# Agriculture Contingency Plan for District: Bilaspur

**State:** CHHATTISGARH

## 1.0 District Agriculture profile

<table>
<thead>
<tr>
<th>1.1</th>
<th>Agro-Climatic/Ecological Zone</th>
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<tbody>
<tr>
<td></td>
<td>Agro Ecological Sub Region (ICAR)</td>
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<tr>
<td></td>
<td>Agro-Climatic Zone (Planning Commission)</td>
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<td></td>
<td>Agro Climatic Zone (NARP)</td>
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<td></td>
<td>List all the districts falling under the NARP Zone*</td>
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<tr>
<td></td>
<td>(&gt;50% area falling in the zone)</td>
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<tr>
<td>Geographic coordinates of district headquarters</td>
<td>Latitude</td>
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<td>22.1</td>
</tr>
<tr>
<td>Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS</td>
<td>ZARS, Sarkanda, Bilaspur, C.G.</td>
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<tr>
<td>Mention the KVK located in the district with address</td>
<td>Krishi Vigyan Kendra, Sarkanda, Bilaspur (C.G.)</td>
</tr>
<tr>
<td>Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone</td>
<td>Department of Agrometeorology, College of Agriculture, IGKV, Raipur (C.G.)</td>
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<tr>
<td>District</td>
<td>Total Geographic Area (000’ ha.)</td>
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<tr>
<td>Bilaspur</td>
<td>581.9</td>
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</tbody>
</table>

1.2 Rainfall

<table>
<thead>
<tr>
<th>Normal RF(mm)</th>
<th>Normal Rainy days (number)</th>
<th>Normal Onset (specify week and month)</th>
<th>Normal Cessation (specify week and month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW monsoon (June-Sep): 1007.8</td>
<td></td>
<td>3rd week of June</td>
<td>4th week of September</td>
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<tr>
<td>NE Monsoon (Oct-Dec): 80.1</td>
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<td>Post monsoon (October-December)</td>
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<tr>
<td>Winter (Jan- March): 40.2</td>
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<td>Winter rains</td>
<td>-</td>
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<tr>
<td>Summer (Apr-May): 36.2</td>
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<td>-</td>
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<tr>
<td>Annual: 1164.6</td>
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</tbody>
</table>

Include Digital maps of the district for Location map of district with in State as Annexure I Enclosed: Yes
Mean annual rainfall as Annexure 2 Enclosed: Yes
Soil map as Annexure 3 Enclosed: No
Annexure 01 : Location map of the Chhattisgarh state and district Bilaspur
Annexure 02: Mean annual rainfall (mm) of district
2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

<table>
<thead>
<tr>
<th>Condition</th>
<th>Major Farming situation</th>
<th>Normal Crop / Cropping system</th>
<th>Change in crop / cropping system including variety</th>
<th>Agronomic measures</th>
<th>Remarks on Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early season drought (delayed onset)</td>
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<tr>
<td>Delay by 2 weeks (July first week)* (REFER TO THE MATRIX TABLE)</td>
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</tr>
<tr>
<td>1) Farming situation: <strong>Unbunded shallow light soils</strong></td>
<td>Cropping system 1: Maize</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Line sowing</td>
</tr>
<tr>
<td></td>
<td>Cropping system 2: Pulses</td>
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<tr>
<td></td>
<td>Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) / Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)</td>
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<td></td>
<td>Cropping system 3: Oilseeds</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Line sowing</td>
</tr>
<tr>
<td></td>
<td>2) Farming situation: <strong>Unbunded sloppy black soils</strong></td>
<td>Cropping system 1: Rice-Purnima, Danteshwari, Samleshwari, Annada Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro-4212 PEM 1, VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426</td>
<td>-</td>
<td>-</td>
<td>Line sowing</td>
</tr>
</tbody>
</table>

