

National Agromet Advisory Service Bulletin

Friday 22nd November, 2013
(For the period 22nd to 25th November 2013)

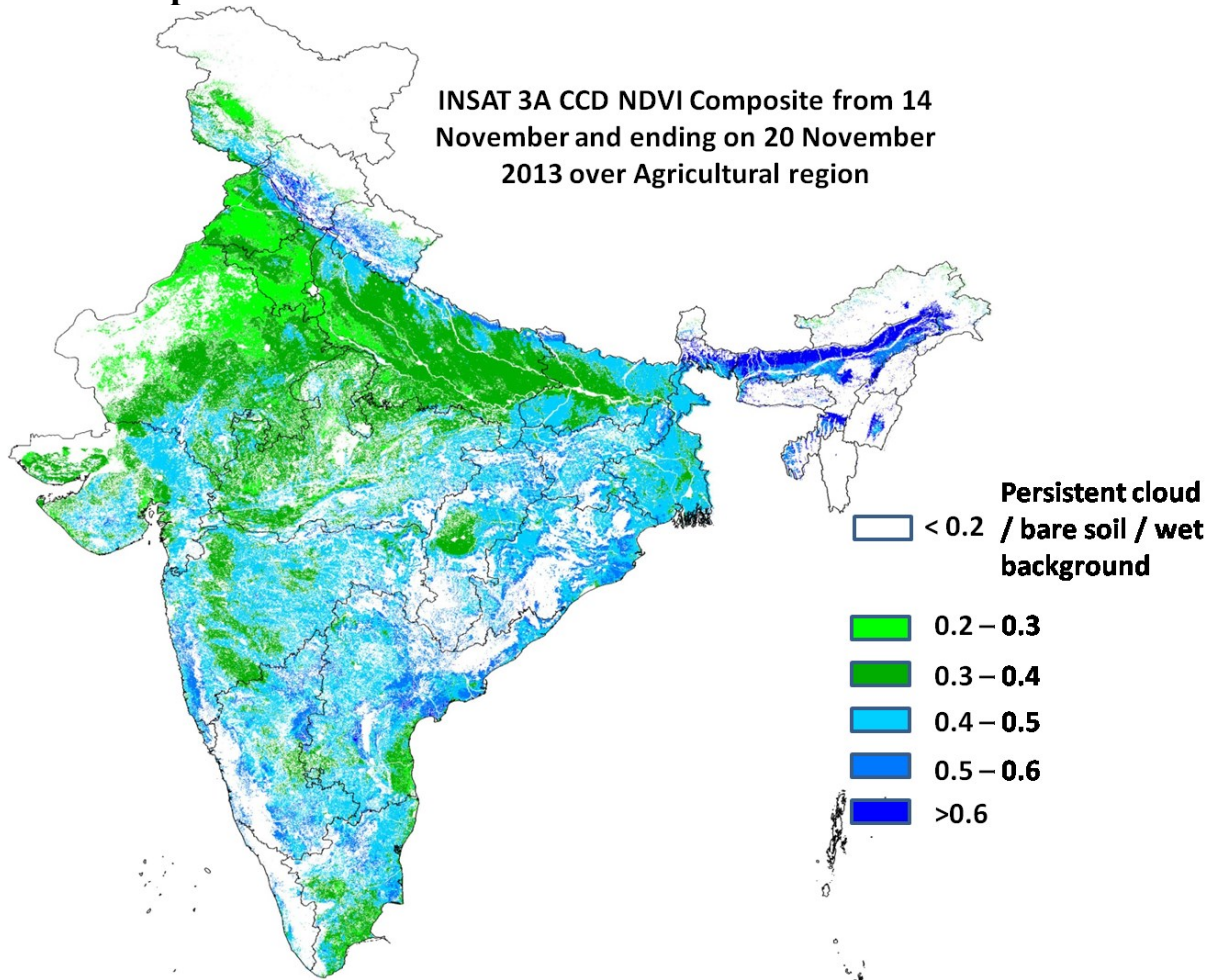


Issued by

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

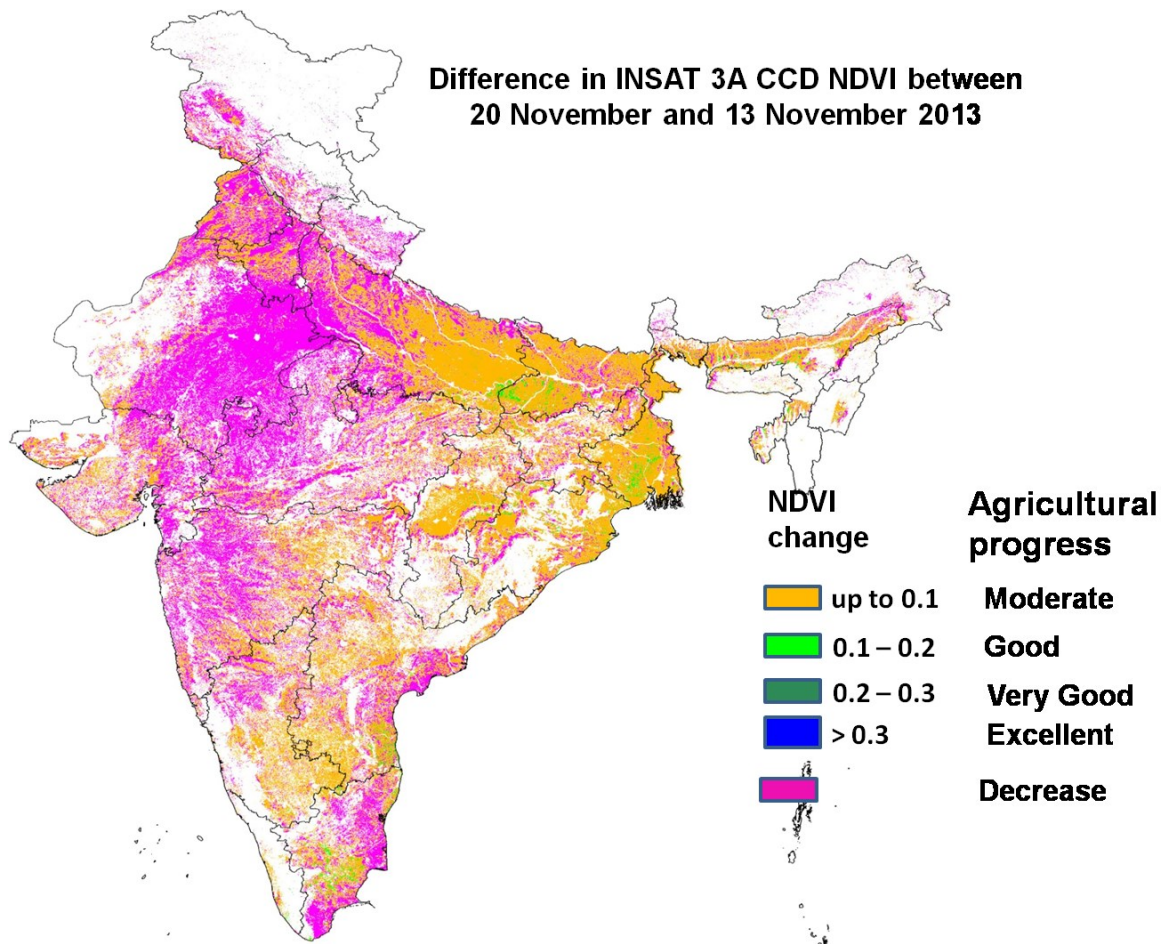


Crop condition based on Rainfall and INSAT 3A CCD NDVI **



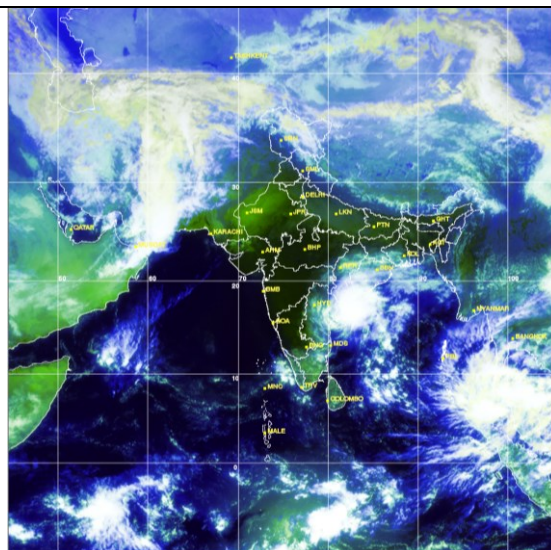
Source: SAC, Ahmedabad

Overall Agricultural Situation: Agricultural conditions is in general very good to good over south-west Bihar, east and north Bihar, north UP, pockets of western UP, West Bengal and Chhattisgarh, eastern and pockets of central and western Madhya Pradesh, north and central Gujarat, eastern Maharashtra, pockets of north Karnataka, north-eastern Andhra Pradesh, Odisha as NDVI vigour showed the range from 0.4 to 0.6 upto 20th November 2013. The NDVI remain low within range of 0.2 to 0.4 over states of Punjab, Haryana, Rajasthan, north and central MP, central Maharashtra and major part of Uttar Pradesh and Madhya Pradesh.



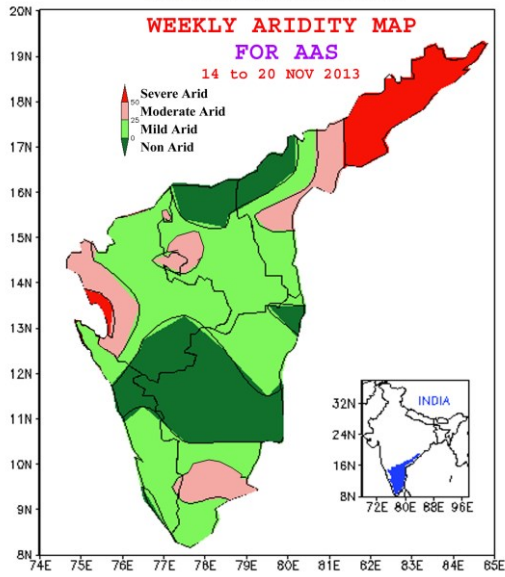
Source: SAC, Ahmedabad

Progress of crop performance during last week: Agricultural progress between 20th November and 13th November 2013 was found to be good over few pockets of north-west Bihar, eastern Uttar Pradesh, central West Bengal, few pockets of central Tamil Nadu. Whereas, progress was moderate over few pockets of south-west, north and central Punjab, western and central Haryana, along with north-east part of Uttar Pradesh, north Bihar, few pockets of north Madhya Pradesh. The moderate growth was also observed in pockets of north Karnataka, parts of central and west Andhra Pradesh and few pockets of Tamil Nadu. Rest of India showed decrease in NDVI which may be due to end of Kharif crop season.



Satellite image dated 22.11.2013, 0600 UTC

Aridity Anomaly Map for the week ending 20.11.2013



During the week (14 to 20 November, 2013) the aridity anomaly map indicated the following aridity conditions over the five Meteorological sub-divisions viz. Coastal Andhra Pradesh, Rayalaseema, South Interior Karnataka, Tamil Nadu & Pondicherry and Kerala.

1. Areas having severe and moderate arid conditions are indicated below:

1.1 **Areas affected by severe arid conditions :**
Northern and central parts of Coastal Andhra Pradesh.

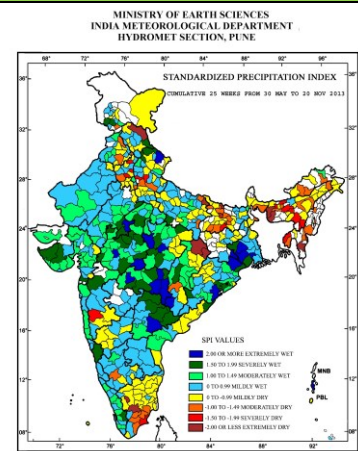
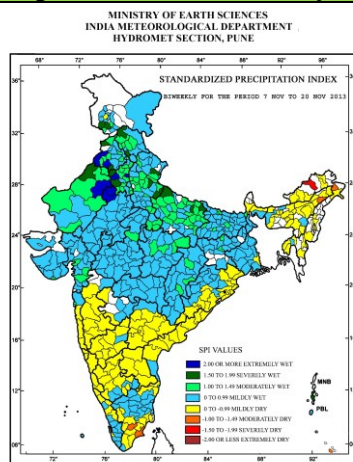
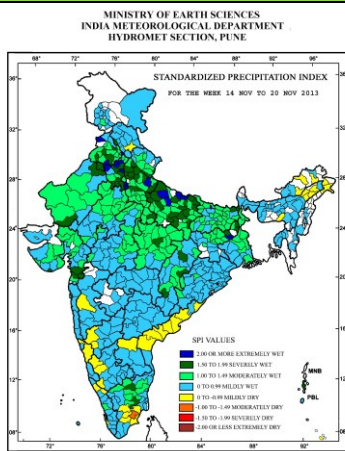
Isolated area around Chickmagalur (South Interior Karnataka).

1.2 **Areas affected by moderate arid conditions :**

Central and some eastern parts of Coastal Andhra Pradesh; some southwestern parts of South Interior Karnataka; some southern parts of Tamil Nadu.

Isolated areas around Anantpur (Rayalaseema) and Bellary (South Interior Karnataka)

Standardised Precipitation Index weekly, fortnightly and seasonal



Weekly SPI values:

- Extremely wet/severely wet conditions over many parts of Uttar Pradesh, Uttarakhand and Haryana and some parts of Tamil Nadu, Chhattisgarh, South Gujarat, North Rajasthan, Punjab and Bihar.

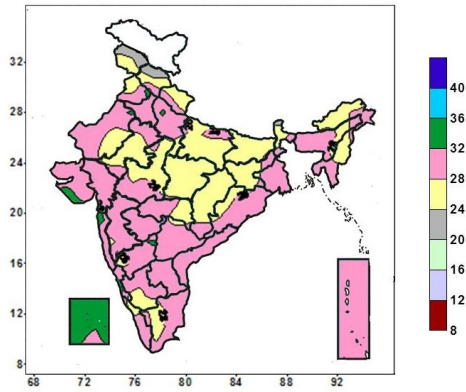
Cumulative SPI values (bi-weeks):

- Extremely wet/severely wet conditions over some parts of North Rajasthan, Punjab, Haryana, Uttarakhand, Uttar Pradesh.
- Extremely dry/severely dry conditions were observed over some parts of Arunachal Pradesh and Assam.

Cumulative SPI values of nineteenth weeks) (i.e. since the beginning of southwest monsoon

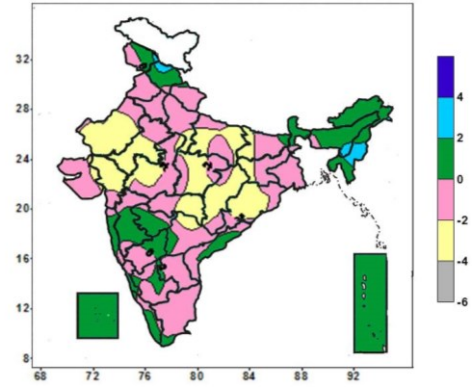
- Extremely wet/severely wet conditions over many parts of North Andhra Pradesh, Madhya Pradesh and West Bengal and some part of Chhattisgarh, East Rajasthan, Gujarat, Odisha and Uttarakhand.
- Extremely dry/ severely dry conditions were observed over many parts of Assam and Haryana and some parts of Meghalaya, Tripura, Bihar, Uttarakhand and Tamil Nadu .

Actual Mean Maximum Temperature ($^{\circ}\text{C}$) in India for the week ending 20.11.2013



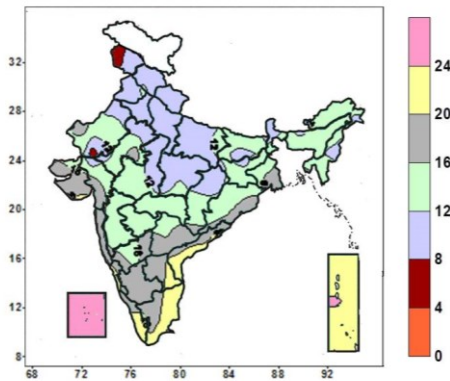
- 28 to 36 $^{\circ}\text{C}$ over entire country (except many parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, East Uttar Pradesh, East Rajasthan, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Manipur, Central India, some parts of West Uttar Pradesh, West Rajasthan, Punjab, Assam, Kerala, Tamil Nadu, Karnataka).
- 20 to 28 $^{\circ}\text{C}$ over many parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, East Uttar Pradesh, East Rajasthan, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Manipur, Central India, some parts of West Rajasthan, West Uttar Pradesh, Punjab, Assam, Kerala, Tamil Nadu, Karnataka.

Mean Maximum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 20.11.2013



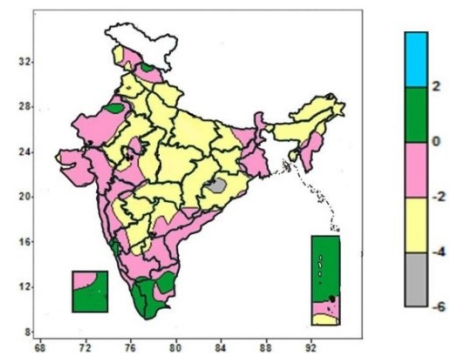
- 0 to 4 $^{\circ}\text{C}$ over many parts of Jammu & Kashmir, Himachal Pradesh, Sub-Himalayan West Bengal, Sikkim, Northeast India, Maharashtra except Vidarbha, Coastal Andhra Pradesh, Kerala, Lakshadweep, Andaman & Nicobar Islands, some parts of Bihar, Telengana, Rayalaseema, Karnataka, Tamil Nadu.
- -4 to 0 $^{\circ}\text{C}$ over entire country (except many parts of Jammu & Kashmir, Himachal Pradesh, Sub-Himalayan West Bengal, Sikkim, Northeast India, Maharashtra except Vidarbha, Coastal Andhra Pradesh, Kerala, Lakshadweep, Andaman & Nicobar Islands, some parts of Bihar, Telengana, Rayalaseema, Karnataka, Tamil Nadu).

