



# *National Agromet Advisory Service Bulletin*

based on

**Extended Range Weather Forecast**

Valid for 12<sup>th</sup> to 25<sup>th</sup> September, 2014

Date of Issue: 12<sup>th</sup> September, 2014

**Issued by**

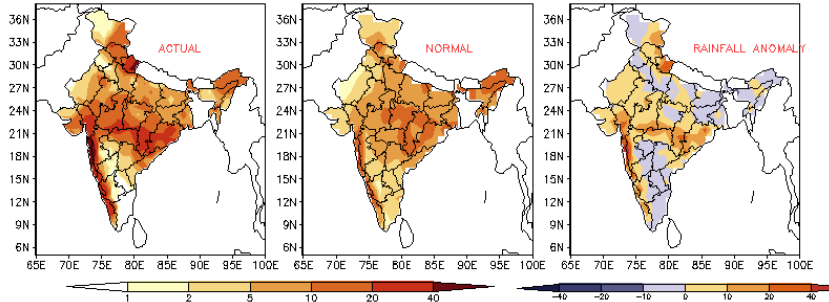
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## Realized Rainfall (28<sup>th</sup> August to 10<sup>th</sup> September 2014)



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 and Telangana received an average rainfall of 5-10 mm/day. Many parts of North Interior Karnataka, Marathwada, Kutch region, West Rajasthan, 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.

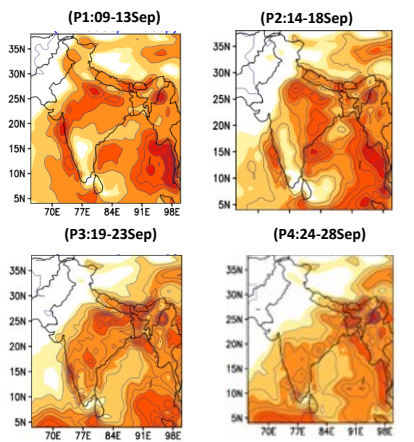
### Monsoon Watch

- Southwest monsoon was active over East Rajasthan, Gujarat region and Konkan & Goa on 11<sup>th</sup> September.

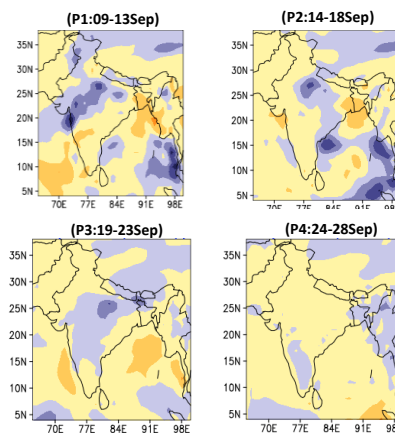
### Extended Forecast System (based on CFS model)

#### Rainfall forecast for 4 pentads

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



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



P1, P2, P3, P4: Pentads

**First pentad (09 -13 Sep):** Rainfall of about 20-40 mm/day is likely over some parts of East Uttar Pradesh, Manipur, Nagaland and Konkan, rainfall of about 10-20 mm/day is likely over many parts of Sikkim, West Uttar Pradesh, West Madhya Pradesh, Gujarat region and Madhya Maharashtra, some parts of Sub-Himalayan West Bengal, Bihar, Jharkhand and East Madhya Pradesh, rainfall of about 5-10 mm/day is likely over many parts of Uttarakhand, Punjab, Haryana, Assam & Meghalaya, Tripura, Mizoram, Gangetic West Bengal, Odisha, Chhattisgarh, Vidarbha and Coastal Karnataka, some parts of Arunachal Pradesh, Jammu & Kashmir, East Rajasthan, Marathwada and Kerala, rainfall of about 2-5 mm/day is likely over many parts of Himachal Pradesh, West Rajasthan, Saurashtra, Kutch, Telangana and Coastal Andhra Pradesh, some parts of Interior Karnataka and Tamil Nadu. Mainly dry weather would prevail over rest of the country.