*Note: Refer to the matrix table for detailed information.*
<table>
<thead>
<tr>
<th>Condition</th>
<th>Suggested Contingency measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early season drought (delayed onset)</td>
<td>Normal Crop/cropping system&lt;sup&gt;a&lt;/sup&gt;&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Delay by 4 weeks (July third week)</td>
<td>Crop timing&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>1) Farming situation: Unbunded shallow light soils</td>
<td>Crop timing&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cropping system 1: Maize</td>
<td>Cropping system 2: Pulses</td>
</tr>
<tr>
<td>Cropping system 2: Pulses Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)</td>
<td>Cropping system 3: Oilseeds</td>
</tr>
<tr>
<td>Cropping system 3: Oilseeds</td>
<td></td>
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<tr>
<td>2) Farming situation: Unbunded sloppy black soils</td>
<td>Crop timing&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cropping system 1: Rice - Danteshwari, Samleshwari, Purnima, Annda Maize- Hishell, P 3785, Bio</td>
<td>Rice- Anjali, Indira barani dhan-1, Annda, Kalinga 3</td>
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<tr>
<td>Cropping system 3: Pigeon pea</td>
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<tr>
<td>Cropping system 4: Sesame</td>
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</tbody>
</table>

<sup>a</sup> Farming situation: Bunded mid-land; heavy black soils

Cropping system 1: Rice - MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari

Cropping system 2: Soybean

Cropping system 3: Pigeon pea

Cropping system 4: Sesame - Rodhi dainage

3) Farming situation: Bunded mid-land; heavy black soils

Rice-Mahamaya, Sampda, IGKV R1, IGKV R2, Bamlshwari, Indira Sona

4) Farming situation: Bunded low-lands; heavy black soils

Rice-Mahamaya, Sampda, IGKV R1, IGKV R2, Bamlshwari, Indira Sona

- Transplanting method

Provide drainage
### 3) Farming situation: **Bunded mid-land; heavy black soils**

| Cropping system 1: Rice - MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrasahsi, Samleshwari | Rice- Poornima, Samleshwari, Danteshwari, Indira Barani dhan-1 | Sowing of pre-germinated seeds; closer transplanting with more no. of seedlings/hill | Puddled field; chopped the seedlings |
| Cropping system 2: Soybean | Short-duration variety | Higher seed rate | Line sowing |
| Cropping system 3: Pigeon pea | Short-duration variety | Higher seed rate | Line sowing |
| Cropping system 4: Sesame | Short-duration variety | Higher seed rate | Line sowing |

### 4) Farming situation: **Bunded low-lands; heavy black soils**

| Cropping system 1: Rice - Rice-Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona | Rice- Chandrasahsi IR64, karma masuri, Indira Barani Dhan -1, MTU 1010 | Sowing of pre-germinated seeds; closer transplanting with more no. of seedlings/hill | Puddled field; chopped the seedlings |
| Cropping system 2: Maize | Change the crop with niger | Normal seed rate | Line sowing |