Actual Mean Minimum Temperature ($^{\circ}\text{C}$) in India for the week ending 20.11.2013



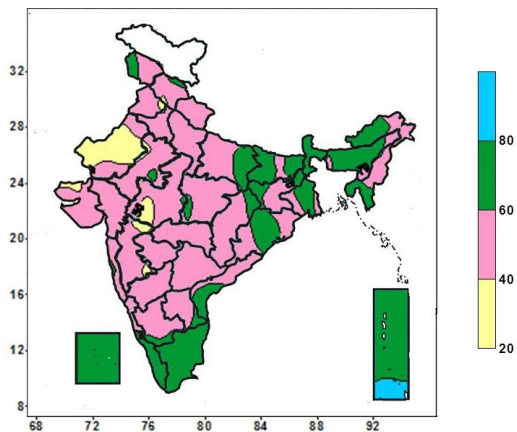
- 24 to 28 $^{\circ}\text{C}$ over many parts of Lakshadweep, some parts of Andaman & Nicobar Islands,
- 20 to 24 $^{\circ}\text{C}$ over many parts of Coastal Andhra Pradesh, Coastal Tamil Nadu, South Kerala, Andaman & Nicobar Islands, some parts of Rayalaseema.
- 12 to 20 $^{\circ}\text{C}$ over many parts of Rajasthan, East India (except Sikkim), Northeast India(except Manipur), West Madhya Pradesh, South Chhattisgarh, West India, Karnataka, Telengana, Rayalaseema, some parts of Coastal Andhra Pradesh, Kerala, Tamil Nadu.
- 4 to 12 $^{\circ}\text{C}$ over many parts of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh, Sikkim, East Madhya Pradesh, North Chhattisgarh, some parts of Rajasthan, West Madhya Pradesh, Bihar, Jharkhand, Nagaland, Gujarat.

Mean Minimum Temperature ($^{\circ}\text{C}$) Anomaly in India for the week ending 20.11.2013



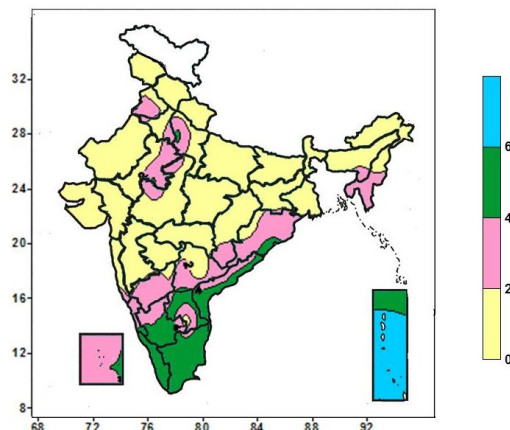
- 0 to 2 $^{\circ}\text{C}$ over many parts of Kerala, Tamil Nadu, Lakshadweep, Andaman & Nicobar Islands, some parts of Himachal Pradesh, West Rajasthan, Goa, Coastal Karnataka.
- -4 to 0 $^{\circ}\text{C}$ over entire country (except many parts of Kerala, Tamil Nadu, Lakshadweep, Andaman & Nicobar Islands, some parts of Himachal Pradesh, West Rajasthan, Odisha, Goa, Coastal Karnataka).
- -6 to -4 $^{\circ}\text{C}$ over some parts of Odisha.

Relative Humidity (%) over India for the week ending 20.11.2013



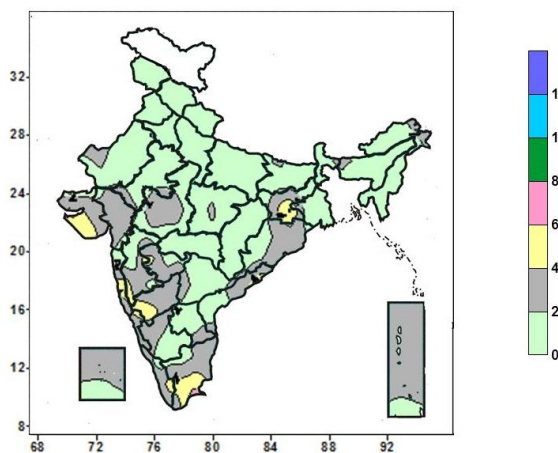
- 80 to 100% over some parts of Andaman & Nicobar Islands.
- 40 to 80% over entire country (except many parts of West Rajasthan, some parts of Himachal Pradesh, Punjab, East Rajasthan, Kutch, West Madhya Pradesh, Madhya Maharashtra, Andaman & Nicobar Islands).
- 20 to 40 % over many parts of West Rajasthan, some parts of Himachal Pradesh, Punjab, East Rajasthan, Kutch, West Madhya Pradesh, Madhya Maharashtra.

Cloud amount (okta) over India for the week ending 20.11.2013



- 4 to 8 okta over many parts of Coastal Andhra Pradesh, Rayalaseema, South Interior Karnataka, Kerala, Tamil Nadu, Andaman & Nicobar Islands, some parts of West Uttar Pradesh, Odisha, Coastal Karnataka, Lakshadweep Islands.
- 0 to 2 okta over entire country (except many parts of Coastal Andhra Pradesh, Rayalaseema, South Interior Karnataka, Kerala, Tamil Nadu, Andaman & Nicobar Islands, some parts of West Uttar Pradesh, Odisha, Coastal Karnataka, Lakshadweep Islands).

Wind speed (knots) over India for the week ending 20.11.2013



- 4 to 6 knots over some parts of Jharkhand, Saurashtra, Konkan & Goa, Madhya Maharashtra, North Interior Karnataka, Kerala, Tamil Nadu.
- 0 to 4 knots over entire country (except some parts of Jharkhand, Saurashtra, Konkan & Goa, Madhya Maharashtra, North Interior Karnataka, Kerala, Tamil Nadu).

Weather Forecast

Weather Forecast for next 3 days (upto 0830 hours IST of 25th November, 2013)

- Rain/thundershowers would occur at most places over coastal Andhra Pradesh.
- Rain/thundershowers would occur at many places over Andaman & Nicobar Islands during next 24 hrs. and most places thereafter.
- Rain/thundershowers would occur at isolated places over Tamilnadu & Puducherry during next 48 hours and at a few places thereafter.
- Rain/thundershowers would occur at a few places over Kerala.
- Rain/thundershowers would occur at a few places over Karnataka and isolated places over Marathawada, south Madhya Maharashtra and south Konkan & Goa from 23rd Nov.
- Rain/thundershowers would occur at a few places over Odisha during next 48 hrs and decrease thereafter.
- Rain/thundershowers would occur at isolated places over Telangana and Rayalaseema during next 24 hours and many places thereafter.
- Rain/thundershowers would occur at isolated places over South Chhattisgarh and Lakshadweep.
- Rain/snow would occur at isolated places over Jammu & Kashmir from 23rd Nov.
- Weather would be mainly dry/dry over rest of the country.
- No significant change in maximum and minimum temperatures over northwest adjoining central & east India.
- Fog/shallow fog would occur over Punjab Haryana and West Uttar Pradesh.

Weather Warning during next 3 days

22 November: Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) over North and adjoining South Coastal Andhra Pradesh. Isolated heavy to very heavy rainfall would occur over rest Andhra Pradesh.

Gale winds speed reaching 100-110 kmph gusting to 120 kmph would prevail along and off North and adjoining South Andhra Pradesh coast.

Squally winds speed reaching 55-65 kmph gusting to 75 kmph would prevail along and off rest Andhra Pradesh coast.

Sea conditions would be rough to very rough along and off central parts of Andhra Pradesh coast. It will be very rough to high along and off remaining parts of north Andhra Pradesh coast.

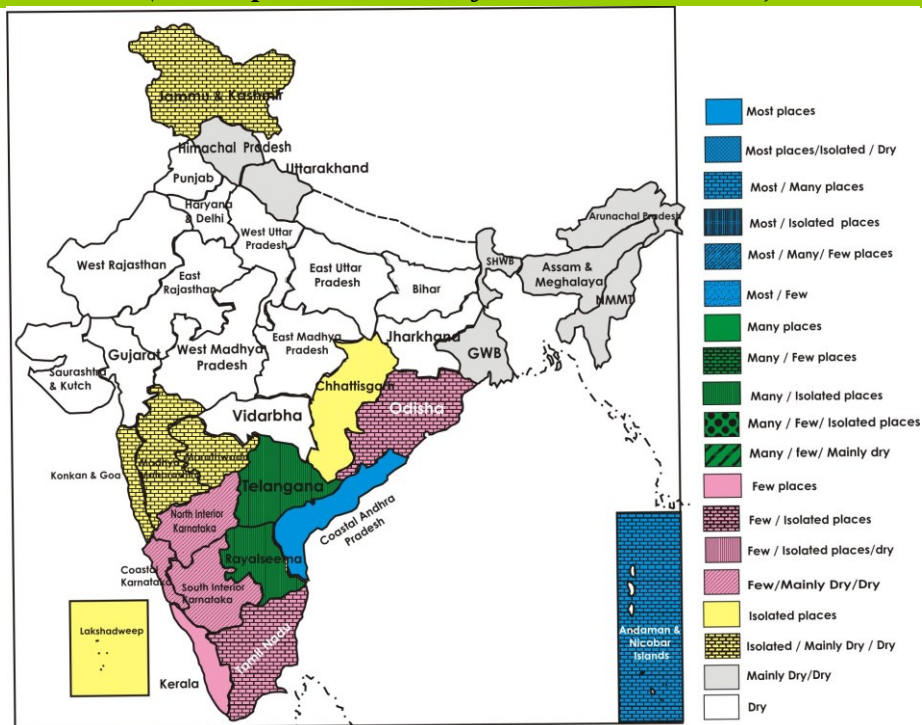
23 November: Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) over North and adjoining South Coastal Andhra Pradesh. Isolated heavy to very heavy rainfall would occur over rest Andhra Pradesh. Heavy to very heavy rainfall would occur at a few places over Andaman & Nicobar Islands.

24 November: Heavy to very heavy rainfall would occur at a few places over Andaman & Nicobar Islands.

Weather Outlook for subsequent 4 days from 25th to 29th November, 2013

- Rain/thundershowers would occur at most places over Andaman & Nicobar Islands with heavy to very heavy rainfalls.
- Rain/thundershowers would occur at many places over South Peninsular India and at a few places over North Peninsular India.
- Weather would be mainly dry/dry over rest of the country.

Weather Forecast Map (Valid upto 0830 hours of 25th November, 2013)



Salient Advisories

South Region:

- In Coastal Andhra Pradesh, as rain / thundershowers would occur at most places, along with heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) on 22nd and 23rd November,
 - postpone sowing of *rabi* pulses, postpone irrigation, intercultural operations and application of fertilizers and plant protection measures in standing crops. Arrange for drainage facilities to avoid water stagnation in the standing crop fields.
 - Postpone picking of cotton. Keep harvested crops in safe places.
 - Arrange for adequate drainage to remove excess water from rice fields and maintain 5-7 cm of water in rice fields. Provide adequate drainage channels in fields of sugarcane, red gram and cotton crops.
 - Arrange for mechanical support for banana crops, propping up in sugarcane and staking in vegetables to prevent lodging of crops due to high winds.
 - Keep animals indoor during the period.
 - Postpone sowing of maize and groundnut in North Coastal of Andhra Pradesh.
- Postpone sowing of *rabi* groundnut in Anantpur district and sowing of jowar, Bengal gram and sunflower in Kurnool district of Scarce Rainfall Zone of Andhra Pradesh.
- Continue planting of sugarcane; sowing of *rabi* bajra in the North East Transition Zone of Karnataka.
- Complete sowing of chick pea and continue harvesting of groundnut, onion, bajra and fodder maize in clear weather in the North Dry Zone of Karnataka.
- Continue harvesting of ginger and intercultural operations in the crops of coffee, pepper, cardamom, banana, arecanut and coconut in High altitude Zone of Kerala.
- Continue sowing of punja rice and planting of winter vegetables and land preparation and sowing of rice in the Problem Area Zone in Kerala. Undertake planting of banana in the Southern Zone of Kerala.
- Undertake sowing of groundnut, sunflower, chickpea and sesame in the North Western Zone of Tamil Nadu.

East Region:

- In East and South Eastern Coastal Plain Zone of Odisha, continue transplanting of cabbage, cauliflower and tomato, nursery raising of onion, garlic and sowing of mustard, groundnut, green pea, beans and cluster beans utilising the residual soil moisture.
- In North Eastern Coastal Plain Zone of Odisha, continue land preparation and sowing of mustard and groundnut in upland areas, nursery sowing of cole crops, brinjal and chilli utilising the residual soil moisture.
- In Laterite and Red Soil Zone of West Bengal, continue harvesting of matured *aman* rice. Continue transplanting of cabbage and cauliflower. After the harvest of *aman* rice, continue land preparation for planting of potato. Undertake land preparation and sowing for mustard.
- Undertake intercultural operations in 20-25 days old early sown crops like maize, sunflower, mustard and potato in North East Alluvial Plain Zone of Bihar. Continue harvesting of early matured rice crop, sugarcane and ginger. Undertake sowing of wheat and maize. Undertake intercultural operations in pigeon pea. Start transplanting of winter vegetables like cauliflower, cabbage, chillies, tomato, brinjal etc.
- In South Eastern Plateau Zone of Jharkhand continue sowing of chick pea and mustard, nursery raising and transplanting of winter vegetables like brinjal, cabbage, cauliflower, tomato, capsicum etc. followed by light irrigation. Continue nursery raising of onion. Undertake intercultural operations in toria and pigeon pea

Northeast Region:

- In Lower Brahmaputra Valley Zone of Assam, continue transplanting of brinjal, cauliflower, cabbage and knolkhol and land preparation and nursery sowing of onion and sowing of pumpkin, spinach and beet followed by light irrigation. Farmers are also advised to continue relay cropping of pea in the standing crop of rice about 15-25 days before harvesting.
- In Hill Zone of Assam, continue nursery raising of *boro* rice and transplanting of winter vegetables. Complete sowing of rapeseed and mustard. Continue land preparation and sowing of lentil and planting of potato. Apply light irrigation after sowing, transplanting and planting of crops.
- In Sub Tropical Hill Zone of Arunachal Pradesh, continue sowing of pea and planting of potato utilising the residual soil moisture. Complete sowing of mustard at the earliest. Apply light irrigation after sowing, transplanting and planting of crops
- In Meghalaya, continue transplanting of cauliflower and winter vegetables followed by light irrigation. Also continue harvesting of matured groundnut and matured *sali* rice. Cover space between rows with rice straw

mulch in rapeseed / mustard crop to conserve soil moisture.

- In Mild Tropical Hill Zone of Mizoram, continue transplanting of cole crops and tomato followed by light irrigation.
- In Sub Tropical Plain Zone of Manipur, complete transplanting of cole crops, continue sowing of rapeseed, mustard, pulses and pea and planting of potato. Continue land preparation for sowing of *rabi* maize. Undertake transplanting of 45-60 days old seedlings of onion. Apply light irrigation after sowing, transplanting and planting of crops.
- In Mild Tropical Hill Zone of Nagaland, continue transplanting of brocolli and tomato followed by light irrigation and harvesting of lowland rice.
- In Mid Tropical Plain Zone of Tripura, continue land preparation and planting of potato. Complete sowing of toria and lentil. Apply light irrigation after sowing, transplanting and planting of crops. Complete harvesting of *aman* rice. Apply light irrigation to cole crops and tomato.

West Region

- As dry weather would prevail over Vidarbha, continue intercultural operation, application of fertilizers in vegetables and orchards. Complete harvesting of already matured *kharif* rice. As there is no significant rain during last few weeks, apply irrigation to vegetable crops, early sown safflower and orchards. Complete sowing of gram utilizing residual moisture in Central Vidarbha Zone and continue sowing of gram and wheat (late sown) in Eastern Vidarbha Zone. Continue picking of fully opened cotton bolls during morning hours. Do not apply irrigation during boll bursting.
- In Madhya Maharashtra, continue intercultural operations and application of fertilizers in sugarcane, *rabi* jowar, maize and vegetable crops like onion, brinjal, tomato, okra and guar. As there is no significant rain during last few weeks, apply irrigation to sugarcane, vegetable crops and early sown jowar and maize. Complete harvesting of late maturing rice varieties during this week. Complete planting of pre seasonal sugarcane and sowing of irrigated gram and wheat. Continue harvesting of already matured *adsali* and pre-seasonal sugarcane. Undertake picking fully opened cotton bolls during morning hours in North Madhya Maharashtra. Do not apply irrigation during boll bursting. Undertake sowing of improved varieties of lentil, gram and linseed pulse in Western Ghat Region.
- In Marathwada, continue intercultural operations, application of fertilizers in vegetables, orchards and sugarcane. As there is no significant rain during last few weeks, apply irrigation to sugarcane, vegetable crops, early sown jowar, maize, safflower and orchards. Thinning and weeding may be done in early sown jowar. Continue harvesting of already matured *adsali* and pre-seasonal sugarcane. Continue picking fully opened cotton bolls during morning hours. Do not apply irrigation during boll bursting. As low minimum temperature prevailing in some pockets of the region, apply irrigation to banana orchards during night time.
- Undertake sowing of wheat, gram and spices and planting of potato followed by light irrigation in Middle Gujarat and North Gujarat Zone. Apply regular irrigation in castor in Middle Gujarat Zone and Bhal and Coastal Zone of Gujarat. Continue picking of cotton during morning hours in Middle Gujarat Zone.
- Complete sowing of wheat, cumin and coriander without delay in North Saurashtra Zone. Complete sowing of wheat in South Saurashtra Zone. Apply light irrigation after sowing of crops. Carry out picking of cotton during early morning hours.

