# State: Rajasthan
# Agriculture Contingency Plan for District: Baran

| | | | | | |
|---|---|---|---|---|---|
| **1.0 District Agriculture profile** | | | | | |
| **1.1** | Agro-Climatic/Ecological Zone | | | | |
| | Agro Ecological Sub Region (ICAR) | Central Highlands (Malwa), Gujarat Plain And Kathiawar Peninsula, Semi-Arid Eco-Region (5.2) | | | |
| | Agro-Climatic Zone (Planning Commission) | Central Plateau Hills Region (VIII) | | | |
| | Agro Climatic Zone (NARP) | Humid South Eastern Plain Zone (RJ-9) | | | |
| | List all the districts or part thereof falling under the NARP Zone | Baran kota and Jhalawar | | | |
| | Geographic coordinates of district headquarters | **Latitude** | | **Longitude** | **Altitude** |
| | | $25^0$ 1'N | | $76\ ^0$52'E | 262 |
| | Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS | Agriculture Research Station, Ummedganj, Post Box No. 7,G.P.O. Nayapura, KOTA - 324 001 (Rajasthan) | | | |
| | **Mention the KVK located in the district** | Krishi Vigyan Kendra, Station Road, Anta, Distt. Baran-325 502 | | | |
| **1.2** | Rainfall | **Normal RF(mm)** | **Normal Rainy days (number)** | **Normal Onset ( specify week and month)** | **Normal Cessation ( specify week and month)** |
| | SW monsoon (June-Sep): | 692.3 | 36.9 | Last week of June (26 week) | $2^{nd}$ week of Sept (37 week) |
| | NE Monsoon(Oct-Dec): | 43.2 | 2.0 | | |
| | Winter (Jan- March) | 9.4 | 1.8 | | - |
| | Summer (Apr-May) | 16.7 | 1.4 | | - |
| | Annual | 761.6 | 42.1 | | - |

| **1.3** | **Land use pattern of the district** (latest statistics) | Geographical area | Cultivable area | Forest area | Land under non-agricultural use | Permanent pastures | Cultivable wasteland | Land under Misc. tree crops and groves | Barren and uncultivable land | Current fallows | Other fallows |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Area ('000 ha) | 699.461 | 366.253 | 216.03 | 25.895 | 35.918 | 15.501 | 0.333 | 39.531 | 13.409 | 19.715 |

| 1. 4 | **Major Soils (common names like red sandy loam deep soils (etc.,)*** | **Area ('000 ha)** | **Percent (%) of total** |
|---|---|---|---|
| | Deep-Black-Clayey | 466.19 | 65.65 |
| | Deep-Brown-Loamy | 100.23 | 14.33 |
| | Red-Gravelly-Loam hilly | 200.25 | 28.63 |

| 1.5 | **Agricultural land use** | **Area ('000 ha)** | | **Cropping intensity %** |
|---|---|---|---|---|
| | Net sown area | 333.129 | | 158 |
| | Area sown more than once | 194.767 | | |
| | Gross cropped area | 527.896 | | |
| 1.6 | **Irrigation** | **Area ('000 ha)** | | |
| | Net irrigated area | 282.755 | | |
| | Gross irrigated area | 296.176 | | |
| | Rainfed area | 231.72 | | |
| | **Sources of Irrigation** | **Number** | **Area ('000 ha)** | **Percentage of total irrigated area** |
| | Canals | | 66.471 | 22.44 |
| | Tanks | 237 | 3.435 | 1.16 |
| | Open wells | 29255 | 34.664 | 11.70 |
| | Bore wells | 9358 | 177.818 | 60.04 |
| | Lift irrigation schemes | - | - | - |
| | Micro irrigation | - | - | - |
| | Other sources | Check dams & rivers | 13.788 | 4.66 |
| | Total Irrigated Area | | 296.176 | 100 |
| | Pump sets | 34664 | | |
| | No. of Tractors | 7371 | | |
| | **Groundwater availability and use* (Data source: State/Central Ground water Department /Board)** | **No. of blocks/ Tehsils** | **(%) area** | **Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)** |
| | Over exploited | 4 | 51 | Suitable for irrigation |
| | Critical | 1 | 8 | Suitable for irrigation |
| | Semi- critical | - | - | - |
| | Safe | 2 | 41 | Suitable for irrigation |

| | | | | |
|---|---|---|---|---|
| | Wastewater availability and use | - | - | - |
| | Ground water quality | - | | |
| *over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70% | | | | |

### 1.7 Area under major field crops & horticulture (2008-09)

| 1.7 | Major field crops cultivated | Area ('000 ha) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Kharif* | | | *Rabi* | | | | |
| | | **Irrigated** | **Rainfed** | **Total** | **Irrigated** | **Rainfed** | **Total** | **Summer** | **Grand total** |
| | Soybean | 2.192 | 206.516 | 208.708 | - | - | - | - | 208.708 |
| | Maize | 0.007 | 12.226 | 12.233 | - | - | - | - | 12.233 |
| | Paddy | 6.233 | 0.008 | 6.401 | - | - | - | - | 6.401 |
| | Rapeseed & Mustard | - | - | - | 105.438 | 3.000 | 108.438 | - | 108.438 |
| | Wheat | - | - | - | 95.786 | 0.016 | 95.802 | - | 95.802 |
| | Coriander | - | - | - | 90.535 | 0.148 | 90.683 | - | 90.683 |
| | Gram | - | - | - | 3.089 | 0.493 | 3.582 | - | 3.582 |

| **Horticulture crops - Fruits** | | **Area ('000 ha)** | | |
|---|---|---|---|---|
| | | **Total** | **Irrigated** | **Rainfed** |
| | Guava | 0.236 | 0.236 | - |
| | Mango | 0.199 | 0.199 | - |
| | Aonla | 0.133 | 0.0133 | - |
| | Lime | 0.068 | 0.068 | - |
| | Orange | 0.006 | 0.006 | - |
| **Horticulture crops - Vegetables** | | **Total** | **Irrigated** | **Rainfed** |
| | Brinjal | 0.350 | 0.350 | - |
| | Gobhi | 0.231 | 0.231 | - |
| | Tomato | 0.181 | 0.181 | - |
| | Chilli | 0.142 | 0.142 | - |
| | Cucurbits | 0.133 | 0.133 | - |
| | Okra | 0.108 | 0.108 | - |
| | Potato | 0.032 | 0.032 | - |
| | Garlic | 5.310 | 5.310 | - |
| **Medicinal and Aromatic crops** | | **Total** | **Irrigated** | **Rainfed** |
| | Nigella | 0.024 | 0.024 | - |
| | Ashwagandha | 0.012 | - | 0.012 |

| | Plantation crops | Total | Irrigated | Rainfed |
|---|---|---|---|---|
| | | **Nil** | **Nil** | **-** |
| | **Fodder crops** | **Total** | **Irrigated** | **Rainfed** |
| | Lucern | 0.310 | 0.310 | - |
| | Chari jowar | 0.050 | 0.050 | - |
| | Berseem | 0.007 | 0.007 | |
| | Total fodder crop area | 0.367 | 0.367 | |
| | Grazing land | 35.918 | - | 35.918 |
| | Sericulture etc | - | - | - |
| | Others (specify) | - | - | - |

