



# *National Agromet Advisory Service Bulletin*

based on

**Extended Range Weather Forecast**  
Valid for 19<sup>th</sup> September to 2<sup>nd</sup> October, 2014

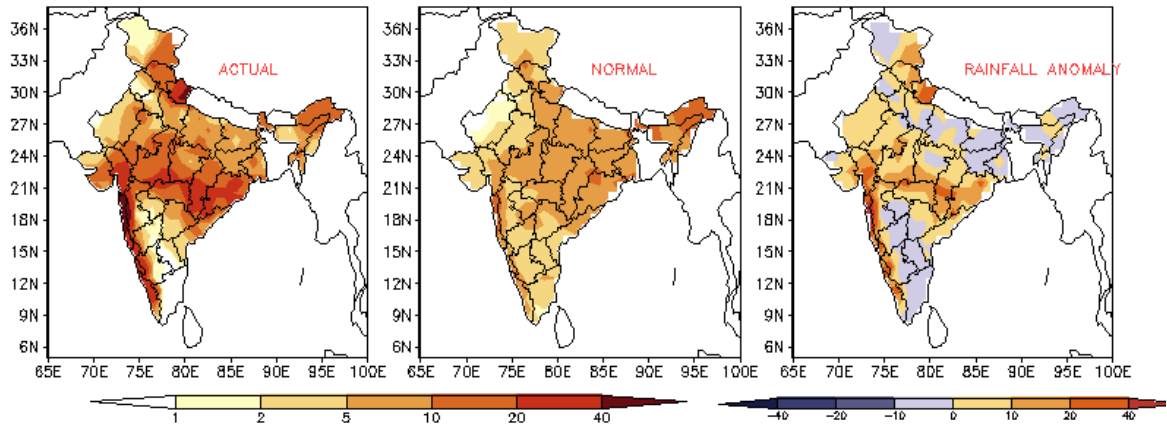
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**Issued by**

Earth System Science Organisation  
Agricultural Meteorology Division  
India Meteorological Department, Pune

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AICRPAM, CRIDA, Hyderabad

## Realized Rainfall (4<sup>th</sup> to 17<sup>th</sup> September 2014)



During last two weeks many parts of Konkan & Goa received an average rainfall of more than 40 mm/day. Many parts of Uttarakhand, Odisha, Chhattisgarh, Gujarat region, Coastal Karnataka and Kerala and some parts of Madhya Maharashtra and South Interior Karnataka received an average rainfall of 20-40 mm/day. Many parts of Sikkim, Jammu & Kashmir, Himachal Pradesh, Arunachal Pradesh, West Madhya Pradesh, Saurashtra and Vidarbha and some parts of Assam, East Rajasthan, East Madhya Pradesh and Coastal Andhra Pradesh received an average rainfall of 10-20 mm/day. Many parts of Uttar Pradesh, West Bengal, Mizoram, Tripura, Bihar and Jharkhand and some parts of Punjab, West Rajasthan and Telangana received an average rainfall of 5-10 mm/day. Many parts of North Interior Karnataka, Marathwada, Kutch region, Haryana, Meghalaya, Manipur and Nagaland and some parts of Rayalaseema received an average rainfall of 2-5 mm/day. Mainly dry weather prevailed over rest of the country.

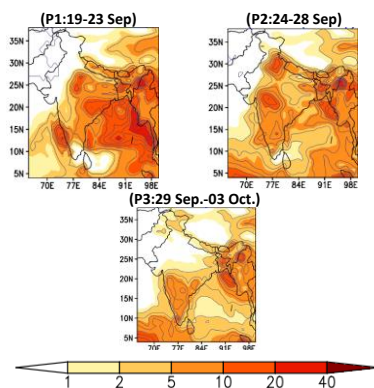
### Monsoon Watch

- Conditions have become favourable for the withdrawal of Southwest Monsoon from some parts of northwest India during next 2-3 days.
- The southwest monsoon has been active over Assam & Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura and Coastal Andhra Pradesh.

