

**DISTRICT CONTINGENCY PLAN OF LONGDING  
ARUNACHAL PRADESH**

**PREPARED BY: Tilling Tayo**

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ARUNACHAL PRADESH.**

**STATE: Arunachal Pradesh**  
**Agriculture Contingency Plan**  
**Longding District**

**1.0 District Agriculture Profile**

<b>1.1</b>	<b>Agro-Climatic/ Ecological Zone</b>			
	Agro Ecological Sub Region (ICAR)	Eastern Himalayas, humid and hot summer and cold winter. (Sub-tropical Plain)		
	Agro-Climatic Region (Planning Commission)	Eastern Himalayan Zone (Zone No. 2)		
	Agro Climatic Zone (NARP)	Sub – Tropical plain Zone (NEH-4)		
	List all the districts or part thereof falling under the NARP Zone	Longding, Tirap.		
	Geographic coordinates of district	Latitude	Longitude	Altitude
		93°57' - 95°23' E	27°69' - 29°27' E	886 m above msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ICAR Research Complex for NEH region, AP Centre, Basar, Arunachal Pradesh- 791101		
	Mention the KVK located in the district	Krishi Vigyan Kendra, Longding, Zibo colony, Longding, Longding District – 792131, Arunachal Pradesh.		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	ICAR Research Complex for NEH Region, Basar, Arunachal Pradesh		

<b>1.2</b>	<b>Rainfall</b>	<b>Normal RF (mm)</b>	<b>Normal Rainy days (number)</b>	<b>Normal Onset (specify week and month)</b>	<b>Normal Cessation (specify week and month)</b>
	<b>NE monsoon (Oct-Dec):</b>	65 mm		2 <sup>nd</sup> Week of October	Last week of December
	Winter (Jan- March)				
	Pre-monsoon/Summer (March-May)	345 mm	March = 9 days April = 2 weeks May = All most daily	2 <sup>nd</sup> Week of March	Last week of May
	Monsoon (South-West) (June-Sept)	1145 mm		1 <sup>st</sup> Week of June	1 <sup>st</sup> week of September
	<b>Annual</b>	1552 mm			

(Source: Department of Agriculture, Longding, Arunachal Pradesh)

<b>1.3</b>	<b>Land use pattern of the district (latest statistics)</b>	<b>Geographical area</b>	<b>Forest area</b>	<b>Land under non-agricultural use</b>	<b>Permanent pastures</b>	<b>Cultivable wasteland</b>	<b>Land under Misc. tree crops and groves</b>	<b>Barren and uncultivable land</b>	<b>Current fallows</b>	<b>Other fallows</b>	<b>Extent of cultivable land</b>
	Area ('000 ha)	119.2 00 ha	74.560.	0.09057	0.0494	2.58	0.0360	0.0547	0.033	0.0314	0.112

<b>1.4</b>	<b>Major Soils (common names like shallow red soils, etc.)</b>	<b>Area ('000 ha)</b>	<b>Percent (%) of total</b>
	1. Laterite soil	107	90 %
	2. Alluvial	9.52	8 %
	3. Black	--	--
	4. sandy	2.38	2 %

<b>1.5</b>	<b>Agricultural land use</b>	<b>Area ('000 ha)</b>	<b>Cropping intensity %:</b>
	Net sown area	7.563	102.25
	Area sown more than once	0.180	
	Gross cropped area	7.743	

<b>1.6</b>	<b>Irrigation</b>	<b>Area ('000 ha)</b>	
	Net irrigated area	0.228	
	Gross irrigated area	1.306	
	<b>Sources of Irrigation</b>	<b>Number</b>	<b>Area ('000 ha)</b>
	Canals	Nil	
	Tanks	Nil	
	Open wells	Nil	
	Bore wells	Nil	
	Lift irrigation	Nil	
	Micro-irrigation	Nil	
	Stream flow	112	
	Total Irrigated Area	Nil	1.306
	Pump sets	Nil	
	No. of Tractors	Nil	

<b>Groundwater availability and use* (Data source : Department of WRD, Longding, Arunachal Pradesh)</b>			
	Over exploited		
	Critical		

	Semi- critical		
	Safe		0.180
	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 etc.

1.7a		Major Field Crops cultivated	Area ('000 ha)						Total
			Pre- Kharif		Kharif		Rabi		
			Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	
	1.	Rice	2.050	0.850	-	-	-	-	2.900
	2.	Maize	-	1.500	-	-	-	-	1.500
	3.	Wheat	-	-	-	-	-	-	-
	4.	Other cereals	-	-	-	-	-	2500	2.500
	5.	Pulses	-	-	-	-	-	-	-
		Oilseeds	-	-	-	-	-	-	-
		Fibres	-	-	-	-	-	-	-
1.7b		Horticulture crops – Fruits	Total Area ('000 ha)		Irrigated		Rainfed		
	1.	Banana	0.106				0.106		0.106
	2.	Guava	0.021				0.021		0.021
	3.	Mango	0.024				0.024		0.024
	4.	Papaya	0.021				0.021		0.021
	5.	Citrus	0.406				0.406		0.406
	6.	Kiwi	0.049				0.049		0.049
	7.	Pears	0.029				0.029		0.029
	8.	Lemon	0.012				0.012		0.012
	9	Pine apple	0.201				0.201		0.201
	10	Jack fruit	0.112				0.112		0.112
1.7c		Horticulture crops – Vegetables	Total Area ('000 ha)		Irrigated		Rainfed		
	1.	Potato	-		-		0.060		0.060
	2.	Cauliflower	-		-		0.035		0.035
	3.	Cabbage	-		-		0.040		0.040
		Tomato	-		-		0.015		0.015
		Beans	-		-		0.025		0.025