| 1.8 | Livestock | Male ('000) | Female ('000) | Total ('000) |
|---|---|---|---|---|
| | Non descriptive Cattle (local low yielding) | - | - | 329.006 |
| | Crossbred cattle | - | - | - |
| | Non descriptive Buffaloes (local low yielding) | - | - | 190.154 |
| | Graded Buffaloes | - | - | - |
| | Goat | - | - | 329.512 |
| | Sheep | - | - | 12.471 |
| | Others (Camel, Pig, Yak etc.) | - | - | 12.729 |
| | Commercial dairy farms (Number) | | | 0.012 |
| **1.9** | **Poultry** | **No. of farms** | **Total No. of birds ('000)** | |
| | Commercial | - | 67.108 | |
| | Backyard | - | - | |

| 1.10 | **Fisheries** (Data source: Chief Planning Officer) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **A. Capture** | | | | | | | |
| | **i) Marine** (Data Source: Fisheries Department) | **No. of fishermen** | **Boats** | | **Nets** | | **Storage facilites (Ice plants etc.)** | |
| | | | Mechanized | Non-mechanized | Mechanized (Trawl nets, Gill nets) | Non-mechanized (Shore Seines, Stake & trap nets) | | |
| | **ii) Inland** (Data Source: Fisheries Department) | **No. Farmer owned ponds** | | **No. of Reservoirs** | | **No. of village tanks** | | |
| | | NIL | | Baran | 2 (484) | Baran | 51 (399) | |
| | **B. Culture** | | | | | | | |
| | | **Water Spread Area ('000ha)** | | **Yield (t/ha)** | | **Production ('000 tons)** | | |
| | i) **Brackish water** (Data Source: MPEDA/ | NA | | NA | | - | | |

| | | | | |
|---|---|---|---|---|
| | Fisheries Department) | | | |
| | ii) **Fresh water** (Data Source: Fisheries Department) | 1403 | Village pond 1500 to 2000 kg./haLakes 50-150 kg./ha | |
| | **Others** | | | |

**1.11 Production and Productivity of major crops** (Average of 5 years: 2004-08)

| 1.11 | Name of crop | Kharif | | Rabi | | Summer | | Total | | Crop residue as fodder (‘000 tons) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Production ('000 t) | Productivity (kg/ha) | Production ('000 t) | Productivity (kg/ha) | Production ('000 t) | Productivity (kg/ha) | Production ('000 t) | Productivity (kg/ha) | |
| **Major Field crops (Crops to be identified based on total acreage)** | | | | | | | | | | |
| 1 | Soybean | 199.212 | 1463 | - | - | - | - | 199.212 | 1463 | Information not available |
| 2 | Maize | 35.42 | 1347 | - | - | - | - | 35.42 | 1347 | |
| 3 | Paddy | 8.471 | 3755 | - | - | - | - | 8.741 | 3755 | |
| 4 | Mustard | - | - | 218.119 | 1421 | - | - | 218.119 | 1421 | |
| 5 | Wheat | - | - | 229.875 | 3122 | - | - | 229.875 | 3122 | |
| 6 | Coriander | - | - | 76.441 | 1252 | - | - | 76.441 | 1252 | |
| 7 | Gram | - | - | 5.09 | 1159 | - | - | 5.09 | 1159 | |
| **Major Horticultural crops (Crops to be identified based on total acreage)** | | | | | | | | | | |
| 1 | Brinjal | 0.162 | 6247 | 0.174 | 4000 | 0.014 | 4243 | 0.350 | 5046 | Information not available |
| 2 | Cole crops | 0.104 | 4207 | 0.127 | 3488 | - | - | 0.231 | 3835 | |
| 3 | Tomato | 0.112 | 5321 | 0.228 | 2447 | 0.026 | 4308 | 0.366 | 3459 | |
| 4 | Chilli | 0.136 | 919 | 0.006 | 2167 | - | - | 0.142 | 999 | |
| 5 | Cucurbits | - | - | - | - | 0.048 | 4083 | 0.048 | 4083 | |
| 6 | Okra | 0.091 | 4780 | 0.060 | 3617 | 0.030 | 3571 | 0.181 | 4177 | |
| 7 | Garlic | - | - | 5.310 | 6678 | - | - | 5.310 | 6678 | |
| 8 | Potato | - | - | 0.174 | 4244 | - | - | 0.174 | 4244 | |
| 9 | Guava | - | - | - | - | - | - | 0.236 | 97240 | |
| 10 | Mango | - | - | - | - | - | - | 0.199 | 1170 | |
| 11 | Aonla | - | - | - | - | - | - | 0.133 | 2016 | |
| 12 | Onion | - | - | 0.023 | 4870 | - | - | 0.023 | 4870 | |

| 1.12 | **Sowing window for 5 major field crops(start and end of normal sowing period)** | **Soybean** | **Maize** | **Wheat** | **Mustard** | **Coriander** |
|---|---|---|---|---|---|---|
| | Kharif- Rainfed | 4th week June to 2nd week of July | 4th week June to 2nd week of July | - | - | - |
| | Kharif-Irrigated | 4th week June to 2nd week of July | 3rd week of June to 1st week of July | - | - | - |
| | Rabi- Rainfed | - | - | 4th week of Oct. to 2nd week of Nov. | 4th week of Sept. to 2nd week of Oct. | 2nd week of Oct. to 2nd week of Nov. |
| | Rabi-Irrigated | - | - | 1-3rd week of Nov. | 1st -4th wk. of Oct. | 2nd week of Oct. to 2nd week of Nov. |