**Second pentad (14 -18 Sep):** Rainfall of about 10-20 mm/day is likely over many parts of Sikkim, Sub-Himalayan West Bengal, Uttar Pradesh, Odisha, Chhattisgarh, some parts of Nagaland, Manipur, Bihar, Jharkhand and Coastal Andhra Pradesh, rainfall of about 5-10 mm/day is likely over many parts of Konkan & Goa, East Madhya Pradesh, Mizoram and Tripura, some parts of Assam & Meghalaya, Arunachal Pradesh, West Madhya Pradesh, Vidarbha, Telangana and Kerala, rainfall of about 2-5 mm/day is likely over many parts of Uttarakhand, Gujarat region, Marathwada and Rayalaseema, Gangetic West Bengal, some parts of East Rajasthan, Madhya Maharashtra and Karnataka. Mainly dry weather would prevail over rest of the country.

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

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

### **Strategic Agricultural Planning based on rainfall during next 2 weeks till 25<sup>th</sup> September**

#### ***Current status***

**Southern India:** Monsoon was active over southern states during last week. The *Viruppu* paddy is in milky stage at many places of Kerala. Seasonal rainfall over Kerala is normal (9%) so far. The rainfall is normal in North Interior Karnataka (6%) and in Coastal Karnataka (3%) and excess in

South Interior Karnataka (22%). The agricultural status (area in lakh ha) is given in the following table.

Sr. No.	Crop	Targeted Area (lakh ha)	Area (lakh ha) covered as on 31.8.2014	Area (lakh ha) covered last year (31.8.2013)
1	Total Cereals:	35.18	30.19	32.53
2	Total Pulses:	15.36	11.33	13.52
	<b>Total food grains</b>	<b>50.55</b>	<b>41.51</b>	<b>46.05</b>
3	Total Oilseeds:	12.49	9.46	10.01
4	Cotton	4.91	7.47	5.24
5	Sugarcane	4.95	5.06	4.51
6	Tobacco	1.11	1.01	1.00
	<b>Grand Total</b>	<b>74.00</b>	<b>64.52</b>	<b>66.81</b>

Rainfall is deficit in Coastal Andhra Pradesh (-24%) and normal in Rayalaseema (-18%). The total area sown in the state of Andhra Pradesh is 30.34 lakh ha, which accounts for 73% of the normal *kharif* area. Telangana state also faces deficit rainfall (-32%). The total area sown in the state of Telangana is 35.63 lakh ha, which accounts for 88% of the normal *kharif* season area. With the receipt of good rainfall during last week, all rainfed crops are recovering from moisture stress in Andhra Pradesh and Telangana.

**Western India:** Continuous rainfall during last week reduced deficit over Marathwada (-35%). Sowing of Kharif crops is completed in 42,31,000 ha area (i.e 96%). Crops are in satisfactory condition. Madhya Maharashtra and Konkan regions received normal rainfall (3% and -2%, respectively). In Gujarat, rainfall status is normal over Saurashtra and Kutch region (1%) and other regions of the state (-9%). Sowing of cereals, pulses and oil seeds are nearly 85, 74, 88% of normal *kharif* sowing area and for the state as a whole, 97% area is covered under various crops.

**Central India:** Rainfall status of Vidarbha is normal (-9%). Rainfall status is normal in West Madhya Pradesh (-7%), but it is deficit over East Madhya Pradesh (-24%).

**Northwest India:** The rainfall status is normal in Rajasthan (3%). Deficit rainfall conditions continue over Haryana, Chandigarh & Delhi (-54%) and over Punjab (-48%). Deficit rainfall condition exist over Himachal Pradesh (-33%), East UP (-43%) and West UP (-54%). Rainfall status is normal in Jammu & Kashmir (18%).

