

National Agromet Advisory Service Bulletin

Tuesday 22nd July 2014

(For the period 22nd to 25th July 2014)



Issued by

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



Monsoon Watch

- Yesterday, the southwest monsoon was Vigorous over Odisha and active over Vidarbha & Chhattisgarh.

Realised Weather as on 22nd July 2014

Rainfall: (From 0830 hours IST to 1730 hours IST of yesterday): Rain/thundershowers occurred at most places over Chhattisgarh and Jharkhand; at many places over Odisha, West Bengal & Sikkim and coastal Karnataka; at a few places over Madhya Maharashtra, Kerala and east Madhya Pradesh and at isolated places over Himachal Pradesh, Uttarakhand, Assam & Meghalaya and Vidarbha. Weather remained dry/mainly dry over rest parts of the country. The amounts of rainfall (4 cm or more) recorded at 1730 IST of yesterday were: Jharsuguda 8; Narsingpur & Mahabaleshwar 7 each; Keonjhar, Hirakud, Bhawanipatna and Karipur 5 each and Pendra Road, Behrampur & Titlagarh 4 each.

Temperature: Maximum temperatures were above normal by 2-4°C at many places over Rajasthan and Gujarat; at a few places over Jammu & Kashmir, Himachal Pradesh and Assam & Meghalaya and at isolated places over coastal Andhra Pradesh. They were below normal by 2-5°C at many places over Odisha, Jharkhand, Gangetic West Bengal, East Madhya Pradesh, Vidarbha and Telangana; at a few places over Chhattisgarh and interior Maharashtra and near normal over rest of the country.

Weather Forecast

Weather Forecast for next 3 days (upto 0830 hours IST of 25th July, 2014)

- Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands during next 24 hours and at many places thereafter.
- Rain/thundershowers would occur at many places over Arunachal Pradesh, Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim and at a few places over Bihar during the period.
- Rain/thundershowers would occur at a few places over Nagaland, Manipur, Mizoram and Tripura during next 24 hours and at many places thereafter.
- Rain/thundershowers would occur at many places over Gangetic West Bengal and Odisha during next 24 hours and at a few places thereafter.
- Rain/thundershowers would occur at most places over Jharkhand and Chhattisgarh during next 24 hours and decrease thereafter.
- Rain/thundershowers would occur at most places over Vidarbha during next 24 hours and over Madhya Pradesh during next 48 hours and at many places thereafter.
- Rain/thundershowers would occur at most places over Konkan & Goa, Coastal Karnataka and at many places over Uttarakhand, Marathwada and Interior Karnataka during the period.
- Rain/thundershowers would occur at most places over Kerala during next 24 hours and at many places thereafter.
- Rain/thundershowers would occur at many places over Madhya Maharashtra during next 24 hours and at most places thereafter.
- Rain/thundershowers would occur at many places over Telangana during next 24 hours and decrease thereafter.
- Rain/thundershowers would occur at a few places over Coastal Andhra Pradesh during next 48 hours and at isolated places thereafter.
- Rain/thundershowers would occur at a few places

Weather Warning during next 3 days

- **22 July (Day 1):** Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls over Chhattisgarh and heavy to very heavy rainfall at a few places over Madhya Pradesh, Vidarbha and Konkan & Goa.
Heavy rainfall would occur at isolated places over Odisha, Jharkhand, Assam & Meghalaya, Marathwada, Madhya Maharashtra, coastal & south interior Karnataka and Kerala.
- **23 July (Day 2):** Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls over Madhya Pradesh and heavy to very rainfall at isolated places over Gujarat region, Vidarbha and Konkan & Goa.
Heavy rainfall would occur at isolated places over Chhattisgarh, Assam & Meghalaya, Madhya Maharashtra, Marathwada, coastal & south interior Karnataka and Kerala.
- **24 July (Day 3):** Heavy to very heavy rainfall would occur at a few places over Konkan & Goa and at isolated places over west Madhya Pradesh, Madhya Maharashtra and coastal Karnataka.
Heavy rainfall would occur at isolated places over Assam & Meghalaya, Gujarat region, Saurashtra & Kutch, south interior Karnataka and Kerala.

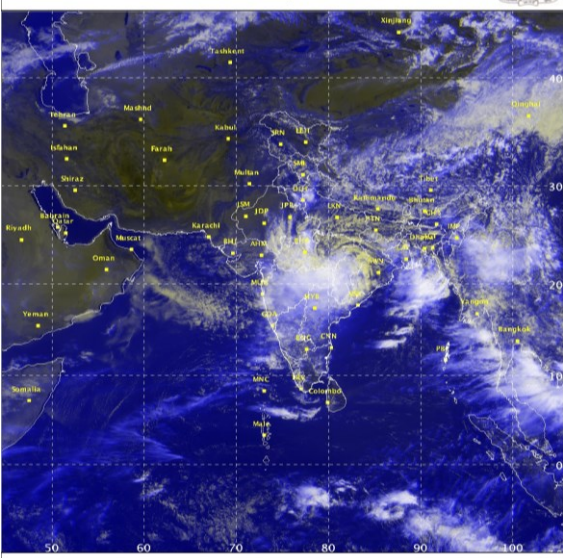
Weather Outlook for subsequent 4 days from 25th to 29th July 2014.

- Rain/thundershowers would occur at most places along west coast and northeastern states.
- Rain/thundershowers would occur at many places over western Himalayan region.
- Rain/thundershowers would occur at a few places over east, central and plains of northwest India.
- Subdued rainfall activity would continue over south interior peninsular India.

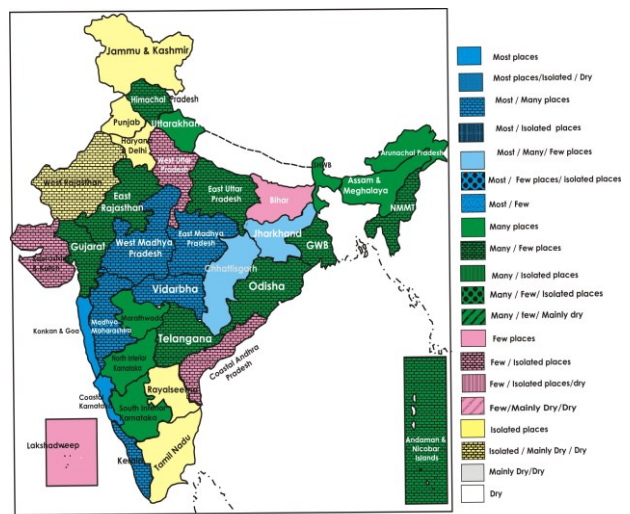
over Gujarat region during next 24 hours and at many places thereafter.