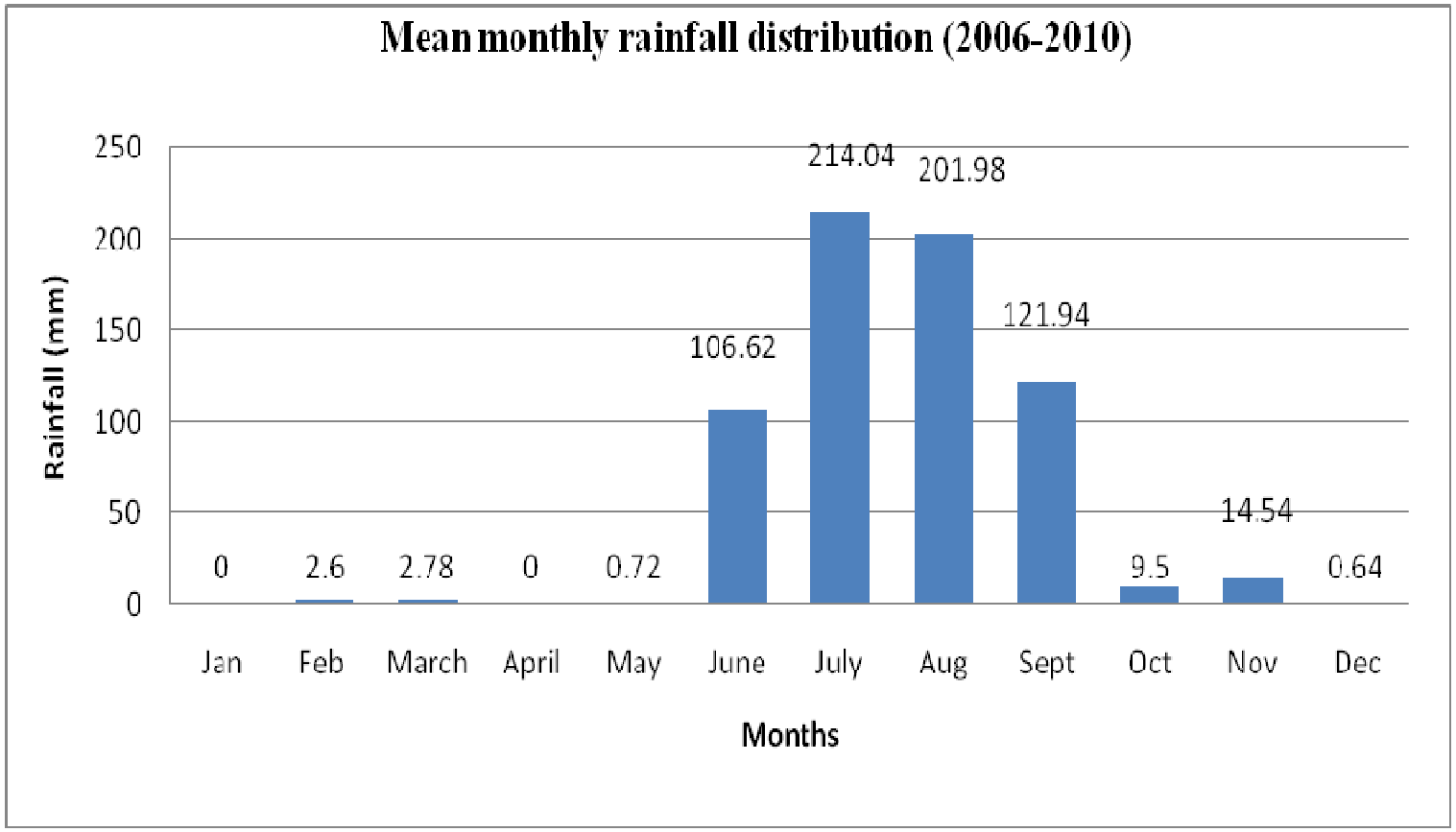
| **1.13** | **What is the major contingency the district is prone to?** (Tick mark) | **Regular** | **Occasional** | **None** |
|---|---|---|---|---|
| | Drought | - | √ | - |
| | Flood | - | - | √ |
| | Cyclone | - | - | √ |
| | Hail storm | - | - | √ |
| | Heat wave | √ | - | - |
| | Cold wave | - | √ | - |
| | Frost | - | √ | - |
| | Sea water intrusion | - | - | √ |
| | Pests and disease outbreak (Tobacco Caterpillar in soybean, Yellow Mosaic Virus in soybean and kharif pulses) | - | - | √ |
| | Others | - | - | - |

| **1.14** | **Include Digital maps of the district for** | Location map of district within State as Annexure I | Enclosed: Yes |
|---|---|---|---|
| | | Mean annual rainfall as Annexure 2 | Enclosed: Yes |
| | | Soil map as Annexure 3 | Enclosed: Yes |