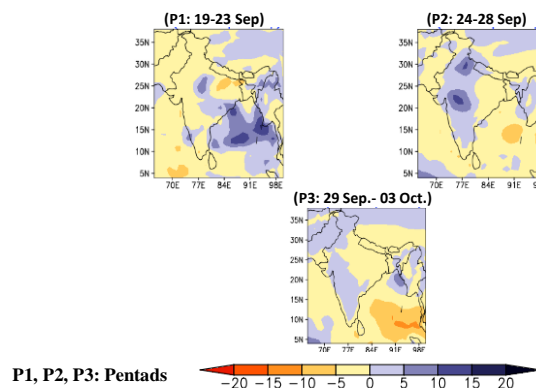
### Extended Forecast System (based on CFS model)

#### Rainfall forecast for 3 pentads

##### Rainfall Forecast Actual (mm/day)



##### Rainfall Forecast Anomaly (mm/day)



**First pentad (19-23 Sep):** Rainfall of about 20-40 mm/day is likely over many parts of Manipur, rainfall of about 10-20 mm/day is likely over many parts of Nagaland, Odisha, Chhattisgarh, Coastal Karnataka, some parts of Vidarbha, West Uttar Pradesh and West Madhya Pradesh, rainfall of about 5-10 mm/day is likely over many parts of Arunachal Pradesh, Assam & Meghalaya, Tripura, Mizoram, East Uttar Pradesh, Gangetic West Bengal, Sikkim, Jharkhand, East Madhya Pradesh, Goa, South Interior Karnataka, Andhra Pradesh and Telangana, some parts of Sub-Himalayan West Bengal, Bihar and North Interior Karnataka, rainfall of about 2-5 mm/day is likely over many parts of Konkan, Madhya Maharashtra and Marathwada and some parts of Uttarakhand, Kerala and Tamil Nadu. Mainly dry weather would prevail over rest of the country.

**Second Pentad (24-28 Sep):** Rainfall of about 10-20 mm/day is likely over many parts of Uttarakhand and some parts of Manipur, Nagaland, West Uttar Pradesh, Haryana, West Madhya Pradesh, Madhya Maharashtra and Vidarbha, rainfall of about 5-10 mm/day is likely over many parts of Assam & Meghalaya, Mizoram, Tripura, Sikkim, Sub-Himalayan West Bengal, Marathwada, Karnataka, Andhra Pradesh and some parts of Arunachal Pradesh, Gangetic West Bengal, Jharkhand, Chhattisgarh, Odisha, Himachal Pradesh, Gujarat region, Kerala and Tamil Nadu, rainfall of about 2-5 mm/day is likely over many parts of Bihar, East Uttar Pradesh, East Madhya Pradesh and some parts of Jammu & Kashmir, East Rajasthan and Saurashtra. Mainly dry weather would prevail over rest of the country.

**Third Pentad (29 Sep-03 Oct):** Rainfall of about 10-20 mm/day is likely over some parts of Manipur and Kerala, rainfall of about 5-10 mm/day is likely over many parts of Meghalaya, Tripura, Mizoram, Madhya Maharashtra, Marathwada, Interior Karnataka, Andhra Pradesh, Telangana and some parts of Assam, Arunachal Pradesh and Tamil Nadu, rainfall of about 2-5 mm/day is likely over many parts of Jammu & Kashmir, Bihar, Jharkhand, West Bengal & Sikkim, Odisha, Chhattisgarh, Vidarbha, Konkan & Goa, Coastal Karnataka, and some part of Himachal Pradesh and South Gujarat. Mainly dry weather would prevail over rest of the country.

### Strategic Agricultural Planning based on rainfall during next 2 weeks till 2<sup>nd</sup> October

#### *Current status*

**Southern India:** Seasonal rainfall over Kerala is normal (8%) so far. The rainfall is normal in North Interior Karnataka (4%), Coastal Karnataka (3%) and South Interior Karnataka (17%). Rainfall is normal over Coastal Andhra Pradesh (-19%) and Rayalaseema (-14%). The total area sown in the state of Andhra Pradesh is 34.78 lakh ha, which accounts for 83% of the normal *kharif* season area. Telangana state also faces deficit rainfall (-31%). The total area sown in the state of Telangana is 37.68 lakh ha, which accounts for 93% of the normal *kharif* season area.