- Rain/thundershowers would occur at isolated places over Saurashtra & Kutch during next 48 hours and at a few places thereafter.
- Rain/thundershowers would occur at isolated places over Jammu & Kashmir, Punjab, Haryana & Delhi, Rayalaseema, Tamilnadu & Pudducherry during the period.
- Rain/thundershowers would occur at many places over East Uttar Pradesh during next 24 hours and at a few places thereafter.
- Rain/thundershowers would occur at a few places over West Uttar Pradesh during next 24 hours and at isolated places thereafter.
- Rain/thundershowers would occur at a few places over East Rajasthan during next 24 hours and increase thereafter.
- Mainly dry weather would prevail over West Rajasthan during next 24 hours and rain/thundershowers would occur at isolated places thereafter.
- Rain/thundershowers would occur at a few places over Lakshadweep during the period.

Satellite image dated 22.07.2014, 0600 UTC



Weather Forecast Map (Valid upto 0830 hours of 25th July, 2014)



Salient Advisories

- Sowing of *Kharif* crops are delayed due to inadequate rainfall in major parts of South Interior Karnataka. Undertake sowing of the following medium duration varieties of crops like groundnut - TMV-2, JL-24 and Chintamani-2; finger millet - Indaf- 8, MR-1, MR-2 and MR-6; Sunflower: KBSH-42 and KBSH-44; maize - Ganga, Deccan, Vijaya composite and Composite NAC are suggested.
- In view of subdued rainfall activity over North Interior Karnataka, sowing of green gram and black gram now is not recommended. Instead onion, sesame, maize, sunflower, niger, castor, bajra, groundnut (spreading), redgram, desi cotton, horsegram, cowpea may be taken up for North Interior Karnataka, sowing of intercrops like, pearl millet + pigeonpea (2:1), pearl millet + castor (2:1), kharif sorghum + redgram (5:1), redgram + sesame (1:2 or 2:4); redgram + horsegram (2:1) is suggested to minimize risk from prevailing rainfall situations.
- In Rayalaseema, undertake intercropping of red gram + groundnut, castor and cotton. In Anantpur district undertake sowing of groundnut and bajra utilizing the realized rainfall.
- Due to non-receipt of rainfall in earlier weeks in most of the districts of Gujarat, normal kharif crops like cotton, pigeon pea, castor, pearl millet and other crops could not be sown. As there is improvement in rainfall during last week over Gujarat and rain would occur at many places, undertake sowing of following contingency crops for different regions of Gujarat as given below:
 - i. **For South and Middle Gujarat region:**
 - Prefer soybean cv. GS-1,GS-2, JS-335.
 - Prefer short duration varieties in Sunflower (cv. Modern and EC-68414 and Guj-1) and Sesame (cv. Guj. Tal 1,2, 10), blackgram (cv. T-9, Guj. Udid-1), Greengram (cv. GM-4, K-851, Meha), Cowpea (cv. Guj. Cowpea 1,2,4, Pusa Falguni).
 - Sowing of grain Sorghum (cv. GJ-35,36 and 37) and Fodder sorghum (cv. S-1049, C-10-2, Gundari, GFS 4,5) is recommended to overcome future fodder shortages.
 - In paddy, varieties like GR-8,9, Sathi 34-36, Ambica and Gurjari can be transplanted up to 25th July.
 - ii. **North Gujarat Region:**
 - In sesame varieties like GT-1, GT-2,GT-10, in sunflower - Modern, EC 68414 and in fodder sorghum - S-1049, C-10-2 are suggested. In cotton Hy-8, 10, V-797, G. Cot 13,21, 23 can be taken up.
 - iii. **For Saurashtra region:**

In groundnut, short duration Spanish bunch varieties like GG-2, GG-5, GG-7 and TG 37 A are recommended.

 - In blackgram, T-9, Guj. Udid-1 and Greengram - GM-4, K-851, Meha are suggested.
 - For fodder purpose, sorghum cv. CSH-6 and CFS-4 are recommended.
 - In sesame cv. Purva-1, in cotton - G. cot-13, 21, 23, V-797, in pigeonpea - cv. BDN-2,ICPL-87,GT-100, GT-101, Vaishali may be preferred. For Kutch region, Guar cv. Guj. Gaur 1 and 2 specially for Kutch region.
- In West **Madhya Pradesh**, sowing of soybean varieties like JS-95 60, IS 93 05, maize varieties like JVM 421, JM 12, sorghum varieties like JJ-938, JJ-1022, bajra varieties like JVB 3, JBV-2, red gram varieties like UPAS 120, Pusa 9, TJT 501, sunflower variety Modern, sesame variety TKG-8 and instead of cotton, varieties of black gram like T 9, JU 86 are advised.
- In Madhya Maharashtra, continue transplanting of rice in Western parts of Kolhapur, Pune and Nasik districts. In north Madhya Maharashtra (Dhule, Nandurbar, Jalgaon and Ahmednagar) undertake short duration improved variety of pearl millet, red gram, sunflower. Intercropping of pearl millet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios. In South Madhya Maharashtra except in Solapur district undertake sowing of contingency crops like sunflower, sesame, pearl millet, red gram, horse gram and moth bean. Intercropping of pearl millet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios.
- In Marathwada undertake delayed sowing of soybean, red gram and bajara with short duration improved varieties in Aurangabad, Jalna and Hingoli districts. Adopt intercropping systems like cotton + pigeon pea (6:1), soybean + pigeonpea (4:2), bajra + pigeon pea (3:3), etc. for minimizing risk. In case of soybean varieties viz., MAUS 71, JS 335 may be chosen.

Detailed Zonewise Agromet Advisories

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



Land preparation/ Sowing

Rice Nursery

Sugarcane

Okra

- **Realised Weather:** Rain/thundershowers occurred at many places over coastal Karnataka; at a few places over Kerala. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were above normal by 2-4°C at isolated places over coastal Andhra Pradesh. They were below normal by 2-5°C at many places over Telangana and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at most places over Coastal Karnataka and at many places over Interior Karnataka during the period. Rain/thundershowers would occur at most places over Kerala during next 24 hours and at many places thereafter. Rain/thundershowers would occur at many places over Telangana during next 24 hours and decrease thereafter. Rain/thundershowers would occur at a few places over Coastal Andhra Pradesh during next 48 hours and at isolated places thereafter. Rain/thundershowers would occur at isolated places over Rayalaseema, Tamilnadu & Pudducherry during the period.
- **Weather Warning:** Heavy rainfall would occur at isolated places over coastal & south interior Karnataka and Kerala on 22nd and 23rd July and over south interior Karnataka and Kerala on 24th July. Heavy to very heavy rainfall would occur at a few places over coastal Karnataka on 24th July.
- **Weather Outlook:** Subdued rainfall activity would continue over south interior peninsular India.
- **Advisories:**
 - **Karnataka:**
 - As rain/thundershowers would occur at most/ many places over Karnataka along with heavy rainfall at isolated places over Coastal and South Interior Karnataka during the period, postpone irrigation, 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 *kharif* rice in the Coastal Karnataka.
 - Continue sowing of maize and cotton, transplanting of lowland and upland rice utilizing the realized and expected rainfall in the Hill Zone of Karnataka.
 - Continue nursery sowing of rice and land preparation for transplanting, sowing of maize, groundnut and red gram in the Southern Transition Zone of Karnataka utilizing the realized and expected rainfall.
 - Crop sowing is delayed due to inadequate rainfall in major parts of South Interior Karnataka. Undertake sowing of the following medium duration varieties of crops like groundnut - TMV-2, JL-24 and Chintamani-2; finger millet - Indaf- 8, MR-1, MR-2 and MR-6; Sunflower: KBSH-42 and KBSH-44; maize - Ganga, Deccan, Vijaya composite and Composite NAC are suggested.
 - In view of subdued rainfall activity over North Interior Karnataka, sowing of green gram and black gram now is not recommended. Instead onion, sesame, maize, sunflower, niger, castor, bajra, groundnut (spreading), redgram, desi cotton, horsegram, cowpea may be taken up for North Interior Karnataka, sowing of intercrops like, pearl millet + pigeonpea (2:1), pearl millet + castor (2:1), kharif sorghum + redgram (5:1), redgram + sesame (1:2 or 2:4); redgram + horsegram (2:1) is suggested to minimize risk from prevailing rainfall situations.
 - Suitable varieties are given in Annexure II.
 - **Kerala:**
 - As rain/thundershowers would occur at most/many places along with heavy rainfall at isolated places during the period, postpone irrigation, intercultural operations and application of fertilizers and plant protection measures in standing crops. Provide adequate drainage in standing crops to remove excess water.
 - Continue direct sowing of rice 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. Continue planting of Nendran banana and cultivation of monsoon vegetables in the Northern Zone of Kerala.
 - Due to high humidity and moist weather conditions, there is chance of increase of leaf folder and stem borer attack on rice crop 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. Due to continuous rain, there is a chance of bud rot disease in coconut. Cut and remove all the affected tissues of the crown. Apply Bordeaux paste and protect it from rain till normal shoot emergence.