Central Region

- In Satpura Plateau Zone of Madhya Pradesh, continue sowing of wheat, gram and mustard utilising the residual soil moisture.
- In Bundelkhand Zone of Madhya Pradesh, continue sowing of mixed crops of chickpea, mustard, lentil, pea and linseed and local and wheat. Undertake intercultural operation in vegetables.
- In Northern Hill Zone of Chattishgarh, continue sowing of wheat, gram and planting of potato and winter sugarcane utilising the residual soil moisture. Continue transplanting of cabbage, cauliflower, tomato and onion.
- In Chattisgarh Plain Zone, continue sowing of gram and undertake sowing of wheat and vegetable crops in upland area. Continue harvesting of rice.
- In Central Narmada Zone of Madhya Pradesh, vegetable crops are highly infested by sap sucking and leaf front cutting (feeding) insects. For control spray Chloropyriphos/Cipermetherin @ 0.5 ml/lit of water 3 sprays at the interval of 15 days or spray Trizophos @ 2 ml/lit of water.

North Region

- In Sub Tropical Zone of Jammu & Kashmir, continue sowing of wheat, pea, lentil and chickpea, mustard and transplanting of mature seedlings of cole crops like broccoli, lettuce, celery, cauliflower (snow ball), Chinese cabbage and tomato. Complete sowing of radish, carrot, garlic, peas, spinach and planting of potato without any further delay.
- In Valley Temperate Zone of Jammu & Kashmir, continue sowing of wheat and complete sowing of oat, lentil and pea. Continue sowing of spinach, methi, planting of garlic, and transplanting of onion seedlings.
- In Bhabar and Tarai Zone of Uttarakhand, complete sowing of wheat, barley, oat, berseem in mid and high hills, vegetable pea, pulses (viz. chickpea, pea, rajmah, lentil), coriander, spinach, radish, fenugreek etc. and planting of potato. Complete nursery raising of onion, tomato, cauliflower and planting of autumn sugarcane.
- In Hill Zone of Uttarakhand, continue sowing of wheat, barley, mustard, lentil, garlic and planting of onion and potato. Also undertake sowing of fodder jai.
- In Sub-Montane & Low Hills Sub-Tropical Zone and Mid Hills Sub-Humid Zone of Himachal Pradesh, continue sowing of wheat, barley and oat and continue nursery sowing of onion and cole crops.
- In Semi Arid Eastern Plain Zone of Rajasthan, continue transplanting of late cauliflower, mid cabbage, *rabi* onion and sowing of wheat, barley, cumin, ajwain, methi, isabgol, carrot, radish & garlic. In Southeastern Humid Plain Zone, continue sowing of wheat and gram.
- In Arid Western Plain Zone of Rajasthan, continue sowing of wheat, cumin, methi and Rijka in Jodhpur. In Bikaner division, continue land preparation for sowing of *rabi* crops viz. wheat, barley, gram etc. Apply light irrigation in the evening and arrange for smoking around the fields of standing crops to protect the crops from cold injury.
- In West Uttar Pradesh, continue sowing of wheat and gram in non-irrigated areas, sowing of pea, lentil, barley, potato and berseem and planting of winter season sugarcane and maize. Apply irrigation in toria and mustard.
- In Central Plain Zone of Uttar Pradesh, complete sowing of wheat upto 30th November and complete sowing of gram and planting of potato. Complete nursery sowing of onion upto 30th November. Apply light irrigation to wheat, vegetables, toria, arhar and early planted potato. Undertake intercultural operations in pea and mustard.
- In Central Plain Zone of Punjab complete sowing of timely sowing wheat varieties. Complete sowing of mustard crop. Undertake nursery sowing of *rabi* onion, tomato and sowing of garlic.
- In Delhi continue sowing of wheat with residual moisture. Also undertake sowing of oat, barseem for fodder, pea, lentil, carrot, radish, beetroot and turnip, nursery sowing of *rabi* onion and planting of late cultiverts of potato. Undertake transplanting of mature seedlings of cauliflower, cabbage, broccoli in raised beds. Transplanting of late marigold should be done in this week.
- In Eastern Zone of Haryana, continue sowing of wheat. Give irrigation to berseem and vegetable crops.

Detailed Zonewise Agromet Advisories

NORTH INDIA [Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh & Rajasthan]



Rice



Sugarcane



Field preparation / sowing of rabi crops



- **Realised Rainfall:** Weather remained mainly dry over the region during last week.
- **Weather Forecast:** Rain/snow would occur at isolated places over Jammu & Kashmir on 23rd November. Weather would be mainly dry/dry over rest of the region. No significant change in maximum and minimum temperatures over the region. Fog/shallow fog would occur over Punjab Haryana and West Uttar Pradesh.
- **Weather Warning:** Nil
- **Weather Outlook:** Weather would be mainly dry/dry over the region.
- **Advisory :**
 - In Sub Tropical Zone of Jammu & Kashmir, continue sowing of wheat, pea, lentil and chickpea, mustard and transplanting of mature seedlings of cole crops like broccoli, lettuce, celery, cauliflower (snow ball), Chinese cabbage and tomato. Complete sowing of radish, carrot, garlic, peas, spinach and planting of potato without any further delay.
 - In Intermediate Zone of Jammu & Kashmir, complete sowing of toria, gobhi sarson, continue sowing of wheat, oat, mustard, barley, field pea, gram, lentil, vegetables viz. radish, carrot, turnip, garlic, peas etc, planting of potato and transplanting of onion.
 - In Valley Temperate Zone of Jammu & Kashmir, continue sowing of wheat and complete sowing of oat, lentil and pea. Continue sowing of spinach, methi, planting of garlic, and transplanting of onion seedlings.
 - In Cold Arid Zone of Jammu Kashmir, undertake harvesting of Chinese cabbage, Palak, Pakchoi and Lettuce, direct seed sowing of Spinach, Turnip & Radish in greenhouses. Also cover the trenches and low tunnels with polythene in the night to avoid loss due to sudden temperature dip.
 - In Bhabar and Tarai Zone of Uttarakhand, complete sowing of wheat, barley, oat, berseem in mid and high hills, vegetable pea, pulses (viz. chickpea, pea, rajmah, lentil), coriander, spinach, radish, fenugreek etc. and planting of potato. Complete nursery raising of onion, tomato, cauliflower and planting of autumn sugarcane.
 - In Hill Zone of Uttarakhand, continue sowing of wheat, barley, mustard, lentil, garlic and planting of onion and potato. Also undertake sowing of fodder jai.
 - In Sub-Montane & Low Hills Sub-Tropical Zone and Mid Hills Sub-Humid Zone of Himachal Pradesh, continue sowing of wheat, barley and oat and continue nursery sowing of onion and cole crops.
 - In Flood Prone Eastern Plain Zone of Rajasthan, undertake sowing of wheat and barley. Continue sowing gram, lentil, planting of potato and late sowing varieties of mustard. Also undertake weeding and thinning operations in early sown mustard within 20-25 days after sowing.
 - In Semi Arid Eastern Plain Zone of Rajasthan, continue transplanting of late cauliflower, mid cabbage, rabi onion and sowing of wheat, barley, cumin, ajwain, methi, isabgol, carrot, radish & garlic. In Southeastern Humid Plain Zone, continue sowing of wheat and gram.
 - In Arid Western Plain Zone of Rajasthan, continue sowing of wheat, cumin, methi and Rijka in Jodhpur. In Bikaner division, continue land preparation for sowing of rabi crops viz. wheat, barley, gram etc. Apply light irrigation in the evening and arrange for smoking around the fields of standing crops to protect the crops from cold injury.
 - In Sub Humid Southern Plain and Aravali Hill Zone of Rajasthan, continue sowing of wheat, barley, mustard, gram and nursery raising of chilli, brinjal and tomato utilising the residual soil moisture.
 - In West Uttar Pradesh, continue sowing of wheat and gram in non-irrigated areas, sowing of pea, lentil, barley, potato and berseem and planting of winter season sugarcane and maize. Apply irrigation in toria and mustard.
 - In East Uttar Pradesh, continue sowing of wheat, mustard, pea, lentil, linseed, chickpea and planting of early potato utilising the residual soil moisture. Undertake the intercultural operations in maize.
 - In Central Plain Zone of Uttar Pradesh, complete sowing of wheat upto 30th November and complete sowing of gram and planting of potato. Complete nursery sowing of onion upto 30th November. Apply light irrigation to wheat, vegetables, toria, arhar and early planted potato. Undertake intercultural operations in pea and mustard.
 - In Western Zone of Punjab, complete sowing of wheat and field pea. Undertake sowing the nursery of rabi onion, tomato and chilli, Japanese white varieties of radish and spinach (Punjab Green).
 - In Western Plain Zone of Punjab, continue sowing of wheat and complete it upto last week of this month. Undertake nursery sowing of onion and tomato. Continue picking of cotton bolls.

- In Central Plain Zone of Punjab complete sowing of timely sowing wheat varieties. Complete sowing of mustard crop. Undertake nursery sowing of *rabi* onion, tomato and sowing of garlic.
 - In Delhi continue sowing of wheat with residual moisture. Also undertake sowing of oat, barseem for fodder, pea, lentil, carrot, radish, beetroot and turnip, nursery sowing of *rabi* onion and planting of late cultiverts of potato. Undertake transplanting of mature seedlings of cauliflower, cabbage, broccoli in raised beds. Transplanting of late marigold should be done in this week.
 - In Eastern Zone of Haryana, continue sowing of wheat. Give irrigation to berseem and vegetable crops.
 - In Western Zone of Haryana, continue sowing of wheat and picking of cotton bolls. Complete sowing of mustard and berseem.
 - In Mid Hills Sub-Humid Zone of Himachal Pradesh, present weather is favourable for occurrence of canker disease in apple. Spray Copper Oxychloride 600 g per 200 liters of water or carbendazim 10 g per litre of water for its control.
 - In Arid Western Plain Zone of Rajasthan (Bikaner), due to high humidity in atmosphere, there are chances of attack of saw fly or painted bug in mustard. Apply dusting with methyl parathion @ 25 kg/ha to control these insect pests. In Flood Prone Eastern Plain Zone of Rajasthan, present weather conditions are favourable for weevil, painted bug and saw fly. Look for damaged mustard seedlings and dust 1.5% Quinalphos to control it.
 - Stages of major crops are mentioned in Annexure I.
 - Varieties are mentioned in Annexure III.
- **Apiculture**
 - In Sub Montane & Low Hills Sub-Tropical Zone and Mid Hills Sub-Humid Zone of Himachal Pradesh, give winter packing immediately to bee colonies. Check the colonies for nectar and give artificial food to honey bees as there is scarcity of flowers during these days and keep colonies in sun on clear day.
 - **Animal Husbandry**
 - In Cold Arid Zone of Jammu Kashmir, keep the animals inside the shelter during night to protect it from cold. Additional concentrate feed must be given during these days such as wheat bran, barley and gur.
 - In Hill Zone of Uttarakhand, spread dry leaves of pine tree and other trees inside cattle shed. Keep small animals covered in morning and evening time to protect from cold.
 - In Bhabar and Tarai Zone of Uttarakhand, farmers are advised to keep animals inside the shed during night time. Put rice straw in the floor of animal sheds for warmth. Keep down curtains in Poultry Farm in the night for safety of birds from these cold weather conditions.
 - In Western Plain Zone of Punjab vaccination should be done for prevention of Gal Ghotu and Foot and Mouth disease. Regularly deworm the calves with piperazine liquid (4 ml/kg body weight) first at 15 days of age, then 7 days later twice and then on 3 months of age and then 3 months after upto 1 year of age.
 - In Mid Hills Sub-Humid Zone of Himachal Pradesh occurrence of tick infestation is observed in grazing animals. For control, apply ectoparasiticide like Cypermethrin (10%w/v) @ 2-3 ml per litres of water on animal body. Spray this drug @ 5ml per litres of water in cattle sheds.

CENTRAL INDIA [M.P., CHHATTISGARH]



Sugarcane



Field preparation / sowing for rabi crops

- **Realised Rainfall:** Mainly dry weather prevailed over the region during last week.
- **Weather forecast:** Rain/thundershowers would occur at isolated places over south Chattisgarh. Weather would be mainly dry/dry over the region. No significant change in minimum and maximum temperatures over the region.
- **Weather Warning:** Nil
- **Weather Outlook:** Weather would be mainly dry/dry over the region.
- **Advisories:**
 - In Satpura Plateau Zone of Madhya Pradesh, continue sowing of wheat, gram and mustard utilising the residual soil moisture.
 - In Kymore Plateau and Satpura Hill Zone of Madhya Pradesh, continue sowing of gram, linseed, mustard, lentil and toria and planting of potato. Continue nursery for cabbage, cauliflower and onion. Apply irrigation in tomato and brinjal and harvest the matured fruits.
 - In Bundelkhand Zone of Madhya Pradesh, continue sowing of mixed crops of chickpea, mustard, lentil, pea and linseed and local and wheat. Undertake intercropping operation in vegetables.

- In Central Narmada Valley Zone and Jhabua Hill Zone of Madhya Pradesh, complete sowing of wheat under semi-irrigated condition and continue sowing under irrigated condition upto 25th November. Continue sowing of safflower and linseed in rainfed condition and planting of potato. Continue sowing of mustard. Apply irrigation in early sown wheat at CRI stage and top dressing with nitrogenous fertilizer.
- In Vindhya Plateau zone of Madhya Pradesh, continue sowing of wheat, lentil, gram and winter season sugarcane. Continue nursery preparation for planting of cabbage, cauliflower and vegetables. Undertake transplanting of onion.
- In Gird Zone and Malwa Plateau Zone of Madhya Pradesh, continue sowing of gram and planting of potato and winter vegetables.
- In Northern Hill Zone of Chattishgarh, continue sowing of wheat, gram and planting of potato and winter sugarcane utilising the residual soil moisture. Continue transplanting of cabbage, cauliflower, tomato and onion.
- In Chattisgarh Plain Zone, continue sowing of gram and undertake sowing of wheat and vegetable crops in upland area. Continue harvesting of rice.
- In Bundelkhand Zone of Madhya Pradesh, fruit borer attack is observed in tomato and brinjal, spray Trizophos 40 E.C. 2 mm per one litre of water.
- In Jhabua Hill Zone of Madhya Pradesh, for control of sucking pests in cotton and vegetables, spray Thiomithaxim / Acetameprid @ 0.3 gm/liter of water. Also for control of stem & fruit borer in brinjal, tomato & okra, spray Trizofos @ 30 ml/pump (15 l. tank).
- In Central Narmada Zone of Madhya Pradesh, vegetable crops are highly infested by sap sucking and leaf front cutting (feeding) insects. For control spray Chloropyriphos/Cipermetherin @ 0.5 ml/lit of water 3 sprays at the interval of 15 days or spray Trizophos @ 2 ml/lit of water.
- Stages of major crops are mentioned in Annexure I.
- Varieties are mentioned in Annexure III

● ANIMAL HUSBANDRY & POULTRY

- In Jhabua Hills Zone of Madhya Pradesh, vaccinate the catles against H.S., B.Q. and FMD diseases and also deworming in cattles and goats. Use potassium permanganate @ 5 ml per liter of water for infected animals.