**Western India:** Rainfall condition of Marathwada (-36%) is deficit so far. Madhya Maharashtra (0%) and Konkan (-3%) received normal rainfall. In Gujarat region (-10%) and Saurashtra (0%), rainfall status is normal. Sowing of cereals, pulses and oil seeds are nearly 86, 76, 88% of normal *kharif* sowing area. State as a whole 97% of normal sowing area is covered under various crops.

**Central India:** Rainfall status of Vidarbha (-10%) is normal. Rainfall status is normal in West

Madhya Pradesh (-8%), but it is deficit over East Madhya Pradesh (-26%).

**Northwest India:** The rainfall status is normal in both eastern (4%) and western Rajasthan (3%). Deficit rainfall conditions continues over Haryana, Chandigarh and Delhi (-55%) and Punjab (-47%). Deficit rainfall condition exist over Himachal Pradesh (-35%), East UP (-41%) and West UP (-54%).

**East & Northeast India:** Odisha (11%) has normal rainfall so far during the season. Normal rainfall conditions prevail over Jharkhand (-13%), Sub-Himalayan West Bengal (-11%) and Gangetic West Bengal(-17%). Rainfall status is normal in Bihar (-18%). Assam & Meghalaya (-20%), Nagaland, Manipur, Mizoram and Tripura (-28%) are facing deficit rainfall condition.

### ***Future Strategies***

#### **Southern India**

##### **Andhra Pradesh**

- In Coastal AP, sowing of direct seeded rice and chillies may be completed. Maintain 2-3 cm water level in rice fields.
- In Rayalaseema, intercultural operations and weeding in standing crops may be carried out to conserve soil moisture. Sowing of contingency crops like sorghum, pearl millet, foxtail millet, cowpea, sunflower, green gram, field bean, castor and horse gram is expected to be completed. As good rainfall received in the districts of Cuddapah and Kurnool, sowing of Maghi Sorghum may be undertaken.
- Plan for *rabi* crops like sorghum, safflower, sunflower and green gram.
- In Krishna and East Godavari districts, creation of soil mulch to conserve moisture is suggested.

##### **Telangana**

- In Adilabad, Karimnagar and Khammam districts, continue gap filling with survived hills (split into individual tillers), wherever the rice fields were inundated and the crop was damaged earlier.
- Undertake intercultural activities in cotton to create better aeration.
- Maintain optimum water level in rice fields.
- Plan for *rabi* crops like sorghum, Safflower, Sunflower.

##### **Karnataka**

- In North Interior Karnataka, sowing of sunflower and fodder crops is expected to be completed. Land preparation for sowing of *rabi* crops like sorghum may be undertaken.
- In South Interior Karnataka intercultivation and weeding operations in red gram, ragi may be carried out. Sowing of sunflower, late *kharif* cow-pea (C-152, TVX-944) and field bean (HA-3, HA-4) may be continued.
- Soil moisture conservation techniques such as compartmental bunding, ridges and furrows across the slope are suggested for medium and deep black soils spared for *rabi* sowings.
- Plan for early *rabi* crops like sunflower, horse gram (PHG-9), sesame and cowpea.