### Condition

<table>
<thead>
<tr>
<th><strong>Early season drought (delayed onset)</strong></th>
<th><strong>Major Farming situation</strong></th>
<th><strong>Normal Crop/cropping system</strong></th>
<th><strong>Change in crop/cropping system</strong></th>
<th><strong>Agronomic measures</strong></th>
<th><strong>Remarks on Implementation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delay by 6 weeks (August first week)</strong></td>
<td>1) Farming situation: <strong>Unbunded shallow light soils</strong></td>
<td>Cropping system1: Maize</td>
<td>Change the crop with niger</td>
<td>Normal seed rate</td>
<td>Line sowing</td>
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<tr>
<td></td>
<td></td>
<td>Cropping system2: Pulses</td>
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<td></td>
<td></td>
<td>Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbea (TU 94-2, TAU-2,</td>
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<tr>
<td>2) Farming situation: <em>Unbunded sloppy black soils</em></td>
<td>Cropping system 1: Rice-Danteshwari, Samleshwari, Purnima, Annda Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro-4212 PEM 1 , VH -9.17HQPM-1 NMH-731NK-30, NMH-803KMH-3426</td>
<td>Change the crops with either niger or short-duration green gram or black gram varieties</td>
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<td>Cropping system 2: Soybean</td>
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<td>Cropping system 3: Pigeon pea</td>
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<td></td>
<td>Cropping system 4: Sesame</td>
<td>Short-duration varieties</td>
<td>Higher seed rate</td>
<td>Line sowing</td>
<td></td>
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<tr>
<td>3) Farming situation: <em>Bunded mid-land; heavy black soils</em></td>
<td>Cropping system 1: Rice -MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari</td>
<td>Sowing of pre-germinated seeds of short-duration varieties in puddled field</td>
<td>Higher seed rate</td>
<td>There should not be initial standing water column in puddled field</td>
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<tr>
<td>4) Farming situation: <em>Bunded low-lands; heavy black soils</em></td>
<td>Cropping system 1: Rice -Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona</td>
<td>Sowing of pre-germinated seeds of short-duration varieties in puddled field</td>
<td>Higher seed rate</td>
<td>There should not be initial standing water column in puddled field</td>
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<tr>
<td>Condition</td>
<td>Major Farming situation</td>
<td>Normal Crop/cropping system</td>
<td>Change in crop/cropping system</td>
<td>Agronomic measures</td>
<td>Remarks on Implementation</td>
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<tr>
<td>Early season drought (delayed onset)</td>
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<td>Delay by 8 weeks (August third week)</td>
<td>1) Farming situation:</td>
<td>Cropping system 1: Maize</td>
<td>Change the crop either with</td>
<td>Normal seed rate</td>
<td>Line sowing</td>
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<tr>
<td></td>
<td><em>Unbunded shallow light soils</em></td>
<td>Cropping system2: Pulses</td>
<td>niger or horse gram</td>
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<td></td>
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<td>Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)</td>
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<td>Cropping system 3: Oilseeds</td>
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<td></td>
<td>2) Farming situation:</td>
<td>Cropping system 1: Rice - Danteshwari, Samleshwari, Purnima, Annda Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro-4212 PEM 1, VH - 9.17HQPM-1 NMH-731NK-30, NMH-803KMH-3426</td>
<td>Change the crop either with niger or horse gram</td>
<td>Normal seed rate</td>
<td>Line sowing</td>
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<td></td>
<td><em>Unbunded sloppy black soils</em></td>
<td>Cropping system 2: Soybean</td>
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<td>Cropping system 3: Pigeon pea</td>
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<td>Cropping system 4: Sesame</td>
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<tr>
<td>Condition</td>
<td>Major Farming situation</td>
<td>Normal Crop/cropping system</td>
<td>Crop management</td>
<td>Soil, nutrient &amp; moisture conservation measures</td>
<td>Remarks on Implementation</td>
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<tr>
<td>Early season drought (Normal onset)</td>
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<tr>
<td>Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.</td>
<td>1) Farming situation: <em>Unbunded shallow light soils</em></td>
<td>Cropping system 1: Maize Cropping system 2: Pulses Mungbean (Pusa Vishal, HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan) Cropping system 3: Oilseeds</td>
<td>Re-sowing with same variety</td>
<td>Addition of organic matters &amp; adoption of soil &amp; moisture conservation measures</td>
<td>Line sowing; higher seed rate</td>
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<td></td>
<td>2) Farming situation: <em>Unbunded sloppy</em></td>
<td>Cropping system 1: Rice - Danteshwari, Samleshwari, Purnima, Annda</td>
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</table>

3) Farming situation: *Bunded mid-land; heavy black soils* | Cropping system 1: Rice - MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahansi, Samleshwari | Change the crop either with linseed, lathyrus, field pea or toria | Normal seed rate; line sowing in October - November | Provisions of adequate drainage during rainy season |

