National Agromet Advisory Service Bulletin

based on

Extended Range Weather Forecast

Valid for 22nd August to 4th September, 2014

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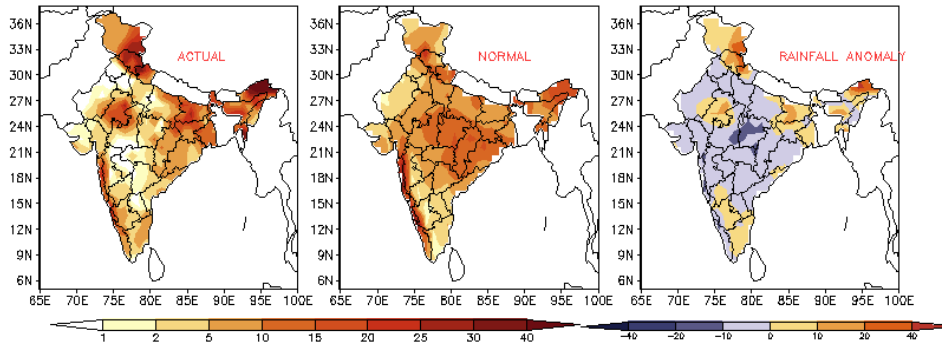
Realized Rainfall

(7th August to 20th August)



During last two weeks many parts of Arunachal Pradesh received an average rainfall of more than 30 mm/day. Many parts of Himachal Pradesh, Uttarakhand, Mizoram and Sikkim received an average rainfall of 20-30 mm/day. Many parts of Tripura, Assam, Meghalaya, Bihar, Jharkhand, Coastal Karnataka, Konkan and Goa, West Bengal, Nagaland and East Rajasthan and some parts of Jammu & Kashmir, East Uttar Pradesh, West Madhya Pradesh and Madhya Maharashtra received an average rainfall of 10-20 mm/day. Many parts of Manipur, Odisha, Chhattisgarh, Kerala and Tamil Nadu and some parts of South Interior Karnataka received an average rainfall of 5-10 mm/day. Many parts of Coastal Andhra Pradesh, Gujarat, West Uttar Pradesh, East Madhya Pradesh and some parts of Telangana, Vidarbha and West Rajasthan received an average rainfall of 2-5 mm/day. Mainly dry weather prevailed over rest of the country.

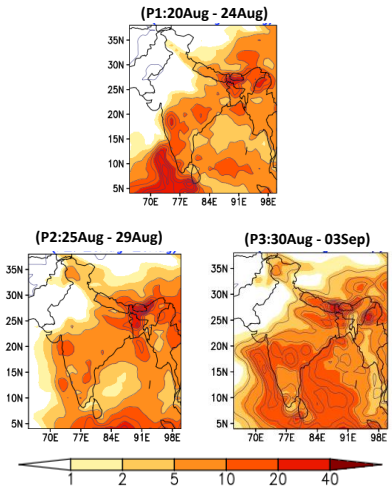
Monsoon Watch

Southwest monsoon was active over South Interior Karnataka on 21st August 2014.

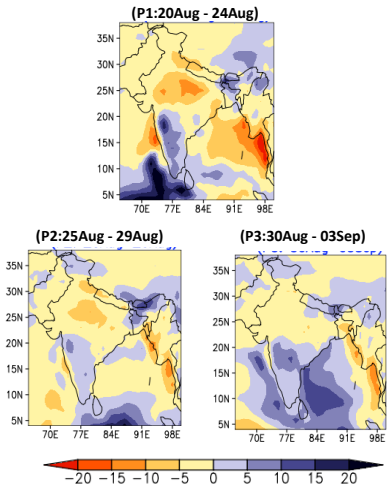
Extended Forecast System (based on CFS model)

Rainfall forecast for 3 pentads

Rainfall Forecast Actual (mm/day)



Rainfall Forecast Anomaly (mm/day)



P1, P2, P3: PENTADS

First pentad (20-24 Aug):

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

Second pentad (25-29 Aug):