		Pumpkin	<b>0.040</b>		-	0.040
<b>1.7d</b>		<b>Medicinal and Aromatic crops</b>	<b>Total Area ('000 ha)</b>	<b>Irrigated</b>	<b>Rainfed</b>	
	1.	Ginger	0.170	-	-	0.170
	2.	Large Cardamom	0.107	-	-	0.107
	3.	Betel vine	0.060	-	-	0.060
<b>1.7e</b>		<b>Plantation crops</b>	<b>Total Area</b>	<b>Irrigated</b>	<b>Rainfed</b>	
	1.	Arecanut	0.521	-	-	0.521
<b>1.7f</b>		<b>Fodder</b>	<b>Total Area</b>	<b>Irrigated</b>	<b>Rainfed</b>	
	1.		-	-	-	
	2.		-	-	-	
		Total fodder crop area	-	-	-	
<b>1.7g</b>		Grazing land	-	-	-	
<b>1.7h</b>		Sericulture etc	0.00117 ha			0.00117
		Others (specify)	-	-	-	

<b>1.8</b>	<b>Livestock</b>	<b>Male ('000)</b>	<b>Female ('000)</b>	<b>Total ('000)</b>
	Non descriptive Cattle (local low yielding)	7.357	4.957	12.314
	Crossbred cattle	-	-	
	Non descriptive Mithun (local low yielding)	-	-	
	Graded Mithun	-	-	
	Goat	8.271	7.985	32.512
	Sheep	-	-	
	Others (Camel, Pig, Yak, <b>Buffalo</b> etc.)	0.055	0.035	0.080
	Pig ( Indigenous non descript)	6.087	3.755	9.842
	Pig crossbreed			
	Rabbit			
	Commercial dairy farms (Number)			
<b>1.9</b>	<b>Poultry</b>	<b>No. of farms</b>	<b>Total No. of birds ('000)</b>	
	Commercial			
	Backyard	---	34.257	34.257
	Ducks (Deshi)			
	Duck (Improved)			

Source: State Veterinary Department, Longding, Govt. of Arunachal Pradesh

<b>1.10</b>	<b>Fisheries</b>						
	<b>A. Capture</b>						
	<b>i) Marine</b>	<b>No. of fisherman</b>	<b>Boats</b>		<b>Nets</b>		<b>Storage facilities (Ice plants etc.)</b>
			Mechanized	Non- mechanized	Mechanized (Trawl nets, Gill nets)	Non- mechanized (Shore seines, stake & trap net)	
	<b>ii) Inland</b> (Data source: Fisheries Department)	<b>No. Farmer owned ponds</b>		<b>No. of Reservoirs</b>		<b>No. of Village tanks</b>	
		126 nos		Nil		Nil	
	<b>B. Culture</b>						
		<b>Water Spread Area (ha)</b>		<b>Yield (t/ha)</b>		<b>Production ('000 tons)hb</b>	
	<b>i) Brackish water</b> (Data source: MPEDA/ Fisheries Department)	-		-		-	
	<b>ii) Fresh water</b> (Data source: Fisheries Department)	40 ha		0.06 t/ha per year		24/year	
	<b>Others</b>	Nil		Nil		Nil	

(Source: Department of Fisheries, Longding, Arunachal Pradesh)

### 1.11 Production and Productivity of major crops (Average of last 5 years)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop Residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)							
<b>Major Field crops (Crops to be identified based on total acreage)</b>										
Crop 1	Rice	4.350	1415.00	-	-	-	-	4.350	1415.00	-
Crop 2	Maize	3.750	986.350	-	-	-	-	3.750	986.350	-
Crop 3	Potato			1.120	7800.223			1.120	7800.223	-
Crop 4	Pulses			0.214	1200.121			0.214	1200.121	-
Crop 5	Oilseeds									
Others										
<b>Horticulture</b>										

Crop 1	Khasi mandarin	1.218	0.0024	-	-	-	-	1.218	0.0024	-
Crop 2	Pineapple	8.120	0.0031					8.120	0.0031	-
Crop 3	Banana	3.180	0.0028					3.180	0.0028	-
Crop 4	Large Cardamom			0.0266	170.154			0.0266	170.154	-
Crop 5	Pear									
Crop 6	Ginger									
Crop 7	Turmeric									

1.12	<b>Sowing window for 5 major field crops</b> (start and end of normal sowing period)	<b>Crop 1: Jhum Paddy</b>	<b>Crop 2: WRC Paddy</b>	<b>Crop 3: Maize</b>	<b>Crop 4: Potato</b>	<b>Crop 5: Fox tail millets</b>
	Kharif- Rainfed	Feb-March	May-June	March-May	-	Feb-March
	Kharif- Irrigated	-	-	-	-	-
	Rabi- Rainfed	-	-	Sept-Oct	Oct-Nov.	-
	Rabi- Irrigated	-	-	-	-	-
	Summer- Irrigated	-	-	-	-	-