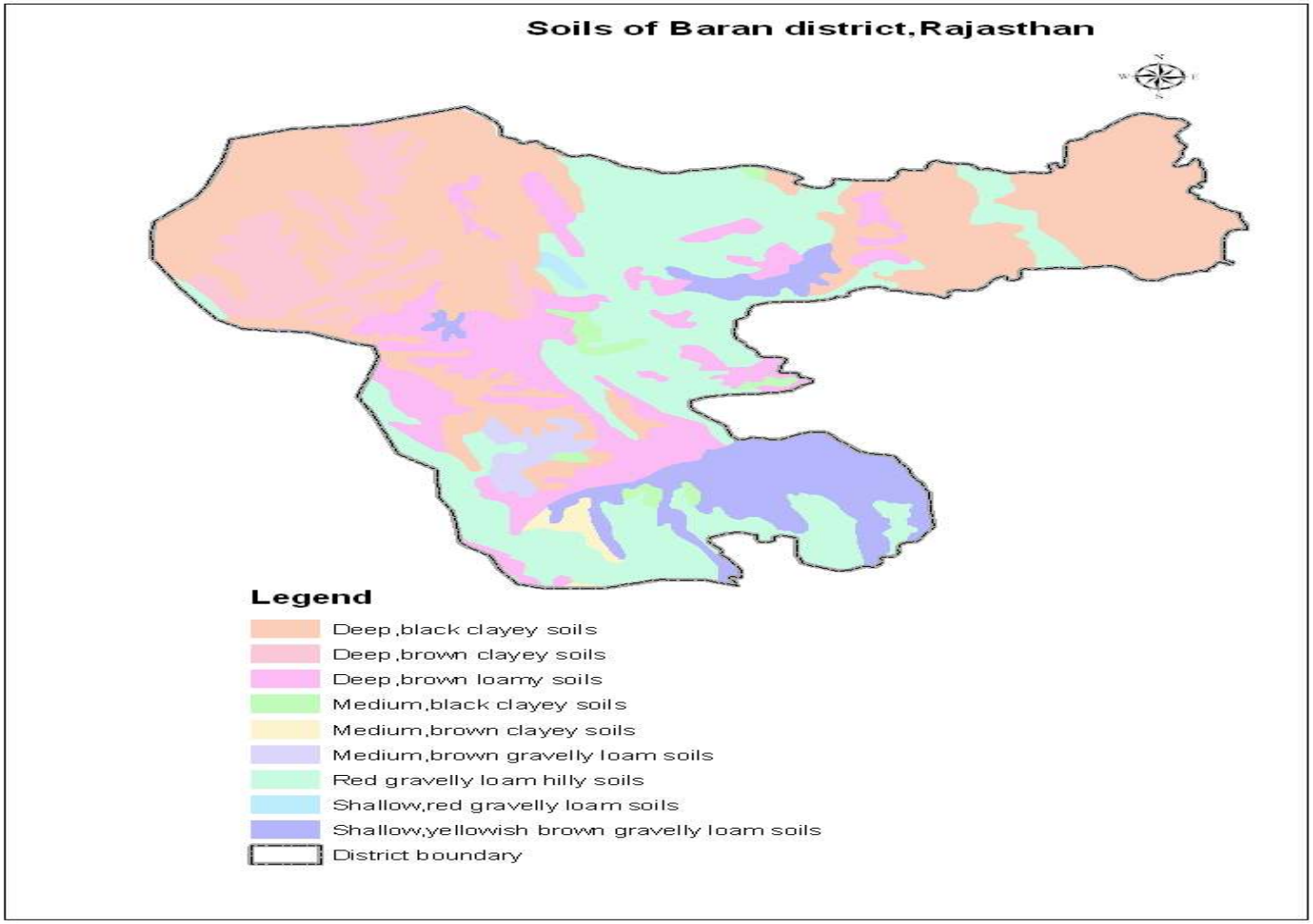
**Annexure 1**

**Location map of Baran district**

**Annexure 2**
**Mean monthly rainfall graph of Baran district**



**Annexure 3**
**Soil map**




Source: NBSS&LUP, Regional Centre, Udaipur

**2.0 Strategies for weather related contingencies**

**2.1 Drought**

**2.1.1 Rainfed situation (kharif)**

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Early season drought (delayed onset)** | **Major Farming situation[a]** | **Normal Crop / Cropping system[b]** | **Change in crop / cropping system[c] including variety** | **Agronomic measures[d]** | **Remarks on Implementation[e]** |
| Delay by 2 weeks (July 2nd week) | 1 Deep black clayey | Soybean (JS 335, NRC-37, MACS-450,JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2 | No change<br>Soybean (JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2, Pratap Raj-24 | • Intercropping of soybean+maize (4:2) | • Supply of seed through RSSC/NSC/ other agencies |
| | | Maize (Ageati-76, Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka-5, PEHM 2, Mahi Kanchan) | No change<br>Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka- 5, PEHM 2, Mahi Kanchan) | • Intercropping of soybean+maize (4:2)<br>• Dry Sowing | |
| | | Urdbean (Krishna, T-9, PU-19, KU 96-3) | No change<br>Urdbean (Krishna, T-9, PU-19, KU 96-3) | - | |
| | | Mungbean K 851, ML 267 | No change<br>Mungbean K 851, ML 267 | - | |
| | | Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | No change<br>Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Early season drought (delayed onset)** | **Major Farming situation[a]** | **Normal Crop / Cropping system[b]** | **Change in crop / cropping system[c] including variety** | **Agronomic measures[d]** | **Remarks on Implementation[e]** |
| Delay by 2 weeks (July 2nd week) | Deep brown loamy | Soybean (JS 335, NRC-37, MACS-450,JS 93-05, JS 95-60, Pratap Soya-1, | No change<br>Soybean (JS 93-05, JS 95-60, | • Intercropping of soybean +maize (4:2) | • Supply of seed through RSSC/NSC |

| | | | | | |
|---|---|---|---|---|---|
| | | Pratap soya-2 | Pratap Soya-1, Pratap soya-2, Pratap Raj-24 | | • Availability of seed drill for inter cropping from government schemes |
| | | Maize (Ageati-76, Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka-5, PEHM 2, Mahi Kanchan) | No change<br><br>Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka- 5, PEHM 2, Mahi Kanchan) | • Intercropping of soybean +maize (4:2)<br>• Dry Sowing | |
| | | Urdbean (Krishna, T-9, PU-19, KU 96-3) | No change<br><br>Urdbean (Krishna, T-9, PU-19, KU 96-3) | - | |
| | | Mungbean K 851, ML 267 | No change<br>Mungbean K 851, ML 267 | - | |
| | | Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | No change<br>Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Early season drought (delayed onset)** | **Major Farming situation[a]** | **Normal Crop/cropping system[b]** | **Change in crop/cropping system[c]** | **Agronomic measures[d]** | **Remarks on Implementation[e]** |
| Delay by 4 weeks (July 4th week ) | Deep black clayey | Soybean (JS 335, JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2 | Soybean (JS 93-05, Pratap Soya-1, Pratap Soya-2, JS 95-60) or Urdbean (T-9, PU-19, KU-96-3) or Sesamum (TC-25, RT-46, RT-123, RT-125) | • Use of 10-15% higher seed rate in soybean | • Supply of seed through RSSC/NSC/ other agency<br>• Construction of Farm pond through NREGA, RKVY |
| | | Urdbean (Krishna, T-9, PU-19, KU 96-3) | Urdbean (Krishna, T-9, PU-19, KU 96-3) | - | |
| | | Mungbean K 851, ML 267 | Mungbean K 851, ML 267 | - | |
| | | Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | Sesamum ( TC-25, RT-103, RT 46, RT 123, RT 125) | - | |
| | Deep brown loamy | Soybean (JS 335, JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2 | Soybean (JS 93-05, Pratap Soya-1, Pratap Soya-2, JS 95-60) or Urdbean (T-9, PU-19, KU-96-3) or Sesamum (TC-25, RT-46, RT-123, RT-125) | • Use of 10-15% higher seed rate in soybean | |
| | | Urdbean (Krishna, T-9, PU-19, | Urdbean (Krishna, T-9, PU-19, KU | - | |

| | | | | | |
|---|---|---|---|---|---|
| | | KU 96-3) | 96-3) | | |
| | | Mungbean K 851, ML 267 | Mungbean K 851, ML 267 | - | |
| | | Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125) | Sesamum (TC-25, RT-103, RT 46, RT 123, RT 125) | - | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Early season drought (delayed onset)** | **Major Farming situation[a]** | **Normal Crop/cropping system[b]** | **Change in crop/cropping system[c]** | **Agronomic measures[d]** | **Remarks on Implementation[e]** |
| Delay by 6 weeks (Aug 2nd week) | Deep black clayey | Fallow-Mustard | Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)- fallow or Mungbean (K-851, RMG-62) – fallow or Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ safflower/linseed on conserved moisture | • Use of bakhar for field moisture conservation<br>• Field bunding | • Supply of seed through RSSC/NSC/ other agency<br>•<br>• Construction of Farm pond through NREGA, RKVY |
| | Deep brown loamy | Fallow-Mustard | Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)- fallow or Mungbean (K-851, RMG-62) – fallow Or Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ safflower/linseed on conserved moisture | • Use of bakhar for field moisture conservation<br>• Field bunding | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Early season drought (delayed onset)** | **Major Farming situation[a]** | **Normal Crop/cropping system[b]** | **Change in crop/cropping system[c]** | **Agronomic measures[d]** | **Remarks on Implementation[e]** |
| Delay by 8 weeks (Aug 4th week) | Deep black clayey | Fallow-Mustard | Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ safflower/linseed on conserved | • Use of bakhar for field moisture conservation | • Supply of seed through RSSC/NSC/ other agency<br>• Construction of Farm pond |

| | | | | | |
|---|---|---|---|---|---|
| | | | moisture | • Field bunding | through NREGA, RKVY |
| | Deep brown loamy | Fallow-Mustard | Fallow – Toria/Taramira/ Mustard/Gram/Coriander/safflower/ linseed on conserved moisture | • Use of bakhar for field moisture conservation<br>• Field bunding | |

| Condition | | | Suggested Contingency measures | | |
|---|---|---|---|---|---|
| Early season drought (Normal onset) | Major Farming situation[a] | Normal Crop/cropping system[b] | Crop management[c] | Soil nutrient & moisture conservation measues[d] | Remarks on Implementation[e] |
| Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc. | Deep black clayey | Soybean | • If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate<br>• If plant population is more thant 75% go for gap filling. | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | • Crop insurance<br>• Availability of inter-culture implements i.e. wheel hand hoe through RKVY |
| | | Maize | • If germination is less than 50% then go for gap filling with urdbean/mungbean<br>• If plant population is more that 75% go for transplanting of thinned plants/or gap filling with same cultivar | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |
| | | Urdbean/ Mungbean | • If germination is less than 50% then go for re-sowing with early maturing varieties otherwise gap fill with improved seeds | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |
| | | Sesamum | • If germination is less than 50% then go resowing with alternate crop | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |
| | Deep brown loamy | Soybean | • If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |

| | | | | | |
|---|---|---|---|---|---|
| | | | • If plant population is more than 75% go for gap filling. | | |
| | | Maize | • If germination is less than 50% then go for gap filling with urdbean/mungbean<br>• if plant population is more than 75% go for transplanting of thinned plants | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |
| | | Urdbean/ Mungbean | • If germination is less than 50% then go for re-sowing with early maturing varieties | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |
| | | Sesamum | • If germination is less than 50% then go for gap filling | • Hoeing by hand hoe to develop soil mulch<br>• Removal of weeds in time.<br>• In situ mulching of weeds | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)** | **Major Farming situation[a]** | **Normal Crop/ cropping system[b]** | **Crop management[c]** | **Soil nutrient & moisture conservation measues[d]** | **Remarks on Implementation[e]** |
| At vegetative stage | Deep black clayey | Soybean | • Life saving Irrigation<br>• Thinning of plants by 30 to 50%<br>• Weeding & hoeing | • Mulching in the crop rows.<br>• Use of anti-transpirants like kaolin<br>• Spray 2% urea after the relief of dry spell | • Crop insurance<br>• Availability of inter-culture implements can be procured from RKVY |
| | | Maize | • Life saving Irrigation<br>• Thinning of plants by 30 to 50%<br>• Weeding & hoein | • Use of green mulch in the rows<br>• Spray of 2% urea after relief of dry spell<br>• Use of anti-transpirants like kaolin | |
| | | Urdbean/ Mungbean | • Weeding & hoeing | • Use of anti-transparent like kaolin.<br>• Spray of 2% urea after relief of dry spell<br>• Mulching in crop rows | |
| | | Sesamum | • Weeding & hoeing | • Use of anti-transpirants like kaolin.<br>• Spray of 2% urea after relief of dry spell | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | • Use of green mulch in the rows | |
| | Deep brown loamy | Soybean | • Life saving Irrigation<br>• Thinning of plants by 30 to 50%<br>• Weeding & hoeing | • Mulching in crop rows.<br>• Spray of 2% urea after relief of dry spell<br>• Use of anti-transpirants like kaolin. | |
| | | Maize | • Life saving Irrigation<br>• Thinning of plants by 30 to 50%<br>• Weeding & hoei | • Use of green material as mulch.<br>• Spray of 2% urea<br>• Use of anti-transpirants like kaolin. | |
| | | Urdbean/ Mungbean | • Weeding & hoeing | • Use of anti-transparent like kaolin. | |
| | | Sesamum | • Weeding & hoeing | • Use of anti-transpirants like kaolin. | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Mid season drought (long dry spell)** | **Major Farming situation[a]** | **Normal Crop/ cropping system[b]** | **Crop management[c]** | **Soil nutrient & moisture conservation measues[d]** | **Remarks on Implementation[e]** |
| At flowering/ fruiting stage | Deep black clayey | Soybean | | • Spray of 0.1% thio urea<br>• Life saving Irrigation from farmpond water<br>• Alternate furrow irrigation | Link watersheds and NREGS for the support of farm pond technology |
| | | Maize | • Removal of lower leaves for fodder<br>• Harvest cobs for table purpose (if market is available) and for green fodder<br>• Harvesting of green cobs and green fodder | • Spray of 0.1% thio urea<br>• Life saving Irrigation by the harvested rainwater<br>• Alternate furrow irrigation | |
| | | Urdbean/ Mungbean | | • Spray of 2% urea<br>• Life saving Irrigation by the harvested rainwater | |
| | | Sesamum | | Life saving Irrigation by the harvested rainwater<br>Alternate furrow irrigation | |
| | Deep brown loamy | Soybean | | • Spray of 0.1% thio urea<br>• Life saving Irrigation from farm pond | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | • Alternate furrow irrigation | |
| | | Maize | • Removal of lower leaves for fodder<br>• Harvest cobs for table purpose (if market is available) and for green fodder<br>• Harvesting of green cobs and green fodder | • Spray of 0.1% thio urea<br>• Life saving Irrigation by the harvested rainwater<br>• Furrow irrigation | |
| | | Urdbean/ Mungbean | | • Spray of 2.0% urea<br>• Life saving Irrigation by the harvested rainwater | |
| | | Sesamum | | Life saving Irrigation by the harvested rainwater | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| **Terminal drought (Early withdrawal of monsoon)** | **Major Farming situation[a]** | **Normal Crop/cropping system[b]** | **Crop management[c]** | **Rabi Crop planning[d]** | **Remarks on Implementation[e]** |
| | Deep black clayey | Soybean | • Life saving Irrigation<br>• If the damage will be severe, harvest for fodder | Plan for land preparation of rabi crops like chickpea, Mustard/taramira | Link watersheds and NREGS for the support of Farm pond technology |
| | | Maize | • Life saving Irrigation from rain water harvesting<br>• Removal of lower leaves for fodder<br>• Harvesting of green cobs and green fodder | Plan forland preparation of rabicrops like chickpea/lentil/mustard/ Taramira | |
| | | Urdbean/ Mungbean | Life saving irrigation from rainwater harvesting | -do- | |
| | | Sesamum | Life saving irrigation from rainwater harvesting | -do- | |
| | Deep brown loamy | Soybean | • Life saving Irrigation from rainwater harvesting | -do- | |
| | | Maize | • Life saving Irrigation by the harvested rainwater<br>• Removal of lower leaves for fodder<br>• Harvesting of green cobs and green fodder | -do- | |
| | | Urdbean/ Mungbean | Life saving irrigation from rainwater harvesting | -do- | |
| | | Sesamum | -do- | -do- | |

**2.1.2 Drought - Irrigated situation**

| Condition | | | Suggested Contingency measures | | |
|---|---|---|---|---|---|
| | **Major Farming situation** | **Normal Crop/cropping system** | **Change in crop/cropping system[h]** | **Agronomic measures[i]** | **Remarks on Implementation[j]** |
| Delayed release of water in canals due to low rainfall | Deep black clayey | Soybean/Maize-wheat | Soybean/Maize –wheat/ barley/gram/ coriander / linseed<br>Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1<br>Coriander : RCr-20, 436, 480, 684, CS-6<br>Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, GNG 683, KAK 2<br>Barley: RD-2552, RD-2052<br>Linseed : Pratap Alsi-1, RL-914, Meera, Kiran | • Upcoming irrigation from farm pond water for sowing of crops<br>• Irrigation by pressurized irrigation system If feasible or furrow method<br>• Irrigation at critical crop growth stages | Lin k watershed programmes for the support of farm pond technology |
| | | Paddy-wheat | Paddy-Wheat<br>Wheat: Raj-3777, Lok-1, Raj-3765 | • Upcoming irrigation from farm pond water for sowing of crops<br>• Upcoming irrigation from farm pond water for sowing of crops<br>• Sprinkler or drip or Furrow irrigation<br>• Use of Roto till drill for sowing | |
| | Deep brown loamy | Soybean/Maize-wheat | Soybean/Maize –wheat/ barley/gram/ coriander / linseed<br>Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1<br>Coriander : RCr-20, 436, 480, 684, CS-6<br>Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, GNG 683, KAK 2<br>Barley: RD-2552, RD-2052<br>Linseed : Pratap Alsi-1, RL-914, Meera, Kiran | • Irrigation by sprinkler or drip or Alternate furrow<br>• Upcoming irrigation from farm pond water for sowing of crops<br>• Irrigation at critical crop growth stages | |
| | | Paddy-wheat | Paddy-Wheat<br>Wheat: Raj-3777, Lok-1, Raj-3765 | • Irrigation by Sprinkler/drip system if feasible or furrow method<br>• Use of Roto till drill for sowing | |