## **Tamil Nadu**

- Transplanting of *samba* rice may be continued in the Cauvery Delta Zone of Tamil Nadu. For late *Samba / Thaladi* season, ADT 38, ADT 46, ADT 49, Improved White Ponni, IR 20, ASD 19, Paiyur1, TRY 1, TRY 3, CO 48, CO 49, BPT 5204 and CO 50 varieties are suggested. Thinning and gap filling in rainfed cotton and maize crops may be undertaken.
- In Western Zone weeding and earthing up in groundnut may be undertaken.
- Keep inputs ready for dry land cultivation during Northeast Monsoon season in the Southern Zone of Tamil Nadu. Drought resistant varieties of cotton (KC3, PA255); maize (CoH (M) 6); sorghum (K8, K11); green gram (CO6); sunflower (CO4) and pearl millet (CO9) are recommended.
- Planting of potato (Kufri Girdhari) may be undertaken in Nilgiris district in Tamil Nadu.
- Foliar spraying of 1% KCl or 3% Kaolin or 100 ppm salicylic acid is advocated to save rainfed crops from terminal drought.

## **Western India**

### **Gujarat**

#### **South and Middle Gujarat region:**

- Carry out intercultural operations and weeding in paddy, pulses and cotton.
- Transplanting of tobacco cv. GT-4, 5, 9 and GT-1 may be completed in tobacco growing districts of Kheda, Anand, Vadodara and part of Mahisagar district.
- Sowing of castor may be completed with varieties GCH-2, 4, 5 and 7.

#### **North Gujarat Region:**

- Weeding, hoeing and intercultural operations in already sown castor, cotton and sesame may be undertaken to conserve soil moisture.
- Sowing of cluster bean varieties Guj. 1 and 2 may be completed.
- Sowing of castor may be completed with varieties GCH-2, 4, 5 and 7.

#### **Saurashtra region:**

- Carry out intercultural operations and mulching in already sown castor to conserve soil moisture in North West Zone.
- Sowing of cluster bean Guj. 1 and 2 may be completed.
- Sowing of castor cv. GCH-2, 4, 5 and 7 may be completed.
- Sowing of sesame cv. Purva-1 may be completed.
- Carry out gap filling in late sown castor and fennel crops.

### **Marathwada**

Rainfall is deficit in Marathwada (-36%).

- Undertake intercultural operations in cotton, soybean, red gram and sunflower.
- Continue plucking of already matured green gram and black gram pods.
- Soybean is at flowering stage. For better growth, spray Urea @ 20 g per 10 litres of water.
- Plan for sowing of *rabi* crops like sorghum and safflower.

## **Madhya Maharashtra**

- Maintain 5 cm water level in transplanted rice fields.
- Carry out intercultural operations like weeding and fertilizer application in sugarcane, vegetables and in late sown cotton, red gram, soybean and sunflower.
- In fallow and already harvested fields of green gram and black gram, undertake sowing of *rabi* sorghum and safflower utilizing the available soil moisture. Select varieties Selection-3, Phule Mauli, Phule Anuradha in light soil, Phule Chitra, Maldandi-35-1 in medium soil and Phule Vasudha, Phule Yashodha in black soil for sowing of *rabi* sorghum and Bhima or Phule Kusuma for sowing safflower.

## **Konkan**

- Maintain 5-8 cm water level in rice fields at tillering stage.
- Undertake intercultural operations in rice, finger millet, vegetable fields and mango and cashew orchards.

## **Central India**

### **Madhya Pradesh**

Due to heavy rain in previous weeks, if there was complete damage of crops in Sehore and Vidisha districts of Vindhya Plateau Zone and Jhabua, Dhar and Alirajpur districts in Jhabua Hill zone, following advisories are suggested.

- Nursery sowing of *kharif* onion, garlic and short duration potato variety before sowing of wheat (lok-1). Sowing of green gram (K-851, Jawahar Mung -721, Pant Mung- 4, T.J. M 3), black gram (Pant U-30, R.B.U.-38, Jawahar Urd-3, J. U-37) by ridge furrow method is recommended.
- As mainly dry weather would prevail, sowing of sarson saag, radish, spinach and coriander crops may be undertaken in Bundelkhand Zone.
- Harvesting of mature urad and moong crops in Bundelkhand Zone and vegetables in Vindhya Plateau Zone and Nimar Valley Zone is also advised.

### **Chhattisgarh**

- In Chhattisgarh Plain Zone and North Hill Zone, sowing of horse gram and niger in fallow uplands is expected to be completed.
- In North Hill Zone of Chhattisgarh, raise the seedlings of winter vegetables like cauliflower, cabbage, chilli, tomato, brinjal etc.