Rainfall of about 20-40 mm/day is likely over many parts of Sikkim and some parts of Assam & Meghalaya, rainfall of about 10-20 mm/day is likely over many parts Arunachal Pradesh, Nagaland, West Bengal and Jharkhand and some parts of Manipur, Bihar, Madhya Maharashtra, Konkan & Goa, Rayalaseema and Telangana, rainfall of about 5-10 mm/day is likely over many parts of Mizoram, Tripura, East Uttar Pradesh, Chhattisgarh, Odisha, Vidarbha, Marathwada, Coastal Karnataka, Interior Karnataka, Coastal Andhra Pradesh and Kerala and some parts of Jammu & Kashmir, East Madhya Pradesh, Saurashtra, Gujarat Region and Tamil Nadu, rainfall of about 2-5 mm/day is likely over many parts of Uttarakhand, Himachal Pradesh, and some parts of West Uttar Pradesh, East Rajasthan and West Madhya Pradesh. Mainly dry weather would prevail over rest of the country.

Third Pentad (30Aug-03 Sep):

Rainfall of about 20-40 mm/day is likely over Sikkim, rainfall of about 10-20 mm/day is likely over Maharashtra, many parts of Telangana, Bihar and Sub-Himalayan West Bengal, some parts of East Uttar Pradesh, Coastal Andhra Pradesh, Nagaland, Manipur, Chhattisgarh, Odisha and Kerala, rainfall of about 5-10 mm/day is likely over many parts of Jharkhand, Karnataka, Rayalaseema and Tamil Nadu, East Madhya Pradesh, Arunachal Pradesh, Assam, Meghalaya and Gangetic West Bengal, some parts of Jammu and Kashmir, rainfall of about 2-5 mm/day is likely over many parts of Himachal Pradesh, Uttarakhand, West Uttar Pradesh, Mizoram, Tripura and West Madhya Pradesh, some parts of Gujarat region and Saurashtra. Mainly dry weather would prevail over rest of the country.

Strategic Agricultural Planning based on rainfall during next 2 weeks till 4th September

Current status

Southern India: Seasonal rainfall over Kerala is normal (-6%). *Viruppu* paddy is in flowering to milky stage at many of the places of Kerala. The rainfall is deficit by 23% in North Interior Karnataka; while it is normal in Coastal Karnataka (-7%) and South Interior Karnataka (16%). In Karnataka, area covered by crops is about 57.5% of normal. Rainfall is deficit in Coastal Andhra Pradesh (-35%) and Rayalaseema (-27%). Total area sown in Andhra Pradesh is 25.72 lakh ha, which

accounts for 62% of the normal *kharif* season area. Telangana state faces a deficit rainfall (-55%). Total area sown in Telangana is 32.43 lakh ha, which accounts for 80% of the normal *kharif* season area.

Western India: Scanty rainfall conditions continued over Marathwada (-62%). Madhya Maharashtra and Konkan regions received normal rainfall (-18% and -14% respectively). In Maharashtra, *kharif* sowing were completed in 117 lakh ha area (87% of normal area). In Gujarat, rainfall is deficit (-22%) over Saurashtra and Kutch region and (-32%) over the rest of the state. About 89 % of normal *kharif* sowing area is covered under various crops so far in Gujarat.

Central India: Deficit rainfall condition is prevailing over Vidarbha (-30%). Rainfall status is normal in West Madhya Pradesh (-16%), but it is deficit over East Madhya Pradesh (-22%).

Northwest India: The rainfall status is normal in both east and west Rajasthan. Scanty rainfall conditions continues over Punjab (-62%) and Haryana, Chandigarh and Delhi (-62%). Deficit rainfall conditions exist over Jammu & Kashmir (-35%), Himachal Pradesh (-30%), East UP (-34%) and West UP (-53%). In Jammu region, almost 98% of normal area is covered under various crops.

East & Northeast India: Odisha has experienced normal rainfall (9%) during the season. Normal rainfall conditions prevail over Jharkhand (-6%), Sub-Himalayan West Bengal (-13%) and Gangetic West Bengal (-9%). Due to the heavy rainfall during last week, flood situation exists in Bihar and Assam, bringing down the rainfall to normal (-11% and -19% respectively) during last ten days. Nagaland, Manipur, Mizoram and Tripura are facing deficit rainfall conditions (-38%).

