Crop Advisories for Kharif-2015
(Contingency Plan/Measures)

BIHAR

These advisories are intended to enhance the preparedness for taking up appropriate measures in the event of deficit rainfall situations

Natural Resource Management Division
&
Crop Science Division
Indian Council of Agricultural Research (ICAR), New Delhi
Crop advisories in case of delay in Onset of monsoon till July

Monsoon seasonal forecast:

The South Asian Climate Outlook Forum (SASCOF-6), which is a collaborative effort of national and international agencies, in their outlook for the monsoon forecast issued during 3rd week of April, 2015, indicated that Below normal rainfall is most likely during the 2015 southwest monsoon season (June – September) over South Asia as a whole. This consensus outlook for the 2015 southwest monsoon rainfall over South Asia has been developed through an expert assessment of the prevailing global climate conditions and forecasts from different climate models from around the world. Below-normal rainfall is likely over broad areas of western, central and southwestern parts of South Asia and some areas in the northeastern-most parts of the region. Normal rainfall is likely over broad areas of northern and eastern parts of the region. The outlook for southwest monsoon rainfall over South Asia is shown in Fig. 1. The figure illustrates the most likely categories over the region, as well as the probabilities for each category. The probabilities were derived by synthesis of the available information and expert assessment.

Summary of the ESSO-IMD’s Operational long range forecast: Monsoon season rainfall is likely to be 93% of the Long Period Average (LPA) with a model error of ± 5% in the first outlook issued on 22nd April and this is revised on 2nd June 2015 and seasonal rainfall is forecasted to be 88% of the LPA. The LPA of the season rainfall over the country as a whole for the period 1951-2000 is 89 cm.

IMD in its update on 2nd June forecasted the rainfall amounts for different regions. The seasonal rainfall is likely to be 85% of LPA over North-West India, 90% of LPA over Central India, 92% of LPA over South peninsula and 90% of LPA over North-East India with a model error of ±8%. The rest of the country is likely to receive seasonal rainfall of 88% of LPA. This regional assessment was superimposed with districts map of India to derive information for different states (Fig. 2).
The progress of the monsoon as on 9th June, 2015 (Fig. 3) indicated a delay of 3 days in the onset of monsoon over Kerala. Rainfall received during the months of March- May in many states is excess compared to normal rainfall. Much of this rainfall was received in March-April causing widespread damage to standing crops. Pre monsoon rainfall in North Eastern States was satisfactory, though delayed, and regular sowings were completed. In the Southern state of Karnataka, excess rainfall with high intensities was received during April and May helping in filling the farm ponds and tanks with reasonable water supplies. Based on the information available on forecast, the advisories for the season are given here.
Must Do Management Practices to be followed by farmers

- In-situ moisture conservation measures covering both soil and land management practices to be practiced. They include field bunding, ridges and furrows, conservation furrows, broad bed and furrow systems, mulches etc.
- Do avoid dry sowing of crops such as Cotton, Groundnut especially in shallow soils.
- Sowing needs to be done only when sufficient moisture is available in soil root zone. Unless 50-60mm rainfall is received over a period of 2-3 days, sowing should not be carried out.
- Facility of crop insurance including weather based insurance to be availed.
- Follow the weather advisories available for the region.

General Contingent Suggestions

- Grow medium and short duration preferably drought tolerant varieties recommended for the region.

  **Rice:**  Sushak Samrat, Sahbhagi, Abhishek  **Rainfed Upland**- Deepa, Kanchan, Prabhat, Rajendra Bhagwati, Turanta Dhan, Vandana, Vishnu;  
  **Rainfed Shallow Lowland**- BR-34, Jayashri, Kanak, Malinja, Panidhan 1, Panidhan 2, Radha, Rajendra Kasturi, Rajendra Mashuri 1, R. Sweta, Rajshree, Santosh, Shakuntala, BPT-5204, Swarna sub-1;  
  **Semi Deep Water**- Janaki, Satyam, Vaidehi;  
  **Deep Water**- Sudha;  
  **Scented**- Kamini, Rajendra Swetha, R. Suwashini, R. Bhagwati, Sugandha

  **Maize:**  KMH 218+, KMH 3426, NMH 803, HM 12, HM 9, Malviya Hybrid Makka 2, Vivek Maize Hybrid 43, Vivek Maize Hybrid 39, Vivek Maize Hybrid 25, Suwan,  
  **Birsia Vikas Makka 2, Pusa Early Sakatiman 1, DK 701, Ganga 2, Sartaj 102;  
  **Composites**- Kanchan, Azad Deccan 107, Navneet.,