1.13	<b>What is the major contingency the district is prone to? (Tick mark)</b>	<b>Regular</b>	<b>Occasional</b>	<b>None</b>
	<b>Drought</b>		✓	
	<b>Flood</b>		✓	
	<b>Cyclone</b>		✓	
	<b>Hail storm</b>		✓	
	<b>Heat wave</b>			✓
	<b>Cold wave</b>	✓		
	<b>Frost</b>		✓	
	<b>Sea water intrusion</b>			✓
	<b>Pests and disease outbreak (specify)</b>	✓		
	<b>Others (specify)</b>			
	<b>Landslide</b>	✓		

2 out of 10 years = Regular

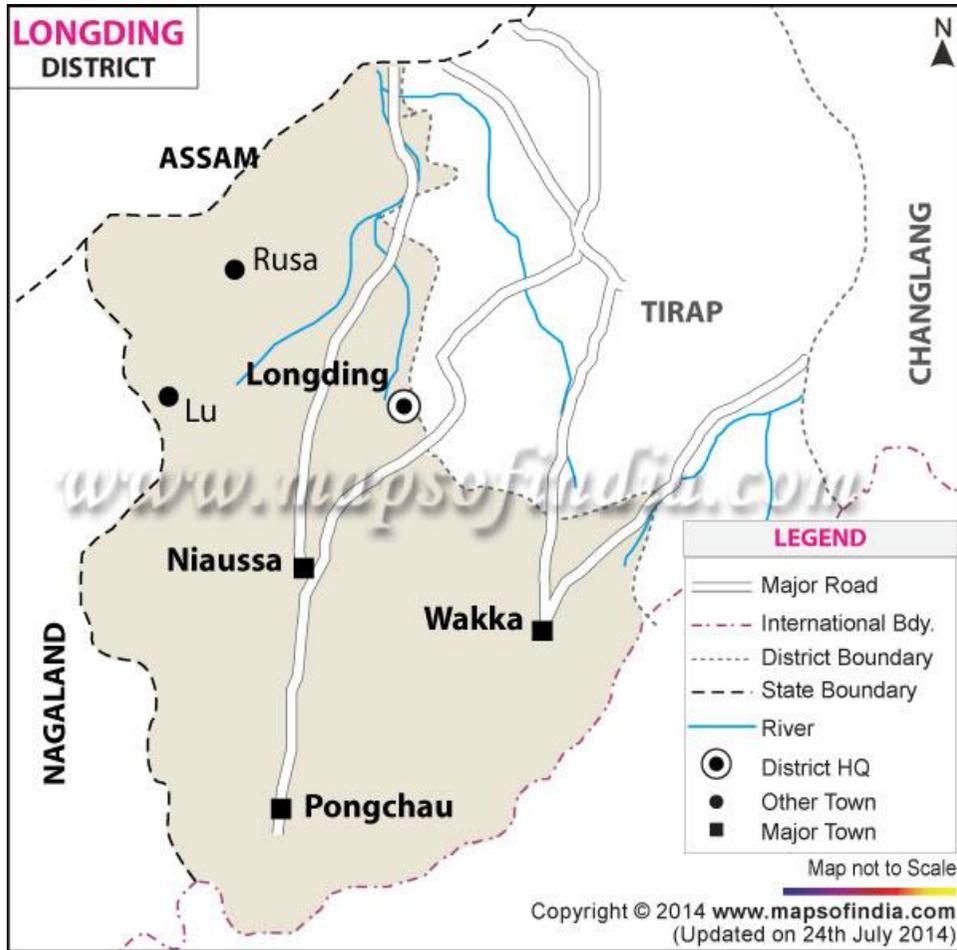
<b>1.14</b>	<b>Include Digital maps of the district for</b>	Location map of district within State as Annexure 1	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Not available