Future Strategies

Southern India

Andhra Pradesh

- Farmers of Anantpur district are advised to go for spraying of 2% urea or DAP or KNO_3 to protect the rainfed groundnut crop. Intercultural operations, weeding may be carried out to conserve soil moisture and protective irrigation may be applied to groundnut, pearl millet, redgram, castor. Farmers of Kurnool district are advised to protect maize crop from moisture stress.
- In Cuddapah district, sowing of contingency crops like redgram (60 x 20 cm spacing), maize, tomato, cowpea, field bean (TFB 5) and sunflower in red soils and instead of groundnut, crops like redgram, jowar and sunflower in black soils may be continued utilizing the expected rainfall.
- In Krishna, Guntur and Prakasam districts, application of protective irrigation to cotton is recommended. Farmers are advised to take up inter-cultivation and fertilizer application in cotton sown on July 2nd FN. Adopt closure spacing for cotton and redgram sole crops and form dead furrows for moisture conservation in Prakasam district.
- Transplanting of rice and ragi may be continued in Coastal Andhra Pradesh.
- In Coastal AP, direct seeding of rice with drum seeder can be taken up with short duration varieties under dry conditions and later converted to wet paddy after receipt of good rainfall. Farmers are advised to go for short and medium duration varieties of rice instead of long duration varieties.

- Farmers of Rayalaseema are advised to take up sowing of contingency crops like sorghum, pearl millet, foxtail millet, cowpea, sunflower, green gram, field bean and horse gram instead of groundnut.

Telangana

As rainfall activity is likely to improve, sowing of cotton, maize, groundnut, pulses and castor is expected to be completed in Southern Telangana utilising expected rainfall. However, in view of scanty/deficit rainfall situation (scanty over Nizamabad, Rangareddy, Medak, Nalgonda districts and deficit over Hyderabad, Adilabad, Karimnagar, Warangal, Khammam, Mehbubnagar districts) following measures are suggested.

- Foliar spray of 2% KNO_3 or 2% urea solution to supplement nutrition during dry spells.
- Frequent inter cultivation for moisture conservation.
- Supplementary irrigation by using micro-irrigation (sprinklers).
- Avoid top dressing of fertilizers until receipt of rains.

Karnataka

Inadequate soil moisture conditions have led to delayed sowings in major parts of North Interior Karnataka. However, improvement in rainfall activity is expected over Interior Karnataka.

- Sowing of horse gram, sunflower and fodder crops in North Interior Karnataka, sowing of ragi, desi cotton, cowpea, soybean and horse gram in South Interior Karnataka and transplanting of rice in Kodagu district may be continued.
- Priority should be given to seed cum fodder crops like cow pea, horse gram and moth bean in dry zones so as to avoid scarcity of fodder for live stock.
- Desi cotton (*Herbacium*) as sole or intercropping with onion + chilli, sunflower (Seed hardening – soaking in calcium chloride solution for 6 hrs before sowing, wider row spacing 120-135 cm), tobacco, maize, may be taken up.
- Soil and moisture conservation techniques such as compartment bunding, ridges and furrows across the slope are suggested for medium and deep black soils spared for *rabi* sowings.

For Bijapur, Yadgir, Bidar and Raichur districts following measures are recommended

- Repeated intercultural operations and weeding.
- Foliar sprays (2%) of micronutrients $MgSO_4$, Zinc, Boron in cotton.

Western India

Gujarat

North Gujarat Region:

- Sesame (cv. Guj. Tal 1,2, 10), cluster bean (Guj. 1 or 2.) and castor (cv.GCH-2, 4, 5 or 7) may be sown.
- As mainly dry weather is likely to continue over North Gujarat and Saurashtra & Kutch region, application of irrigation at critical stages of crops (cotton -flowering, groundnut – flowering/pegging) through micro irrigation systems in North Gujarat and Saurashtra & Kutch region is advised.