### **Vidarbha**

Rainfall condition over Vidarbha region has improved (-10%). The following advisories are suggested:

- Maintain 5 cm water level in rice fields in East Vidarbha.
- Intercultural operations in cotton and red gram are suggested.



- Spray 2 % urea in cotton, red gram and soybean for better growth.
- Undertake harvesting of matured *kharif* crops (green gram, black gram) and vegetable cowpea, cluster bean (green pods).
- Apply foliar spray of 2% Urea (200 g Urea +10 litres of water) to late sown soybean and cotton crops at flowering stage. Repeat spray at pod development stage in soybean.
- Foliar spray of 2% DAP (200 g DAP +10 litres of water) is advisable at boll development stage in cotton.
- Rainfed crops of safflower (Bhima, AKS-207, PKV-Pink), chickpea ( JAKI 9218, Vijay, Vishal, ICCV-2, ICCV-10, Gulak 1, PKV-Harita, PKV-Kabuli 2 and 4) and sorghum (Maldandi, Yashoda, SPV 504, CSV 14R, PKV Kranti ) can be sown up to 15 October.
- Preventive measures may be undertaken to avoid floral bud dropping in cotton.

## **Eastern India**

### **Jharkhand**

- Transplanting of tomato, cauliflower and cabbage may be continued.
- Prepare land for planting of marigold. After land preparation open the furrow by maintaining a row to row distance of 40 cm and apply half dose of urea @ 50 kg, full dose of single super phosphate @ 94 kg & muriate of potash @ 45 kg per acre and planting may be done with a plant to plant distance of 30 cm.
- Conserve rain water by repairing the broken bunds of the rice field to saturate the soil.
- Field preparation for cultivation of early potato and green peas may be continued.
- Sowing of the seed of green fodder like Maize (variety- African tall or J-1006), Lobia (variety-UPC-4200) may be undertaken.

### **West Bengal**

- Sowing of black gram may be continued.
- Maintain water level of 5-8 cm in main rice fields at tillering stage. Gap filling may be done in *aman* rice. Complete weeding & top dressing operations.
- Seedbed / land preparation for early winter vegetables (radish, broccoli etc.) is suggested. Sowing of onion, cabbage, cauliflower etc. in the nursery bed may be continued.
- Keep the upland rice field weed free and maintain 3-5 cm standing water in the field.

### **Bihar**

- Sowing of pigeon pea (Pusa-9 and Sarad) may be completed.
- In *kharif* maize, undertake weeding from the field and apply nitrogenous fertilizer.
- Continue nursery sowing of cabbage.
- Maintain optimum water level in rice fields.
- Transplanting of tomato and planting of cauliflower may be undertaken.

### **Odisha**

In the flood affected areas, where there was complete failure of crops in upland and up-medium land, sowing of pre-*rabi* pulses and oil seeds like green gram, black gram, horse gram, sesame, castor and vegetables may be continued.

- Raising of nursery for early *rabi* vegetables may be continued.
- Transplanting of *kharif* vegetables, planting of fruits and marigold may be continued.
- Go for nursery raising of brinjal and cole crops.
- Planting of banana may be undertaken.
- Planting of *rabi* sweet corn may be undertaken.
- In fallow uplands sowing of green gram, black gram and sesame may be undertaken.

## **Northwest India**

### **Rajasthan**

#### **East Rajasthan**

- Nursery sowing/transplanting of mid-season cauliflower (Pusa Hybrid-2, Improved Japanese, Pusa Shubhra and Pusa Himjyoti) and cabbage in Flood Prone Eastern Plain Zone and Sub-Humid Southern Plain Zone may be continued.
- Continue sowing of radish (Pusa Chetki) and taramira, toria and mustard in Semi Arid Eastern Plains Zone and Arid Western Plain Zone.
- Nursery raising of tomato, brinjal, chillies, cabbage etc. in Transitional Plain Zone is suggested.