**Mean average rainfall for 3 years in mm**

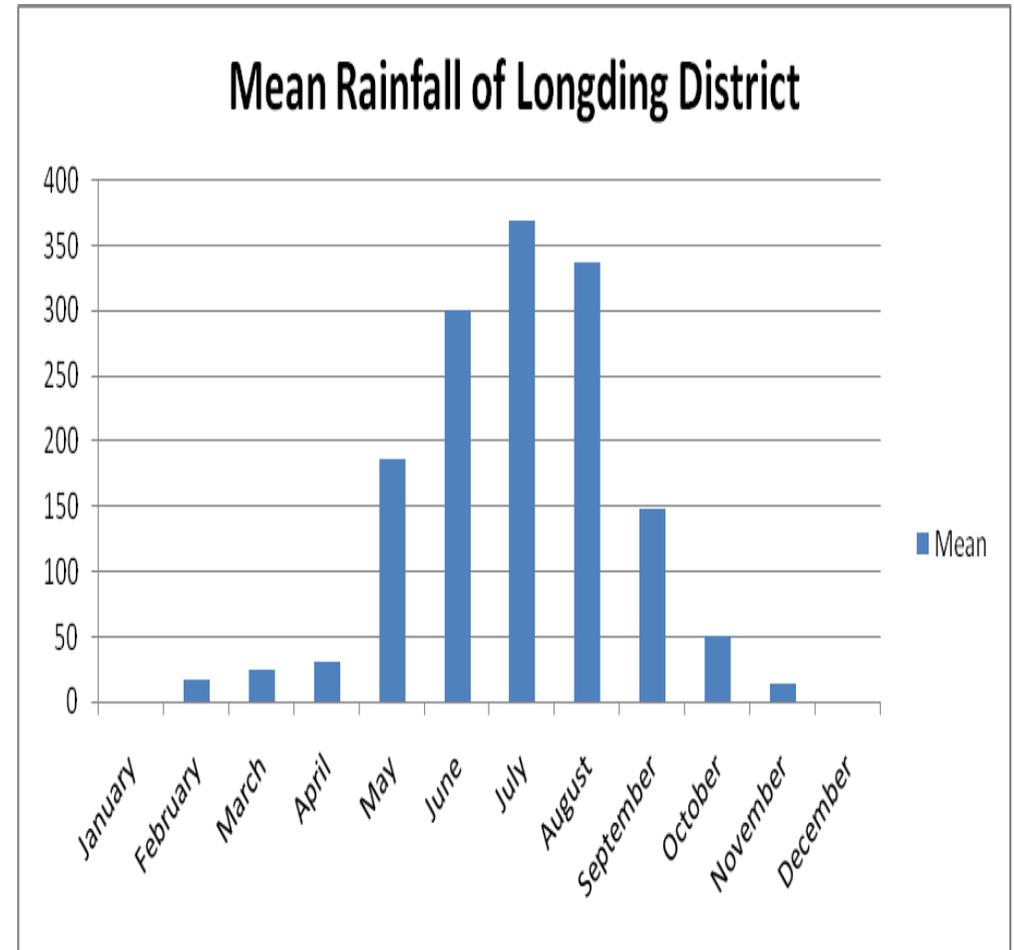
<b>Year/Month</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Mean</b>
<b>January</b>	Nil	Nil	Nil	0.00
<b>February</b>	50	Nil	Nil	16.67
<b>March</b>	26	25	23	24.67
<b>April</b>	32	30	31	31.00
<b>May</b>	200	180	178	186.00
<b>June</b>	350	274	280	301.33
<b>July</b>	370	369	370	369.67
<b>August</b>	350	339	325	338.00
<b>September</b>	165	160	120	148.33
<b>October</b>	53	54	45	50.67
<b>November</b>	20	11	10	13.67
<b>December</b>	Nil	Nil	Nil	0.00

(Source: Department of Agriculture, Longding, Arunachal Pradesh)

ANNEXURE 1: LOCATION MAP OF DISTRICT



ANNEXURE 2 : MEAN ANNUAL RAINFALL



## 2.0: Strategies for weather related contingencies

### 1.1 Drought-Pre-Monsoon (Last week of March to First week of April) Normal

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)  Delay by 2 weeks (2 <sup>nd</sup> to 3 <sup>rd</sup> week of April)	AES-I (Very steeply sloping hills-shallow loamy soils), rainfed				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils), rainfed	Rice base	1.Introduction of short duration and suitable Jhum Rice Variety– CAU R1 2.Growing drought tolerant var. Subhadra, Satya etc.	1.Zero tillage and dibbling of seeds instead of broadcasting. 2. Balance fertilizer application 3. Soil conservation contour bund and pest and disease management	Schemes from Line Deptt. /RKVY/ ATMA
		Maize	1.Short duration Crops/varieties like HQPM-9, RCM-75 and RCM-76 (75-80 days). 2. Inter cropping with green gram, cowpea as it helps in risk sharing.	1. balance nutrient application, weeding, pest and disease mgt. mulching	-do-
		Foxtail Millet	1. Introduction of short duration varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. balance application of fertilizer	-do-

		Colocasia	1.Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Applcation of fertilizer.	-do-
		Tapioca	1.Introduction of short duration Tapioca variety i.e. CO (TP) 4, 2. Growing of drought resistance varieties i.e. H-87, Sree Viajya.	1. Proper and timely weeding. 2. Applcation of fertilizer 3. Integrated Pest Management.	-do-
	AES-III (Moderately side slopes of hills- deep fine soils)	Paddy	1.Introduction of Short duration Jhum Rice varieties like Salli rice 2. Growing drought tolerant varieties Subhadra, Satya etc.	1.Zero tillage and dibbling of seeds instead of broadcasting. 2. Balance fertilizer application 3. Soil conservation contour bund and pest and disease management	Schemes from Line Deptt. /RKVY/ ATMA
		Maize	1.Short duration varieties like HQPM -9, RCM-75 and RCM-76 (75-80 days). 2. Inter cropping with green gram, cowpea as it helps in risk sharing.	1. balance application of fertilizer , weeding, veg.mulching, pest mgt.	- Schemes from Line Deptt. /RKVY/ ATMA
		Foxtail Millet	1. Introduction of short duration varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	balance application of fertilizer , weeding, veg.mulching, pest mgt	Schemes from Line Deptt. /RKVY/ ATMA

		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Application of fertilizer	
		Tapioca	1. Introduction of short duration variety like CO (TP) 4, 2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.	1. Proper and timely weeding. 2. Application of balance fertilizer. 3. Integrated Pest Management.	