- High humidity is congenial for the incidence of sheath blight and sheath rot in rice in the Southern Zone of Kerala. Spray Bavistin @ 200 g/Tilt (Propiconazol) @ 150 ml/ 200 litre of water to manage sheath blight and sheath rot in rice after current spells of rain.
- **Andhra Pradesh:**
- Continue nursery sowing of rice, direct seeding of rice may be taken up with short duration varieties under dry conditions and later converted to wet paddy after receipt of good rainfall. In Guntur, Krishna and Prakasam districts in the North Coastal Zone of Andhra Pradesh, continue planting of rainfed sugarcane and sowing of irrigated maize, green gram, black gram and red gram utilizing the realized rainfall.
- In the Southern Telangana Zone of Andhra Pradesh, complete sowing of rainfed crops like cotton, maize, groundnut, pulses etc. at the earliest. Continue nursery sowing and transplanting of tomato, brinjal and chilli and direct sowing of cucurbits, beans and bhendi utilizing the realized and expected rainfall.
- Continue 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.
- In Rayalaseema, undertake intercropping of red gram + groundnut, castor and cotton. In Anantpur district undertake sowing of groundnut and bajra utilizing the realized rainfall
- Continue 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.
- Since prevailing wind speed is high, five months old banana and sugarcane may be propped against lodging in the Western Zone and Southern Zone of Tamil Nadu.
- Black bug incidence was noticed in *kuruvai* rice in tillering stage in the Cauvery Delta Zone of Tamil Nadu and likely to persist, spray Cholorpyrifos 20 E.C @500 ml /acre or Neem seed kernel extract 5% to manage the incidence.
- Suitable varieties are given in Annexure II.
- **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.

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



Rice Nursery



Land preparation/Sowing



Okra



Jute

- **Realised Weather :** Rain/thundershowers occurred at isolated places over Assam & Meghalaya. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were above normal by 2-4°C at a few places over Assam & Meghalaya and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at many places over Arunachal Pradesh, Assam & Meghalaya during the period. Rain/thundershowers would occur at a few places over Nagaland, Manipur, Mizoram and Tripura during next 24 hours and at many places thereafter.
- **Weather Warning:** Heavy rainfall would occur at isolated places over Assam & Meghalaya during the period.
- **Weather Outlook:** Rain/thundershowers would occur at most places over northeastern states.
- **Advisories:**
 - **Assam & Meghalaya, Arunachal Pradesh:**
 - As rain/thundershowers would occur at many places over Assam and Meghalaya along with isolated heavy spells during the period, postpone irrigation, 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, continue transplanting of *sali* rice. The proper age of seedling for transplanting is 21days for short duration varieties, 30-35 days for medium duration varieties and 35-40 days for long duration varieties.
 - In Meghalaya, continue transplanting of *sali* rice, sowing of pigeon pea and planting of khasi mandarin. Complete transplanting of *sali* rice by the end of July. In water stressed upland fields, farmers are advised to grow tuber crops like sweet potato, colocassia, tapioca, etc. for better land utilization and risk minimization.
 - In Arunachal Pradesh, complete transplanting of local varieties and HYV of *Kharif* rice.

- In Upper Brahmaputra Valley Zone and Central Brahmaputra Valley Zone of Assam, complete nursery sowing of medium duration (130-135 days) *sali* rice varieties like Satyaranjan, Basundhara, Jaya, IR 36 etc. Transplanting of the same can be done till 15-20 August.
- Continue sowing of arhar and sesame in Hill Zone and Central Brahmaputra Valley Zone of Assam, continue sowing of sesame and groundnut in Lower Brahmaputra Valley Zone of Assam.
- In Upper Brahmaputra Valley Zone of Assam, there is chance of stem borer on sugarcane, spray Monocrotophos @ 200 ml in 200 litres of water. If the attack of fruit fly, red pumpkin beetle and epilechna beetle in summer gourds is observed in North Bank Plain Zone and Upper Brahmaputra Valley Zone of Assam, spray malathion 50 EC @ 1 ml per litre.
- In North Bank Plain Zone and Central Brahmaputra Valley Zone of Assam, as pesticide application is not feasible in rainy weather, so arrangement of Bamboo perch is an effective measure to control the hairy caterpillar and semi-looper in jute through predatory birds.
- In Hill Zone of Assam, due to humid weather, there is chance of stem borer infestation in sugarcane, spray Phosphamidon @400-500ml in 800 litre of water after current spells of rain. Also continue soil drenching with 1.0% Bordeaux mixture or 0.05% Bavistin for managing banana wilt in banana after current spells of rain.
- Due to prevailing humid weather conditions, there is chance of attack of aphid on black gram in Arunachal Pradesh. Spray Methyl Demeton 25 EC or Dimethoate @ 500 ml /500 litres of water per ha 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 thrips, blast, Gundhi bug and stem borer in *ahu* rice in Temperate Sub Alpine Zone of Meghalaya. Spray Chloropyriphos @ 2ml/litre of water against thrips, Mancozeb @ 2 g/litre of water or Carbendazim @ 1 g/litre of water against blast, spray Malathion 5% dust @ 6.25 kg/ha against rice Gandhi bug and Chloropyriphos @ 0.02 % or Monocrotophos @ 0.04 % for stem borer after current spells of rain.
- **Nagaland, Manipur, Mizoram and Tripura:**
- In Mizoram, continue nursery sowing and main field preparation for transplanting of rice 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 transplanting of rice.
- Continue transplanting of main *kharif* rice and sowing of black gram in Manipur utilizing the realized and expected rainfall. Continue nursery raising of early cauliflower in raised beds.
- In Mild Tropical Plain Zone of Tripura, continue transplanting of *aman* rice and continue sowing of vegetables. Undertake harvesting of pre-*kharif* rice on sunny days.
- As rain/thundershowers would occur at many places over Nagaland, Manipur, Mizoram and Tripura on 23rd and 24th July, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops.
- 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. Also cloudy and humid weather is conducive for the attack of leaf curl disease in summer brinjal, chilli etc. To manage the attack, apply Imidachloprid @ 2ml per litre of water after current spells of rain.
- In Nagaland, cloudy weather is conducive for thrips in chilli, spray 3% and 5% neem oil for control after current spells of rain.
- Suitable varieties are given in Annexure II.
- **Animal Husbandry**
- In the Northeastern States, animal sheds should be kept dry and avoid dampness during rainy days. Immunizations against FMD, HS and BQ in cattle & buffaloes and swine-fever in pigs may carry out during monsoon season. Keep pig sheds warm using gunny bags, straw, enclosure.
- 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.
- In Nagaland, high humidity is favourable for occurrence of coccidiosis disease in poultry, provide anti-coccidial drugs.
- **Fisheries**
- In flood affected areas of Lower Brahmaputra Valley Zone of Assam, protect the fish ponds by putting nylon net or bamboo net around the ponds. Due to heavy rainfalls & muddy water influx from the surrounding areas, the ponds may result reduction of dissolved oxygen. Stirring the water with a bamboo pole will help in increasing the oxygen and protect the fishes from suffocation.