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



Rice

Sugarcane

Field preparation /
sowing for rabi crops

Cole crops

Onion

- **Realised Rainfall:** Dry weather prevailed over the states of the region during last week.
- **Weather Forecast:** Rain/thundershowers would occur at a few places over Odisha during next 48 hours and decrease thereafter. Weather would be mainly dry / dry over the States of the region. No significant change in minimum temperature over the region.
- **Weather Warning:** Nil.
- **Weather Outlook:** Weather would be mainly dry / dry over the States of the region.
- **Advisories:**
 - In East and South Eastern Coastal Plain Zone of Odisha, continue transplanting of cabbage, cauliflower and tomato, nursery raising of onion, garlic and sowing of mustard, groundnut, green pea, beans and cluster beans utilising the residual soil moisture.
 - In North Eastern Plateau Zone of Odisha, continue sowing of wheat, toria, groundnut and sunflower and planting of potato utilising the residual soil moisture.
 - In North Eastern Coastal Plain Zone of Odisha, continue land preparation and sowing of mustard and groundnut in upland areas, nursery sowing of cole crops, brinjal and chilli utilising the residual soil moisture.
 - In Laterite and Red Soil Zone of West Bengal, continue harvesting of matured *aman* rice. Continue transplanting of cabbage and cauliflower. After the harvest of *aman* rice, continue land preparation for planting of potato. Undertake land preparation and sowing for mustard.
 - In New Alluvial Zone of West Bengal, continue harvesting of *aman* rice. After harvesting of *aman* rice prepare the field and undertake sowing of mustard utilizing the residual soil moisture. Also continue transplanting of cauliflower, cabbage, tomato and brinjal.
 - In Coastal Saline Zone of West Bengal, continue harvesting of *aman* rice. After harvesting of *aman* rice prepare land and undertake sowing of lentil, transplanting of cabbage, cauliflower and tomato and planting of potato and

- onion utilising the residual soil moisture.
 - In Old Alluvial Zone and Terai Zone of West Bengal, continue sowing of wheat and mustard and planting of potato utilizing the residual soil moisture.
 - In North West Alluvial Plain Zone of Bihar, continue harvesting of matured rice. Continue sowing of pea, lentil, gram, rajmah and planting of potato. Continue sowing of wheat and *rabi* maize. Apply light irrigation after sowing or planting of crops.
 - Undertake intercultural operations in 20-25 days old early sown crops like maize, sunflower, mustard and potato in North East Alluvial Plain Zone of Bihar. Continue harvesting of early matured rice crop, sugarcane and ginger. Undertake sowing of wheat and maize. Undertake intercultural operations in pigeon pea. Start transplanting of winter vegetables like cauliflower, cabbage, chillies, tomato, brinjal etc.
 - In South Bihar Alluvial Zone, complete sowing of winter maize, sunflower, mustard, linseed, vegetable pea etc. and planting of potato and continue transplanting of cauliflower and nursery raising of late variety of cauliflower. Continue sowing of fodder crop like barseem, lucern and oat. Apply light irrigation after sowing, transplanting or planting of crops.
 - In Western Plateau Zone of Jharkhand continue sowing of pea, green pea, mustard, gram, wheat, linseed and lentil and planting of potato followed by light irrigation.
 - In South Eastern Plateau Zone of Jharkhand continue sowing of chick pea and mustard, nursery raising and transplanting of winter vegetables like brinjal, cabbage, cauliflower, tomato, capsicum etc. followed by light irrigation. Continue nursery raising of onion. Undertake intercultural operations in toria and pigeon pea.
 - In Central & North Eastern Plateau Zone of Jharkhand, continue sowing of green pea, mustard, gram, wheat, lentil and onion. Apply light irrigation after sowing or planting of crops. Undertake intercultural operations in early planted potato
 - In Laterite and Red Soil Zone, New Alluvial Zone and Old Alluvial Zone of West Bengal, BPH may become severe in late transplanted *aman* rice. To control, apply Diclorovos or Carbaryl @ 1 ml per litre of water. In the present weather condition there is a chance of attack of fungal root rot disease in brinjal and tomato. Before transplanting dip the roots of seedling to the solution of Carbendazim 12% + Mancozeb 63% @ mixture (2 g per litre of water).
 - In Mid Central Table Land Zone of Odisha, there is chance of red rot disease in sugarcane at grand growth stage. Bunding of affected fields should be done to avoid movement of water from affected field to non-affected fields. Destroy trashes from the infected plants by burning and spray Carbendazim @ 2 g / litre of water. Severely affected plants or canes should be uprooted and destroyed.
 - In Kendrapara, Nayagarh and Khurda districts of East and South Eastern Coastal Plain Zone of Odisha, cutworm is found in rice. Spray 2 ml Chloropyriphos in 1 litre water during afternoon on a non rainy day. Apply Chloropyriphos dust around the bund to prevent the entry of caterpillar to the unaffected field in the early morning. To control Gundhi bug infestation in the late planted medium duration rice at milking stage, dust 10 kg Malathion using duster or spray 200 ml DDVP/acre on a non rainy day.
 - Stages of major crops are mentioned in Annexure I.
 - Varieties are mentioned in Annexure III.
- **Animal Husbandry**
 - Farmers in Central & North Eastern Plateau Zone of Jharkhand are advised to give tetracycline medicine in water to goats to prevent pneumonia.

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



Sugarcane



Rice



Field preparation/ sowing of rabi crops



cole crops

- **Realised Rainfall:** Dry weather prevailed over the States of the region during last week.
- **Weather Forecast:** Weather would be mainly dry / dry over the States of the region.
- **Weather Warning:** Nil.
- **Weather Outlook:** Weather would be mainly dry / dry over the States of the region.
- **Advisories:**
 - In Lower Brahmaputra Valley Zone of Assam, continue transplanting of brinjal, cauliflower, cabbage and knolkhol and land preparation and nursery sowing of onion and sowing of pumpkin, spinach and beet followed by light irrigation. Farmers are also advised to continue relay cropping of pea in the standing crop of rice about 15-25 days before harvesting.

- In Central Brahmaputra Valley Zone of Assam, continue sowing of rapeseed, mustard and wheat, transplanting of the seedlings of cole crops, which are 30-35 days old and planting of potato followed by light irrigation. Undertake harvesting of matured *sali* rice immediately and undertake land preparation and sowing of *rabi* pulses.
 - In Hill Zone of Assam, continue nursery raising of *boro* rice and transplanting of winter vegetables. Complete sowing of rapeseed and mustard. Continue land preparation and sowing of lentil and planting of potato. Apply light irrigation after sowing, transplanting and planting of crops.
 - In North Bank Plain Zone of Assam, continue planting of potato. Complete sowing of rapeseed and mustard at the earliest. Apply light irrigation after sowing, transplanting and planting of crops.
 - In Sub Tropical Hill Zone of Arunachal Pradesh, continue sowing of pea and planting of potato utilising the residual soil moisture. Complete sowing of mustard at the earliest. Apply light irrigation after sowing, transplanting and planting of crops.
 - In Meghalaya, continue transplanting of cauliflower and winter vegetables followed by light irrigation. Also continue harvesting of matured groundnut and matured *sali* rice. Cover space between rows with rice straw mulch in rapeseed / mustard crop to conserve soil moisture.
 - In Sub Tropical Plain Zone of Manipur, complete transplanting of cole crops, continue sowing of rapeseed, mustard, pulses and pea and planting of potato. Continue land preparation for sowing of *rabi* maize. Undertake transplanting of 45-60 days old seedlings of onion. Apply light irrigation after sowing, transplanting and planting of crops.
 - In Mild Tropical Hill Zone of Mizoram, continue transplanting of cole crops and tomato followed by light irrigation.
 - In Mild Tropical Hill Zone of Nagaland, continue transplanting of brocolli and tomato followed by light irrigation and harvesting of lowland rice.
 - In Mid Tropical Plain Zone of Tripura, continue land preparation and planting of potato. Complete sowing of toria and lentil. Apply light irrigation after sowing, transplanting and planting of crops. Complete harvesting of *aman* rice. Apply light irrigation to cole crops and tomato.
 - In Mid Tropical Plain Zone of Tripura, sudden reduction of soil moisture increase the chances of fruit cracking in banana; farmers are advised to provide proper mulching and nutrient management especially boron.
 - Stages of major crops are mentioned in Annexure I.
 - Varieties are mentioned in Annexure III.
- **Animal Husbandry**
 - In Sub Tropical Hill Zone of Arunachal Pradesh, maintain warmth by lighting with filament bulb in the shed of poultry, pigs and cattle.
 - In Mizoram, cover or tie cattle with gunny bag during night to avoid cold. Also cover poultry house with gunny bags / polythene sheet and provide the heating during night for chicks less than 21 days old.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]



Field preparation / sowing of rabi crops

Sugarcane

Cotton

- **Realised Rainfall:** Mainly dry / dry weather prevailed over the states in the region during last week.
- **Weather Forecast:** Rain/thundershowers would occur at isolated places over Marathwada, south Madhya Maharashtra and south Konkan and Goa from 23rd November. Weather would be mainly dry / dry over the states of the region.
- **Weather Warning:** Nil.
- **Weather Outlook:** Rain/thundershowers would occur at few places over north peninsular India. Weather would be mainly dry / dry over Gujarat State.
- **Advisories:**
 - As mainly dry weather would prevail over Konkan region of Maharashtra, continue intercultural operations and application of fertilizers in vegetable fields and mango, cashew and sapota orchards. Continue sowing of short duration crops like cowpea, *wal* and *kulthi* utilizing residual moisture in the harvested rice field on '*vapsa*' condition and sowing of watermelon variety 'Sugar baby' on one side of ridges with a spacing of 4 x 1 m. Prepare raised nursery beds for sowing of chilli, brinjal, cabbage, knol-khol and prepare field for sowing of *rabi* groundnut.

- As dry weather would prevail over Vidarbha, continue intercultural operation, application of fertilizers in vegetables and orchards. Complete harvesting of already matured *kharif* rice. As there is no significant rain during last few weeks, apply irrigation to vegetable crops, early sown safflower and orchards. Complete sowing of gram utilizing residual moisture in Central Vidarbha Zone and continue sowing of gram and wheat (late sown) in Eastern Vidarbha Zone. Continue picking of fully opened cotton bolls during morning hours. Do not apply irrigation during boll bursting.
- As dry weather would prevail over Madhya Maharashtra, continue intercultural operations and application of fertilizers in sugarcane, *rabi* jowar, maize and vegetable crops like onion, brinjal, tomato, okra and guar. As there is no significant rain during last few weeks, apply irrigation to sugarcane, vegetable crops and early sown jowar and maize. Complete harvesting of late maturing rice varieties during this week. Complete planting of pre seasonal sugarcane and sowing of irrigated gram and wheat. Continue harvesting of already matured *adsali* and pre-seasonal sugarcane. Undertake picking fully opened cotton bolls during morning hours in North Madhya Maharashtra. Do not apply irrigation during boll bursting. Undertake sowing of improved varieties of lentil, gram and linseed pulse in Western Ghat Region.
- As dry weather would prevail over Marathwada, continue intercultural operations, application of fertilizers in vegetables, orchards and sugarcane. As there is no significant rain during last few weeks, apply irrigation to sugarcane, vegetable crops, early sown jowar, maize, safflower and orchards. Thinning and weeding may be done in early sown jowar. Continue harvesting of already matured *adsali* and pre-seasonal sugarcane. Continue picking fully opened cotton bolls during morning hours. Do not apply irrigation during boll bursting. As low minimum temperature prevailing in some pockets of the region, apply irrigation to banana orchards during night time.
- Undertake sowing of wheat, gram and spices and planting of potato followed by light irrigation in Middle Gujarat and North Gujarat Zone. Apply regular irrigation in castor in Middle Gujarat Zone and Bhal and Coastal Zone of Gujarat. Continue picking of cotton during morning hours in Middle Gujarat Zone.
- In Bhal and Coastal Zone of Gujarat, complete sowing of wheat, gram, cumin and mustard, followed by light irrigation as early as possible.
- In North Gujarat Zone, apply irrigation in mustard, castor and vegetable crops in the evening. Continue sowing of gram followed by light irrigation in South Gujarat Zone.
- Complete sowing of mustard in South Gujarat Heavy Rainfall Zone. Continue sowing of chickpea, onion and transplanting of cauliflower. Apply irrigation in early sown crops and apply split doze of nitrogen followed by hand weeding and intercultural operations.
- Complete sowing of wheat, cumin and coriander without delay in North Saurashtra Zone. Complete sowing of wheat in South Saurashtra Zone. Apply light irrigation after sowing of crops. Carry out picking of cotton during early morning hours.
- There may be attack of pod borer on red gram in East Vidarbha Zone; spray Quinalphos 25% @ 16 ml per 10 litres of water.
- Prevailing foggy weather condition during morning hours in Pune region is favourable for infestation of blight (sigatoka) in banana, spray Diathane-M-45@ 25g or Carbendazim @ 10 g per 10 liter of water.
- Stages of major crops are mentioned in Annexure I.
- Varieties are mentioned in Annexure III.

• Animal Husbandry

- In Gujarat, keep the animal sheds clean to avoid the spread of ticks, flies, mosquitoes etc.

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



Rice



Sugarcane



Transplanting of rice

- **Realized rainfall:** Significant rainfall occurred in most of the districts in Kerala except Kannur, Kasaragod, Palakkad and Wynad; Nellore district in Coastal Andhra Pradesh; Chittoor district in Rayalaseema; Chamarajnagar district in South Interior Karnataka; most of the districts in Tamil Nadu except Madurai, Dindigul, Pudukkottai, Ramanathapuram, Sivaganga, Theni and Virudhunagar. No significant rainfall occurred in the remaining parts of the region.
- **Weather Forecast:** Rain/thundershowers would occur at most places over coastal Andhra Pradesh; isolated places over Tamilnadu & Puducherry during next 48 hours and at a few places thereafter; few places over Kerala; few places over Karnataka from 23rd onwards; isolated places over Telangana and Rayalaseema during next 24 hours and many places thereafter.
- **Weather Warning:**

- **22nd November:** Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) over north and adjoining south coastal Andhra Pradesh. Isolated heavy to very heavy rainfall would occur over rest Andhra Pradesh.
Gale winds speed reaching 100-110kmph gusting to 120 kmph would prevail along and off north and adjoining south Andhra Pradesh coast.
Squally winds speed reaching 55-65kmph gusting to 75 kmph would prevail along and off rest Andhra Pradesh coast.
- Sea conditions would be rough to very rough along and off central parts of Andhra Pradesh coast. It will be very rough to high along and off remaining parts of north Andhra Pradesh coast.
- **23rd November:** Heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) over north and adjoining south coastal Andhra Pradesh. Isolated heavy to very heavy rainfall would occur over rest Andhra Pradesh.
- Heavy to very heavy rainfall would occur at a few places over Andaman and Nicobar islands on 23rd & 24th.
- **Weather Outlook (25th-29th November):** Rain/thundershowers would occur at many places over south peninsular India and at a few places over north peninsular India.
- **Advisory:**
 - **In Coastal Andhra Pradesh,** as rain / thundershowers is likely to occur at most places, along with heavy to very heavy rainfall would occur at a few places with isolated extremely heavy falls (25cm or more) on 22nd and 23rd November,
 - postpone sowing of *rabi* pulses, intercultural operations and application of fertilizers and plant protection measures. Arrange for drainage facilities to avoid water stagnation in the standing crop fields.
 - Postpone picking of cotton. Keep harvested crops in safe places.
 - Arrange for adequate drainage to remove excess water from rice fields and maintain 5-7 cm of water in rice fields. Provide adequate drainage channels in fields of sugarcane, red gram and cotton crops.
 - Arrange for mechanical support for banana crops, propping up in sugarcane and staking in vegetables to prevent lodging of crops due to high winds.
 - Keep animals indoor during the period.
 - Postpone sowing of *rabi* groundnut in Anantpur district and sowing of jowar, bengal gram and sunflower in Kurnool district of Scarce Rainfall Zone of Andhra Pradesh.
 - Postpone sowing of maize and groundnut in North Coastal, South Telangana region and sowing of *rabi* crops like groundnut, pulses and maize in Northern Telangana Zone of Andhra Pradesh.
 - Continue planting of sugarcane; sowing of *rabi* bajra in the North East Transition Zone of Karnataka.
 - Complete sowing of chick pea and continue harvesting of groundnut, onion, bajra and fodder maize in clear weather in the North Dry Zone of Karnataka.
 - Continue harvesting of ginger and intercultural operations in the crops of coffee, pepper, cardamom, banana, arecanut and coconut in High altitude Zone of Kerala.
 - Continue sowing of punja rice and planting of winter vegetables and land preparation and sowing of rice in the Problem Area Zone in Kerala. Undertake planting of banana in the Southern Zone of Kerala.
 - Provide adequate drainage facilities to drain off excess rain water from rainfed crops and samba/thaladi paddy fields to improve better aeration in the root Zone in the Cauvery Delta Zone of Tamil Nadu.
 - Undertake sowing of groundnut, sunflower, chickpea and sesame in the North Western Zone of Tamil Nadu.
 - Prevailing weather situation is congenial for leaf blight incidence in coconut, leaf spot in turmeric crop and sigatoka leaf spot in banana in the Western Zone of Tamil Nadu. Monitor the crops and undertake plant protection measures if noticed.
 - Prevailing weather conditions are congenial for incidence of wilt, leaf spot and grey mildew in cotton in the Southern Telangana zone of Andhra Pradesh. To control wilt drench the soil with Copper Oxy Chloride @ 3 g per litre of water, Leaf spot spray Copper-Oxy-Chloride @ 30 g and Plantomycin @ 1 g per 10 litres of water and Grey mildew spray wettable Sulphur @ 3 g per litre of water after after current spells of heavy rain.
 - Stages of major crops are mentioned in Annexure I.
 - Varieties are mentioned in Annexure III.
- **Animal Husbandry**
 - In North Coastal Tamil Nadu, protect the young calves, lambs, kids and piglets from chillness by providing side wall curtains, provide additional lightings and bedding materials to protect from cold shock. Avoid stagnation of water nearby animal shed to protect animals from vector borne diseases. Feed ingredients should be stored in damp proof areas to avoid aflatoxin and other micotoxins developments.
 - Control FMD in cattle by local medicine and vaccination in the Western Zone of Tamil Nadu
 - Protect buffaloes and cattle from foot and mouth disease by periodic vaccination and sheep & goat from Blue tongue disease by giving antibiotics and tonics like Enrofaccin @10 ml per animal in the Scarce Rainfall Zone of Andhra Pradesh.