### 1.2. Rainfed situation-South west-Monsoon (First week of June) Normal

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)					
Delay by 2 weeks (3 <sup>rd</sup> week of June)	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1. Grow medium duration rice varieties like Satya, Basundhara etc. 2. select drought tolerant var. like Luit, Kapilee, Vandana, Anjali etc.	1. Apply life saving irrigation at critical stages 2. When the mortality of seedlings is less than 50% gap filling should be done 3. In-situ rain water conservation, practices like deep summer ploughing, inter-cultural tillage practices, weed control 4. balance application of nutrient 5. IPM should be taken	Schemes from Line Deptt. /RKVY/ ATMA

				up	
		Maize	<p>1.Short duration varieties like HQPM 9, RCM-75 and RCM-76 (75-80 days).</p> <p>2. Inter cropping with green gram, cowpea as it helps in risk sharing.</p>	<p>1.Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices, furrow sowing</p>	
		Foxtail Millet	<p>1. Introduction of short duration suitable varieties.</p> <p>2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and lifesaving irrigation.</p>	
		Colocasia	<p>1.Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and life saving irrigation</p>	
		Tapioca	<p>1.Introduction of short duration variety like CO (TP) 4,</p> <p>2.Growing of drought resistance varieties like H-87, Sree Viajya.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and life saving irrigation.</p> <p>3. Integrated Pest Management.</p>	

AES-III (Moderately side slopes of hills- deep fine soils)	Paddy	<ol style="list-style-type: none"> <li>1. Grow medium duration rice varieties like Satya, Basundhara etc .</li> <li>2. Prefer drought tolerant varieties like Luit, Kapilee, Vandana, Anjali etc .</li> </ol>	<ol style="list-style-type: none"> <li>1. Apply life saving irrigation to maintain nursery</li> <li>2. When the mortality of seedlings 30% or less , gap filling should be done</li> <li>3. In-situ rain water conservation, practices like summer ploughing, interculture, tillage practices, weed control .</li> </ol>	Schemes from Line Deptt. /RKVY/ ATMA
	Maize	<ol style="list-style-type: none"> <li>1. Short duration Crops/varieties like QPM 9, RCM-75 and RCM-76 (75-80 days).</li> <li>2. Inter cropping with crops like green gram, cowpea as it helps in risk sharing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices , gap filling</li> </ol>	
	Cowpea	<ol style="list-style-type: none"> <li>1. Select drought tolerant varieties like VCP 16, CO 6 and CO (CP) 711</li> </ol>	<ol style="list-style-type: none"> <li>1. Mulching</li> <li>2. Maintain proper dept of sowing.</li> <li>3. Adoption of moisture conservation practices like deep summer ploughing.</li> </ol>	
	Soyabean	<ol style="list-style-type: none"> <li>1. Select drought tolerant and shorter duration varieties such as MAUS-71, MAUS-162.</li> </ol>	<ol style="list-style-type: none"> <li>1. proper weeds mgt,</li> <li>2. intercropping cropping with Maize.</li> <li>3. During large spell of drought, lifesaving irrigation at critical stage to be provided</li> <li>4. Deep Tillage.</li> </ol>	

		Foxtail Millet	1. Introduction of short duration varieties. 2. Growing drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Balance application of fertilizer and provision of life saving irrigation at critical stages	
		Vegetable crops (Bottle gourd, Chilli, beans, okra, brinjal)	Selecting short duration crops varieties	1. Provide lifesaving irrigation from any available water sources 2. Prefer Drip/sprinkler irrigation if possible 3. Deep Tillage. 4. Enhancing cucurbitaceous vegetables by raising nursery in polythene bags and furrow planting in order to skip 2-3 irrigations.	
		Tapioca	1. Introduction of short duration variety i.e. CO (TP) 4, 2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.	1. Proper and timely weeding. 2. balance application of fertilizer and provision of life saving irrigation. 3. Integrated Pest Management.	

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Delay by 4 weeks (1 <sup>st</sup> week of July)	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1, Short duration rice varieties like RCM-11, RCM-12 (90-100	1. Apply life saving irrigation to maintain nursery	Schemes from Line Deptt. /RKVY/ ATMA

			<p>days) etc .</p> <p>2. drought tolerant varieties crop i.e. Luit, Kapilee, Vandana, Anjali etc</p>	<p>2. When the mortality of seedlings is less than 50% gap filling should be done</p> <p>3..In-situ rain water conservation, practices like summer ploughing, interculture tillage practices, weeds and pest control .</p>	
		Maize	<p>1.Short duration crops/varieties like QPM 9, RCM-75 and RCM-76 (75-80 days).</p> <p>2.Inter cropping with crops like green gram, cowpea as it helps in risk sharing.</p>	<p>1.Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices</p>	
		Foxtail Millet	<p>1. Introduction of short duration suitable foxtail varieties.</p> <p>2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p>	
		Colocasia	<p>1.Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Balance application of fertilizer, mulchign and providing life saving irrigation at critical stages</p>	
		Tapioca	<p>1.Introduction of short duration variety i.e. CO (TP) 4,</p> <p>2.Growing drought tolerant varieties such as</p>	<p>1. Proper and timely weeding.</p> <p>2. Balance application of fertilizer and providing life saving</p>	