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



Sugarcane

Jute

Onion

Trasplanting of Rice

- **Realised Weather:** Rain/thundershowers occurred at most places over Jharkhand; at many places over Odisha, West Bengal & Sikkim. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were below normal by 2-5°C at many places over Odisha, Jharkhand, Gangetic West Bengal and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at many places over Sub-Himalayan West Bengal & Sikkim and at a few places over Bihar during the period. Rain/thundershowers would occur at most places over Jharkhand during next 24 hours and decrease thereafter. Rain/thundershowers would occur at many places over Gangetic West Bengal and Odisha during next 24 hours and at a few places thereafter. Rain/thundershowers would occur at a few places over Andaman & Nicobar Islands during next 24 hours and at many places thereafter.
- **Weather Warning:** Heavy rainfall would occur at isolated places over Odisha and Jharkhand on 22nd July.
- **Weather Outlook:** Rain/thundershowers would occur at a few 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, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops.
 - In Sub Himalayan West Bengal, continue transplanting of *aman* rice utilizing the realised and expected rainfall.
 - Undertake direct seeding of *aman* rice in Coastal Saline Zone and New Alluvial Zone of West Bengal. Undertake nursery raising of tomato, and brinjal.
 - In Laterite and Red Soil Zone, continue nursery sowing of *aman* rice. Undertake main field for transplanting of *aman* rice.
 - In New Alluvial Zone of West Bengal, due to cloudy and humid weather, there is a chance of curling of top leaves in chilli. Spray 5% Fipronil @1.5ml/litre of water. Also apply Spinosad 45 SC @ 1ml / 5 litre of water or Carbosulfan 25 EC @ 2 ml / litre of water against fruit or shoot borer attack in brinjal after current spells of rain. Due to cloudy weather and humid conditions, fungal and bacterial diseases are prevalent in maize. For fungal attack, spray Mancozeb @ 2.5g/litre of water and in case of bacterial rot disease, spray Streptocycline @ 0.1g per litre of water after current spells of rain.
 - In Laterite and Red Soil Zone, there is a chance of the attack of white-fly and jassid in ladies finger. To control these insects, apply Imidachloprid 17.8 S. L. @ 4 ml per 10 litre of water against white fly and Thiamethoxon@1g/10 liter of water against jassid after current spells of rain. In the prevailing weather situation, there is a chance of attack of fruit borer in chilli. To control these insects, spray Dichlorovos @ 1.5 – 2.0 ml per litre of water after current spells of rain.
 - In Old Alluvial Zone of West Bengal, due to cloudy weather and high humidity, there is a chance of fruit and stem rot attack in chilli and brinjal. To manage this disease, spray Copper oxy Chloride 50WP @4g/litre water after current spells of rain.
 - **Andaman & Nicobar Islands:**
 - In Andaman & Nicobar Islands, drain out excess water from vegetable crop fields.
 - **Odisha:**
 - In East and South Eastern Coastal Plain Zone of Odisha, continue 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. Undertake sowing of early duration arhar, green gram and black gram in upland.
 - 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 Plateatu 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.
 - 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 Sevin WP @ 4 g or Malathion @ 2 ml in 1 litre water alternatively. Drying of fruit and stem of brinjal has been occurred. 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 water. Fruit fly in cucurbit and bitter gourd. Spray 3 ml Sevin WP in 1 litre water after current spells of rain.

▪ **Bihar:**

- In Bihar, continue transplanting of rice varieties like Rajendra Bhagwati, Prabhat, Narandra 97, MTU-1010 and Rajendra Sweta in medium land and Swarna Sab-1, BPT-5204, MTU-7029, MTU-1001 and Rajshree in low land situation. Transplanting in upland areas should be avoided. Instead of that, sowing of Til (var. Krishna), intercropping of Maize (Suwan) + Urd (T-9, Pant U-31, Pant U-19) is advised.
- In North West Alluvial Plain Zone of Bihar, continue sowing of arhar, urd and kulthi in upland areas. In upland and medium land areas, it is advised to sow brinjal, early tomato, chilli and onion in the nursery with realised rainfall.
- In South Bihar Alluvial Zone, continue transplanting of long or medium duration rice variety which is 21-25 days old and planting of Mango, Litchi, Guava and Papaya. Complete sowing of *kharif* okra and nurseery raising of early brinjal, chilli, cauliflower. Continue transplanting of *kharif* onion.
- In North East Alluvial Plain Zone of Bihar, complete sowing of *kharif* okra and early brinjal, chilli, cauliflower. Undertake transplanting of *Kharif* onion.

▪ **Jharkhand:**

- As rain/thundershowers would occur at most/many places over Jharkhand on 22nd and 23rd July along with heavy rainfall at isolated places on 22nd July, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
- 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. Continue transplanting of rice in low and medium land areas with realised and expected rainfall.
- In Western Plateau Zone of Jharkhand, continue transplanting of rice in low and medium land areas and transplanting of finger millet. Continue sowing of medium duration varieties of maize for green cob and early duration varieties for grain purpose.
- In Central & North Eastern Plateau Zone of Jharkhand, continue sowing of urad, til and groundnut and continue transplanting of rice and planting of mango, guava and litchi.
- Suitable varieties are given in Annexure II.

• **Animal Husbandry**

- Keep the cattle in the sheds during heavy rainfall periods in Sub-Himalayan West Bengal.
- 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. De-worming and FMD-HS-BQ vaccination should be done to protect the livestock animals.
- In South Bihar Alluvial Zone, carry out vaccination of animals against *Anthrax*, *Black Quarter (Dakaha)*, *Galgotu* disease to protect them during rainy season.

