM-189,

Medium : ICPL-87-119, ICPL88039

### **Chhattisgarh**

**Rice :** MTU 1010, Mahamaya

### **Maharashtra**

**Kharif jowar:-** Hybrid- CSH5, CSH 9, CSH13, CSH14, CSH16, CSH17, CSH18, CSH2, Improved- SPV 462, CSV 13, CSV15, CSV17, PKV 801 for Pune region and CSH14, CSH16, CSH25 for Marathwada.

**Kharif bajra:-** Hybrid variety Shraddha (RHRBH 8609), Saburi (RHRBH 8924), Phule Shanti (RHRBH 9808) and Improved variety – ICTP 8203, ICMV – 155 for Pune region and GHB558, Shraddha, Saburi, Pratibha for Marathwada.

**Kharif groundnut** – SD 11, Phule Pragati, Phule Vyas, Phule Unnati, TPG 41, TG 26.

Red Gram – ICPL 87, Vipula, BSMR-853, BSMR-736, AKT8811, Amol for Madhya Maharashtra, ICPL-87119 (Asha), C-11 for Central Vidarbha and BSMR 736, BSMR 853, BDN 711 (for rain shadow area) for Marathwada.

**Sunflower** – EC-68414, SS-56 and Bhanu.

**Soyabean** – JS-335, Phule Kalyani (DS-228) for North Madhya Maharashtra, MAUS 71, JS-335 for Marathwada.

**Kharif Rice** – PKVHMT, PKV Khamang, PKV Makarand, PKV Ganesh, PKV Kisan, Sindewahi 2001, Sindewahi 1 for East Vidarbha.

**Kharif Cotton:** – Improved variety – AKA-5, AKA-7, AKA-8, American improved variety – AKH-081, PKV-Rajat, AKH-8828 and PKV DH-1 (hybrid) for Central Vidarbha Zone.

**Green Gram:** - Jalgaon 781, S8, Phule M2 for Western Maharashtra Scarcity Zone, BM-2002-1, BM 2003-2, AKM-4 and Green Gold for Marathwada.

### **Gujarat**

**Paddy:** GR-3, GR-4, IR – 28, Gurjary.

**Pearl millet:** GHB-558,577,538,719,732,744.

**Kharif groundnut:** GG-20, GG-11,13, GG-7, GAUG-10, Semi spreading- GG-2, GG-5, TAG-24, TG-37 A, TPG-41, TLG-45, TG-26.

**Cotton:** GCH-4,6, GCH-8, Agritop-444, Solar-76, Beejdhan-2, Ajit-155, Mallika, RCH-II, Vikram-5, Sankar-4,6,8,10.

**Green gram:** GM-3, GM-4, K-851.

**Black gram:** T-9, GU-1.

**Cowpea:** Gujarat cowpea-1,2,4, pusa falguni.

**Pigeon pea:** BDN-2, GT-100, GTH-1.

**Sesame:** GT-1, GT-2 or GT-3 variety.

**Soybean:** Gujarat soyabean-1, 2, 3.

**Castor:** GAUCH-1, GCH-2,4,5,6,7 and GC-2,3.

**Maize:** Ganga safed-2, Ganga-5, African tall.

**Okra:** Gujarat Bhinda -2, Gujarat hybrid bhinda-1, Parbhani kranti

**Brijal:** PLR-1, PUSA hybrid-5,6 ,GBH-1,2.

**Tomato:** PUSA rubi, Gujarat Tameti-1,2, Hybrid-2,4, Pusa hybrid-2,4.