			H-87, Sree Viajya.	irrigation during critical stages. 3. Integrated Pest Management.	
AES-III (Moderately side slopes of hills- deep fine soils)	Paddy	Short duration varieties like RCM-11, RCM-12 (90-100days), select drought tolerant varieties i.e. Luit, Kapilee, Vandana, Anjali etc	1. Provide life saving irrigation 2. When the mortality of seedlings 30% or less , gap filling should be done 3..In-situ rain water conservation, practices like summer ploughing, interculture tillage practices, weed control .	Schemes from Line Deptt. /RKVY/ ATMA	
	Maize	1.Short duration Crops/varieties like QPM 9, RCM-75 and drought tolerant like RCM-76 (75-80 days). 2. Inter cropping with green gram, cowpea as it helps in risk sharing.	1.Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices, deeper ploughing		
	Cowpea	Select drought tolerant varieties like VCP 16, CO 6 and CO (CP) 711	1.Mulching 2. Maintain proper dept of sowing. 3. Application of organic manures before sowing & deep ploughing 2-3 times.		
	Soyabean	1. Introduction of short and semi drought resistant varieties like MAUS-71, MAUS-162.	1. Timely weeding. 2. Intercropping with Maize. 3. During large spell of drought life saving		

				irrigation should be provided from any available water sources	
		Vegetable crops (Bottle gourd, Chilli, beans, okra, brinjal)		1.Prefer Drip/sprinkler irrigation if possible to save water 2.Conserved moisture through deep tillage 4. Enhancing cucurbitaceous vegetables by raising nursery in polythene bags and furrow planting to skip 2-3 irrigations.	
		Foxtail Millet	1. Introduction of short duration varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Balance application of fertilizer and life saving irrigation	
		Colocasia	1.Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Balance application of fertilizer and life saving irrigation	
		Tapioca	1.Introduction of short duration Tapioca variety i.e. CO (TP) 4, 2.Growing of drought resistance varieties i.e. H-87, Sree Viajya.	1. Proper and timely weeding. 2. balance application of fertilizer and life saving irrigation. 3. Integrated Pest Management.	

**Pre-Monsoon-Normal**

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
<b>Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.</b>	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1.Gap filling to be done to maintain optimum plant density 2.Foliar spray of anti transpirant.	1. Mulching with locally available biomass. 2.Adoption of Integrated Nutrient Management. 3.Adoption of IPM and IDM.	Schemes from Line Deptt. /RKVY/ ATMA
		Maize	1.Short duration and drought tolerant varieties like RCM-76. 2 .Inter cropping with crops like green gram, cowpea as it helps in risk sharing.	1. Proper and timely weeding. 2. Applcation of fertilizer and proper irrigation..	
		Foxtail Millet	1. Introduction of short duration varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Applcation of fertilizer and proper irrigation.	
		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	Proper and timely weeding. 2. Applcation of fertilizer and proper irrigation.	

AES-III (Moderately side slopes of hills- deep fine soils)	Paddy	1.Gap filling to be done to maintain optimum plant density 2.Foliar spray of anti transpirant.	1. Mulching with locally available biomass. 2.Adoption of Integrated Nutrient Management. 3.Adoption of IPM and IDM.	Schemes from Line Deptt. /RKVY/ ATMA
	Maize	1.Short duration and drought tolerant varieties like RCM-76.	1. Mulching with locally available biomass. 2.Adoption of Integrated Nutrient Management. 3.Adoption of IPM and IDM.	
	Cowpea	1.Prefer drought tolerant varieties like VCP 16, CO 6 and CO (CP) 711	1.Mulching 2.Maintain proper dept of sowing. 3.Adoption of moisture conservation practices like ploughing. 4. Application of organic manures before sowing & deep ploughing 2-3 times.	
	Soyabean	1. Introduction of soyabean varieties like MAUS-71, MAUS-162.	1.Timely weeding. 2.Intercropping with Maize. 3.During large spell of drought, irrigation can be provided.	
	Vegetable crops (Bottle gourd, Chilli, beans, okra, brinjal)		1.Provide irrigation from the available sources 2.Prefer Drip/sprinkler irrigation 3. Enhancing cucurbitaceous vegetables by raising nursery in polythene bags	

				followed by transplanting in order to save 2-3 irrigations.	
		Foxtail Millet	1. Introduction of short duration suitable foxtail varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
		Tapioca	1. Introduction of short duration Tapioca variety i.e. CO (TP) 4, 2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation. 3. Integrated Pest Management	

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Mid season drought (Long dry)					

<b>spell consecutive 2 weeks rainless (&gt; 2.5 mm) period)</b>  <b>Vegetative Stage</b>	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching with locally available biomass as it will reduce runoff and evaporation from bare soil surfaces. 2. Application of organic fertilizers e.g. crop residues, green manure, slurry and farmyard manure. 3. In situ moisture conservation by construction of bunds. 4. Making jalkund	Schemes from Line Deptt. /RKVY/ ATMA
		Maize	1. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching with locally available biomass. 2. Deep Tillage. 3. Application of anti transpirant like ABA.	
		Foxtail Millet	1. Introduction of short duration suitable foxtail varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	

		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
		Tapioca	1. Introduction of short duration Tapioca variety i.e. CO (TP) 4, 2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation. 3. Integrated Pest Management.	
AES-III (Moderately side slopes of hills- deep fine soils)		Paddy	1. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching with locally available biomass as it will reduce runoff and evaporation from bare soil surfaces. 2. Application of organic fertilizers e.g. crop residues, green manure, slurry and farmyard manure. 3. In situ moisture conservation by construction of bunds. 4. Making jalkund	
		Maize	1. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching with locally available biomass. 2. Deep Tillage. 3. Application of anti transpirant like ABA.	