• **Poultry**

- In Nicobar Islands, South, North and Middle Andaman, newly hatched chicks should be provided warm condition with electric bulbs under enclosed dry area with sufficient feeding and watering facility.

CENTRAL INDIA [M.P., CHHATTISGARH]



Sugarcane



Land Preparation/Sowing



Okra



Green Gram

- **Realised Weather:** Rain/thundershowers occurred at most places over Chhattisgarh; at a few places over east Madhya Pradesh. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were below normal by 2-5°C at many places over East Madhya Pradesh; at a few places over Chhattisgarh and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at most places over Chhattisgarh during next 24 hours and decrease thereafter. Rain/thundershowers would occur at most places over Madhya Pradesh during next 48 hours and at many places thereafter.
- **Weather Warning:** Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls over Chhattisgarh and heavy to very heavy rainfall at a few places over Madhya Pradesh on 22nd July. Heavy to very heavy

rainfall would occur at a few places with isolated extremely heavy falls over Madhya Pradesh and heavy rainfall would occur at isolated places over Chhattisgarh on 23rd July. Heavy to very heavy rainfall would occur at isolated places over west Madhya Pradesh on 24th July.

- **Weather Outlook:** Rain/thundershowers would occur at a few places over central India.

- **Advisories:**

- **Madhya Pradesh:**

- As rain/thundershowers would occur at most/ many places over Madhya Pradesh along with heavy to very heavy rainfall at a few places on 22nd , with extremely heavy spells on 23rd July, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
 - Continue transplanting of rice and continue sowing of maize, soybean in east Madhya Pradesh after current spells of heavy rain. Continue sowing of early maturing varieties of moong, urad and nursery sowing of vegetables in Satpura Plateau Zone of Madhya Pradesh after current spells of heavy rain.
 - Continue sowing of early maturing varieties of maize, soybean, sorghum and barely after current spells of heavy rain, undertake transplanting of *kharif* vegetables in West Madhya Pradesh.
 - 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 after current spells of rain.
 - In West Madhya Pradesh undertake sowing of soybean varieties like JS-95 60, IS 93 05, maize varieties like JVM 421, JM 12, sorghum varieties like JJ-938, JJ-1022, bajra varieties like JVB 3, JBV-2, red gram varieties like UPAS 120, Pusa 9, TJT 501, sunflower variety Modern, sesame variety TKG-8 and instead of cotton, varieties of black gram like T 9, JU 86.

- **Chhattisgarh:**

- As rain/thundershowers would occur at most/ many places over Chhattisgarh on 22nd & 23rd July along with heavy to very heavy rainfall at a few places with extremely heavy spells on 22nd and heavy spells at isolated places on 23rd July, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
 - In Chhattisgarh Plain Zone, undertake transplanting of rice and continue sowing of maize, soybean, moong and urad and nursery sowing /transplanting of *kharif* vegetables after spells of heavy rain. Arrange drainage system to avoid water logging in pulses and oilseed crop fields.
 - Continue transplanting /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 after current spells of heavy rain.
 - In Plain Zone of Chhattisgarh, there are chances of of blast disease in rice nursery. Spray Carbendazim @ 1g or Tricyclozole @ 0.6 g per liter of water after current spells of rain.

- **Animal Husbandry**

- In Madhya Pradesh and Chhattisgarh, keep animals indoors during heavy rainfall periods. Supplement the feed with vitamins and energy food material along with calcium content to dairy animals. Vaccinate the milch cattle against H.F. and B.Q disease.

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



Land Preparation

Sugarcane

Bottle Gourd

Onion

- **Realised Weather:** Rain/thundershowers occurred at isolated places over Himachal Pradesh and Uttarakhand. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were above normal by 2-4°C at many places over Rajasthan; at a few places over Jammu & Kashmir and Himachal Pradesh and near normal over rest of the region.
- **Weather Forecast:** Rain/thundershowers would occur at many places over Uttarakhand during the period. Rain/thundershowers would occur at isolated places over Jammu & Kashmir, Punjab, Haryana & Delhi during the period. Rain/thundershowers would occur at many places over East Uttar Pradesh during next 24 hours and at a few places thereafter. Rain/thundershowers would occur at a few places over West Uttar Pradesh during next 24 hours and at isolated places thereafter. Rain/thundershowers would occur at a few places over East Rajasthan during next 24

hours and increase thereafter. Mainly dry weather would prevail over West Rajasthan during next 24 hours and rain/thundershowers would occur at isolated places thereafter.

- **Weather Warning:** Nil.
- **Weather Outlook:** Rain/thundershowers would occur at a few places over plains of northwest India. Rain/thundershowers would occur at many places over western Himalayan region.
- **Advisories:**
 - **Jammu & Kashmir:**
 - Undertake sowing of pulses like mash (var. Pant U-19, T-9) and moong (var.PDM-54, PS-16, PS-17, ML-131) Intermediate Zone of Jammu & Kashmir, utilizing realized rainfall.
 - Due to prevailing humid weather conditions, there are chances of fruit borer in turmeric and cucurbits in Sub Tropical Zone of Jammu & Kashmir. To control, spray Ridomil MZ @ 2.5 gm per litre of water.
 - Due to prevailing humid weather condition, there are chances of scab in apple in Valley Temperate Zone of Jammu & Kashmir, to control spray with Flusilazole 40 EC @ 20 ml per 100 litre of water or Penconazole 10 EC@ 50 ml per 100 litre of water.
 - Due to humid condition there are chances of aphid attack on vegetables, in Cold Arid Zone of Jammu & Kashmir. To control, apply Chloropyriphos 20EC @ 2 ml/litre of water.
 - **Himachal Pradesh:**
 - As rain/thundershowers would occur at many places in Himachal Pradesh on 23rd & 24th July, postpone irrigation, intercultural operations and application of fertilizers and plant protection measures in standing crops.
 - Continue 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 and expected rainfall. Undertake nursery sowing of cauliflower and transplanting of cabbage.
 - Due to prevailing humid weather conditions, there are chances of attack of fruit borer in brinjal and bhindi in Mid-Hills Sub-Humid Zone and Sub-Montane & Low Hills Sub-Tropical Zone of Himachal Pradesh. Spray Cypermethrin @ 565 ml (Ripcord 10EC) or Deltamethrin (Desis 2.8EC) in 750 ml of water per hectare after current spells of rain. Apply another dose of urea @40-50 kg per hectare in tomato, brinjal, capcicum, chilli and cucurbits. To control the leaf spot and fruit rot diseases in tomato, brinjal, capsicum and chilli, spray Metamil/Redomil MZ @2.5 g per litre of water after current spells of rain and repeat after 15 days.
 - Due to prevailing humid weather conditions, there are chances of scab infestation in apple orchards in Mild Hills Sub-Humid Zone of Himachal Pradesh. Spray Miclobutanil (boon) @ 80g per 200 litres of water after current spells of rain.
 - **Uttarakhand:**
 - As rain/thundershowers would occur at many places along with heavy to very heavy rainfall at a few places with isolated extremely heavy spells over Uttarakhand during the period, postpone irrigation, intercultural operations and application of fertilizers and plant protection measures in standing crops.
 - Complete transplanting of rice and maintain optimum water level. Continue sowing of sorghum, millets, groundnut, soybean and pigeon pea in Bhabar & Tarai Zone of Uttarakhand. Complete 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.
 - **Punjab, Haryana and Delhi:**
 - In Western Zone of Punjab complete transplanting of rice with 25 to 30 days old seedlings utilizing realised rainfall, continue nursery sowing of basmati rice and complete sowing of okra and cow pea.
 - In Sub-Mountane and Undulating Plain Zone of Punjab, continue transplanting of rice and complete sowing of maize and continue sowing of mung, mash and til..
 - In Central Plain Zone and in Western Plain Zone of Punjab, complete transplanting of rice and continue sowing of okra, radish and cucurbits.
 - 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 @ 80 g/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 realised rainfall.
 - 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 complete transplanting of rice by the end of this month.
 - In Delhi, continue nursery preparation of rice, early cauliflower and brinjal. 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, cucurbits sweet corn, baby corn and soybean during the week with realised rainfall.
 - **Uttar Pradesh:**
 - In Central Plain Zone of Uttar Pradesh, continue transplanting of rice, brinjal and chilli, nursery sowing of cauliflower and sowing of arhar, jowar, maize, groundnut, urad, mung, soybean, sunflower cucurbits like bottle guard, cucumber, bitter guard, tinda , planting of fruit crops and land preparation for planting of banana utilizing