Stages of Major Crops

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

- Wheat, barley, oat, (sowing), early peas, gobhi sarson (early vegetative / germination), cauliflower (transplanting), cucurbits viz. khira, bitter gourd, tori (fruiting/maturity), radish, carrot, turnip, beet leaf and fenugreek (direct sowing), onion (planting), apple (harvesting) in Himachal Pradesh.
- Wheat, barley, oat, berseem (sowing), ginger (vegetative), sugarcane (vegetative / active vegetative), sesame in low land area (early vegetative / vegetative), vegetable pea (sowing / germination), toria, chickpea (sowing/germination), tomato (transplanting), potato (planting / transplanting), Autumn sugarcane (planting), sarson, masoor (field preparation /sowing), coriander, spinach, radish, fenugreek (sowing/germination) in Uttarakhand.
- Rice (harvesting), wheat, barley (sowing), toria, gobi sarson, mustard (sowing /germination), brown sarson, oat, lentil, berseem, gram, field pea (sowing / germination), potato (planting), palak, radish, carrot, turnip, garlic, methi, spinach (sowing / germination), pole type beans (vegetative), radish, spinach (transplanting / early vegetative), carrot, turnip (sowing), onion, cole crops (nursery sowing / transplanting), fruit crops (planting) in Jammu & Kashmir.
- Wheat, barley (sowing), lentil (sowing), sesame (capsule maturity/harvesting), rainfed taramira, toria, gram and mustard, potato (sowing/seedling), tomato, brinjal, chilli (nursery sowing / transplanting), Shimla mirch (early vegetative / vegetative), new sugarcane (early vegetative / vegetative), castor (flowering), cucurbits (sowing), radish, Desi carrot (sowing), cabbage and cauliflower (nursery sowing/transplanting), onion (nursery raising/ transplanting), cumin, Ajwain, methi, Isabgol (sowing) in Rajasthan.
- wheat (sowing), oats, barseem (sowing), brinjal, tomato, early (cauliflower and cabbage) (vegetative / flowering), cauliflower, cabbage, broccoli and tomato (transplanting), early radish, spinach and coriander (vegetative), Sarson Saag, Bathua, radish, spinach, fenugreek, coriander and turnip (sowing), guar, bajra (flowering / grain filling), rabi onion (nursery sowing), mustard, gram, pea, carrot, garlic (sowing), oat, barseem (sowing) in Delhi.
- Jowar, bajra, (grain filling/maturity), pigeon pea (vegetative/branching), rice (maturity/harvesting), groundnut (pod formation / maturity), arhar, moong and urad (vegetative/ branching), tomato, brinjal, chilli (fruiting/picking), black gram, green gram (flowering/pod formation), spring sugarcane (active vegetative/grand growth), toria, potato (sprouting/early vegetative) in Uttar Pradesh.
- New sugarcane (tillering / vegetative), cotton (picking), cucurbits, cowpea (sowing), rice (grain formation / harvesting), black gram, green gram, soybean, arhar (vegetative/pod formation), moong, mash (vegetative) maize (cob formation / cob maturity) sesamum (vegetative), cauliflower (transplanting), potato (planting) in Punjab.
- New sugarcane (vegetative), cotton (picking), rice (grain formation/maturity) in Haryana.

CENTRAL INDIA [M.P., CHHATTISGARH]

- *Kharif* rice (grain maturity/harvesting), *Kharif* onion (maturity/harvesting), arhar (pod maturity/ harvesting), groundnut (pod formation/ maturity), sugarcane (grand growth), winter sugarcane (planting), vegetables (flowering/ fruiting), wheat, safflower, mustard, gram and linseed (sowing/germination) , potato ,onion (planting) in Madhya Pradesh.
- Sugarcane (elongation), *kharif* rice (grain maturity/harvesting), jowar, (grain formation), groundnut (pod formation/ maturity), ragi and kodo millet (vegetative), ginger, turmeric, papaya (vegetative), onion (vegetative), vegetable crops (flowering/ fruiting), wheat, safflower and gram (sowing) ,potato, onion (planting) in Chhattisgarh.

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

- *Kharif* rice (harvesting), sugarcane (harvesting), ginger (harvesting), onion (transplanting), yam (tuber development/harvesting), arhar (vegetative), winter maize, sunflower, mustard, toria, pea, lentil, gram, rajmah (sowing), cauliflower, cabbage, chilli, tomato, brinjal (transplanting) in Bihar.
- *Kharif* rice (harvesting), maize (harvesting), urad, marua (harvesting), arhar (vegetative / flowering), groundnut (grain maturity), onion (vegetative), ginger and turmeric (rhizome maturity/harvesting), *kharif* vegetables viz. bhindi, bean, French bean (flowering / fruiting), tomato, cauliflower, cabbage (nursery sowing / transplanting), niger, horse gram (harvesting), sweet potato (stem elongation), potato (vegetative), green peas, bell pepper (sowing) in Jharkhand.
- Rice (grain maturity / harvesting), pigeon pea (pod formation / pod maturity), turmeric, ginger, yam (rhizome formation), *rabi* vegetables (transplanting), sugarcane (grand growth), banana (vegetative), mustard (sowing / seedling), wheat, sesame, groundnut, cluster bean, green pea (sowing) in Odisha.
- *Aman* rice (maturity / harvesting), ginger, turmeric (rhizome formation), tomato, brinjal (nursery sowing / transplanting), cabbage and cauliflower (transplanting), wheat, mustard (sowing), potato (planting), winter flower (seedbed preparation) in West Bengal.
- **Ginger** (vegetative), large cardamom (secondary flowering), *kharif* vegetables (vegetative) in Sikkim

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

- *Boro* rice (nursery raising), sugarcane (Autumn) (active vegetative), *sali* rice (grain maturity/ harvesting), rapeseed and mustard (sowing / early vegetative), *rabi* pulses like lentil, rajmah, pea, lathyrus etc. (sowing), cauliflower, cabbage, knol-khol, brinjal (vegetative/ flowering /fruiting), wheat, niger (sowing/early vegetative), winter vegetables (transplanting/ early vegetative), potato (planting/vegetative), bottle gourd, pumpkin (sowing) in Assam.
- Regular WRC rice (grain maturity / harvesting), cauliflower, cabbage, broccoli and kholkhol (vegetative), radish, (maturity / harvesting), spinach, carrot (vegetative), mustard (sowing / vegetative), pea (sowing / early vegetative), winter maize (vegetative) and potato (planting / early vegetative) in Arunachal Pradesh.
- Rapeseed and mustard, pea, pulses (sowing), *rabi* vegetables, cole crops (early vegetative/ vegetative), potato (planting), onion (transplanting) in Manipur.
- *Sali* rice (grain maturity / harvesting), groundnut (pod maturity / harvesting), potato (vegetative), rapeseed and mustard (vegetative), cauliflower and other winter vegetables (transplanting) in Meghalaya.
- Ginger and turmeric (vegetative / rhizome formation), banana (fruiting / maturity / harvesting), cole crops (transplanting) in Mizoram.
- Lowland rice (grain maturity / harvesting), maize (vegetative), mustard (early vegetative), potato, *rajama* (early vegetative), cabbage, broccoli (transplanting/ vegetative), tomato (transplanting / early vegetative) in Nagaland.
- *Rabi* maize (seedling), toria, lentil (sowing), potato (planting), winter vegetables (transplanting), banana (vegetative / fruiting / harvesting), cole crops, tomato, brinjal and radish (vegetative) in Tripura.

WEST INDIA [GOA, MAHARASHTRA, GUJARAT]

- *Kharif* rice (harvesting in late maturing varieties in Konkan, Kolhapur, Nasik (ghat), Pune (west) region and East Vidarbha), cotton (boll maturity / picking in Madhya Maharashtra, Marathwada and Vidarbha), red gram (pod development in Madhya Maharashtra, Vidarbha and Marathwada), *rabi* jowar (early vegetative/ vegetative in Madhya Maharashtra and Marathwada), safflower (germination / early vegetative in Madhya Maharashtra, Marathwada and Vidarbha), gram (germination / early vegetative in Madhya Maharashtra and Marathwada), wheat (sowing / germination in Madhya Maharashtra and Marathwada), maize (germination / early vegetative in Madhya Maharashtra), sugarcane (*adsali* and pre seasonal) (maturity / harvesting), sugarcane (*suru*) (elongation), New *adsali* (early tillering in Marathwada and Madhya Maharashtra), pre-seasonal sugarcane (planting / sprouting in Marathwada and Madhya Maharashtra).
- Castor (spike formation / maturity / harvesting), cotton (boll maturity /picking), vegetables (flowering / fruiting), sugarcane (elongation), new sugarcane (planting), wheat, sweet corn, chickpea, mustard, garlic, cumin, coriander (sowing), cabbage, cauliflower, onion (transplanting) in Gujarat.

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

- Bt.cotton (boll maturity/harvest), late sown groundnut (harvest), cotton (boll maturation/harvest),pulses (sowing to seedling / early vegetative),cotton (flowering / boll formation stage), chilli (seedling / vegetative stage) in Krishna Godavari Zone of Andhra Pradesh},sugarcane (Jan-March planted) (cane development), late sown kharif rice (grain formation/maturity), castor(capsule maturity/harvest), banana (flowering/bunch formation), *rabi* crops: rice (tillering), rabi groundnut and pulses (sowing), chick-pea (vegetative/flowering), maize (dough stage), red gram (vegetative/flowering), bengal gram and jowar (sowing to vegetative), chillies (vegetative), vegetables (vegetative), onion (bulb development), in Andhra Pradesh.
- Sugarcane (grand growth), samba rice (tillering/panicle initiation), thaladi rice (transplanting/tillering), cotton(vegetative/maturity),maize(vegetative to flowering/maturity), onion (vegetative), sunflower (seedling), winter cotton (vegetative), groundnut (pod development / harvesting), vegetables (vegetative), black gram (flowering), and rainfed cotton, maize, sorghum and pulses (vegetative) in Tamil Nadu.
- Mundakan rice (transplanting / tillering), Puncha rice (sowing in Kottayam district), arecanut (harvesting), sugarcane (grand growth), Nendran banana (vegetative), rubber (tapping), *rabi* vegetables (vegetative), pepper (berry maturity), cardamom (harvesting), in Kerala.
- Sugarcane (grand growth), kharif crops: ragi (maturity), maize (cob maturity/ harvesting), red gram(flowering/pod formation), groundnut (maturity/ harvesting), rice (grain formation/ harvesting), cotton (boll formation/boll opening),vegetable crops (flowering/ fruiting), Rabi Crops: Bengal gram, sunflower, sorghum, safflower and wheat(sowing), sugarcane(planting) in Karnataka.

Annexure II

Week by week Rainfall Distribution

East Garo Hills	**	**	**	**	**	-100	0.0	-100	**	**
East Khasi Hills	11.8	-75	24.2	-36	0.2	-98	0.0	-100	0.0	-100
Jaintia Hills	14.0	-79	15.0	-72	0.0	-100	0.0	-100	0.0	-100
Ribhoi	59.2	83	51.1	202	0.0	-100	0.0	-100	0.0	-100
South Garo Hills	0.0	-100	23.0	65	0.0	-100	0.0	-100	0.0	-100
West Garo Hills	4.4	-78	0.6	-96	10.0	45	0.0	-100	0.0	-100
West Khasi Hills	0.0	-100	**	**	0.0	-100	0.0	-100	0.0	-100
Mizoram										
Aizwal	38.2	10	31.6	-25	0.0	-100	0.0	-100	0.0	-100
Champhai	12.0	-64	84.0	95	0.0	-100	0.0	-100	0.0	-100
Kolasib	47.0	60	26.0	-13	0.0	-100	0.0	-100	0.0	-100
Lawngtlai	**	**	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Lunglei	10.5	-72	106.0	215	0.0	-100	0.0	-100	0.0	-100
Mamit	8.0	-77	12.0	-71	0.0	-100	0.0	-100	0.0	-100
Saiha	48.5	55	119.0	289	0.0	-100	0.0	-100	0.0	-100
Serchhip	1.5	-94	9.0	-52	0.0	-100	0.0	-100	0.0	-100
Manipur										
Bishnupur	9.0	-44	19.0	-48	0.0	-100	0.0	-100	0.0	-100
Chandel	12.0	-59	7.0	-82	0.0	-100	0.0	-100	0.0	-100
Churachandpur	6.0	-62	24.0	-32	0.0	-100	0.0	-100	0.0	-100
Imphal east	10.1	-24	18.9	-32	0.0	-100	0.0	-100	0.0	-100
Imphal west	**	**	**	**	**	**	**	**	**	**
Senapati	2.0	-88	14.0	-30	0.0	-100	0.0	-100	0.0	-100
Tamenglong	**	**	**	**	**	**	**	**	**	**
Thoubal	3.5	-56	15.0	-36	0.0	-100	0.0	-100	0.0	-100
Ukhrul	4.0	-65	10.5	-42	0.0	-100	0.0	-100	0.0	-100
Nagaland										
Dimapur	0.0	-100	34.1	245	0.0	-100	0.0	-100	0.0	-100
Kephire	2.5	-75	8.0	-13	1.0	-92	0.0	-100	0.0	-100
Kohima	28.6	28	15.3	-27	0.0	-100	0.0	-100	0.0	-100
Longleng	**	**	**	**	**	**	**	**	**	**
Mokokchung	12.0	-49	8.0	-35	0.0	-100	0.0	-100	0.0	-100
Mon	**	**	**	**	**	**	**	**	**	**
Paren	**	**	**	**	**	**	**	**	**	**
Phek	18.0	-20	11.5	-45	0.0	-100	0.0	-100	0.0	-100
Tuensang	**	**	**	**	**	**	**	**	**	**
Wokha	3.0	-89	4.0	-75	0.0	-100	0.0	-100	0.0	-100
Zunheboto	**	**	**	**	**	**	**	**	**	**
Tripura										
Dhalai	16.5	-44	5.5	-81	0.0	-100	0.0	-100	0.0	-100
North tripura	29.4	28	58.6	142	0.0	-100	0.0	-100	0.0	-100
South tripura	16.3	-42	15.3	-37	0.0	-100	0.0	-100	0.0	-100
West tripura	13.7	-44	11.5	-51	0.0	-100	0.0	-100	0.0	-100
Himachal Pradesh										
Bilaspur	0.0	-100	0.0	-100	2.6	-14	10.5	175	0.0	-100
Chamba	0.0	-100	0.0	-100	11.9	191	32.1	1361	0.0	-100
Hamirpur	0.0	-100	0.0	-100	0.0	-100	12.4	727	0.0	-100
Kangra	0.0	-100	0.0	-100	1.4	-48	19.5	926	0.0	-100
Kinnaur	0.0	-100	0.0	-100	0.0	-100	8.4	127	0.0	-100

Kullu	0.3	-98	0.0	-100	0.1	-98	21.8	328	0.0	-100
Lahaul and Spiti	0.0	-100	0.0	-100	1.3	-78	12.9	158	0.0	-100
Mandi	0.0	-100	0.0	-100	0.0	-99	17.6	469	0.0	-100
Shimla	0.0	-100	0.0	-100	2.1	-42	8.4	164	0.0	-100
Sirmaur	0.2	-97	0.0	-100	7.9	367	1.4	-11	0.0	-100
Solan	0.0	-100	0.0	-100	7.5	128	18.7	713	0.0	-100
Una	0.0	-100	0.0	-100	3.7	38	7.8	289	0.0	-100
Punjab										
Amritsar	0.0	-100	0.0	-100	0.0	-100	10.5	454	0.0	-100
Barnala	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bhatinda	0.0	-100	0.0	-100	0.0	-100	4.0	3900	0.0	-100
Faridkot	0.0	-100	0.0	-100	2.0	18	11.0	900	0.0	-100
Fatehgarh Sahib	0.0	-100	0.0	-100	8.0	122	3.0	650	0.0	-100
Ferozpur	0.0	-100	0.0	-100	0.5	-64	12.3	1956	0.0	-100
Gurdaspur	0.0	-100	0.0	-100	2.5	26	13.0	549	0.0	-100
Hoshiarpur	0.0	-100	0.0	-100	2.3	-6	3.7	103	0.0	-100
Jalandhar	0.0	-100	0.0	-100	2.7	27	2.6	189	0.0	-100
Kapurthala	0.0	-100	0.0	-100	0.0	-100	0.3	-77	0.0	-100
Ludhiana	0.0	-100	0.0	-100	6.1	222	0.2	-46	0.0	-100
Mansa	0.0	-100	0.0	-100	0.0	-100	2.5	400	0.0	-100
Moga	0.0	-100	0.0	-100	0.5	-44	4.6	667	0.0	-100
Muktesar	0.0	-100	0.0	-100	0.0	-100	2.0	567	0.0	-100
Nawashahar	0.0	-100	0.0	-100	3.0	58	6.4	108	0.0	-100
Patiala	0.0	-100	0.0	-100	1.0	-54	0.3	14	0.0	-100
Ropar	0.0	-100	0.0	-100	3.6	38	8.7	136	0.0	-100
Sangrur	0.0	-100	0.0	-100	1.0	-44	0.6	-25	0.0	-100
Mohali	0.0	-100	0.0	-100	2.0	-23	0.0	-100	0.0	-100
TarnTaran	0.0	-100	0.0	-100	0.0	-100	25.2	2420	0.0	-100
Haryana										
Ambala	0.0	-100	0.0	-100	5.6	370	1.0	90	0.0	-100
Bhiwani	0.0	-100	0.0	-100	0.0	-97	2.9	1350	0.0	-100
Chandigarh	0.0	-100	0.0	-100	12.9	257	0.4	-71	0.0	-100
Faridabad	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Fatehabad	0.0	-100	0.0	-100	0.0	-100	1.0	233	0.0	-100
Gurgaon	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Hissar	0.0	-100	0.0	-100	0.0	-100	5.7	5567	0.0	-100
Jhajar	0.0	-100	0.0	-100	0.0	-100	0.8	67	0.0	-100
Jind	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Katihah	0.0	-100	0.0	-100	0.8	-60	0.0	-100	0.0	-100
Karnal	0.0	-100	0.0	-100	0.6	-73	0.0	-100	0.0	-100
Kurukshetra	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mahendragarh	0.0	-100	0.0	-100	0.0	-100	1.0	67	0.0	-100
Mewat	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Palwal	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Panchkkula	0.0	-100	0.0	-100	6.7	251	0.3	-70	0.0	-100
Panipat	0.0	-100	0.0	-100	1.0	-58	0.1	43	0.0	-100
Rewari	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Rohtak	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sirsa	0.0	-100	0.0	-100	0.0	-100	1.0	150	0.0	-100