		Cowpea	Prefer drought tolerant varieties like VCP 16, CO 6 and CO (CP) 711	<ol style="list-style-type: none"> <li>1. Mulching</li> <li>2. Maintain proper dept of sowing.</li> <li>3. Adoption of moisture conservation practices like ploughing.</li> <li>4. Application of organic manures before sowing &amp; deep ploughing 2-3 times.</li> <li>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</li> <li>5. Adoption of compartmental bunding</li> <li>6. Making jalkund</li> </ol>	
		Soyabean	1. Introduction of soyabean varieties like MAUS-71, MAUS-162..	<ol style="list-style-type: none"> <li>1. Mulching</li> <li>2. Maintain proper dept of sowing.</li> <li>3. Adoption of moisture conservation practices like ploughing.</li> <li>4. Application of organic manures before sowing &amp; deep ploughing 2-3 times.</li> <li>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</li> <li>5. Adoption of compartmental bunding.</li> <li>6. Making jalkund</li> </ol>	
		Vegetable crops (Bottle gourd, Chilli, beans, okra, brinjal)		<ol style="list-style-type: none"> <li>1. Mulching</li> <li>2. Maintain proper dept of sowing.</li> <li>3. Adoption of moisture conservation practices like ploughing.</li> </ol>	

				<p>4. Application of organic manures before sowing &amp; deep ploughing 2-3 times.</p> <p>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</p> <p>5. Adoption of compartmental bunding.</p> <p>6. Making jalkund</p> <p>7. Enhancing cucurbitaceous vegetables by raising nursery in polythene bags followed by transplanting in order to save 2-3 irrigations.</p>	
		Tapioca	<p>1. Introduction of short duration Tapioca variety i.e. CO (TP) 4,</p> <p>2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p> <p>3. Integrated Pest Management.</p>	
		Foxtail Millet	<p>1. Introduction of short duration suitable foxtail varieties.</p> <p>2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p>	
		Colocasia	<p>1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p>	

<b>Condition</b>			<b>Suggested Contingency measures</b>
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Mid season drought (Long dry spell consecutive 2 weeks rainless long dry)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
At flowering/Fruiting Stage	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1. Changing crop calendars to avoid extreme heat and drought. 2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	Mulching with locally available biomass as it will reduce runoff and evaporation from bare soil surfaces. 2. Application of organic fertilizers e.g. crop residues, green manure, slurry and farmyard manure. 3. In situ moisture conservation by construction of bunds. 4. Making jalkund	Schemes from Line Deptt. /RKVY/ ATMA
		Maize	1. Changing crop calendars to avoid extreme heat and drought. 2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching with locally available biomass. 2. Deep Tillage. 3. Application of anti transpirant like ABA.	
		Tapioca	1. Introduction of short duration Tapioca variety i.e. CO (TP) 4,	1. Proper and timely weeding. 2. Application of	

			2. Growing of drought resistance varieties i.e. H-87, Sree Vijaya.	fertilizer and proper irrigation. 3. Integrated Pest Management.	
		Foxtail Millet	1. Introduction of short duration suitable foxtail varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
	AES-III (Moderately side slopes of hills- deep fine soils)	Paddy	1. Changing crop calendars to avoid extreme heat and drought. 2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	Mulching with locally available biomass as it will reduce runoff and evaporation from bare soil surfaces. 2. Application of organic fertilizers e.g. crop residues, green manure, slurry and farmyard manure. 3. In situ moisture	

				conservation by construction of bunds. 4Making jalkund	
		Maize	<ol style="list-style-type: none"> <li>1. Changing crop calendars to avoid extreme heat and drought.</li> <li>2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.</li> </ol>	<ol style="list-style-type: none"> <li>1. Mulching with locally available biomass.</li> <li>2. Deep Tillage.</li> <li>3. Application of anti transpirant like ABA.</li> </ol>	
			<ol style="list-style-type: none"> <li>1. Growing vegetables such as cluster bean, cowpea, lablab bean, radish, peas which can sustain with less amount of water.</li> </ol>	<ol style="list-style-type: none"> <li>1. Making fields free of weeds for full utilization of water and nutrients by the crops.</li> <li>2. Strengthen the field and contour bunds for in-situ moisture conservation.</li> </ol>	
		Cowpea	<p>Prefer drought tolerant varieties like VCP 16, CO 6 and CO (CP) 711</p>	<ol style="list-style-type: none"> <li>1. Mulching</li> <li>2. Maintain proper dept of sowing.</li> <li>3. Adoption of moisture conservation practices like ploughing.</li> <li>4. Application of organic manures before sowing &amp; deep</li> </ol>	