the realized and expected rainfall.

- Continue sowing of groundnut, arhar, jowar and soybean and land preparation for planting of fruit crops like mango, papaya, guava, etc. in Bundelkhand Zone of Uttar Pradesh utilizing the realized and expected rainfall.
- In Western Plain Zone of Uttar Pradesh, continue direct sowing of rice in lowland areas and sowing of guar, bajra, jowar and moong as fodder crops in uplands utilizing realized rainfall.
- Due to humid weather condition, there are chances of attack of white fly, jassids, thrips in ladies finger in Bundelkhand Zone of Uttar Pradesh. Spray Dimethoate 30 EC @ 800 ml per 800 litres of water on a non-rainy day.
- Due to humid weather condition, there are chances of attack of aphids in Anola orchard in Central Plain Zone of Uttar Pradesh. Spray Monocrotophos @ 1 litre per 800 litres of water for control after current spells of rain.
- Due to humid weather condition, there are chances of attack of stem borer or leaf roller in Maize in Central Plain Zone of Uttar Pradesh. Spray Phenitrothion 50 E.C. @ 500-700 ml in 700-800 litres of water per hectare or Quinolphos 25 E.C. @ 2 litres in 700-800 litres of water per hectare.
- Due to humid weather condition, there are chances of red beetle in bottle guard in Bundelkhand Zone of Uttar Pradesh. Spray Monocrotophos @ 1 litre per 800 litres of water for control on a non-rainy day

▪ **Rajasthan:**

- Complete sowing of short duration varieties of *kharif* crops like pearl millet, cowpea, green gram, moth bean and urad bean etc. in Semi Arid Eastern Plain Zone and also continue sowing of bajra, til, moong, urad in Flood Prone Eastern Plain Zone of Rajasthan, utilizing the realised and expected rainfall.
- Continue sowing of short duration varieties of maize, soybean in Southern Humid Plain Zone of Rajasthan, utilizing the realised and expected rainfall.
- Continue sowing of maize, jowar, soybean, moong, urad, til, groundnut and arhar in South Eastern Humid Plain Zone utilizing the realised and expected rainfall.
- Continue sowing of short duration varieties of *kharif* crops along with intercropping like Maize-Urad (2:2), Maize-Moong/Cowpea (1:1) or Maize- Cluster bean (2:2) in Sub Humid Southern Plain and Aravali Hill Zone of Rajasthan, utilizing the realised and expected rainfall.
- Continue sowing of bajra, moong, moth, guar and til in Irrigated North Western Plain Zone & Arid Western Plain Zone of Rajasthan.
- In view of subdued rain for sowing of *kharif* crops in Rajasthan, following agricultural operations may be undertaken as given in Annexure I.
- Suitable short duration varieties are given in Annexure II.

• **Floriculture**

- Due to prevailing humid weather condition there are chances of incidence of gladiolus blight 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 after current spells of rain.

• **Horticulture**

- Continue planting of mango, guava and lemon saplings in Bhabar and Tarai Zone of Uttarakhand, utilizing realised and expected rainfall.
- 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 after current spells of rain.
- 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, after current spells of rain.

• **Animal Husbandary:**

- Keep cattle indoors during heavy rainfall periods in Uttarakhand and Himachal Pradesh.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



Land Preparation/ Sowing

Sugarcane

Rice Nursery

Okra

- **Realised Weather:** Rain/thundershowers occurred at a few places over Madhya Maharashtra and at isolated places over Vidarbha. Weather remained dry/mainly dry over rest parts of the region. Maximum temperatures were above normal by 2-4°C at many places over Gujarat. They were below normal by 2-5°C

at many places over Vidarbha; at a few places over interior Maharashtra and near normal over rest of the region.