Sonepat	0.0	-100	0.0	-100	0.0	-100	0.5	0	0.0	-100
Yamunanagar	0.0	-100	0.0	-100	7.8	169	0.0	-100	0.0	-100
Delhi	0.0	-100	0.0	-100	0.4	-68	0.4	34		
Jammu & Kashmir									0.0	-100
Anantnag	0.3	-97	0.0	-100	23.1	157	10.7	69	0.0	-100
Badgam	0.0	-100	0.0	-100	4.1	-53	2.2	-44	0.0	-100
Bandipore	**	**	**	**	**	**	**	**	**	**
Baramula	3.5	-77	0.0	-100	14.8	-1	6.6	34	0.0	-100
Doda	0.0	-100	0.0	-100	16.8	113	19.2	262	0.0	-100
Ganderwal	0.0	-100	0.0	-100	22.2	231	22.3	321	0.0	-100
Jammu	0.0	-100	0.0	-100	2.2	69	13.1	671	0.0	-100
Kargil	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kathua	0.0	-100	0.0	-100	2.8	250	21.8	1717	0.0	-100
Kistwar	**	**	**	**	**	**	**	**	**	**
Kulgam	0.5	-95	0.0	-100	12.4	38	9.1	44	0.0	-100
Kupwara	0.0	-100	1.0	-93	17.3	33	11.1	31	0.0	-100
Ladakh(Leh)	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Poonch	2.3	15	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Pulwama	0.0	-100	0.0	-100	8.2	82	5.0	61	0.0	-100
Rajouri	0.0	-100	0.0	-100	0.2	100	64.8	21500	0.0	-100
Ramban	0.0	-100	0.0	-100	9.8	24	9.5	79	0.0	-100
Reasi	0.0	-100	0.0	-100	6.0	50	29.5	1129	0.0	-100
Samba	0.0	-100	0.0	-100	2.1	62	10.3	506	0.0	-100
Shopian	0.0	-100	0.0	-100	10.0	122	6.0	94	0.0	-100
Srinagar	0.0	-100	0.0	-100	11.4	70	5.2	-2	0.0	-100
Udhampur	0.0	-100	0.0	-100	3.9	-3	14.8	517	0.0	-100
East Madhya Pradesh										
Anuppur	0.0	-100	36.0	634	0.0	-100	0.0	-100	0.0	-100
Balaghat	0.0	-100	7.2	-9	0.0	-100	0.0	-100	0.0	-100
Chhatarpur	0.0	-100	0.0	-100	0.0	-100	0.6	-76	0.0	-100
Chindwara	0.0	-100	3.1	-26	0.0	-100	0.0	-100	0.0	-100
Damoh	0.0	-100	0.0	-100	0.0	-100	6.7	375	0.0	-100
Dindori	0.0	-100	28.0	306	0.0	-100	0.0	-100	0.0	-100
Jabalpur	0.0	-100	11.1	455	0.0	-100	0.0	-100	0.0	-100
Katni	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mandla	0.0	-100	4.4	-5	0.0	-100	0.0	-100	0.0	-100
Narsingpur	0.0	-100	0.2	-86	0.0	-100	0.0	-100	0.0	-100
Panna	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Rewa	0.0	-100	5.6	833	0.0	-100	0.0	-100	0.0	-100
Sagar	0.0	-100	0.2	-93	0.0	-100	0.4	-87	0.0	-100
Satna	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Seoni	0.0	-100	1.5	-65	0.0	-100	0.9	-67	0.0	-100
Shahdol	0.0	-100	3.0	-32	0.0	-100	0.0	-100	0.0	-100
Sidhi	0.0	-100	2.9	32	0.0	-100	0.0	-100	0.0	-100
Singrauli	0.0	-100	8.0	627	0.0	-100	0.0	-100	0.0	-100
Tikamgarh	0.0	-100	0.0	-100	0.0	-100	1.0	-29	0.0	-100
Umaria	0.0	-100	4.2	56	0.0	-100	0.0	-100	0.0	-100
West Madhya Pradesh										
Alirajpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100

Allahabad	6.1	14	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Ambedkar Nagar	1.0	-88	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Azamgarh	3.5	-45	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bahraich	0.5	-90	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Ballia	42.6	536	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Balrampur	0.8	-89	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Banda	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Barabanki	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Basti	2.7	-52	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Chandauli	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Deoria	36.0	490	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Faizabad	0.5	-95	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Farrukhabad	0.0	-100	0.0	-100	0.0	-100	4.1	413	0.0	-100
Fatehpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Gazipur	16.9	138	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Gonda	0.3	-95	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Gorakhpur	3.0	-67	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Hardoi	0.0	-100	0.0	-100	0.0	-100	1.8	27	0.0	-100
Jaunpur	21.7	456	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kannauj	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kanpur City	0.0	-100	0.0	-100	0.0	-100	0.2	-84	0.0	-100
Kanpur Dehat	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kaushambi	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kheri	0.0	-100	5.3	2550	0.0	-100	4.8	1100	0.0	-100
Kushi nagar	0.0	-100	0.0	-100	0.0	-100	2.0	567	0.0	-100
Lucknow	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Maharajganj	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mau	22.5	341	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mirzapur	10.9	153	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Pratapgarh	6.0	-6	0.0	-100	0.0	-100	0.0	-100	0.0	-100
RaiBareilly	4.0	-38	0.0	-100	0.0	-100	0.1	-75	0.0	-100
Sahuji Maharajnagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sant Kabirnagar	2.0	-68	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sant Ravidas Nagar	12.0	380	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Shrawasti	0.0	-100	**	**	**	**			0.0	-100
Sidharthnagar	0.1	-98	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sitapur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sonbhadra	0.0	-100	0.3	-87	0.0	-100	0.0	-100	0.0	-100
Sultanpur	10.8	44	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Unnao	0.0	-100	0.0	-100	0.0	-100	1.3	25	0.0	-100
Varanasi	13.8	253	0.0	-100	0.0	-100	0.0	-100	0.0	-100
West Uttar Pradesh										
Agra	0.0	-100	0.0	-100	0.0	-100	0.2	-93	0.0	-100
Aligarh	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Auraiya	0.0	-100	0.0	-100	0.0	-100	6.0	186	0.0	-100
Badaun	0.0	-100	0.0	-100	0.0	-100	0.4	-64	0.0	-100
Baghpat	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bareilly	0.0	-100	0.0	-100	0.0	-100	0.4	-39	0.0	-100
Bijnor	0.0	-100	0.0	-100	0.0	-100	4.1	86	0.0	-100

Bulandsahar	0.0	-100	0.0	-100	0.0	-100	1.7	28	0.0	-100
Etah	0.0	-100	0.0	-100	0.0	-100	0.3	-33	0.0	-100
Etawah	0.0	-100	0.0	-100	0.0	-100	2.0	25	0.0	-100
Firozabad	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
GBNagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Ghaziabad	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Hamirpur	0.0	-100	0.0	-100	0.0	-100	1.7	4	0.0	-100
Jalaun	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jhansi	0.0	-100	0.0	-100	0.0	-100	4.0	48	0.0	-100
Jotirba Phule Nagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kanshiramnagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Lalitpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mahamaya Nagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mahoba	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mainpuri	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Mathura	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Meerut	0.0	-100	0.0	-100	0.0	-100	0.1	-91	0.0	-100
Moradabad	0.0	-100	0.0	-100	0.0	-100	2.4	118	0.0	-100
Muzzaffarnagar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Pilibhit	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Rampur	0.0	-100	0.0	-100	0.0	-100	2.2	2067	0.0	-100
Saharanpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Shahjahanpur	0.0	-100	0.0	-100	0.0	-100	7.3	1117	0.0	-100
Uttarakhand										
Almora	0.0	-100	0.0	-100	0.0	-100	9.6	336	0.0	-100
Bageshwar	2.0	-59	0.0	-100	0.0	-100	2.3	5	0.0	-100
Chamoli	0.3	-96	0.0	-100	0.0	-100	3.3	58	0.0	-100
Champawat	0.0	-100	0.0	-100	0.0	-100	0.5	-71	0.0	-100
Dehradun	3.0	-50	0.0	-100	0.4	-93	8.5	174	0.0	-100
Garhwal Pauri	0.0	-100	0.0	-100	0.0	-100	0.1	-95	0.0	-100
Garhwal Tehri	2.7	-65	0.0	-100	0.7	-83	2.6	-6	0.0	-100
Haridwar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Nainital	0.0	-100	0.0	-100	0.0	-100	1.7	24	0.0	-100
Pithorgarh	2.8	-59	0.0	-100	0.0	-100	5.5	82	0.0	-100
Rudraprayag	1.0	-77	0.0	-100	0.0	-100	3.1	182	0.0	-100
Udham Sing Nagar	0.0	-100	0.0	-100	0.8	-50	0.1	-91	0.0	-100
Uttarkashi	9.0	33	0.7	-90	0.0	-100	2.3	-18	0.0	-100
Bihar										
Araria	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Arwal	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Aurangabad	0.0	-100	2.3	-54	0.0	-100	0.0	-100	0.0	-100
Banka	14.0	57	21.4	219	0.0	-100	0.0	-100	0.0	-100
Begusarai	3.0	-79	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bhabua	0.7	-85	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bhagalpur	44.3	195	42.6	847	6.8	70	0.0	-100	0.0	-100
Bhojpur	66.6	1181	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Buxar	0.4	-92	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Darbhanga	4.8	-36	0.0	-100	0.0	-100	0.0	-100	0.0	-100
East Champaran	22.4	220	0.0	-100	0.0	-100	0.0	-100	0.0	-100

Gaya	1.0	-89	6.1	1	0.0	-100	0.0	-100	0.0	-100
Gopalganj	53.5	430	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jahanabad	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jamui	26.1	129	17.1	287	0.0	-100	0.0	-100	0.0	-100
Kathihar	20.8	70	6.7	110	1.2	-66	0.0	-100	0.0	-100
Khagadia	0.4	-98	0.2	-95	1.6	-16	0.0	-100	0.0	-100
Kishanganj	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Lakhisarai	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Madhepura	0.0	-100	0.4	-83	6.0	131	0.0	-100	0.0	-100
Madhubani	7.5	-56	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Monghyar	0.0	-100	2.8	-53	3.2	39	0.0	-100	0.0	-100
Muzaffarpur	26.9	327	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Nalanda	16.9	94	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Nawada	2.5	-70	15.3	104	0.0	-100	0.0	-100	0.0	-100
Patna	32.5	460	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Purnea	1.8	-88	12.6	688	0.0	-100	0.0	-100	0.0	-100
Rohtas	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Saharsha	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Samstipur	18.3	358	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Saran	86.0	1079	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sheikpura	7.7	-35	0.7	-76	0.0	-100	0.0	-100	0.0	-100
Sheohar	13.6	19	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sitamarhi	17.0	49	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Siwan	147.7	1723	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Supaul	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Vaishali	24.5	158	0.0	-100	0.0	-100	0.0	-100	0.0	-100
West Champaran	5.9	-39	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jharkhand										
Bokaro	15.2	48	39.1	483	0.0	-100	0.0	-100	0.0	-100
Chatra	7.7	-5	23.4	655	0.0	-100	0.0	-100	0.0	-100
Deoghar	3.9	-74	24.9	168	0.0	-100	0.0	-100	0.0	-100
Dhanbad	3.3	-79	41.5	400	0.0	-100	0.0	-100	0.0	-100
Dumka	**	**	**	**	**	**	**	**	**	**
East Singbhum	15.8	18	102.1	1757	0.0	-100	0.0	-100	0.0	-100
Garhwa	6.0	28	5.0	72	0.0	-100	0.0	-100	0.0	-100
Giridih	3.0	-76	18.0	210	0.0	-100	0.0	-100	0.0	-100
Godda	14.9	-22	27.3	876	0.0	-100	0.0	-100	0.0	-100
Gumla	**	**	**	**	**	**	**	**	**	**
Hazaribagh	14.9	-38	8.1	1	0.0	-100	0.0	-100	0.0	-100
Jamtara	2.8	-87	44.0	358	0.0	-100	0.0	-100	0.0	-100
Khunti	30.0	216	56.0	657	0.0	-100	0.0	-100	0.0	-100
Koderrna	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Latehar	0.0	-100	16.5	162	0.0	-100	0.0	-100	0.0	-100
Lohardagga	7.6	-42	22.0	323	0.0	-100	0.0	-100	0.0	-100
Pakur	8.0	-65	142.5	1150	0.0	-100	0.0	-100	0.0	-100
Palamau	2.0	-67	13.7	217	0.0	-100	0.0	-100	0.0	-100
Ramgarh	1.0	-92	13.2	181	0.0	-100	0.0	-100	0.0	-100
Ranchi	6.2	-59	23.6	136	0.0	-100	0.0	-100	0.0	-100
Sahebganj	0.0	-100	32.8	315	0.0	-100	0.0	-100	0.0	-100

Saraikele	0.0	-100	59.4	1349	0.0	-100	0.0	-100	**	**
Simdega	0.0	-100	**	**	**	**	**	**	**	**
West Singbhum	0.0	-100	63.5	1196	0.0	-100	0.0	-100	0.0	-100
East Rajasthan										
Ajmer	0.0	-100	0.0	-100	0.0	-100	0.3	-16	0.0	-100
Alwar	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Banswara	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Baran	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bharatpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bhilwara	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bundi	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Chittorgarh	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Dausa	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Dholpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Dungarpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jaipur	0.0	-100	0.0	-100	0.0	-100	0.6	29	0.0	-100
Jhalawar	0.0	-100	0.0	-100	0.0	-100	0.2	-92	0.0	-100
Jhunjhunu	0.0	-100	0.0	-100	0.5	-34	13.3	4321	0.0	-100
Karauli	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Kota	0.0	-100	0.0	-100	0.0	-100	0.4	-85	0.0	-100
Pratapgarh	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Rajsamand	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sawai Madhopur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sikar	0.0	-100	0.0	-100	0.0	-100	8.7	4257	0.0	-100
Sirohi	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Tonk	0.0	-100	0.0	-100	0.0	-100	0.5	-59	0.0	-100
Udaipur	0.0	-100	0.0	-100	0.0	-100	0.0	-99	0.0	-100
West Rajasthan										
Barmer	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Bikaner	0.0	-100	0.0	-100	0.0	-100	0.4	200	0.0	-100
Churu	0.0	-100	0.0	-100	0.1	-91	9.0	4400	0.0	-100
Hanumangarh	0.0	-100	0.0	-100	0.0	-100	0.7	43	0.0	-100
Jaisalmer	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jalore	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Jodhpur	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Nagaur	0.0	-100	0.0	-100	0.0	-100	0.9	125	0.0	-100
Pali	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Sri Ganganagar	0.0	-100	0.0	-100	0.0	-100	3.4	1017	0.0	-100
Gujarat Region										
Ahmedabad	0.0	-100	0.0	-100	0.3	-78	0.0	-100	0.0	-100
Anand	0.0	-100	0.0	-100	0.3	-86	0.0	-100	0.0	-100
Banaskantha	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Baroda	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Broach	0.2	-84	0.0	-100	0.0	-100	0.0	-100	0.0	-100
DNH	21.0	176	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Dahod	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Daman	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Dangs	3.3	-68	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Gandhinagar	0.3	-89	0.0	-100	0.8	-20	0.0	-100	0.0	-100