4) Farming situation: *Bunded low-lands; heavy black soils* | Cropping system 1: Rice - Rice-Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona | Change the crop either with linseed, lathyrus, field pea or toria | Normal seed rate; line sowing in October - November | Provisions of adequate drainage during rainy season |
<table>
<thead>
<tr>
<th><strong>black soils</strong></th>
<th>Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426</th>
<th>Re-sowing with same variety</th>
<th>soil &amp; moisture conservation measures</th>
<th>Line sowing; higher seed rate</th>
</tr>
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<tbody>
<tr>
<td>Cropping system 2: Soybean</td>
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<td>Cropping system 3: Pigeon pea</td>
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<tr>
<td>Cropping system 4: Sesame</td>
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<table>
<thead>
<tr>
<th><strong>3) Farming situation:</strong> Bunded mid-land; heavy black soils</th>
<th>Cropping system 1: Rice - MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari</th>
<th>Re-sowing with same variety both in main field &amp; nursery</th>
<th>Repairing of field bunds</th>
<th>Line sowing; higher seed rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>4) Farming situation: Bunded low-lands; heavy black soils</td>
<td>Cropping system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona</td>
<td>Re-sowing with same variety both in main field &amp; nursery</td>
<td>Repairing of field bunds</td>
<td>Line sowing; higher seed rate</td>
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<thead>
<tr>
<th><strong>Condition</strong></th>
<th><strong>Suggested Contingency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mid season drought (long dry spell, consecutive 2 weeks rainless (&gt;2.5 mm) period)</strong></td>
<td>Major Farming situationa</td>
</tr>
<tr>
<td>1 ) Farming situation: Unbunded shallow light soils</td>
<td>Cropping system 1: Maize</td>
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<tr>
<td>2) Farming situation:</td>
<td>Crop system 1: Rice -</td>
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<tr>
<td></td>
<td>Indira Barani Dhan 1, Samleshwari, Annda, Danteshwari</td>
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<td></td>
<td>Cropping system 2: Soybean</td>
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<td>Cropping system 3: Pigeon pea</td>
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<td>3) Farming situation:</td>
<td>Crop system 1: Rice -</td>
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<tr>
<td>Bunded mid-land; heavy black soils</td>
<td>MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,</td>
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<td></td>
<td>Cropping system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2 , Bamleshwari, Indira Sona</td>
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<tr>
<td>4) Farming situation:</td>
<td>Crop system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2 , Bamleshwari, Indira Sona</td>
</tr>
<tr>
<td>Bunded low-lands; heavy black soils</td>
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<tr>
<td>Condition</td>
<td>Major Farming situation</td>
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<tr>
<td>Mid season drought (long dry spell)</td>
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<tr>
<td>At flowering/fruiting stage</td>
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<tr>
<td>1) Farming situation: <strong>Unbunded shallow light soils</strong></td>
<td>Cropping system 1: Maize</td>
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<td>Cropping system 2: Pulses</td>
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<td>Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1)</td>
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<td>Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)</td>
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<td></td>
<td>Cropping system 3: Oilseeds</td>
</tr>
<tr>
<td>2) Farming situation: <strong>Unbunded sloppy black soils</strong></td>
<td>Cropping system 1: Rice - Indira Barani Dhan 1, Samleshwari, Annda, Danteshwari</td>
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<tr>
<td></td>
<td>Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1, VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426</td>
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<td></td>
<td>Cropping system 4: Sesame</td>
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</tbody>
</table>
### 3) Farming situation: *Bunded mid-land; heavy black soils*

Cropping system 1: Rice - MTU1010, IR64, IR 36, Chandrhasni, Indira barani dhan-1, Samleshwari, Weed control, thinning, life saving irrigation, if available

Mulching, intercultural operations, repairing of bunds, foliar application of nutrients

### 4) Farming situation: *Bunded low-lands; heavy black soils*

Cropping system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona

Weed control, thinning, life saving irrigation; if available

Mulching, intercultural operations, repairing of bunds, foliar application of nutrients

<table>
<thead>
<tr>
<th>Condition</th>
<th>Suggested Contingency measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terminal drought</strong> (Early withdrawal of monsoon)</td>
<td><strong>Major Farming situation</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>1) Farming situation: <em>Unbunded shallow light soils</em></td>
<td>Cropping system 1: Maize</td>
</tr>
<tr>
<td></td>
<td>Cropping system 2: Pulses</td>
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<tr>
<td></td>
<td>Cropping system 3: Oilseeds</td>
</tr>
<tr>
<td>2) Farming situation: <em>Unbunded sloppy black soils</em></td>
<td>Cropping system 1: Rice - Indira Barani Dhan 1, Samleshwari, Annda, Danteshwari Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324,</td>
</tr>
</tbody>
</table>
### 3) Farming situation: *Bunded mid-land; heavy black soils*

| Cropping system 1: Rice - MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari, | Life saving irrigation, if available | Plan for sowing of gram, linseed, field pea, wheat, safflower etc. | Harvest the crop at physiological maturity |
| Cropping system 2: Soybean | Partial leaf removal, life saving irrigation | |
| Cropping system 3: Pigeon pea | |
| Cropping system 4: Sesame | |