#### **West Rajasthan**

- Hoeing and weeding operation to reduce weed population and to maintain proper aeration in standing crops is recommended.
- Conserve soil moisture by Bhakhar and planking to utilize residual soil moisture for *rabi* crops like taramira (RTM 314) and fodder sorghum (Raj Chari 2) and perennial grasses like sewan, dhaman and modadhaman grass etc. which grow naturally during rainy season can also be grown to use as fodder.

### **Uttar Pradesh**

Rainfall is deficit by 41 and 54% in Eastern and Western UP, respectively.

#### **East Uttar Pradesh**

- Undertake transplanting of cauliflower (60x60 cm row spacing), brinjal (75x60 cm row spacing), cabbage, tomato and chilli and planting of fruit crops in Raibareilly, Amethi and Sultanpur districts of Eastern Plain Zone.
- Undertake sowing of toria @ 4kg seed per hectare in Fatehpur, Pratapgarh, Allahabad, Chitrakut, Kaushambi, Agra, Mathura, Lucknow and Kanpur districts of Central Plain Zone; varieties like Sangam, TL-17, 67 in Western Plain Zone and continue sowing of toria (T-9, T-36, Bhavani, Pant -30,303, 507) at a row spacing of 30 cm in Raibareilly, Amethi, Sultanpur, Deoria and Ballia districts of Eastern Plain Zone and Central Plain Zone.
- Sowing of early varieties of potato like Kufri Chandramukhi, Ashoka in Central Plain Zone is also recommended.
- Sowing of ladies finger and lobia in Gorakhpur, Raibareilly and Sultanpur districts may be



continued.

- Top dressing of urea fertilizer in paddy crop at panicle initiation stage in Faizabad, Kannauj, Mathura, Agra, Kanpur district is advised.

### **West Uttar Pradesh**

- Sowing of pigeon pea (Bahar, Narendra 1 and 2) + pearl millet (NDFB 3) + blackgram (Ajad) or Pigeon pea (Bahar, Narendra 1 and 2) + Sorghum (Varsha, CSH 13 and 23, Bundela) is recommended.
- Planting of fruit crops like mango, papaya, lemon, amla, etc. in Jhansi district of Bundelkhand Zone is suggested. Second top dressing of urea @ 20 kg + Zinc Sulphate @ 5 kg per hectare in rice is also suggested.
- Select maize hybrid as Ganga-2, 5, 7 or composite as Kishan , African tall and Vijay or indigenous variety Type-41 for fodder.
- Undertake weeding in standing crops like rice, maize, sorghum, pigeon pea, black gram and green gram.

### **Haryana**

As the rainfall situation is deficient (55% deficit) so far, crop diversification is advocated and short duration mung bean (MH 421, SML 668) or maize or fodder crops as per local demand/ market are suggested in place of paddy.

- Continue sowing of mustard (RH-30, RH -819, RB-24, RB 50, RH- 781 and Varuna) and chickpea (C-235, H-208 and HC-1).
- Undertake plantation of new orchard with expected rainfall during last week of September
- Apply irrigation to pearl millet and recently transplanted fruit crops through micro irrigation system.
- Undertake hoeing in guar and pulses for conserving soil moisture. Alternate wetting and drying in rice fields and irrigation is advised in alternate rows in sugarcane in case of shortage of water for irrigation.

Following measures are also suggested:

- Straw mulching in between rows for soil moisture conservation and preparation of ridge and furrow for rain water harvesting.
- Foliar spray of urea (2.5%) at 30-35 days.
- Conjunctive use of canal and ground water.

### **Punjab**

Rainfall situation has slightly improved over Punjab (-47% deficit). Following recommendations are suggested.

- Sowing of toria and early varieties for potato is recommended.
- Transplant tomato seedlings for autumn-winter crop.
- Sowing of leguminous and non-leguminous crops in mixture to improve the nutritive value of the fodder i.e. maize + cowpea, sorghum + guar is advised
- In Western Plain Zone of Punjab, field preparation and sowing of short duration hybrid maize (PMH 2) is suggested.