**East & Northeast India:** Odisha has experienced normal (13%) rainfall so far during the season. Normal rainfall conditions prevailed over Jharkhand (-13%), Sub-Himalayan West Bengal (-9%) and Gangetic West Bengal (-13%). Rainfall status is deficit in Bihar (-20%) and Assam & Meghalaya (-18%). Nagaland, Manipur, Mizoram and Tripura are facing deficit rainfall condition (-30%).

## ***Future Strategies***

### **Southern India**

#### **Andhra Pradesh**

- In Coastal AP, sowing of direct seeded rice and chillies may be continued. Undertake gap filling in direct seeded rice. Maintain 2-3 cm water level in rice fields. Apply biogyme, micronutrients and mineral mixture in cotton to overcome slow growth due to micro nutrient deficiencies.
- In Rayalaseema, intercultural operations and weeding in standing crops may be carried out to conserve soil moisture. Sowing of sorghum (CSH-9, CSH-13, CSH-14, PSV-15, PSV-19), pearl millet (ICTP 8203, PBH 3), Korra (Prasad, Krishna devaraya, Narashimharaya, Srilakshmi, Surya nandi), cowpea (C 152 GC3 C0-4 CO-5) and field bean (TFB-1 TFB-5) may be continued in Anantpur district.
- 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, undertake gap filling with survived hills (split into individual tillers), wherever the rice fields are inundated and the crop is damaged.
- In cotton, apply a booster dose of 30 kg urea + 15 kg MOP per acre and undertake intercultural activities to create better aeration in areas which received heavy rains.
- Maintain optimum water level in rice fields.

#### **Karnataka**

- In North Interior Karnataka, sowing of sunflower and fodder crops is expected to be completed. Land preparation for *rabi* sowings may be continued.
- In South Interior Karnataka inter cultivation and weeding operations in red gram, ragi and thinning, gap filling in ragi may be carried out. Sowing of ragi (Indaf-5, Indaf-9, and GPU-28), sunflower, late *kharif* cow-pea (C-152, TVX-944) and field bean (HA-3, HA-4) may be continued.
- Use 15-20% more seed rate for late sown situation
- Maintain optimum plant population by thinning
- 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.

- Sowing of maize, sorghum under rainfed condition and winter irrigated cotton in Western Zone may be continued.
- 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**

- Undertake hand weeding and intercultural operation in castor crop.

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

- Transplanting of tobacco cv. GT-4, 5, 9 and GT-1 may be continued in tobacco growing districts of Kheda, Anand, Vadodara and part of Mahisagar district.
- Drain out excess water from earlier planted tobacco.
- Sowing operation may be continued for castor with varieties GCH-2, 4, 5 and 7.

### **North Gujarat Region:**

- Continue sowing of cluster bean Guj. 1 and 2.
- Sowing may be continued in castor with varieties GCH-2, 4, 5 and 7.

### **Saurashtra region:**

- Continue sowing of cluster bean Guj. 1 and 2.
- Sowing of castor cv. GCH-2, 4, 5 and 7 may be continued.
- Sowing of guar cv. Guj. Gaur 1 and 2 is in progress in Kutch region
- Sowing of sesame cv. Purva-1 may be continued.
- Carry out gap filling in late sown castor.

### **Marathwada**

Rainfall is deficit in Marathwada (-35%).

- Make furrows in cotton, soybean and sorghum fields for rain water harvesting.
- Farmers may undertake intercultural operations like weeding / hoeing in late sown cotton, soybean, pearl millet, sunflower and pigeon pea crops during third week of September to conserve soil moisture.

### **Madhya Maharashtra**

- Planting of *adsali* sugarcane may be completed and conserve rain water for future use.

- Maintain the 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.
- Plan for early *rabi* sorghum and safflower crops.
- Sowing of fodder crops like sorghum (Ruchira, Phule Amruta, Phule Godhan) and maize (African tall, Karveer, Rajshree) may be completed utilizing realised and expected rain.

### **Konkan**

- Maintain 5-8 cm water level in main rice fields at tillering stage.