Akola	0.1	-97	3.5	-54	0.0	-100	0.0	-100	0.0	-100
Amraoti	0.4	-94	1.8	-69	0.0	-100	0.0	-100	0.0	-100
Bhandara	0.0	-100	12.9	38	0.0	-100	0.0	-100	0.0	-100
Buldhana	0.3	-96	3.5	-35	0.0	-100	0.0	-100	0.0	-100
Chandrapur	0.1	-99	34.5	291	0.0	-100	0.0	-100	0.0	-100
Gadchiroli	3.4	-71	38.3	378	0.0	-100	0.0	-100	0.0	-100
Gondia	0.0	-100	6.7	-23	0.0	-100	0.0	-100	0.0	-100
Nagpur	0.6	-93	2.4	-79	0.0	-100	0.0	-100	0.0	-100
Wardha	0.7	-94	2.9	-68	0.0	-100	0.0	-100	0.0	-100
Washim	0.0	-100	0.0	-100	0.0	-100	0.0	-100	0.0	-100
Yeotmal	0.2	-98	9.0	3	0.0	-100	0.0	-100	0.0	-100
Odisha										
Angul	39.7	117	96.1	512	0.0	-100	0.0	-100	0.0	-100
Balasore	58.4	101	198.2	533	0.0	-100	0.0	-100	0.0	-100
Bargarh	6.5	-39	13.9	162	0.0	-100	0.0	-100	0.0	-100
Bhadrak	125.5	408	183.3	725	0.0	-100	0.0	-100	0.0	-100
Bolangir	21.6	61	43.4	302	0.0	-100	0.0	-100	0.0	-100
Boudh	35.8	138	64.7	426	0.0	-100	0.0	-100	0.0	-100
Cuttack	108.2	408	224.4	1416	0.0	-100	0.0	-100	0.0	-100
Deogarh	30.1	162	53.4	529	0.0	-100	0.0	-100	0.0	-100
Dhenkanal	44.5	114	162.5	645	0.0	-100	0.0	-100	0.0	-100
Gajapati	51.4	63	303.8	3898	0.0	-100	0.0	-100	0.0	-100
Ganjam	110.5	123	348.4	1028	0.0	-100	0.0	-100	0.0	-100
Jagatsingpur	63.4	101	223.2	1161	0.0	-100	0.0	-100	0.0	-100
Jajpur	78.7	312	200.9	1276	0.0	-100	0.0	-100	0.0	-100
Jharsuguda	5.9	-44	29.9	368	0.0	-100	0.0	-100	0.0	-100
Kalahandi	36.0	161	39.5	490	0.0	-100	0.0	-100	0.0	-100
Kandhamal	58.5	290	86.4	603	0.0	-100	0.0	-100	0.0	-100
Kendrapara	96.2	234	275.0	1395	0.0	-100	0.0	-100	0.0	-100
Keonjhar	26.1	17	72.4	479	0.0	-100	0.0	-100	0.0	-100
Khurda	110.0	241	225.9	829	0.0	-100	0.0	-100	0.0	-100
Koraput	28.7	-14	73.9	371	0.0	-100	0.0	-100	0.0	-100
Malkangiri	28.5	31	62.6	256	0.0	-100	0.0	-100	0.0	-100
Mayurbhanj	22.1	14	166.8	1019	0.0	-100	0.0	-100	0.0	-100
Nawapara	7.5	-27	45.0	552	0.0	-100	0.0	-100	0.0	-100
Nawarangpur	38.1	154	95.4	601	0.0	-100	0.0	-100	0.0	-100
Nayagarh	96.1	329	324.3	1361	0.0	-100	0.0	-100	0.0	-100
Puri	102.4	192	162.1	387	0.0	-100	0.0	-100	0.0	-100
Rayagada	47.1	100	96.5	1362	0.0	-100	0.0	-100	0.0	-100
Sambalpur	36.6	218	26.4	211	0.0	-100	0.0	-100	0.0	-100
Sonepur	18.2	102	25.9	146	0.0	-100	0.0	-100	0.0	-100
Sundargarh	17.6	117	21.7	294	0.0	-100	0.0	-100	0.0	-100
West Bengal										
GWB										
Bankura	66.6	294	93.4	502	0.0	-100	0.0	-100	0.0	-100
Birbhum	30.2	58	57.1	376	0.0	-100	0.0	-100	0.0	-100
Burdwan	48.1	157	83.1	604	0.0	-100	0.0	-100	0.0	-100
East Midnapore	53.1	96	171.5	472	0.0	-100	0.0	-100	0.0	-100
Hooghly	25.5	34	71.5	438	0.0	-100	0.0	-100	0.0	-100

Howrah	47.8	167	65.3	920	0.0	-100	0.0	-100	0.0	-100
Kolkata	28.6	-6	184.0	868	0.0	-100	0.0	-100	0.0	-100
Murshidabad	18.0	4	24.0	88	0.0	-100	0.0	-100	0.0	-100
Nadia	15.4	48	70.5	317	0.0	-100	0.0	-100	0.0	-100
24 Pargana (N)	45.5	93	101.6	308	0.0	-100	0.0	-100	0.0	-100
Purulia	13.9	-31	107.9	1320	0.0	-100	0.0	-100	0.0	-100
24 Pargana (S)	28.0	-25	133.1	261	0.3	-99	0.0	-100	0.0	-100
West Midnapore	26.4	59	137.2	1114	0.0	-100	0.0	-100	0.0	-100
SHWB										
Cooch Behar	3.7	-87	0.5	-91	6.4	-4	0.0	-100	0.0	-100
Darjeeling	16.9	-8	13.8	57	14.1	85	0.0	-100	0.0	-100
East Sikkim	29.5	181	55.1	206	41.6	1199	0.0	-100	0.0	-100
Jalpaiguri	16.7	-49	29.3	257	6.5	63	0.0	-100	0.0	-100
Malda	4.3	-75	26.5	372	2.8	-44	0.0	-100	0.0	-100
North Dinajpur	31.0	97	9.0	1025	**	**	0.0	-100	0.0	-100
North Sikkim	38.5	4	34.1	0	107.5	851	0.0	-100	0.0	-100
South Dinajpur	6.0	-52	8.2	-9	0.0	-100	0.0	-100	0.0	-100
South Sikkim	9.6	-9	21.4	19	2.2	-31	0.0	-100	0.0	-100
West Sikkim	23.3	-37	27.0	-21	3.2	-72	0.0	-100	0.0	-100
Karnataka										
Coastal Karnataka										
Dakshin Kannada	94.1	97	39.9	-14	28.0	7	2.6	-89	16.5	-16
Udupi	61.6	45	41.6	-5	21.6	-6	5.5	-78	10.3	-27
Uttar Kannada	20.4	-24	65.3	144	12.1	4	0.0	-100	0.0	-100
N I Karnataka										
Bagalkote	19.0	-6	74.1	274	0.0	-100	0.0	-100	0.0	-100
Belgaum	6.7	-73	51.4	185	0.0	-100	0.0	-100	0.0	-100
Bidar	0.1	-99	58.8	250	0.1	-99	0.0	-100	0.0	-100
Bijapur	17.4	-3	45.0	114	1.4	-87	0.0	-100	0.0	-100
Dharwad	15.3	-44	34.2	93	0.0	-100	0.0	-100	0.0	-100
Gadag	12.7	-51	42.8	147	0.0	-100	0.0	-100	0.0	-100
Gulbarga	11.5	-28	37.0	91	2.4	-67	0.0	-100	0.0	-100
Haveri	8.9	-65	44.8	136	0.0	-100	0.0	-100	0.0	-100
Koppal	28.2	50	75.4	297	0.0	-100	0.0	-100	2.2	-68
Raichur	25.7	36	63.7	311	0.0	-100	0.0	-100	0.0	-100
Yadgir	36.2	98	71.2	142	0.0	-100	0.0	-100	0.0	-100
S I Karnataka										
Bangalore Rural	25.5	-13	40.2	49	11.2	-48	0.0	-100	13.0	45
Bangalore Urban	20.6	-35	22.3	-9	10.1	-47	0.0	-100	10.8	4
Bellary	46.3	120	45.6	113	7.6	-38	0.0	-100	1.9	-75
Chamarajnaragar	77.6	128	4.7	-86	10.4	-52	0.2	-99	36.0	181
Chichballapur	37.1	37	33.3	36	6.6	-71	0.0	-100	8.8	4
Chickmagalur	16.2	-54	17.6	-47	5.6	-70	0.6	-97	0.2	-99
Chitradurga	27.5	27	14.0	-26	1.8	-85	0.0	-100	1.6	-82
Davangere	23.2	5	34.9	70	1.1	-92	0.0	-100	0.0	-100
Hassan	34.2	9	15.3	-54	3.1	-84	2.9	-82	4.7	-59
Kodagu	80.2	94	13.5	-66	9.1	-58	3.8	-83	1.3	-90
Kolar	26.3	4	26.4	2	3.5	-83	0.0	-100	16.9	49
Mandya	50.4	69	26.8	-7	7.0	-62	1.2	-92	15.6	79

Mysore	80.1	145	12.0	-62	8.1	-51	1.0	-92	15.0	25
Ramnagara	55.2	63	39.1	33	6.4	-69	0.0	-100	9.1	1
Shimoga	39.2	55	32.3	34	9.3	-19	0.0	-100	1.4	-90
Tumkur	44.3	76	27.9	5	4.3	-76	0.0	-100	6.4	-19
Kerala										
Alappuzha	100.2	28	11.6	-84	40.3	-43	45.3	-12	26.7	-30
Kannur	107.2	104	75.0	58	15.2	-59	0.0	-100	5.5	-67
Ernakulam	131.7	102	72.1	4	60.8	12	28.1	-31	64.6	122
Idukki	111.8	24	40.0	-38	33.0	-51	40.4	-22	28.1	-9
Kasaragod	59.1	25	30.8	-36	7.4	-75	0.0	-100	6.5	-66
Kollam	158.8	74	31.3	-62	36.3	-59	65.4	3	44.9	-1
Kottayam	214.1	215	35.1	-53	41.2	-42	58.8	19	52.9	68
Kozhikode	62.6	16	17.7	-73	27.6	-42	1.0	-97	41.4	66
Malappuram	86.4	17	49.9	-11	68.5	25	16.0	-51	21.8	-23
Palakkad	139.1	119	56.0	-8	24.9	-56	4.3	-88	14.5	-42
Pathanamthitta	209.2	139	2.7	-97	80.9	8	79.0	31	74.9	41
Thiruvananthapuram	114.7	56	6.7	-89	34.4	-57	113.2	132	32.4	-15
Thrissur	153.3	121	113.7	75	37.1	-28	1.5	-97	50.0	110
Wyanad	96.2	75	30.6	-36	18.7	-30	0.2	-99	1.8	-90
Tamil Nadu										
Ariyalur	23.5	-55	15.5	-65	28.3	217	13.3	-79	89.5	82
Chennai	128.7	50	15.9	-79	0.0	-100	0.0	-100	127.9	63
Coimbatore	107.9	152	10.3	-75	0.6	-89	7.9	-79	20.6	-10
Cuddalore	43.2	-32	10.9	-82	21.7	39	11.8	-85	91.6	25
Dharmapuri	56.9	39	33.3	-6	2.3	-54	0.0	-100	79.1	291
Dindigul	67.7	30	10.7	-75	10.8	20	0.6	-99	17.6	-44
Erode	84.9	104	6.7	-82	0.2	-96	1.8	-94	35.8	78
Kanchipuram	51.2	-26	36.6	-41	0.2	-99	0.0	-100	77.8	46
Kanyakumari	56.7	-21	10.5	-81	0.1	-99	75.7	26	66.2	61
Karikal	48.1	-28	17.8	-84	18.9	-42	2.1	-98	159.6	85
Karur	31.4	-20	7.0	-77	6.5	-10	0.0	-100	59.0	188
Krishnagiri	43.5	14	19.7	-39	0.3	-90	0.0	-100	55.7	238
Madurai	116.8	97	18.2	-59	3.6	-47	0.9	-98	6.6	-75
Nagapattinam	53.7	-31	14.7	-79	50.6	153	32.4	-71	143.0	46
Namakkal	69.7	80	11.6	-64	0.8	-88	0.0	-100	47.5	167
Nilgiris	83.7	51	46.2	-19	1.1	-86	4.1	-93	64.9	81
Perambalur	57.0	6	22.5	-40	9.0	27	0.8	-98	117.1	236
Puducherry	49.2	-36	7.3	-92	0.4	-98	1.7	-98	126.0	64
Pudukottai	39.4	-12	11.3	-68	5.6	-8	7.2	-81	17.1	-52
Ramanathapuram	74.4	34	0.0	-100	1.9	-78	13.3	-73	3.1	-91
Salem	59.0	30	20.0	-50	4.0	-22	0.0	-100	55.7	101
Sivaganga	114.6	129	2.0	-96	4.3	-46	19.1	-54	0.6	-98
Thanjavur	50.0	-2	14.5	-70	34.2	183	8.6	-84	56.0	24
Theni	107.7	127	3.8	-92	6.6	3	4.5	-89	19.8	-25
Tirunelveli	49.4	-3	2.0	-96	14.9	64	11.8	-80	64.2	46
Tirupur	77.9	82	0.0	-100	0.0	-100	0.0	-100	21.5	3
Tiruvallur	65.9	15	44.8	-21	0.0	-100	1.0	-99	81.2	47
Tiruvannamalai	37.1	-29	9.0	-77	0.0	-100	0.0	-100	91.1	144
Tiruvarur	50.7	-19	2.2	-96	21.8	51	15.7	-79	64.7	-12

Toothukudi	56.2	14	5.5	-87	7.3	-19	30.4	-34	36.4	-8
Trichy	37.1	-16	13.1	-65	15.9	141	4.0	-90	94.9	244
Vellore	35.5	-4	27.4	-13	0.0	-100	0.0	-100	38.5	47
Villupuram	44.4	-13	22.7	-48	2.7	-72	1.3	-98	99.4	114
Virudhunagar	101.8	94	0.8	-98	1.1	-89	4.4	-90	15.6	-56
Andhra Pradesh										
Coastal Andhra Pradesh										
East Godavari	127.4	156	293.9	965	2.0	-92	0.0	-100	0.0	-99
Guntur	74.8	96	196.6	639	9.1	-69	0.0	-100	0.2	-99
Krishna	72.5	69	221.6	783	1.3	-96	0.0	-100	0.0	-100
Nellore	143.4	78	59.1	-15	48.8	-49	0.1	-99	87.9	43
Prakasam	102.7	120	189.3	348	9.4	-79	0.0	-100	3.7	-84
Sirkakulam	152.0	198	366.6	845	0.0	-100	0.0	-100	0.0	-100
Visakhapatnam	104.4	107	280.1	900	0.0	-100	0.0	-100	0.0	-100
Vizianagram	86.2	66	219.4	760	0.0	-100	0.0	-100	0.0	-100
West Godavari	87.6	88	173.8	506	1.3	-95	0.0	-100	0.1	-99
Telangana										
Adilabad	2.8	-87	30.2	144	0.0	-100	0.0	-100	0.0	-100
Hyderabad	26.5	39	110.7	492	0.0	-100	0.0	-100	0.0	-100
Karimnagar	7.0	-64	99.8	540	0.0	-100	0.0	-100	0.0	-100
Khammam	21.7	15	110.2	698	0.0	-100	0.0	-100	0.0	-100
Mehabubnagar	33.9	108	151.0	1127	0.0	-100	0.0	-100	0.0	-100
Medak	9.2	-48	84.7	392	0.0	-100	0.0	-100	0.0	-100
Nalgonda	42.9	108	237.3	1412	0.0	-100	0.0	-100	0.0	-100
Nizamabad	3.7	-83	38.8	111	0.0	-100	0.0	-100	0.2	-93
Rangareddy	22.6	43	116.7	620	0.7	-90	0.0	-100	0.0	-100
Warangal	12.1	-26	149.3	845	16.4	52	0.0	-100	0.0	-100
Rayalaseema										
Anantapur	31.0	48	31.8	83	3.4	-79	0.0	-100	0.8	-89
Chittoor	63.8	62	50.8	37	17.3	-58	0.0	-100	39.6	40
Cuddapah	94.3	178	36.2	37	7.0	-76	0.0	-100	12.6	-8
Kurnool	44.5	106	52.4	229	4.9	-60	0.0	-100	0.0	-100

	(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

Jammu & Kashmir

Mustard :- Pusa Sarson-25, Pusa Sarson-26, Pusa Agrni, Pusa Taraka, Pusa Mahak, NPJ 112, EJ17, Pusa Mahak and Kanti, Maya, Rohini, Pusa Jaikisan, Varuna, RGN13, RGN73, Bharat Sarson-1 (NRCD-2), Bharat Sarson-2 (NRCHB 101), Bharat Sarson-3, (NRCHB 506), Arawali, RGN48, Geeta and PBR 97, CS52, CS54, Narendra Rai 1, Karan Tara, Narendra, - NRCYS-05-02, YSH401 Tara, RSPR-01, RLM-514, RLM-619, Kranti, P. Gold, P. Basant.

Wheat: (irrigated) PBW-550, PBW-502, DPW-621-50, DBW-17, Raj-3077, HD-2967, HD-2687, RSP-303, VL-738, VL-804, HS-240, PBW-154, Raj-1555, Raj-3765, Lok-1, WH-147, GW-190, GW-322 and GW-273 (unirrigated) PBW-175, RSP-81 (Jitto) WH-1080, Raj 3077, PBW-396, HI-1500 and HI-1531

Barley: RD-2552, RD-2052, RD-2035, RD-2503, RD-2715, RD-2660, RD-2508, Ratna, Jyoti and Sonu

Chickpea: C-235, K-468, Gourav and PBG-1; Pea- AP-1, Bonnevillea, Rachna and Arkel; Chickpea-K-468, Gourav;

Lentil- L-4147, L-9/12, PL-406

Field pea: T-163, PG-2 and Rachna

Oat : Kent, Sabzar

Gram: C-235, Gaurav, K-468, SCS-3, PBG-1, RSG 44, Dahod yellow, GNG 16, ICCV 10, RSG 888, GNG 469 and Pratap chana 1

Berseem : Mescavi, Pusa Giant, BL-1 and Vardan

Vegetables:

Potato: (Kufri Chandramukhi), K Badshah, K. Sinduri, K. Chipsona & K. Sona.

Cole crops (Cauliflower (var. Snowball-16, Pusa Snowball K-1), **Knol-khol** (var. White Vienna, Purple Vienna, King of Market),) and rare crops (broccoli, lettuce, celery, chienesese cabbage, pakchoi).

Cabbage : Golden Acre, Pride of India and Pusa Mukta, **Carrot :** Pusa Kesar, P. Yamdagani. **Turnip :** PTWG (Purple Top White Globe). **Garlic :** Large Segmented, Yamuna Safed-3 Agrifound parvati, **Methi :** pusa early bunching and kasurimethi., **Radish** (var. P.