  **Arhar:**  Narendra Arhar 1, Bahar, Sharad Narndra Arhar 2, Pusa 9,

  **Cowpea:**  Kansi Kanchan, Kashi Nidhi

  **Green gram:**  Pant M-4, Malviya Jagriti (HUM-12)

  **Black gram:**  Birsa Urd-1, IPU-94-1, Sulata, Pant Urd -31

  **Sesame:**  Krishna, Jawahar Til-11, TKG-22

- Less water requiring crops of maize, til, urd, moong, lentil, khesri etc. should be preferred under rainfed uplands /protective irrigation conditions
✓ Promote sowing of legumes as intercrop or in field bunds. Intercropping of Arhar+Moong/Urd or Maize+ Moong/Urd/Arhar ensured better yields.

✓ Encourage directed seed rice (DSR) over conventional transplanting.

✓ Avoid transplanting of over-aged seedlings of rice. Promote staggered community nursery of medium and short duration varieties at 15-days interval.

✓ Instead of flooding rice crop, keep the field wet with light irrigation.

✓ Broad bed and furrow (BBF) system of sowing improves moisture availability to crops and also helps in draining out flooded fields, if needed.

✓ Frequent intercultural operation should be followed to remove the weeds and break the soil capillaries.

✓ Use weeds and farm wastes as mulch in between the crop rows.

✓ Ensure application of recommended doses of NPK fertilizers.

✓ Foliar spray of 1-3% urea (with or without 0.5% ZnSO₄), 2% DAP, 2% 13:0:45 or 2% 19:19:19 solutions during intermittent drought and immediately after rains to rejuvenate the crops.

✓ Use of organic manures to enhances moisture availability in field.

✓ Give lifesaving irrigation at critical crop growth stages preferably through sprinkler or drip system, if feasible.
Date bound crop specific contingency measures for rainfall deficit/prolonged dry spells

<table>
<thead>
<tr>
<th>Main crops</th>
<th>15 June - 15 July</th>
<th>16-31 July</th>
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<tbody>
<tr>
<td><strong>Rice</strong></td>
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<td></td>
<td>Delayed onset / deficit rainfall situation</td>
<td>Early season drought</td>
<td>Mid-season drought at vegetative stage</td>
<td>Mid-season drought reproductive stage</td>
<td>Terminal drought</td>
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<tr>
<td>Rainfed Upland: Deepa, Kanchan, Prabhat, Rajendra Bhagwati, Turanta Dhan, Vandana, Vishnu, Sahabhiagi, Sushk Samrat, Abhishek</td>
<td>Early maturing drought tolerant rice varieties of 75-100 like Sahabaghi dhan, Heera, Vandana, Kalinga III, Dala Heera, Anjali, Parijat, Khadagiri, Govind, Narendra 80, Narendra 97, Turant Dhan etc. can be grown by direct seeding the crop immediately after receiving the rain under irrigated, medium and lowland situations. Rice varieties of 110 to 125 days duration like Annada, Ratna, Udaya, Tapaswani, Saket-4, Radhi, Rasi, Vikas, IR-36, IR-64, Narendra Dhan 359 etc. can be grown by raising the seedlings and then transplanting of 20-25 days old seedlings. Half of the N and full P and K doses should be applied</td>
<td>In deficit rainfall areas, adopt SRI or direct seeding to save water</td>
<td>For transplanting till 15 August, use short duration varieties (100-110 days) like NDR 118. Transplant 21 days old nursery or 12 days old in SRI method</td>
<td>If rice crop is damaged, go for short duration pulses (Black gram-WBU 109, Azad Urd 1, Uttara, Pant U 31)) to be followed by wheat in rabi</td>
<td>Plan for early rabi crops such as Wheat, rabi Maize/Pulses/Oilseeds/Vegetables</td>
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<td>Rainfed Shallow Lowland: BR-34, Jayashri, Kanak, Malanja, Panidhan 1, Panidhan 2, Radha, Rajendra Kasturi, Rajendra Mashuri 1, Rajshree, Santosh, Shakuntala, R. Sweta, BPT5204, Swarna Sub-1</td>
<td>• Nursery sowing up to end of July with medium and</td>
<td>• Nursery sowing up to end of July Varieties: Rajendra Subashini, R.</td>
<td>• Apply foliar spray of N through urea (2%) and K through potassic fertilizers KNO3 or KCl (1%) and Zn</td>
<td>• Hand weeding should be done and weed should be used as mulch for moisture conservation</td>
<td>• Life-saving irrigation to transplanted rice, if possible.</td>
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<td>Maize</td>
<td>Sow short duration maize <strong>Hybrids</strong> - Sakatiman 1, Sakatiman 2, Ganga 2, Sartaj 102; <strong>Composites</strong> - Kanchan, Azad Deccan 107, Navneet, Suvan, Devaki</td>
<td>Plant early maturing varieties of maize (Azad maize 3, HQPM 1, Deoki) and medium duration pigeon pea (Narendra Arhar 1, Bahar, Sharad Narendra Arhar 2 and Pusa 9)</td>
<td>Interculture and mulching</td>
<td>Conserve moisture for early planting of rabbi crops like toria, rabi maize and vegetable pea (Arkel)</td>
<td>Sowing of pigeonpea during September (Sharad pigeonpea) with varieties like Bahar by increasing seed rate and plant population by 50%</td>
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<td>Pigeon pea</td>
<td>Plant medium duration pigeonpea: Narendra Arhar 1, Bahar, Sharad Narendra Arhar 2 and Pusa 9</td>
<td>Sesame can be sown up to 1st week of August</td>
<td>Mulching to conserve moisture</td>
<td>Hand weeding should be done and weed should be used as mulch for moisture conservation</td>
<td>Go for early rabbi crops like Toria, maize and vegetable pea</td>
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<td>Sesame</td>
<td>For early planting of rabi crops like Toria, rabi maize and vegetable pea (Arkel)</td>
<td>Line sowing drills + FYM 5 t/ha spreading + 50% NPK gives higher yield in case of drought.</td>
<td>Foliar spray of urea (2%)</td>
<td>Apply 1/3rd N only after receipt of rain</td>
<td>For early planting of rabi crops like Toria, rabi maize and vegetable pea (Arkel)</td>
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**Main crops**