- **Weather Forecast:** Rain/thundershowers would occur at most places over Konkan & Goa and at many places over Marathwada during the period. Rain/thundershowers would occur at most places over Vidarbha during next 24 hours and at many places thereafter. Rain/thundershowers would occur at many places over Madhya Maharashtra during next 24 hours and at most places thereafter. Rain/thundershowers would occur at isolated places over Saurashtra & Kutch during next 48 hours and at a few places thereafter. Rain/thundershowers would occur at a few places over Gujarat region during next 24 hours and at many places thereafter.
- **Weather Warning:** Heavy to very heavy rainfall would occur at a few places over Vidarbha and Konkan & Goa on 22nd and 23rd July. Heavy rainfall would occur at isolated places over Marathwada and Madhya Maharashtra on 22nd and 23rd July. Heavy to very rainfall would occur at isolated places over Gujarat region on 23rd July. Heavy to very heavy rainfall would occur at a few places over Konkan & Goa and at isolated places over Madhya Maharashtra on 24th July. Heavy rainfall would occur at isolated places over Gujarat region, Saurashtra & Kutch on 24th July.
- **Weather Outlook:** Rain/thundershowers would occur at most places along west coast.
- **Advisories:**
 - **Maharashtra:**
 - As rain would occur at most/ many places with heavy to very heavy spells at a few places in Konkan, Vidarbha and isolated heavy spells over Madhya Maharashtra and Marathwada, postpone irrigation, intercultural operations, application of plant protection measures and fertilizers in the standing crops. Provide adequate drainage in crop fields to remove excess water.
 - In Konkan, drain out excess water from rice, finger millet and vegetable fields and postpone fertilizer application. Complete transplanting with 20-22 days old seedlings of rice and finger millet.
 - In Madhya Maharashtra, continue transplanting of rice in Western parts of Kolhapur, Pune and Nasik districts. In north Madhya Maharashtra (Dhule, Nandurbar, Jalgaon and Ahmednagar) undertake short duration improved variety of pearl millet, red gram, sunflower. Intercropping of pearl millet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios. In South Madhya Maharashtra except in Solapur district undertake sowing of contingency crops like sunflower, sesame, pearl millet, red gram, horse gram and moth bean. Intercropping of pearl millet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios.
 - In Marathwada undertake delayed sowing of soyabean, red gram and bajara with short duration improved varieties in Aurangabad, Jalna and Hingoli districts. Adopt intercropping systems like cotton + pigeon pea (6:1), soybean + pigeonpea (4:2), bajra + pigeon pea (3:3), etc. for minimizing risk. In case of soybean varieties viz., MAUS 71, JS 335 may be chosen.
 - In west Vidarbha, undertake sowing of sunflower, red gram and soyabean short duration improved varieties. Intercropping of sunflower + red gram in soyabean + red gram 2:1. In east Vidarbha continue transplanting of rice.
 - **Gujarat:**
 - Due to non-receipt of rainfall in earlier weeks in most of the districts of Gujarat, normal *kharif* crops like cotton, pigeon pea, castor, pearl millet and other crops could not be sown. As there is improvement in rainfall during last two weeks over Gujarat and likely to continue during next fortnight, contingency plan for different regions of Gujarat may be undertaken as given in Annexure I.
 - **Gujarat region:**
 - As rain/thundershowers would occur at many places on 23rd and 24th July along with heavy to very heavy rainfall at a isolated places over Gujarat region on 23rd July and heavy rainfall over Gujarat region and Saurashtra & Kutch on 24th 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 mid maturing varieties of rice and sowing of pearl millet, groundnut and pigeon pea utilising the realised and expected rainfall in Middle Gujarat Zone. Rice varieties like GR-8,9, Sathi 34-36, Ambica and Gurjari can be transplanted up to 25th July. Prefer soybean cv. GS-1,GS-2, JS-335. Prefer short duration varieties in Sunflower (cv. Modern and EC-68414 and Guj-1) and Sesame (cv. Guj. Tal 1,2, 10), blackgram (cv. T-9, Guj. Udid-1), Greengram (cv. GM-4, K-851, Meha), Cowpea (cv. Guj. Cowpea 1,2,4, Pusa Falguni). Sowing of grain Sorghum (cv. GJ-35,36 and 37) and Fodder sorghum (cv. S-1049, C-10-2, Gundari, GFS 4,5) is recommended to overcome future fodder shortages.
 - In North Gujarat Zone, undertake sowing of sesame varieties like GT-1, GT-2,GT-10, in sunflower - Modern, EC 68414 and in fodder sorghum - S-1049, C-10-2. In cotton Hy-8, 10, V-797, G. Cot 13,21, 23 can be taken up after spells of heavy rainfall.
 - Carry out land preparation for sowing of castor, transplanting of paddy and vegetable crops; undertake sowing of desi cotton as in some places rain has occurred; carryout weeding, intercultural operation and mulching in already sown cotton crop to conserve soil moisture in Bhal and Coastal Zone. Take green gram, pigeon pea, guar as an intercrop. Prepare the pits for horticulture crops.
 - Continue transplanting of tomato, brinjal, chilli and other vegetable crops and transplanting of rice seedlings at 4-5 leaves stage in South Gujarat Heavy Rainfall Zone utilising the realised and expected rainfall; undertake planting of ornamental and horticulture crops; remove excess water from sugarcane, vegetable and ornamental and horticulture

- crop fields. Take suitable short duration intercrops in new orchards. Conserve runoff water in farm ponds.
- As rain is expected at many places, postpone intercultural operations, application of fertiliser and plant protection measures in standing crops.
 - As onset of monsoon was delayed in Gujarat region, detailed contingency measures are given in Annexure I.
 - **Saurashtra & Kutch:**
 - Undertake sowing of groundnut, short duration Spanish bunch varieties like GG-2, GG-5, GG-7 and TG 37 A. In blackgram, T-9, Guj. Udid-1 and Greengram - GM-4, K-851, Meha are suggested. For fodder purpose, sorghum cv. CSH-6 and CFS-4 are recommended. In sesame cv. Purva-1, in cotton - G. cot-13, 21, 23, V-797, in pigeonpea - cv. BDN-2, ICPL-87, GT-100, GT-101, Vaishali may be preferred. For Kutch region, Guar cv. Guj. Gaur 1 and 2 specially for Kutch region.
 - Due to delayed onset of monsoon in Saurashtra & Kutch, crops recommended for sowing are given in Annexure I.
 - Suitable varieties are given in Annexure II.
 - **Animal Husbandry**
 - In Gujarat, clean animal byres and spray neon insecticide 1 to 1.5 ml per liter of water for control ecto parasites in animal house. Spray phenyl in the animal shed to avoid flies, mosquitoes. Make arrangement for artificial light to birds to maintain egg production. Keep fodder in safe place to avoid spoilage due to rainfall.

Annexure I
Contingency measures for the meteorological subdivisions

Interior Karnataka

Subdivision	Districts	Normal crops	Contingency crops
North Interior Karnataka	Bidar Bagalkote Dharwad Belgaum Bellary Koppal	Rice, sorghum, red gram, maize, soybean, black gram, sugarcane, cotton, greengram, groundnut	In view of subdued rainfall activity over Interior Karnataka, sowing of green gram and black gram now is not recommended in North Interior Karnataka. Instead onion, sesame, maize, sunflower, niger, castor, bajra, groundnut (spreading), redgram, desi cotton, horsegram, cowpea may be taken up for North Interior Karnataka, sowing of intercrops like, pearl millet + pigeonpea (2:1), pearl millet + castor (2:1), kharif sorghum + redgram (5:1), redgram + sesame (1:2 or 2:4); redgram + horsegram (2:1) is suggested to minimize risk from prevailing rainfall situations.
SIK	Chamrajnagar, Mandya, Mysore, Tumkur	Rice, Ragi, Groundnut, Jowar, Maize, green gram, black gram	In South Interior Karnataka, sowing was delayed due to inadequate rainfall in major parts of interior districts. The following medium duration varieties are suggested for sowings beyond 20 th July. □□ Groundnut - TMV-2, JL-24 and Chintamani-2 □□ Finger millet - Indaf- 8, MR-1, MR-2 and MR-6 □□ Maize - Ganga, Deccan, Vijaya composite and Composite NAC □□ Sunflower: KBSH-42 and KBSH-44