| Condition | | | Suggested Contingency measures | | |
|---|---|---|---|---|---|
| | **Major Farming situation[f]** | **Crop/cropping system[g]** | **Change in crop/cropping system[h]** | **Agronomic measures[i]** | **Remarks on Implementation[j]** |
| Non release of water in canals under delayed onset of monsoon in catchment | Deep black clayey | Soybean/Maize-Wheat/Gram<br>Or<br>Fallow-Mustard | Soybean/Maize-Gram/ Coriander/<br>Or<br>Fallow-Mustard/Gram/ Coriander | • Irrigation by sprinkler/dripsystem if feasible<br>• Soil stirring for dust mulch<br>• Weed removal<br>• Use of anti transparent i.e. Kaolin<br>• Spray of urea at 2-3% as per recommendation<br>• Spray of thio urea 0.1% | Construction of Rain water harvesting structures with the support of watershed programmes and NREGS |
| | Deep brown loamy | Soybean/Maize-Wheat/Gram<br>Or<br>Fallow-Mustard | Soybean/Maize-Gram/ Coriander/<br>Or<br>Fallow-Mustard/Gram/ Coriander | • Irrigation by Sprinkler or drip if water is available from other sources<br>• Soil stirring for dust mulch<br>• Weed removal<br>• Use of anti transparent i.e. Kaolin<br>• Spray of urea at 2-3% as per recommendation<br>• Spray of thio urea 0.1% | |

| Condition | | | Suggested Contingency measures | | |
|---|---|---|---|---|---|
| | Major Farming situation[f] | Crop/cropping system[g] | Change in crop/cropping system[h] | Agronomic measures[i] | Remarks on Implementation[j] |
| Lack of inflows into tanks due to insufficient /delayed onset of monsoon | Deep black clayey | No Sowing and water is used for drinking of Animals and other domestic use | If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira, Safflower in Tank beds | • Soil stirring for dust mulch<br>• Weed removal<br>• Spray of urea @ 2-3% as per recommendation<br>• Spray of thio urea 0.1% | Deepening of Tanks under NREGA if tanks are kept fallow |
| | Deep brown loamy | No Sowing and water is used for drinking of Animals and other domestic use | If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira, Safflower in Tank beds | • Soil stirring for dust mulch<br>• Weed removal<br>• Spray of urea @ 2-3% as per recommendation<br>• Spray of thio urea 0.1% | |

| **Condition** | | | **Suggested Contingency measures** | | |
|---|---|---|---|---|---|
| | **Major Farming situation[f]** | **Crop/cropping system[g]** | **Change in crop/cropping system[h]** | **Agronomic measures[i]** | **Remarks on Implementation[j]** |
| Insufficient groundwater recharge due to low rainfall | Deep black clayey | Soybean/Maize-Wheat | Soybean/Maize-Gram/Coriander/Linseed/ Lentil/Mustard/Durum Wheat | • Irrigation by sprinkler or drip system If feasible<br>• Conjunctive use of surface rainwater with ground water<br>• Irrigation at critical growth stages with water saving technologies<br>• Soil stirring for dust mulch<br>• Timely weed removal<br>• Spray of Thiourea 0.1% | • Link watersheds,NREGA for the support of farm pond technology |

**2.2 Un-timely (unseasonal) rains- Situation does not exist**

| Condition | Suggested contingency measure | | | |
|---|---|---|---|---|
| **Continuous high rainfall in a short span leading to water logging** | **Vegetative stage[k]** | **Flowering stage[l]** | **Crop maturity stage[m]** | **Post harvest[n]** |
| **Horticulture** | | **NA** | | |
| **Vegetables** | | **NA** | | |
| **Heavy rainfall with high speed winds in a short span[2]** | | **NA** | | |

| Outbreak of pests and diseases due to unseasonal rains | Disease | Control | Insect/pest | Control |
|---|---|---|---|---|
| **NA** | **NA** | **NA** | **NA** | **NA** |

**2.3 Floods**

| Condition | Suggested contingency measure[o] | | | |
|---|---|---|---|---|
| **Transient water logging/ partial inundation[1]** | **Seedling / nursery stage** | **Vegetative stage** | **Reproductive stage** | **At harvest** |
| Soybean | Drain excess water by proper drainage<br><br>Intercultivation with hoe to improve the aeration and to control weeds<br><br>Apply 20kg N/ha at optimum moisture content | Drain excess water by proper drainag<br>Intercultivation with hoe to improve soil aeration and to control weeds<br><br>Apply multi nutrient or hormonal spray<br><br>Plano fix to promote flowering | Drain excess water by proper drainage as early as possible<br><br>Harvest at physiological maturity on clear sunny day | Dry the produce up to 10-12% moisture level before storage /bagging |
| Maize | Drain excess water by proper drainage<br><br>Earthling up of crop for anchorage<br><br>Intercultivation with hoe to improve the aeration and to control weeds<br><br>Apply 20kg N/ha at optimum | Drain excess water by proper drainage<br><br>Earthing up of crop for anchorage<br>Intercultivation with hoe to improve soil aeration and to control weeds<br><br>Apply multi nutrient or hormonal spray to promote flowering | Drain excess water by proper drainage as early as possible<br><br>Harvest green cobs from dislodged plants for immediate marketing<br>Shift the produce into the shed | Harvest the cobs after they are dried up properly<br>Dry the grains up to 10-12% moisture level before storage /bagging |