- long duration varieties: Rajendra Suwashini, Rajendra Kasturi, Sughanda-4, Rajshree in mid and lowlands
  - Where scanty rain is available and field is moist, direct seeding of rice varieties (125 days duration) can be done in midlands.
  - Line sowing drills + FYM 5 t/ha spreading + 50% NPK gives higher yield in drought.

- Kasturi, R. Bhagwati, Sughanda-4, Rajshree
  - Maximum possible ground water should be used to save the rice nursery.
  - Where limited canal water is available, unpuddled transplanting of rice can be opted for judicious water use.
  - Direct seeding of rice varieties (125 days duration) can be done in midlands after some rain.
  - Line sowing drills + FYM 5 t/ha spreading + 50% NPK gives higher yield in drought.

- Foliar spray of urea (2%)
- If crop fails, sow extra early varieties like Turanta dhan
- Apply 1/3rd N only after receipt of rain
- Conserve moisture for early planting of rabi crops like Toria, rabi maize and vegetable pea (Arkel)
- Hand weeding should be done and weed should be used as mulch for moisture conservation
- Go for early rabi crops like Toria, maize and vegetable pea

**Maize**

- Sow short duration maize
- Interculture and mulching
- Foliar spray of urea (1%)
- Clip lower leaves in maize
- Mulching to conserve moisture
- Fodder production may be increased by growing maize and sorghum.

**Pigeon pea**

- Sesame can be sown up to 1st week of August
- Conserve moisture for early planting of rabi crops like toria, rabi maize and vegetable pea (Arkel)
- Hand weeding should be done and weed should be used as mulch for moisture conservation
- Go for early rabi crops like Toria, maize and vegetable pea

**Sesame**

- Sowing of pigeonpea during September (Sharad pigeonpea) with varieties like Bahar by increasing seed rate and plant population by 50%
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| Sesame     | • Sowing of sesame varieties viz., Krishna, Jawahar Til-11, TKG-22, Kanke Safed, Kalika, Pragati can be done up to 1st week of August  
• Use 15-20% higher seed rate and reduce fertilizer dose by 25% | • Re-sow within 15 DAS if plant population is less than 30%  
• Provide life-saving irrigation, if possible | • Interculture operations by hand weeding and hand wheel hoe to control weeds and conserve moisture  
• Avoid split application of N- fertilizer till sufficient soil moisture is available  
• Mulching within the rows | • Foliar spray of 2% urea  
• Provide life-saving irrigation, if possible | • Harvest at physiological maturity to avoid shattering losses.  
• Plan for early rabi crops viz., sunflower, horse gram, etc. |