### 4) Farming situation: *Bunded low-lands; heavy black soils*

| Cropping system 1: Rice - Rice-Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona | Life saving irrigation, if available | Plan for sowing of gram, linseed, field pea, wheat, lathyrus (*uter*ae) etc. | Harvest the crop at physiological maturity |
| Cropping system 2: | |

### 2.1.2 Drought - Irrigated situation

<table>
<thead>
<tr>
<th>Condition</th>
<th>Major Farming situation(^1)</th>
<th>Normal Crop/cropping system(^2)</th>
<th>Change in crop/cropping system(^3)</th>
<th>Agronomic measures(^4)</th>
<th>Remarks on Implementation(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed release of water in canals due to low rainfall</td>
<td>1) Farming situation: Mid-land Alfisols</td>
<td>Rice - MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,</td>
<td>Rice-Gram/Sunflower/ Linseed</td>
<td>Drilling in lines, use of higher seed rate</td>
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<tr>
<td></td>
<td></td>
<td>Rice-Wheat</td>
<td>Rice-Gram/Sunflower/ Linseed</td>
<td>Drilling in lines, use of higher seed rate</td>
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<td></td>
<td>Cropping system 3:</td>
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<tr>
<td></td>
<td>2) Farming situation: Lowland</td>
<td>Rice- Mahamaya, swarna, Sampda, Chandrahasni,</td>
<td>Rice-Gram/Sunflower/ Linseed</td>
<td>Drilling in lines, use of higher seed rate</td>
<td>-</td>
</tr>
<tr>
<td>Condition</td>
<td>Major Farming situation</td>
<td>Normal Crop/cropping system</td>
<td>Change in crop/cropping system</td>
<td>Agronomic measures</td>
<td>Remarks on Implementation</td>
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<tr>
<td>Vertisols</td>
<td>Vertisols</td>
<td>karma masuri, IGKV R1, IGKV R2, IGKV R 1244</td>
<td>Rice-Wheat</td>
<td>Rice-Gram/Sunflower/Linseed</td>
<td>Drilling in lines, use of higher seed rate</td>
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<td>Cropping system 3:</td>
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</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Major Farming situation</th>
<th>Normal Crop/cropping system</th>
<th>Change in crop/cropping system</th>
<th>Agronomic measures</th>
<th>Remarks on Implementation</th>
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<tbody>
<tr>
<td>Limited release of water in canals due to low rainfall</td>
<td>1) Farming situation: Mid-land Alfisols</td>
<td>Rice- MTU1010, IR64, IR 36, Chandrahansi, Indira barani dhan-1, Samleshwari,</td>
<td>Rice-Gram/Sunflower/Linseed</td>
<td>Drilling in lines, adoption of moisture conservation practices</td>
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<td></td>
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<td></td>
<td>Cropping system 3:</td>
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<tr>
<td></td>
<td>2) Farming situation: Lowland Vertisols</td>
<td>Rice- Mahamaya, swarna, Sampda, Chandrahansi, karma masuri, IGKV R1, IGKV R2, IGKV R 1244</td>
<td>Rice-Gram/Sunflower/Linseed</td>
<td>Drilling in lines, adoption of moisture conservation practices</td>