Reshmi, Japanese White, Minowase), carrot (var. Pusa Kesar, P. Yamdagani), Peas var. Bonnevillea, AP-1, AP-3 & Punjab -89,

Onion (Pusa Red ,N-53, Agrifound Dark Red & Agrifound Light Red), **Knolkhol** (King of Market and White Vienna), **Spinach Beet** (All Green).

Rajasthan

Wheat: HD-2329, HD-2687, HD-2009 (Arjun), HD-2967, WH 147, PBW 373, PBW502, PBW 550, RAJ 1482, RAJ 1555, RAJ 3077, RAJ 3777, RAJ 3765, RAJ 376, Raj 4037, HI 8381, HI 8498, HI 1544, WH 147, GW 273, GW 322, GW 190, GW 366, DL 803-3, PDW 215, and LOK 1.

Barley: RD- 2052, RD 2035, RD 2624, RD 2660, RD 2668, RD 2552, RD 2592, RD2503, RD-2508, RD-2715, for normal sowing DWRUB 52, DWRUB 64 (for late sowing), RD 2668, BL 2.

Lentil: T 36, BL 406, Sihore 74-7 and K 75

Vegetables :

Onion: Pusa Red, Arka Niketan, Pusa White & Local Red, **Deshi carrot:** Pusa Keshar, **Tomato:** Pusa Rubi, Pusa Early and Vihar, T-27, RTM 314, **Brinjal:** Pusa Summer Prolific Round, Pusa Summer Prolific Long, Meghdoot and Arka Bahar, **Cauliflower:** Pusa Snowball 1 and Hissar 1, **Cabbage:** Pusa Drum Head and Hybrid 10, **Potato: late sowing var.-** Kufri Badshah and Kufri Sindoori, Kufri-Ashok and Chandramukhi, **Mid sowing var.-** Kufri-Anand, Chipsona-1, 2, Jyoti and Pukhraj. **Methi:** RMT-1, RMT-143, RMT-305, Pusa, Rajendra Kranti, Radish : Japanese white and hill queen

Gram : RSG 44, C 235, G 130, H208, Dahod yellow, GNG 16, GNG 663 (Vardan), GNG 469 (Samrat), GNG 1581 (Gangaur), for Kabuli Chana (GNG 1449 (Gauri), GNG 1958 (Marudhar), GNG 1292, Kak-2), ICCV 10, RSG 888, GNG 469 GNG 149 and Pratap chana 1, RSG-888 (Anubhav), CSJD-884 (Aakash), RSG-2, BG-256, Phule G 5.

Mustard: PR 48, T-59, Bio-902, Laxmi, Aravali, Swarna Jyoti and Vasundhara, Bio- 902, Laxmi, RH 30, Pusa bold, T 59

Cumin: RZ-19, RZ-209, RZ-223, GC-4, Gujarat Jeera-2.

Rijka: Anand-2, LLC-3 (yearly), Type 9, RL-88, Igfree 244 (multiyearly)

Uttarakhand

Pea : VL Ageti Mater-7, Vivel Mater-10, Pant Subjee Mater-3, Azad Mater-3 and Arkel. High yielding varieties : Pant Pea-13, Pant Pea-14, Pant Pea-25, Pant Pea-42, Pant Pea-74] Pant Pea-86, Pant Pea-96, Pant Pea-108 etc.

Chickpea : Avrodhi, Radhey, Pant G-114, Pant G-186, BG-56, Uday etc.

Gram: Kabuli Chana are BG-1003, BG-1053

Toria : Type -9, Pant Toria-30, Pant Toria-303, Uttara, Pant Toria-507, P.T.-303, P.T.-507,

Garlic : VL-Garlic or DARL-52.

Sugarcane : Co-238, Co-241, Co Pant, 3220, Co Pant 84211, COS-8436, COS-88230 etc. and medium to late sown varieties like Co Pant 90223, Co Pant-96219, COS-97222, COS-767, COS-1148 etc.

Wheat: VL-829, 802, 804, 892, 738 (Mundri wheat), 719, HL-272, VL-421, HS-240, VL-616, HS-277, VL-829, HD 2687, HD 2329, PBW 343, PBW-550, PBW-502, Raj 3077, UP 2338, UP-1109, UP-2382, UP-2584, UP-2572, UP-2554 etc.

Barley: Jow-1, VL Jow-56, 85, PRB-502, 507, 701.

Sarson: Varun, Kanti, Peeli sarson.

Masoor: Pant Masoor-4, 5, PL-234, PL- 639. Var. sown under sufficient soil moisture are VL masoor-1, 4, 203,

Potato : Kufri Satluj, Kufri Jawahar, Kufri Chipsoma-1, Kufri Chipsoma-2, Kufri Jyoti, Kufri Giriraj etc.

Onion : Pusa Red, Pusa Ratnar, Nasik Red, Pusa Madhavi, Punjab Round Red etc

Uttar Pradesh

Potato: Kuphari Chanramukhi, Kuphari Ashoka, Kuphari Bahar, Kuphari Surya, Kuphari Sutlaj, Kuphari Pukharaj

Peas: Pant-5, Aparna, Malaviya-2, Malaviya-15, Shikha, Sapana, Ta.- 163, Rachana, Malviya matar,-2

Bengal gram: Pusa, Shubhra

Mustard- Pussa-25, Varuna, Kranti, Krishna, Vardan, Vaibhav.

Sugarcane: Kosha-88230, Kosha-8436, Kosha-0238, Kosha-07250, UP-05125

Wheat : VL-829, VL-802, VL-804, VL-892, VL-738, VL-719, HS-277, UP-2572, 2338, Pusa- 256, KWR- 108, K-850, KGD- 1168, PVW- 343, 443, WH- 542, K- 9107, 9006, 9423, 307, Raj-3077.

Gram: Ta-3, Radhe, K-850, Pant, Kabuli, PDG-3, GPF-2, C-235, Gurav

Lentil: Ta.-8, Pant L- 406 & 234

Alsi- L.C.2023, L.C. 74

Onion- Pusa Red, Pusa White.

Himachal Pradesh

Wheat: HPW-89,147 VL-738 and HS-240

Barley: HBL-316 and Dolma

Oat: Palampur-1

Cauliflower : Patna snowball and joint snowball.

Pea: Ageta-6 and ArkaMatar.

Raddish: Japanese white, Chinese pink and mino early white

Turnip :PTWG-1

Carrot :Pusa kesar

Fenugreek: I.C. 74, kasoori

Punjab

Radish: Punjab Pasand& Punjab Safed,

Turnip: L-1 & 4-white

Carrot: PC-34), potato and palak (Punjab Green).

Cauliflower: Pusa Snow ball 1 &Pusa Snow ball K-1.

Pea: Punjab 87, Punjab 88, Punjab 89 and Mithi Phali.

Raya: RLC-1, PBR-210, RLM-619, PBR-91 under irrigated conditions and PBR-97 under rainfed conditions.

Garlic: PG-17 .

Wheat: PBW 621, HD 2967, DBW-17, PBW-502, PBW-343, WH-542, and durum wheat WHD 943, PDW 291 and PDW-233 under irrigated conditions and PBW-644, PBW-527, PBW-175 under rainfed conditions.

Gram: L 552, L 550 & BG-1053.

Delhi

Wheat: H.D. 2687, H.D. 2851, H.D. 2894, H.D. 2967, D.B.W.-17

Gram: Kabuli type - Pusa 267, Pusa 1003, Pusa Chamatkar; local type – C235, Pusa 246, P.B.G. 1, Pusa 372.

Oat: J.H.O-822, O.L.-9, Pusa oat-5 and for barseem – Vardan, Buland Barseem-1, Masakavi, J.B-3

Lentil: Pusa Masoor -5 (L-4594).

Pea: Pusa Pragati, Arkel, Azad Matar-3, Pant Matar-3 and Bournville

Potato: Kufri Badshah (Late blight tolerant), Kufri Jyoti (Short duration), Kufri Alankar, Kufri Chandramukhi.

Garlic: G-1, G-41, G-50, G-282.

Carrot: Pusa Rudhira and Pusa Kesar

Sarson Saag- Pusa Saag-1; **Bathua-** Pusa Bathua-1; **Radish-** Japani White, Hill queen, French Radish; **Spinach-** All Green, Pusa Bharti; **Fenugreek-** Pusa Kasuri; **Coriander-** Pant Haritama, Hybrids; **Turnip-** Pusa Swati, Local Red variety.

Madhya Pradesh:

Wheat: MP 1142, GW 273, GW 322, GW 190, MP 1106, Sujata, HW- 2004, HI-1500, MP 1142, GW 273, GW 322, GW 190, MP 1106.

Black Gram: JG-130, JG-315, JG-16, Jaki-9218, JG 6, JG 11, JG-14, JG-74, JG-322, JG-01,

Cicer kabulinum (Kabuli chana): KAK-2, JGK-1, JGK-2, JGK-3

Chickpea: KAK-2, JGK-1, J.G-11, J.G-315.

Pulse (Masoor): RVL-31, JL-2, Jawahar Lentil 1 & 2, K-75, J.L.S-4076, J.L.S-3.

Potato: K. surya, K.khyati, K Loukar, K Badshah.

Pea: Arkel, PSM3 arkil, PUSA Pragati, Jawahar Pea 1, Jawahar Pea 2, Jawahar Pea 5 and Bonvile etc.

Maize: JVM 421, JM 16.

Linseed: R.L.C.92, Deepika, Indira Alsi- 32, Kartika

Lentil: RVL-31, JL-2

Winter Sugarcane: Co. J. N. 86-572, Co. J. N. 86-141

Safflower: J.S.F. -1, A-1 (Sweta), D.S.H.- 129, J.S.I.- 7, Nari- 6, M.K.H.-II, D.S.H.- 129.

Mustard: Pusa Mahak, Pusa Agrani,, Pusa Bold Jaggnath, Pusa Jay-Kisan, N.R.C.H.B- 506, J.M-02, 03

Chhattisgarh.

Wheat: Arpa, Vidisha, Kanchan

Gram: JG-16, 11, 74, 130, 315, indira chana-1 and vaibhav

Odisha

Cauliflower: Pusa Ketaki and Pusa Deepali.

Cabbage: Pride of India.

Beans: Pusa Parvati and Arka Komal.

Tomato: BT 2, BT 10, BT 12 Neeladri, Sada Bahar, Madhuri, Maharathi, Rashmi and Navin.

Mustard: Parbhathi, Anuradha, TS-29 and M-27.

Onion: Nasik Red, Patna Red, Pune Red, Bellary Red, Pusa Ratnar, Pusa Madhavi, Arka Niketan, Arka Pragati, Agrifound Light Red, Agrifound Dark, Punjab Selection, Patna White, Bombay White, Pusa White Round etc.

Garlic: Phawari, Rajalbadi, Jamnagar, G-282

Sunflower: Morden, Sunrise, Surya and Hybrid varieties like KBSH-1, KBSH-3 and MSFH.

Potato: Kufri Chandramukhi, Kufri Chamatkar, Kufri Jyoti, Kufri Sinduri and Kufri Alankar,

West Bengal

Banana: Mortoman, Chapa, Kathali, Singapuri.

Cabbage: Pride Of India, Pusa Early, Kranti.

Cauliflower: Jawhar Moti, Bharat Jyoti, Early Banaras.

Mustard: Agrani (B-54), Panchali (TWC-3), B-9, Rai-5 and Bhagiroti (RW-351) etc.

Potato: Kufri Jyoti, Ashoka.

Onion: Rupsa, Sukhsagar.

Jharkhand

Potato: Kufri Ashok, Kufri Kanchan.

Green Peas: Arkel, Kashi Nandini, P.E.-6, Birsa Matar.

Horse Gram: Birsa Kulthi-1, G.H.G.-20.

Sweet potato: Birsa Sakarkand-1 and Sri Bhadra.

Toria: T-9, B.R.-23 and P.T.-303.

Mustard: Shiwani, Varuna, Pusa Bold, BR-40.

Onion: N-53, Agrifound Dark Red and Basant-780, N 53, Pusa Red, Arka Niketan, Arka Kalian, Agrifound Dark Red, Pusa White Round and Flat, Pusa Madhavi, Bombay Selection, Patna White and Bellary Red.

Bihar

Onion: N-53, Agrifound Dark Red and Basant- 780.

Potato: Kufri Chandramukhi, Kufri Ashoka, Kufri Pukharaj, Kufri Badshah, Kufri Lalima, Kufri Jyoti and Rajendra Alu 2.

Pea: Malviya Mator 15, Harbhajan, Arpana and Pusa Prabhat.

Oat: Kent.

Mustard: Varuna, Pusa bold, Kranti.

Assam

Boro rice: Mahsuri, IR-50, Dinanath, Bishnuprasad, Jyotiprasad, Kanaklata, Dinanath.

Wheat: Sonalika, UP 262, K 7410, WH 291 and HDR-77.

Rabi maize: HQPM- 1.

Mid Cauliflower: Improved Japanese, Pusa Synthetic, Pusa Snowball.

Tomato: Punjab Chhuhara, S-12, Punjab Kesri, Pusa Early Dwarf, Sioux, Pusa Ruby, VC- 48-1, Arka Abha (BWR-1), Arka Alok (BWR-5), BT-1, Bilahi-1, Bilahi-2, Trishul, Allrounder, T- 1408, T- 1458, Anup.

Cabbage: Golden Acre, Pride of India, BC- 76, Pusa Drum Head, Pusa Synthetic.

Knolkhol: White Vienna, Purple Vienna.

Potato: Kufri Chandramukhi, Kufri Jyoti and Kufri Sindhuri, Kufri Megha, Kufri Badshah, Pukhraj.

Rapeseed and mustard: M-27, TS-36, TS-38.

Pumpkin: Arka Suryamukhi, Arka chandan and local varieties.

Lentil: B-77, L-9-12.

Pea: T-163, HUP-2, KFPD1.

Onion: Pusa Red, Pusa Ratnar, Pusa White (Round), Pusa White (Flat), N-53, Agrifound Light Red, Punjab Red Round, Pusa Madhuri, Arka Niketa.

Bottle gourd: Pusa Summer Prolific Long, Pusa Summer Prolific Round, Pusa Meghdoot and Pusa Manjiri.

Pumpkin: Arka Suryamukhi, Arka Chandan, and local varieties.

Manipur

Rapeseed and mustard: M-27.

Pea: Rachana.

Potato: Kufri Megha, Kufri Chipsona and Kufri Jyoti.

Maharashtra

Gram (Irrigated): Vikas, Vishwas, Phule G 12, Vijay, Vishal, Virat for Madhya Maharashtra and Akash, Vikas, Vishwas and Vijay for Marathwada.

Preseasonal sugarcane: CO.740, CO.7219 (Sanjivani), CO.88121 (Krishna), CO.8014 (Mahalaxmi), CO.86032 (Nira), CO.94012 (Phule Savitri), CO.M.0265 (Phule 265), CO.V.S.I.9805, CO.C.671 for Madhya Maharashtra and CO.94012, CO-86032, CO.V.S.I.9805, CO-C-671, Co-8014 for Marathwada.

Wheat: NIAW-301, NIAW-917 and NIDW-295 (for Madhya Maharashtra).

Wheat (Late sown): NIAW – 34 in Madhya Maharashtra, AKW – 1071, AKW 4627 in East Vidarbha.

Linseed : NL-97, PKV NL-260 in East Vidarbha.

Gujarat

Wheat: GW-366, GW-496, GW-273, GW-322, OR GW-503.

Chick pea (unirrigated): Gujarat Chana-2.

Chick pea (irrigated): Gujarat Chana-3, Gujarat Chick Pea-1, Dahod Pila, ICC-4.

Mustard: Varuna, Gujarat Mastard 1 or 2 or 3.

Garlic: Gujarat Garlic-4 or Local.

Cabbage: Kranti, Golden Acaire, Pride of India, Coppen Market.

Cauliflower: Pusa Early, Pusa Dipali, Pusa Kartiki, Early Kuvari (for early maturity), Pusa Synthetic, Early Snowball, Snowball (for medium duration).

Brinjal: Guj. Brinjal-6, P.L.R. 1, Junagadh Lambagoal, Mahicco- 11, 16.

Onion: Pusa Red, Nashik Lal, N 53 & H 48.

Raddish: Pusa Hemadri, White ICL, Japanees White, Pusa Rashmi, Pusa Chetaki.

Maize: Ganga Safed -2, GM -6.

Potato: Punkharaj, Kufari Chandramukhi, Kufari Jawahar, Kufari Bahar, Asoka (short duration), Kufari Laukar, Kufari Jyoti, Kufari Badshah, Kufari Sinduri, Satalaj (long duration)

Fenugreek: Methi kasuri or Pusa early branching.

Coriandar: Guj. Coriander 1 or Guj. Coriander 2.

Cumin: Guj.Cumin 1, 2, 3, 4, MC-43.

Amaranthus: Gujarat Amaranth -3.

Andhra Pradesh

Blackgram: LBG-20, T-9, LBG: 623, WBG: 26, PU: 31, BG: 752

Green gram: LGG: 407, LGG: 410, LGG: 450, WGG:2, WGG: 37, LGG: 460, ML:267, Pusa:105, MGG: 348, TM-96-2

Bengalgram: Kranthi (ICCC: 37), Svetha (ICCC:2), Annegiri, Jyothi, ICCV: 10 KAK:2, JG:1, Lamsanga:7

Redgram: Laksmi (ICCPL85063), LRG-38, LRG-41, WRG-27

Tamil Nadu

Groundnut: TMV-13 or CO-6

Gingelly: TMV-7 or SVPR-1

Chickpea: CO-4