Saurashtra region:

- Sowing of cluster bean (Guj. 1 or 2.), castor (cv. GCH-2, 4, 5 or 7.), Sesame cv. Purva-1 and Guar (cv. Guj. Gaur 1 or 2) are specially preferred for Kutch region.
- In North Saurashtra, optimum use of potash fertilizer to minimize the water requirement of crops is also recommended.
- Repeated intercultural operations in black soils to close cracks in soil and create soil mulch to conserve soil moisture.
- Foliar spray of urea (2%) or KNO_3 (2%) in cotton.
- Delay top dressing of N, till sufficient occurrence of rain in castor and cotton.
- Alternate furrow irrigation.
- Harvest one row for every 3-rows of pearl millet and maize.
- Apply life saving irrigation in castor and pigeon pea (micro-irrigation).

South and Middle Gujarat region:

- Transplanting of GT-4, 5,9 and GT-1 tobacco may be initiated under tobacco growing districts of Kheda, Anand, Vadodara and part of Mahisagar district.
- Commence the sowing of cluster bean (Guj. 1 or 2.), castor (cv. GCH-2, 4, 5 or 7).

Marathwada

- As rainfall is scanty/deficit during earlier part of the season, sowing of contingency crops is not recommended till the receipt of sufficient rains.
- Farmers may take up intercultural operations like weeding / hoeing in already sown cotton, soybean, Pearl millet, sunflower and pigeon pea crops to conserve soil moisture and remove weeds. Apply supplementary irrigation to already sown crops.
- In cotton, mulching by hoeing may be carried out to conserve moisture.
- Considering the deficient rainfall situation, sprinkler/micro sprinkler /drip irrigation to turmeric and ginger and drip irrigation to banana & sugarcane may be applied. Also mulching with crop residue is recommended to preserve the soil moisture.
- In view of subdued rainfall activity, mulching in *suru* and ratoon sugarcane may be undertaken. As there is probability of occurrence of rainfall, planting of *adsali* sugarcane may be undertaken.

Madhya Maharashtra

- As there was subdued rainfall activity over Ahmednagar (-41%), Jalgaon (-33 %) and Dhule (-21%) districts, cotton crop may experience wilting; drenching of 150 – 200 ml solution per plant (1.5 kg Urea + 1.5 kg Potash per 100 litres water) may be done to the infested plants.
- Fodder crops like jowar (Ruchira, Phule Amruta, Phule Godhan) and maize (African tall, Karveer, Rajshree) may be sown utilizing expected rain.

Central India

Madhya Pradesh

- In view of subdued rainfall activity, intercultural operations for control of weeds in crops like

soybean, urad and moong is suggested. Application of irrigation to the standing crops is also recommended.

Vidarbha:

- As subdued rainfall is prevailing and likely to prevail, apply irrigation to maintain water level upto 2-3 cm in already transplanted rice field.
- Unsown/delayed sowing areas can be accommodated with sole pigeon pea (AKT 8811, Vipula, PKV- Tara and BSMR-736 (with closer 45x20 spacing) in the districts of Amravati, Wradha, Washim etc. after receipt of adequate rain.
- Alternative crops include sunflower (TAS 82, PKV SF-9, PKVSH-27, KBSH 1 and KBSH 44), pearl millet (PKV Raj, Shradha and Saburi), sesame (AKT-64 and JLT-7), castor (AKC-1, GCH-4,5,6, DCH-117, 32), and pearlmillet+pigeonpea (2:1 or 4:2), sunflower+pigeonpea (2:1), sesame+pigeonpea (4:1) intercropping systems.
- Early *rabi* pigeonpea (C-11, ICPL-87119 with closer spacing 45x20 cm) can be sown up to September 15.
- Early *rabi* sesame (N-8) can be sown up to September 15.

Eastern India

Jharkhand

- Transplanting of tomato, cauliflower, cabbage, brinjal and chilli may be taken up. Planting of mango, guava and litchi may be continued. Sowing of horse gram, moong, black gram, niger, til, groundnut, safflower, short duration maize and sweet potato may be continued. Planting of custard apple, banana and papaya may be continued.

West Bengal

- Transplanting of *aman* rice and vegetables may be continued.
- In view of occurrence of good rainfall during the season and possibility of occurrence of rainfall during the period, it is suggested to postpone irrigation to the standing crops.
- Avoid water stagnation to prevent rhizome rot in turmeric & ginger.