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<td>Cropping system 3:</td>
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</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Major Farming situation</th>
<th>Normal Crop/cropping system</th>
<th>Change in crop/cropping system</th>
<th>Agronomic measures</th>
<th>Remarks on Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non release of water in canals under delayed</td>
<td>1) Farming situation: Mid-land Alfisols</td>
<td>Rice- MTU1010, IR64, IR 36, Chandrahansi, Indira barani dhan-1, Samleshwari,</td>
<td>Rice –Gram/ linseed/sunflower</td>
<td>Early sowing in Rabi &amp; moisture conservation</td>
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<td>Cropping system 3:</td>
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<tr>
<td>Condition</td>
<td>Major Farming situation&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Normal Crop/cropping system&lt;sup&gt;g&lt;/sup&gt;</td>
<td>Change in crop/cropping system&lt;sup&gt;h&lt;/sup&gt;</td>
<td>Agronomic measures&lt;sup&gt;i&lt;/sup&gt;</td>
<td>Remarks on Implementation&lt;sup&gt;j&lt;/sup&gt;</td>
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<tr>
<td><strong>onset of monsoon in catchment</strong></td>
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<tr>
<td></td>
<td>Rice-Wheat</td>
<td>Rice –Gram/ linseed/sunflower</td>
<td>Early sowing in Rabi &amp; moisture conservation</td>
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<td>Cropping system 3:</td>
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<tr>
<td>2) Farming situation: Lowland Vertisols</td>
<td>Rice- Mahamaya, swarna, Sampda, Chandrasasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244</td>
<td>Rice-Lathyrus</td>
<td>Relay cropping of Lathyrus</td>
<td>-</td>
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<tr>
<td>Rice-Wheat</td>
<td>Rice-Lathyrus</td>
<td>Relay cropping of Lathyrus</td>
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<tr>
<td>Cropping system 3:</td>
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<th>Agronomic measures&lt;sup&gt;i&lt;/sup&gt;</th>
<th>Remarks on Implementation&lt;sup&gt;j&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td><strong>Lack of inflows into tanks due to insufficient /delayed onset of monsoon</strong></td>
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<tr>
<td>1) Farming situation: Mid-land Alfisols</td>
<td>Rice- MTU1010, IR64, IR 36, Chandrasasni, Indira barani dhan-1, Samleshwari,</td>
<td>Rice –Gram/ linseed/sunflower</td>
<td>Early sowing in Rabi &amp; moisture conservation</td>
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<td>Rice-Wheat</td>
<td>Rice –Gram/ linseed/sunflower</td>
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<tr>
<td>2) Farming situation: Lowland Vertisols</td>
<td>Rice- Mahamaya, swarna, Sampda, Chandrasasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244</td>
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<td>Rice-Lathyrus</td>
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<td>Cropping system 3:</td>
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</tbody>
</table>