- In Undulating Plain Zone of Punjab, continue nursery sowing of mid-season cauliflower, desi varieties of radish, carrot and turnip.
- Adopt moisture conservation practices like hoeing, weeding, mulching in crops like sugarcane, maize, cotton to reduce the evapotranspiration losses and to conserve moisture for *rabi* crops.

### **Delhi**

- Due to subdued rainfall conditions, application of irrigation to the standing crops is recommended.
- Continue transplanting of onion seedling with expected rain in last week of September.
- Making of higher bunds for conserving rain water in the field is advised.
- Weeding and hoeing in all crops and vegetables may be carried out for optimum growth.
- Sowing of carrot in the raised bed may be undertaken. Recommended cultivars for carrot are Pusa Rudhira and Pusa Kesar.
- In sugarcane intercultural operations, earthing up and tying operations are recommended.
- Transplanting of brinjal, tomato, chilli, cauliflower and cabbage are advised on raised bed where seedlings are ready.
- Preparation of nurseries on raised bed for mid season cauliflower (Nov.-Dec.) (Pusa sharad, Pusa hybrid-2, Pant shubra) is suggested.
- Sowing of sarson saag (Pusa saag-1); radish- Versa kee rani, summer long, long chetaki); spinach- (All green); coriander- (Pant Haritama or other hybrids) may be undertaken on raised bed.

### **Jammu and Kashmir**

In view of recent flash floods in Ravi river in Jammu & Kashmir which has damaged paddy, fruit crops, vegetables and maize. Following advisories are suggested as decrease in rainfall activity is likely during next fortnight:

- Arrange for extensive drainage facilities to remove excess water from fields wherever feasible and then apply top dressing of nitrogen @ 3.25 kg urea per kanal in rice and in maize. Monitor maize crop for the incidence of stalk rot.
- Apply urea to rice seedlings in the nurseries after receding of excess water.
- Sowing of toria (RSPT-1 and Local toria) and nursery bed preparation for winter vegetables and nursery raising of cole crops & onion in Sub-Tropical Zone is suggested. Sowing of root crops like radish, carrot, turnip etc. is also advised.

### **Himachal Pradesh**

- Nursery beds for winter flowers i.e. Gudashia, marigold, chrysanthemum, antirrhinum and limonium etc. may be prepared and plantation of agro forestry trees which are in polybags like harad, bahera, amla, ritha, jamun and kher may be undertaken in Himachal Pradesh.
- Continue sowing of radish, turnip, carrot and leafy vegetable like spinach and fenugreek in mid hill areas and early varieties of pea in Sub-Montane and Low Hills Sub-Humid Tropical Zone and Bilaspur district of Mid Hills Sub-Humid Zone.
- Nursery sowing of cauliflower (late group), cabbage, knol khol, broccoli and Chinese cabbage

and direct sowing of radish, carrot, turnip, spinach and fenugreek and planting of onion (30X 10 cm spacing ) is suggested in mid hill areas.

- Transplanting of mid season cauliflower in low hill areas may be undertaken.
- Sowing of African tall variety of maize and makchari as well as berseem, lucerne and oats catch crops for animal fodder in Chamba, Hamirpur, Kangra, Una and Bilaspur districts is suggested. It is also advised to mix seed of gobhi sarson to have nutritious production of fodder during first-cut.
- Harvesting of rajmah in High Hill Temperate Dry Zone may be undertaken.
- Intercultural operation like weeding in peas is advised for soil moisture conservation in High Hill Temperate Dry Zone.