### **Central India**

#### **Madhya Pradesh**

- Transplanting of seedlings of tomato, brinjal and chilli and sowing of other vegetable crops may be undertaken.

Due to heavy rain in Sehore and Vidisha districts of Vindhya Plateau Zone and Jhabua, Dhar and Alirajpur districts in Jhabua Hill zone, if there was complete damage of crops, 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.
- Drain out excess water from standing crop fields in Vindhya Plateau Zone and Jhabua Hill Zone.

#### **Chhattisgarh**

- In Chhattisgarh Plain Zone and North Hill Zone, sowing of horse gram and Niger may be undertaken upto mid September in fallow uplands.
- Transplanting of vegetable crops with proper drainage system may be undertaken.
- Drain out excess water from standing crop fields.

#### **Vidarbha**

Rainfall condition over Vidarbha region has improved (-9%) due to last week's rain. The following advisories are suggested:

- Early *rabi* pigeonpea (C-11 or ICPL 87119 (Asha) with closer spacing 45x20 cm or early-*rabi* sesame (N-8) or early-*rabi* castor (AKC-1, GCH-4,5,6, DCH-9, 32,177) can be sown up to September 15.
- Drain out excess water from crop field to avoid wilting in cotton & soybean & drenching of Copper Oxychloride solution @ 30g per 10 litres water may be undertaken.
- Spray 2 % urea at flowering stage in cotton and soybean for better growth.
- Maintain 5 cm water level in already transplanted rice fields in East Vidarbha.

## Eastern India

### Jharkhand

- In fallow sloppy lands, cultivation of September pigeon pea, kulthi, niger, lobia, rice bean is in progress.
- 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.
- Undertake field preparation for cultivation of early potato and green peas.

### 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 undertaken.
- 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.
- Before initiation of tassel of *kharif* maize, remove weeds from the field and apply nitrogenous fertilizer.
- Planting of Shakarkand may be continued. Rajendra Shakarkand- 5, Rajendra Shakarkand-35, Rajendra Shakarkand-43, Rajendra Shakarkand-47, Kalmegh and Rajendra Shakarkand-92 are recommended varieties for sowing in north Bihar.
- Continue nursery sowing of cabbage and cauliflower.
- Maintain optimum water level in rice fields.

### 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.
- Conserve rain water in the paddy fields by plugging the bund holes and maintain 2-5 cm water as the crop is at active tillering stage.
- Hoeing, weeding and earthing up in pulses 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.
- Sowing of radish (Pusa Chetki) and taramira, toria and mustard is recommended in Semi Arid Eastern Plains Zone.
- Hoeing & weeding and removal of alternate rows in cluster bean to conserve moisture are suggested.

#### **West Rajasthan**

- Apply remaining half dose of nitrogen *i. e.* 30 kg/ha through urea to 25-30 days old pearl millet crop in Arid Western Plain Zone.
- In rainfed areas, maintain proper plant population to conserve moisture.
- Hoeing and weeding operation to reduce weed population and to maintain proper aeration in standing crops is recommended.
- As there was good rainfall except in Jaisalmer district, 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 43 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 Barabanki, Faizabad, and Ambedkarnagar districts of Eastern Plain Zone.
- Sowing of toria (T-9, T-36, Bhavani, Pant -30,303, 507) at a row spacing of 30 cm in Deoria and Ballia districts of Eastern Plain Zone and Kannauj, Mathura, Agra and Kanpur districts of Central Plain Zone. Sowing 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) is recommended.
- Undertake transplanting of cauliflower, cabbage, tomato, chilli and brinjal, sowing of palak,

cucumber, methi, ageti carrot, planting of fruit crops like mango, papaya, lemon, amla, etc. in Jhansi district of Bundelkhand Zone of Uttar Pradesh. Second top dressing of urea @ 20 kg + Zinc Sulphate @ 5 kg per hectare in rice is also suggested.