| | | | | |
|---|---|---|---|---|
| | moisture content | | | |
| Paddy | Drain excess water by proper drainage<br><br>Take up gap filling either with available nursery or from splitting the tillers from the surviving hills<br>Intercultivation with hoe to improve the aeration of soil and to control weeds<br><br>Apply 240 kg N/ha at optimum moisture content<br><br>Micro nutrient deficiency corrections for Zn and Fe foliar application of 0.2% of ZnSO4,Fe SO4 two to three timesat 4-5 days interval | Drain excess water by proper drainage<br>Need based micronutrient spray<br><br>Apply 40-50kg N/ha as booster dose at optimum moisture content<br><br>Spray Zn SO4 0.2% if it is less than 45 days after transplanting | Tie the group of fallen plants in small bundles to avoid grain damage in ear heads<br><br>Protect against false smut and gain discoloration | Dry the grain up to 10-12% moisture level before storage /bagging<br>Spray common salt (5%) on panicles to prevent germination and spoilage of straw from the moulds<br><br>Quick drying against discoloration |
| **Horticulture** | | | | |
| Kharif vegetable | Drain excess water from the field as soon as possible<br><br>Interculture the field to loosen the soil and to improve aeration | Drain excess water from the field as early as possible<br><br>Staking the plants<br><br>Multi nutrient application to promote flowering | Drain excess water from the field as early as possible<br><br>Drain excess water from the field as early as possible<br><br>Harvest on clear sunny day | Shift the produce safely to the shed<br><br>Market the produce as early as possible |
| Cucurbits | -do— | -do | -do | -do- |
| Orchards | Drain excess water from the basin/field<br><br>Apply N10-20kgN/ha to regain vigor<br><br>Need based plant protection | Drain excess water with proper drainage<br><br>Application of N-fertilizers (10-20KgN/ha)<br><br>Need based plant protection<br>Spray planofix to promote flowering | Fruit harvest at proper stage | Grading , shorting and produce placed in proper way to avoid rotten |

| | | | | |
|---|---|---|---|---|
| **Continuous submergence for more than 2 days[2]** | | | | |
| Soybean | Drain excess water by proper drainage<br><br>Intercultivation with hoe to improve the aeration and to control weeds<br>Apply 20kg N/ha at optimum moisture content | Drain excess water by proper drainage<br><br>Intercultivation with hoe to improve soil aeration and to control weeds<br><br>Apply multi nutrient or hormonal spray<br>Plano fix to promote flowering | Drain excess water by proper drainage as early as possible<br><br>Harvest at physiological maturity on clear sunny day | Dry the produce up to 10-12% moisture level before storage /bagging |
| Maize | Drain excess water by proper drainage<br>Earthling up of crop for anchorage<br><br>Intercultivation with hoe to improve the aeration and to control weeds<br>Apply 20kg N/ha at optimum moisture content | Drain excess water by proper drainage<br><br>Earthing up of crop for anchorage<br><br>Intercultivation with hoe to improve soil aeration and to control weeds<br><br>Apply multi nutrient or hormonal spray to promote flowering | Drain excess water by proper drainage as early as possible<br><br>Harvest green cobs from dislodged plants for immediate marketing<br>Shift the produce into the shed | Harvest the cobs after they are dried up properly<br><br>Dry the grains up to 10-12% moisture level before storage /bagging |
| Paddy | Drain excess water by proper drainage<br><br>Take up gap filling either with available nursery or from splitting the tillers from the surviving hills<br><br>Intercultivation with hoe to improve the aeration of soil and to control weeds<br><br>Apply 240 kg N/ha at optimum moisture content<br><br>Micro nutrient deficiency corrections for Zn and Fe foliar application of 0.2% of ZnSO4,Fe SO4 two to three timesat 4-5 days interval | Drain excess water by proper drainage<br>Need based micronutrient spray<br><br>Apply 40-50kg N/ha as booster dose at optimum moisture content<br><br>Spray Zn SO4 0.2% if it is less than 45 days after transplanting | Tie the group of fallen plants in small bundles to avoid grain damage in ear heads<br><br>Protect against false smut and gain discoloration | Dry the grain up to 10-12% moisture level before storage /bagging<br><br>Spray common salt (5%) on panicles to prevent germination and spoilage of straw from the moulds<br><br>Quick drying against discoloration |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **Horticulture** | | | | |
| Kharif vegetable | Proper drainage | Proper drainage | Proper drainage | Proper drainage |
| Cucurbits | Proper drainage | Proper drainage | Proper drainage | Proper drainage |
| Orchards | Proper drainage | Proper drainage | Proper drainage | Proper drainage |
| **Sea water inundation[3]** | **Not applicable** | | | |

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

| **Extreme event type** | **Suggested contingency measure[r]** | | | |
|---|---|---|---|---|
| | **Seedling / nursery stage** | **Vegetative stage** | **Reproductive stage** | **At harvest** |
| **Heat Wave[p]** | | | | |
| Mungbean/urdbean | Application of irrigation | Light and frequent irrigation | Light and frequent irrigation | Picking of pods at physiological maturity |
| **Horticulture** | | | | |
| Tomato | Cultivation in control conditions | Light and frequent irrigation at evening | Light and frequent irrigation at evening | Picking of fruits at physiological maturity |
| Brinjal | Cultivation in control conditions | Light and frequent irrigation at evening | Light and frequent irrigation at evening | Picking of fruits at physiological maturity |
| Cucurbits | Cultivation in control conditions | Light and frequent irrigation at evening | Light and frequent irrigation at evening | Picking of fruits at physiological maturity |
| Okra | - | Light and frequent irrigation at evening | Light and frequent irrigation at evening | Picking of fruits at physiological maturity |
| **Cold wave[q]** | **Situation rare exists in the district** | | | |
| Wheat | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Mustard | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Gram | - | • Burning of farm waste for Smoke<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Coriander | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| **Horticulture** | | | | |
| Tomato | - | • Burning of farm waste for Smoke, | • Burning of farm waste for Smoke, | NA |

| | | | | |
|---|---|---|---|---|
| | | • light irrigation<br>• Spray of sulphuric acid 0.1% | • light irrigation<br>• Spray of sulphuric acid 0.1% | |
| Potato | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Brinjal | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| **Frost** | | | | NA |
| Wheat | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Mustard | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Gram | - | • Burning of farm waste for Smoke<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Coriander | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| **Horticulture** | | | | |
| Tomato | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Potato | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| Brinjal | - | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | • Burning of farm waste for Smoke,<br>• light irrigation<br>• Spray of sulphuric acid 0.1% | NA |
| **Hailstorm** | **Not applicable** | | | |
| **Cyclone** | **Not applicable** | | | |

## 2.5 Contingent strategies for livestock, Poultry & Fisheries

### 2.5.1 Livestock

| | Suggested contingency measures | | |
|---|---|---|---|
| | **Before the event** | **During the event** | **After the event** |
| **Drought** | | | |
| Feed and Fodder availability | As the district is occasionally prone to drought the under mentioned measures may be taken to enhance the availability of feed and fodder base at the village/ household level<br>Sowing of horsegram/Lucerne etc., during NE monsoon<br>Preservation green maize fodder as silage<br>All the crop residues especially Bajra Karabi, paddy/Wheat/barley straw/ Chopped sewan/Dhaman/Bharut/ Dry leaves of Jharberi/ Groundnut bhusa should be stored properly in the farm of hay at individual farmer level.<br>Harvest the top fodder (Khejari, Neem, Subabul, Acasia, Pipol etc) and create fodder banks at village level<br>Establishment of silvi-pastoral system in CPRs with ***Stylosanthus hamata*** and ***Cenchrus ciliaris*** as grass with ***Leucaena leucocephala*** as tree component<br>Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in CPRs with the monsoon pattern for higher biomass production<br>Increase area under short duration fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAINT BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7 etc.,) on farmers fields with some input subsidy<br>Avoid burning of wheat straw<br>Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon<br>Proper drying, bailing and densification of harvested grass<br>Capacity building and preparedness of the stakeholders and official staff for the extreme events | Harvest and use all the failed crop (Maize, Blackgram, Sorghum, Ground nut, Cluster bean, Wheat, Barley, Green gram, Soybean etc.,) material as fodder and feed the Livestock.<br>Use judiciously the karabi, Preserved sewan /Dhaman /Bharut, Wheat straw, Lopped Khejari<br>High productive animals should be Supplemented with tree fodder<br>Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals<br>Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock)<br>Available kitchen waste should be mixed with dry fodder while feeding<br>Arrangements should be made for mobilization of small ruminants across the districts where no drought exits<br>Subsidized loans should be provided to the livestock keepers for procurement of feed | Flushing the stock to recoup<br>Replenish the feed and fodder banks |