Bihar

- Under low land conditions re-transplanting (Kharuhan) of medium and long duration paddy varieties (Swarna Sub- 1, BPT5204, Rajendra Manasuri, Sambha Sub-1, Kasturi, Sudha, Vaidahi, Swarna) is suggested using 3-4 seedlings per hill up to 30th August.
- In transplanted rice crop, undertake top dressing of 1/3rd urea (44 kg/ha) after 1st hand weeding at 25-30 days after transplanting and apply remaining 1/3rd urea (44 kg/ha) after 2nd hand weeding at 40-45 days after transplanting.
- As heavy to very heavy rainfall occurred over many places over Bihar, farmers can still go for direct seeding of short duration rice varieties like, Shabhagi, Riccharya, Turanta, Prabhat, NDR-97, Pusa 834, in medium land this can be completed up to end of August.
- In upland situation farmers were advised to sow black gram (T9, Pant U-31 and Pant U-19) as earliest as possible, however, the sowing of Navin could be done up to the end of August.

- Sowing of Rajendra Mishrikand-1 can be done up to the end of August.
- Sowing of pigeonpea (Pusa-9 and Sarad) can be taken up to 15th September. Intercropping of blackgram/sesame with pigeonpea in 1:1row ratio is more profitable than sole pigeonpea.

Odisha

In the flood affected areas, the following contingent measures may be taken up after the flood water recedes;

- In direct seeded rice, if the entire crop is damaged, wet seeding with sprouted seeds should be done by taking 120-130 days duration varieties.
- Apply 50% N & K_2O and full dose of P_2O_5 at the time of sowing and rest dose at tillering stage.
- If loss in seedlings is less than 50%, go for distribution of clonal tillers with application of 50 % N and 50 % K_2O.
- In transplanted rice, in case of silt deposit, go for water spray in nursery areas.
- Avoid application of urea and go for spraying of 1% K_2SO_4.
- Go for clonal propagation if the loss in plant stand is less than 50%.
- Go for re sowing of paddy nursery with short duration paddy (90-110days) if the nursery has been damaged by recent flood. In main field gap filling with same age seedling should be done and put 3-4 nos seedling /hill with closure spacing.
- In case of 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 undertaken.

Northwest India

Rajasthan

East Rajasthan

- Nursery sowing of cauliflower (Pusa hybrid-2, Improved Japanese, Pusa Shubhra and Pusa Himjyoti) may be undertaken.
- Sowing of radish and nursery sowing of mid-season cauliflower is expected to be completed utilizing the realized rainfall.

West Rajasthan

- Intercropping of groundnut cv. JL-24, Pratap, Mungphali-2 with seasame at 6:2 ratio is suggested.
- Perennial grasses like sewan, dhaman and moda dhaman grass etc. which grow naturally during rainy season can also be grown to use as fodder.

Uttar Pradesh

East Uttar Pradesh

- The floods in Uttar Pradesh, triggered by the heavy rains in the Himalayas, are posing serious threat to sugarcane crops. Sugarcane is at high risk due to floods as water logging can damage the crop. Draining out of the field and earthing-up and propping in sugarcane is suggested to prevent crop lodging. Drain out excess water from the crop field of papaya, banana and guava.

- Nursery sowing/transplanting of cauliflower, cabbage, tomato and chilli in Raibareilly, Sultanpur, Basti, Sant Kabir Nagar and Gorakhpur districts is suggested.
- Sowing of short duration varieties of bajra (ICMV-155, WCC-75, ICTP-8203, Raj-171, Pusa-322,23, ICMH-451) in Ballia and Deoria districts is expected to be completed.
- Sowing of arhar (Bahar, Narendra Arhar 1,2, Azad, Pusa-9, Malveey-Vikas, Chamtkar, PDA-11) and of moong (Pant-1, Narendra-1, PDM-54, Malyeey- Jyoti, Janchetana, Janpriya, Jagruti, Samrat and Asha) in Barabanki, Faizabad and Ambedkarnagar districts of Eastern Plain Zone of Uttar Pradesh is recommended.
- As mainly dry weather would prevail, second top dressing of nitrogen in maize at silking stage and in jowar, 25-30 days after sowing in Central Plain Zone and application of urea @ 125 kg per hectare in rice and fourth top dressing of nitrogen in maize in Eastern Plain Zone is advised.