### **Uttarakhand**

- Sowing of toria with improved varieties like Pant Toria-30, Pant Toria-303 or Pant Toria-507 is recommended in Udham Singh Nagar district.
- Sowing of mustard, phalak, methi, radish, early toria and pea varieties like VL Ageti Mater-7, Vivek Mater-10, Pant Subjee Mater-3, Azad Mater-3 and Arkel in high hills may be continued in Nainital district.
- Maintain 5 cm water level in rice crop at panicle initiation stage and undertake top dressing of urea @ 20 kg per acre in Udham Singh Nagar district. Weeding and plant protection measures in late sown maize are also advised.
- Sowing of fodder crops like sorghum, maize, lobia etc. may be undertaken in Udham Singh Nagar district. Chara Sarson-602 variety of sarson and African Tall, Jawahar or Kisan variety or any local variety of fodder Maize are recommended. Planting of new orchards is advised.
- Transplanting of subtropical fruits like aonla, citrus spp. Malta in Mid Hills region is advised.
- Foliar spray of urea on temperate fruit trees after harvesting of fruits is also recommended.

### **Northeast India**

#### **Arunachal Pradesh, Assam & Meghalaya, NNMT**

- In Central Brahmaputra Valley Zone of Assam, complete nursery sowing of cole crops and early radish. Undertake weeding in sesame. Nursery sowing of winter brinjal (Pusa Kranti, Pusa Purple Long, Pusa Purple Cluster, Pusa Bhairav, JC-2, BWR-12) may also be undertaken.
- In Hill zone of Assam, replanting or gap filling with seedlings of *sali* rice of similar age should be done within 7-10 days of transplanting. Land preparation for sowing of sesame (AST-1, Gauri, Vinayak) may be continued.
- In Lower Brahmaputra Valley Zone of Assam, transplanting of 25-30 days old seedlings of mid cauliflower, early cabbage, knol khol in the main field may be continued. Sowing of black gram (T-9, T-27, Pant U-19, T-122) and green gram (T-44, Kopergaon, K-851, ML-56, ML-131) may be continued. Sowing of garlic may be undertaken. Weeding and thinning in already sown sesame crops may be undertaken.
- In Upper Brahmaputra Valley Zone of Assam, transplanting of 25-30 days old seedlings of mid cauliflower, early cabbage, knol khol in the main field may be continued. Sowing of

black gram (T-9, T-27, Pant U-19, T-122) and green gram (T-44, Kopergaon, K-851, ML-56, ML-131) may be completed. Weeding in *sali* rice may be undertaken.

- In Barak Valley Zone of Assam sowing of jute for seed purpose may be continued. Nursery sowing of mid cauliflower, early cabbage and knol khol may be undertaken. Sowing of bottle gourd may be undertaken.
- In North Bank Plain Zone of Assam nursery sowing of mid cauliflower, early cabbage, brinjal, tomato, carrot, spinach, beet, raddish and knol khol may be undertaken. Weeding and thinning in pulse crops may be undertaken.
- In Meghalaya, maintain water level of 3-5 cm in transplanted *Sali* rice. Conserve water by repairing bunds. Transplanting of cabbage, cauliflower and broccoli and sowing of carrot, radish and French bean may be completed. In ginger and turmeric undertake hand weeding followed by fertilizer application, earthing up and mulching. Mulching can be done with locally available weed biomass, maize stalk, etc. Land preparation for sowing of potato and peas may be undertaken.
- In Manipur, in *kharif* rice, maintain water level of 5-8 cm. Continue raising off-season tomato nursery under poly houses. Preparation of nursery for onion may be continued. Continue preparation of main field for transplanting from raised cole crops nurseries (cabbage/ cauliflower/ broccoli). Sowing of French bean, broad bean and pea may be undertaken. Recommended varieties for French bean are – Pant Anupam, Anupam and Tangkhul Hawai (local), for broad bean, plant local variety and for pea, Arkel or Azad may be planted. Weeding in soybean, groundnut and black gram may be carried out.
- In Mizoram, nursery preparation for cabbage, cauliflower, broccoli and knol khol may be continued. Carry out weeding in rice, maize, cowpea, turmeric and ginger field.
- In Mild Tropical Plain Zone of Tripura, weeding in *aman* rice may be carried out. In raised nursery beds sowing of winter vegetable like tomato, cauliflower, cabbage, broccoli is in progress.