| | | | |
|---|---|---|---|
| **Floods** | Harvest all the possible wetted grain (Sorghum, Wheat, Groundnut etc) and use as animal feed.<br>Don't allow the animals for grazing in case of early fore warning (EFW)<br>Incase of EFW, shift the animals to safer places. | Treatment of the sick, injured and affected animals through arrangement of mobile emergency veterinary hospitals / rescue animal health workers.<br>Diarrhea out break may happen arrangement should be made to mitigate the problem<br>Protect the animals from heavy rains and thunder storms<br>In severe cases un-tether **or** let loose the animals<br>Arrange transportation of highly productive animals to safer place<br>Spraying of fly repellants in animal sheds | Repair of animal shed<br>Deworm the animals through mass camps<br>Vaccinate against possible out breaks<br>Proper disposable of the dead animals / carcasses by burning / burying with line powder in pit<br>Bleach / chlorinate (0.1%) drinking water or water resources<br>Collect drowned crop material, dry it and store for future use<br>Sowing of above mention short duration fodder crops in unsown and water logged areas<br>Application of urea (20-25kg/ha) in the CPR's to enhance the bio mass production. |
| **Heat & Cold wave** | Arrangement for protection from **heat wave**<br>i) Provision shed with bamboo/thatched material<br>ii) Plantation around the shed<br>iii) $H_2O$ sprinklers / foggers in the shed<br>**iv)** Application of white reflector paint on the roof<br>**Cold wave :** Covering all the wire meshed walls / open area with gunny bags/ polyethylene sheets (with a mechanism for lifting during the day time and putting down during night time) | Allow the animals early in the morning or late in the evening for grazing during heat waves<br>Allow for grazing between 10AM to 3PM during cold waves<br>Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves<br>Add 25-50 ml of edible oil in concentrates and fed to the animal during cold waves<br>Put on the foggers / sprinkerlers during heat weaves and heaters during cold waves | Feed the animals as per routine schedule<br>Allow the animals for grazing (normal timings) |

| | | | |
|---|---|---|---|
| | | In severe cases, vitamin 'C' and electrolytes should be added in $H_2O$ during severe heat waves.<br>Apply / sprinkle lime powder in the animal shed during cold waves to neutralize ammonia accumulation | |
| **Health and Disease management** | Procure and stock emergency medicines and vaccines for important endemic diseases of the area<br>All the stock must be immunized for endemic diseases of the area<br>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district<br>Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health & management measures.<br>Procure and stock multivitamins & area specific mineral mixture | Carryout deworming to all animals entering into relief camps<br>Identification and quarantine of sick animals<br>Constitution of Rapid Action Veterinary Force<br>Performing ring vaccination (8 km radius) in case of any outbreak<br>Restricting movement of livestock in case of any epidemic<br>Rescue of sick and injured animals and their treatment<br>Organize with community, daily lifting of dung from relief camps | Keep close surveillance on disease outbreak.<br>Undertake the vaccination depending on need<br>Keep the animal houses clean and spray disinfectants<br>Farmers should be advised to breed their milch animals during July-September so that the peak milk production does not coincide with mid summer |
| **Insurance** | Encouraging insurance of livestock | Listing out the details of the dead animals | Submission for insurance claim and availing insurance benefit<br>Purchase of new productive animals |
| Drinking water | Identification of water resources<br>Desilting of ponds<br>Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)<br>Construction of drinking water tanks in herding places/village junctions/relief camp locations<br>Community drinking water trough can be arranged in shandies /community grazing areas | Restrict wallowing of animals in water bodies/resources<br>Provide clean drinking water | Bleach (0.1%) drinking water / water sources<br>Provide clean drinking water |

### 2.5.2 Poultry

| | Suggested contingency measures | | |
|---|---|---|---|
| | **Before the event[a]** | **During the event** | **After the event** |
| **Drought** | | | |
| Shortage of feed ingredients | Storing of house hold grain like maize, wheat, sorghum, bajra etc,<br>Culling of weak birds | Supplementation only for productive birds with house hold grain<br>Supplementation of shell grit (calcium) for laying birds | Supplementation to all the birds |
| Drinking water | Rain water harvesting | Sanitation of drinking water | Give sufficient water as per the bird's requirement |
| Health and disease management | Culling of sick birds.<br>Deworming and vaccination against RD and IBD | Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water | Hygienic and sanitation of poultry house<br>Disposal of dead birds by burning / burying with line powder in pit |
| **Floods** | | | |
| Shortage of feed ingredients | In case of EFW, shift the birds to safer place<br>Storing of house hold grain like wheat/rice, sorghum, bajra etc,<br>Culling of weak birds | Use stored feed as supplement<br>Don't allow for scavenging<br>Protect from thunder storms | Supplementation to all the birds |
| Drinking water | Provide clean drinking water | Sanitation of drinking water | Give sufficient water as per the bird's requirement |
| Health and disease management | In case of EFW, add antibiotic powder in drinking water to prevent any disease outbreak | Sanitation of poultry house<br>Treatment of affected birds<br>Prevent water logging surrounding the sheds<br>Assure supply of electricity<br>Sprinkle lime powder to prevent ammonia accumulation due to dampness | Hygienic and sanitation of poultry house<br>Disposal of dead birds by burning / burying with line powder in pit |
| **Heat wave** | | | |
| Shelter/environment management | Provision of proper shelter with good ventilation | In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged<br>Don't allow for scavenging during mid day | Routine practices are followed |
| Health and disease management | Deworming and vaccination against RD and IBD | Supplementation of house hold grain<br>Provide cool and clean drinking water with | Routine practices are followed |

| | | | |
|---|---|---|---|
| | | electrolytes and vit. C<br>In hot summer, add anti-stress probiotics in drinking water or feed | |
| **Cold wave** | | | |
| Shelter/environment management | Provision of proper shelter<br>Arrangement for brooding<br>Assure supply of continuous electricity | Close all openings with polythene sheets<br>In severe cases, arrange heaters<br>Don't allow for scavenging during early morning and late evening | Routine practices are followed |
| Health and disease management | Arrangement for protection from chilled air | Supplementation of grains<br>Antibiotics in drinking water to protect birds from pneumonia | Routine practices are followed |

**2.5.3: Fisheries/Aquaculture: Not Applicable**