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Suggested contingency measure</th>
<th>Vegetative stage</th>
<th>Flowering stage</th>
<th>Crop maturity stage</th>
<th>Post harvest</th>
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<tbody>
<tr>
<td>Continuous high rainfall in a short span leading to water logging</td>
<td>Provision of drainage; if rains are intense</td>
<td>Provision of drainage; if rains are intense</td>
<td>Provision of</td>
<td>Provision of drainage; if</td>
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<tr>
<td>Class of Crops</td>
<td>Action to Take</td>
<td>Action to Take</td>
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<tr>
<td>Pulses &amp; oilseeds</td>
<td>Provision of drainage; if rains are intense</td>
<td>intense</td>
<td>drainage; if rains are intense</td>
<td>rains are intense</td>
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<tr>
<td>Wheat</td>
<td>Provision of drainage; if rains are intense</td>
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<td>Crop4:</td>
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<td>Crop5:</td>
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<tr>
<td><strong>Horticulture (Vegetables)</strong></td>
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<tr>
<td>Tomato</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td>Brinjal</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td>Bhindi</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td>Cauliflower</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td>Cabbage</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td><strong>Fruits</strong></td>
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<tr>
<td>Mango</td>
<td>Drain out-excess water &amp; gap filling</td>
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<tr>
<td>Guava</td>
<td>Drain –out excess water &amp; gap filling</td>
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<td>Citrus</td>
<td>Drain –out excess water &amp; gap filling</td>
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<td>Papaya</td>
<td>Drain –out excess water &amp; gap filling</td>
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<td>Banana</td>
<td>Drain –out excess water &amp; gap filling</td>
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<tr>
<td><strong>Heavy rainfall with high speed winds in a short span</strong></td>
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<td>Paddy</td>
<td>Provision of drainage</td>
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<tr>
<td>Pulses &amp; oilseeds</td>
<td>Provision of drainage</td>
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<tr>
<td><strong>Horticulture</strong></td>
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<tr>
<td>Tomato</td>
<td>Drain out-excess water &amp; gap filling &amp; Staking the plants</td>
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<tr>
<td>Brinjal</td>
<td>Drain out-excess water and spray the plano fix @ 10 ppm to control the flower drop</td>
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<td></td>
<td>Drain out-excess water and spraying the plano fix @ 10 ppm to control the flower drop</td>
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<tr>
<td></td>
<td>Drain out excess water staking the plants and picking the fruit</td>
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<td></td>
<td>Drain out-excess water keep the produce in shed at higher elevation and cover with plastic sheets</td>
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<td></td>
<td>Drain out-excess water keep the produce in shed at higher elevation and cover with plastic sheets</td>
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<tr>
<td></td>
<td>excess water keep the produce in shed at higher elevation &amp; cover it with plastic sheet and fruits may the used for pickle, jam, jelly &amp; as vegetable</td>
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19
<table>
<thead>
<tr>
<th>Crop</th>
<th>Care Requirements</th>
<th>Insect Management</th>
</tr>
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<tbody>
<tr>
<td>Bhindi</td>
<td>Drain out excess water &amp; gap filling &amp; Staking the plant</td>
<td>Drain out excess water and spray the planofix @ 10 ppm to control the flower drops</td>
</tr>
<tr>
<td>Cauliflower</td>
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<td>Cabbage</td>
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<td>Mango</td>
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<td>Guava</td>
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<td>Citrus</td>
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<tr>
<td>Papaya</td>
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<tr>
<td>Banana</td>
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<tr>
<td>Outbreak of pests and diseases due to unseasonal rains</td>
<td></td>
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<tr>
<td>Rice (rain fed)</td>
<td>Cut worm, army worm (swarming caterpillar) (i) Insect-pest monitoring (ii) clean cultivation in crop field along with bunds (iii) Collection and destruction of egg mass (iv) Soil trenching/mechanical barrier all along the infested fields (iv) Use of chlorpyriphos/fenvalerate dusts @ 20-25 kg/ha.</td>
<td>Gundhi bug (i) Spray of chlorpyriphos/malathion @ 02 ml/lr. on the infested crop</td>
</tr>
<tr>
<td>Rice (transplanted)</td>
<td>Cut worm, army worm (swarming caterpillar) (i) Insect-pest monitoring (ii) clean cultivation in crop field along with bunds (iii) Collection and destruction of egg mass (iv) Soil trenching/mechanical barrier all along the infested fields (iv) Use of chlorpyriphos/fenvalerate dusts @ 20-25 kg/ha.</td>
<td>Gundhi bug (i) Spray of chlorpyriphos/malathion @ 02 ml/lr. on the infested crop</td>
</tr>
<tr>
<td>Soybean</td>
<td>Foliage feeders (larval pest) (i) Weekly collection and destruction of egg masses and tiny larvae along with the leaves (ii)</td>
<td>Foliage feeders (larval pest) (i) Weekly collection and destruction of egg masses and</td>
</tr>
</tbody>
</table>