Gujarat State

Subdivision	Normal crops	Contingency crops
South and Middle Gujarat region	Rice, groundnut, cotton, maize, soyabean	<ul style="list-style-type: none"> • Prefer soybean cv. GS-1,GS-2, JS-335. • Prefer short duration varieties in Sunflower (cv. Modern and EC-68414 and Guj-1) and Sesame (cv. Guj. Tal 1,2, 10), blackgram (cv. T-9, Guj. Udid-1), Greengram (cv. GM-4, K-851, Meha), Cowpea (cv. Guj. Cowpea 1,2,4, Pusa Falguni). • Sowing of grain Sorghum (cv. GJ-35,36 and 37) and Fodder sorghum (cv. S-1049, C-10-2, Gundari, GFS 4,5) is recommended to overcome future fodder shortages. • In paddy, varieties like GR-8,9, Sathi 34-36, Ambica and Gurjari can be transplanted up to 25th July.
North Gujarat region	Cotton, Pearl millet green gram, castor, sesame,	<ul style="list-style-type: none"> • In sesame varieties like GT-1, GT-2,GT-10, in sunflower - Modern, EC 68414 and in fodder sorghum - S-1049, C-10-2 are suggested. In cotton Hy-8, 10, V-797, G. Cot 13,21, 23 can be taken up.
Saurashtra region	Groundnut, cotton, Pearl millet green gram, castor, sesame,	<ul style="list-style-type: none"> • In groundnut, short duration Spanish bunch varieties like GG-2, GG-5, GG-7 and TG 37 A are recommended. • In blackgram, T-9, Guj. Udid-1 and Greengram - GM-4, K-851, Meha are suggested. • For fodder purpose, sorghum cv. CSH-6 and CFS-4 are recommended. • In sesame cv. Purva-1, in cotton - G. cot-13, 21, 23, V-797, in pigeonpea - cv. BDN-2,ICPL-87,GT-100, GT-101, Vaishali may be preferred. • For Kutch region, Guar cv. Guj. Gaur 1 and 2 specially for Kutch region.

Maharashtra

Subdivision	Normal crops/cut off dates	Contingency crops
Madhya Maharashtra	Soybean – June end Cotton - 15 July Jowar – 15 July Bajra – 15 July Groundnut – 7 July	In north Madhya Maharashtra (Dhule, Nandurbar, Jalgaon and Ahmednagar) undertake short duration improved variety of pearl millet, red gram, sunflower. Intercropping of pearlmillet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios. In South Madhya Maharashtra except in Solapur district undertake sowing of contingency crops like sunflower, sesame, pearl millet, red gram, horse gram and moth bean. Intercropping of pearlmillet+redgram in 2:1, sunflower+redgram in 2:1, and guar+redgram in 2:1 ratios.
Marathwada	Soybean – 15 July Cotton – 15 July Jowar – 15 July Bajra – 30 July Red gram – 30 July Green gram – 7 July	Undertake delayed sowing of soyabean, red gram and bajara with short duration improved varieties in Aurangabad, Jalna and Hingoli districts. Adopt intercropping systems like cotton + pigeon pea (6:1), soybean + pigeonpea (4:2), bajra + pigeon pea (3:3), etc. for minimizing risk. In case of soybean varieties viz., MAUS 71, JS 335 may be chosen.

Vidarbha	East Vidarbha normal crop rice, red gram	Drilled rice with early maturing variety
	West Vidarbha normal crop cotton, soyabean and red gram.	Undertake sowing of sunflower, red gram and soyabean short duration improved varieties. Intercropping of sunflower + red gram in soyabean + red gram 2:1.

West Madhya Pradesh

Subdivision	Normal crops	Contingency crops
West Madhya Pradesh	Soybean, Maize, Paddy, Black gram, Cotton	sowing of soybean varieties like JS-95 60, IS 93 05, maize varieties like JVM 421, JM 12, sorghum varieties like JJ-938, JJ-1022, bajra varieties like JVB 3, JBV-2, red gram varieties like UPAS 120, Pusa 9, TJT 501, sunflower variety Modern, sesame variety TKG-8 and instead of cotton, varieties of black gram like T 9, JU 86 are advised.

Rajasthan

Subdivision	Normal Crops	Contingency crops
West Rajasthan	Bajra , Moth bean, Cluster bean, Mungbean	short duration varieties of Bajra (HHB-67, Improved, RHB-121, RHB-90 and Raj-171) can be sown upto 20 th July as these varieties mature in 65-80 days.
East Rajasthan	Pearl millet, Sesame , Moth bean, Maize, Green gram, Cluster bean, Sesame	Maize-Urad (2:2), Maize-Moong/Cowpea (1:1) or Maize- Cluster bean (2:2), Sorghum varieties CSH – 6, CSH – 14, Pratap jowar 1430, CSV-17, CSV-15, CSH-13, CSV- 13, RJ – 96 may be used at 25 % higher seed rate.

Andhra Pradesh

Subdivision	Normal Crops	Contingency crops
Coastal Andhra Pradesh	rice, groundnut, castor and cotton	Direct seeding of rice may be taken up with short duration varieties under dry conditions and later converted to wet paddy after receipt of good rainfall. In NSP command areas of Guntur, Krishna and Prakasam districts as there is no water in reservoirs and chances of release of water in canals are bleak, farmers are advised to go for rainfed crops like maize, cotton, redgram, greengram wherever feasible. In Prakasam districts, farmers are advised to adopt closure spacing for cotton and redgram sole crops and form dead

		furrows for moisture conservation.
Telangana	Red gram, green gram and castor- end of July. Cotton- middle of August	Undertake sowing of cotton, maize, groundnut and pulses utilizing realised rainfall.
Rayalaseema	Groundnut- 15 th August Red gram –end of July Sunflower	Undertake intercropping of red gram + groundnut, castor and cotton. In Anantpur district undertake sowing of groundnut and bajra.

Source: CRIDA, ICAR

Annexure II 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

Sesame : 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

Kharif 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

Pigeon Pea:arhar: Bahar, Pusa 9, Narendra Arhar 1

Urd: T-9, Pant U-19, Pant Urd 31, PDU-1

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

Urd:T 9, Pant U 19, 30, 35 and Birsa urd 1

Moong: Pusa Vishal, S M L 668, K 885, P S 16, Pant Moong 2 and P D M 11.

Arhar:Birsa Arhar (210 days), Bahar (240 Days) and ICPH 2671 (210 days),

Soybean:Birsa soybean 1, Birsa safed soybean 2;

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, IR 36, IR 64

Maize - Pusa early, Navjot 3, Chandana 3

Ragi - JPU 28, JPU 45, JK 155

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.

Uttar Pradesh

Urd: Uttara, Narendra urd-1, Pant Urd-30, Type-27,66, Shekhar-1,2,3, Azad-1,2,3, WBU-108

Moong: Pant-1,3,4, Samrat, Narendra Moong-1, Malaveey- Jyoti,-Janchetana, Janpriya, Jagruti, Jankalyani, Samrat, Asha, Neha, Shweta, MH-215, IPM-23

Groundnut: TG-37A, Kaushal, Amber

Jowar: Bundela, CSV-13, 15,17; CSH-14, 16, 18, 23

Bajra: WCC-75, Raj-171, ICMB-155, Pusa-322, 23, ICMH-451

Maize: Azad Uttam, Shweta

Arhar: Upas-120, Narendra-1A, Bahar

Soybean:PK-472, JS-335, MAUS-47, NRC-37

Lobia: UPC-4200