West Uttar Pradesh

- Sowing of pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + black gram(Ajad) is recommended.
- Undertake weeding operations like weeding/mulching for soil moisture conservation.
- Undertake foliar spray of 1% KCl.
- Opening conservation furrow is recommended.

Haryana

Rainfall was deficit by 62% in Haryana, Chandigarh and Delhi meteorological sub-divisions. As the rainfall situation is scanty 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. 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.
- Life saving irrigation, if possible.

Punjab

The rainfall deficit is 62% so far in the state.

- Field preparation can be started for sowing of short duration hybrid maize (PMH 2) during second fortnight of August.
- Sowing of leguminous and non-leguminous crops in mixture to improve the nutritive value of the fodder i.e. maize + cowpea, sorghum + guara is advised.
- Short duration early maturing and drought tolerant varieties of crops including maize (PMH2) and moong (PAU 911, ML 818) are suggested.
- Moong varietyML13 can be sown in rainfed areas in Gurdaspur, Hoshiarpurand Ropar. Moong PAU- 911 variety has been recommended for the whole state except Bathinda, Mansa, Faridkot, Muktsar and Ferozepur districts.
- 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.
- Life-saving irrigation may be given, if available.
- In case of limited release of water in canals due to low rainfall, direct seeding of paddy and zero tillage sowing of Raya is recommended which saves 20-25% irrigation water.

Delhi

- As subdued rainfall activity is prevailing and is likely to continue, application of irrigation to the standing crops is recommended.
- Making of higher bunds for conserving rain water in the field is advised.

Jammu and Kashmir, Himachal Pradesh and Uttarakhand

- In Jammu & Kashmir, continue transplanting of cole crops and apply second top dressing of nitrogen @ 3.25 kg urea per kanal in rice after 38-42 days of transplanting and complete second top dressing of nitrogen @ 3.25 kg urea per kanal in maize. Nursery sowing of cabbage (Golden Acre, Pride of India and Pusa Mukta) and cauliflower (Giant Snow Ball and Pusa Synthetic) is suggested.
- Continue nursery sowing of Chinese cabbage and direct sowing of radish, carrot and lettuce with realized rainfall and apply second dose of urea @ 40-50 kg per hectare to tomato, brinjal, capsicum, chilli and cucurbits in Himachal Pradesh.
- In Uttarakhand, arrange for drainage of excess water from rice and maintain 5 cm water level. Sowing of urad is expected to be completed.

Northeast India

Arunachal Pradesh, Assam & Meghalaya, NNMT

In flood affected areas of Lower Bramhaputra Valley Zone of Assam, the following contingency measures may be adopted for *sali* rice:

- Nursery raising of the photo insensitive short duration variety like Luit for replanting (in case of total damage).
- Wet seeding of sprouted seeds (@75-80 kg/ha) of short to medium duration varieties like Disang, Luit, (100 days) Kapili, Kalong (120 days).
- Adoption of submergence tolerant varieties like Jalashree and Jalkuwari for repeat flood prone areas.
- In partially affected fields, drain out excess water and apply 1/2 N + 50% K_2O as top dressing during tillering stage.
- Farmers may also opt for sowing of green gram, black gram, soybean etc.
- In upland areas explore the possibility of growing early rabi vegetables.

In Upper Bramhaputra Valley Zone of Assam, farmers in the flood affected areas should select short duration HYV rice varieties like Luit, Kapili, Kolong, Dishang etc. These varieties can be transplanted or sown within 1st week of September. Long duration cultivars like Monohar Sali, Andrew Sali and Gitesh can be transplanted with 60 days seedling, whereas Prafulla can be transplanted with 90 days old seedlings. Therefore, farmers should be ready with this type of cultivars to cope up with flood situation. Gap filling in the main field should be done with same age of seedling at 20 and 40 days after transplanting.

In Meghalaya, maintain water level of 2-5 cm in transplanted *sali* rice. In high upland fields, planting of tuber crops like sweet potato, colocassia, tapioca, etc. may be continued and complete sowing of pigeon pea. Nursery preparation/ sowing of vegetables like cabbage, cauliflower, carrot, radish, laipatta, broccoli and French bean may be undertaken.