- and cover with plastic sheets

- Drain out excess water and picking the fruits at pre-maturity stage & collect the fallen fruits

- Keep the produce in shed at higher elevation & cover it with plastic sheet and fruits may be used for pickle, jam, jelly & as vegetable
<table>
<thead>
<tr>
<th>Crop</th>
<th>Pest Management Measures</th>
<th>Additional Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>Spraying of Triazophos @ 2 ml/kr of water along with tiny larvae along with the leaves</td>
<td>-</td>
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<tr>
<td></td>
<td>(ii) Spraying of Triazophos @ 2 ml/kr of water</td>
<td>-</td>
</tr>
<tr>
<td>Pigeon pea</td>
<td>Jassid and foliage feeding insects (i) spraying of monocrotophos @ 1.11 ml/kr. of water.</td>
<td>Pod borer complex (i) weekly collection and destruction of larvae (ii) use of pheromone trap against <em>H. armigera</em> (iii) Spraying of Triazophos @ 2 ml/kr or quinalphos @ 02ml. of water</td>
</tr>
<tr>
<td>Groundnut</td>
<td>Jassid and foliage feeding insects (i) spraying of monocrotophos @ 1.11 ml/kr. of water.</td>
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</tr>
<tr>
<td></td>
<td>Groundnut</td>
<td>-</td>
</tr>
<tr>
<td>Sesame</td>
<td>Jassid and foliage feeding insects (i) spraying of monocrotophos @ 1.11 ml/kr. of water.</td>
<td>-</td>
</tr>
<tr>
<td>Moong/urd</td>
<td>White fly (i) Acetameprid @ 0.20 g/kr or dimethate @ 1ml/kr. of water.</td>
<td>-</td>
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<tr>
<td><strong>Horticulture</strong></td>
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<tr>
<td>Tomato</td>
<td>Drain out excess water Drenching with fungicide to control wilt &amp; damping off.</td>
<td>Drain out-excess water and spray the plano fix @ 10 ppm to control the flower drop</td>
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<tr>
<td>Brinjal</td>
<td></td>
<td></td>
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<tr>
<td>Bhindi</td>
<td></td>
<td>Drain out-excess water and drenching with fungicide to control wilt</td>
</tr>
<tr>
<td>Cabbage</td>
<td></td>
<td>NIL</td>
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<tr>
<td>Cauliflower</td>
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</tbody>
</table>
Fruit Crops

Mango

Drain out-excess water Drenching with fungicide to control rotting

Spray 0.2 % wt sulphur powder to control powdery miedew,
Spray 0.5 % copper oxy chloride to control citrus canker in citrus spp

Drain out excess water and picking the fruits at pre-maturity stage

Guava

NIL

Citrus

Papaya

Banana

2.3 Floods

<table>
<thead>
<tr>
<th>Condition</th>
<th>Suggested contingency measure(^a)</th>
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<tbody>
<tr>
<td>Transient water logging/ partial inundation(^1)</td>
<td>Seedling / nursery stage</td>
</tr>
<tr>
<td>Paddy</td>
<td>Provision of drainage</td>
</tr>
<tr>
<td>Kharif oil seeds &amp; pulses</td>
<td>Provision of drainage</td>
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</table>

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<thead>
<tr>
<th>Continuous submergence for more than 2 days(^2)</th>
<th>Suggested contingency measure(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>Provision of drainage/ growing of tolerant varieties like; Pankaj</td>
</tr>
</tbody>
</table>

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone

<table>
<thead>
<tr>
<th>Extreme event type</th>
<th>Suggested contingency measure(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seedling / nursery stage</td>
<td>Vegetable stage</td>
</tr>
<tr>
<td>Heat Wave(^b)</td>
<td></td>
</tr>
<tr>
<td>Paddy</td>
<td>Situation doesn’t arise in Kharif rice</td>
</tr>
<tr>
<td>Wheat</td>
<td>Situation doesn’t arise in this stage</td>
</tr>
<tr>
<td>Summer pulses &amp; oilseeds</td>
<td>Situation doesn’t arise in this stage</td>
</tr>
<tr>
<td>Cold wave</td>
<td>Crop 1</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>Doesn’t prevail in the region</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horticulture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
</tr>
<tr>
<td>Brinjal</td>
</tr>
<tr>
<td>Cali flower</td>
</tr>
<tr>
<td>Knoolkhol</td>
</tr>
<tr>
<td>Cabbage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruit Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop 1: Mango</td>
</tr>
<tr>
<td>Crop 2: Guava</td>
</tr>
<tr>
<td>Crop 3: Citrus</td>
</tr>
<tr>
<td>Crop 4: Papaya</td>
</tr>
<tr>
<td>Crop 5: Banana</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hailstorm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
</tr>
<tr>
<td>Crop 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horticulture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop 1 (specify)</td>
</tr>
<tr>
<td>Crop 2</td>
</tr>
<tr>
<td>Crop 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cyclone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
</tr>
<tr>
<td>Wheat</td>
</tr>
</tbody>
</table>