- Sowing of jowar varieties such as Pusa Chari-23, SSG-98-8 MFSH-3, H Pant-5 and MP Chari @ 30-40 kg seeds / ha with lobia varieties like Rashiyanzoint UPC-5286, UPC-5287, NP-3, Bundhel Lubia-2, UPC-9202 and UPC-4200 @ 15-20 kg seed for mixed cropping is advised.
- 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.
- Top dressing of 1/4 urea in rice at tillering stage is suggested.
- Opening of conservation furrow is recommended.

## Haryana

As the rainfall situation is deficient (54% 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.

- In Western Zone of Haryana, complete sowing of fodder crops such as jowar mixed with cowpea to increase the nutritive value for continuous supply of green fodder.
- Sowing of mustard (RH-30, RH -819, RB-24, RB 50, RH- 781 and Varuna) and chickpea (C-235, H-208 and HC-1) may be undertaken.
- 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 (-48% deficit). Following recommendations are suggested.

- Sowing of early varieties for potato is recommended.
- Sowing of toria is advised.
- Transplant tomato seedlings for autumn-winter crop.
- Complete new plantation of fruit crops.
- 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.
- Sowing of short duration early maturing and drought tolerant varieties of crops including maize (PMH1, PMH2) and moong (PAU 911, ML 818).

- 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.
- De-tasselling in maize is advised to reduce transpiration losses.

### **Delhi**

As subdued rainfall activity is prevailing and is likely to continue, application of irrigation to the standing crops is recommended.

- Undertake transplanting of onion seedling.
- 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:

- Undertake sowing of toria in fallow lands in Sub Tropical Zone after receding of flood water.
- 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.

### **Himachal Pradesh**

- Undertake nursery sowing of cauliflower (late group), cabbage, knol khol, broccoli and Chinese cabbage; direct sowing of radish, carrot, turnip, spinach, fenugreek and early varieties of pea; planting of onion (30 X 10 cm spacing ) in mid hill areas of Chamba, Hamirpur, Kangra, Una and Bilaspur districts of Himachal Pradesh. Transplanting of mid season cauliflower in low hill areas is also suggested.
- 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.

## Uttarakhand

- 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 are recommended for Nainital district.
- Maintain 5cm water level in rice crop and apply second dose of Urea.
- Weeding in standing crops may be carried out.
- 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. 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, sowing of black gram, green gram is expected to be completed. Continue nursery sowing of cole crops and early radish. Undertake weeding in sesame.
- 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. Undertake land preparation for sowing of sesame (AST-1, Gauri, Vinayak).
- In Lower and Upper Brahmaputra Valley Zone of Assam, undertake transplanting of 25-30 days old seedlings of mid cauliflower, early cabbage, knol khol in the main field. Undertake land preparation for 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).
- In Upper Brahmaputra Valley Zone of Assam, undertake gap filling in the main field of rice with same age of seedlings at 20 and 40 days after transplanting.
- In Barak Valley Zone of Assam undertake sowing of jute for seed purpose.
- 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 continued. In ginger and turmeric undertake hand weeding followed by fertilizer application, earthing up and mulching. Apply 80 kg/ha urea and 40 kg/ha MOP for ginger and apply 65 kg/ha urea and 100 kg/ha for turmeric MOP at 90 DAS. Mulching can be done with locally available weed biomass, maize stalk, etc.
- In Manipur, in *kharif* rice, maintain water level of 5-8cm. Weeding may be done before top dressing. 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). Land preparation for sowing of French bean, broad bean and pea may be continued. Recommended varieties for French bean are – Pant Anupam, Anupam and Tangkhul Hawaii (local), for broad bean, plant local variety and for pea, Arkel or Azad may be planted.

- In Mizoram, nursery preparation for cabbage, cauliflower, broccoli and knol khol may be undertaken. Carry out weeding in rice, maize, cowpea, turmeric and ginger field.
- In Mild Tropical Plain Zone of Tripura, provide adequate drainage in groundnut at pod filling stage particularly in low and medium lands and where there is a chance of water stagnation.