				<p>ploughing 2-3 times.</p> <p>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</p> <p>5. Adoption of compartmental bunding</p> <p>6. Making jalkund</p>	
		Soyabean	MAUS-71)	<p>1. Mulching</p> <p>2. Maintain proper dept of sowing.</p> <p>3. Adoption of moisture conservation practices like ploughing.</p> <p>4. Application of organic manures before sowing &amp; deep ploughing 2-3 times.</p> <p>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</p> <p>5. Adoption of compartmental bunding.</p> <p>6. Making jalkund</p>	
		Vegetable crops (Bottle gourd, Chilli, beans, okra, brinjal)		<p>1. Mulching</p> <p>2. Maintain proper dept of sowing.</p> <p>3. Adoption of moisture conservation practices like ploughing.</p> <p>4. Application of organic manures before sowing &amp; deep</p>	

				<p>ploughing 2-3 times.</p> <p>4. Adoption of Basin listing as it provides enough time to rain water to infiltrate into soil.</p> <p>5. Adoption of compartmental bunding.</p> <p>6. Making jalkund</p> <p>7. Enhancing cucurbitaceous vegetables by raising nursery in polythene bags followed by transplanting in order to save 2-3 irrigations.</p>	
		Tapioca	<p>1. Introduction of short duration Tapioca variety i.e. CO (TP) 4,</p> <p>2. Growing of drought resistance varieties i.e. H-87, Sree Viajya.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p> <p>3. Integrated Pest Management.</p>	
		Foxtail Millet	<p>1. Introduction of short duration suitable foxtail varieties.</p> <p>2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p>	
		Colocasia	<p>1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.</p>	<p>1. Proper and timely weeding.</p> <p>2. Application of fertilizer and proper irrigation.</p>	

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Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
	AES-I (Very steeply sloping hills-shallow loamy soils)				
	AES-II (Steeply sloping side slopes of hills-very deep fine soils)	Paddy	1.Changing crop calendars to avoid extreme heat and drought. 2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1.Mulching 2. Adoption of moisture conservation practices like ploughing. 3. Application of organic manures before sowing & deep ploughing 2-3 times. 4Making jalkund	Schemes from Line Deptt. /RKVY/ ATMA
		Maize		1. Mulching with locally available biomass. 2. Application of anti transpirant like ABA,PMA, Aspirin etc.	
	Tapioca	1.Introduction of short duration Tapioca variety i.e. CO (TP) 4, 2.Growing of drought resistance varieties i.e.	1. Proper and timely weeding. 2. Applcation of fertilizer and proper irrigation.		

			H-87, Sree Viajya.	3. Integrated Pest Management.	
		Foxtail Millet	1. Introduction of short duration suitable foxtail varieties. 2. Growing of drought tolerant varieties like PR-202, VL-315, VR-708 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation.	
		Colocasia	1. Instead of cultivating local cultivar, introduce variety like Kandyam – C, ML-1, ML-9 etc.	1. Proper and timely weeding. 2. Application of fertilizer and proper irrigation	
AES-III (Moderately side slopes of hills- deep fine soils)		Paddy	1. Changing crop calendars to avoid extreme heat and drought.  2. Weeding/Intercultural operations to reduce crop stand. It will reduce intra-specific competition and enhanced water availability to the single plant.	1. Mulching 2. Adoption of moisture conservation practices like ploughing. 3. Application of organic manures before sowing & deep ploughing 2-3 times. 4. Making jalkund	
		Maize		1. Mulching with locally available biomass. 2. Application of anti transpirant like ABA, PMA, Aspirin etc.	

**2.1.2 Drought-Irrigated situation: Not applicable**

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>f</sup>	Change crop/cropping system	Agronomic measures <sup>f</sup>	Remarks on Implementation <sup>f</sup>
Delayed release of water in canals due to low rainfall	NA				

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>f</sup>	Change crop/cropping system	Agronomic measures <sup>f</sup>	Remarks on Implementation <sup>f</sup>
Limited release of water in canals due to low rainfall	NA				
	NA				

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>f</sup>	Change crop/cropping system	Agronomic measures <sup>f</sup>	Remarks on Implementation <sup>f</sup>
Non release of water in canals under delayed onset of monsoon in catchment	NA				
	NA				

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>f</sup>	Change crop/cropping system	Agronomic measures <sup>f</sup>	Remarks on Implementation <sup>f</sup>

<b>Lack of inflow into tanks due to insufficient/delayed onset of monsoon</b>	NA				

<b>Condition</b>	<b>Suggested Contingency measures</b>				
	<b>Major Farming situation <sup>f</sup></b>	<b>Normal Crop/cropping system <sup>f</sup></b>	<b>Change crop/cropping system</b>	<b>Agronomic measures <sup>f</sup></b>	<b>Remarks on Implementation <sup>f</sup></b>
<b>Insufficient groundwater recharge due to low rainfall</b>	NA				

<b>Condition</b>	<b>Suggested Contingency measures</b>				
	<b>Major Farming situation <sup>f</sup></b>	<b>Normal Crop/cropping system <sup>f</sup></b>	<b>Change crop/cropping system</b>	<b>Agronomic measures <sup>f</sup></b>	<b>Remarks on Implementation <sup>f</sup></b>
<b>Insufficient flow of water in streams</b>	NA				

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

<b>Condition</b>	<b>Suggested Contingency Measures</b>			
	<b>Vegetative stage<sup>k</sup></b>	<b>Flowering stage<sup>l</sup></b>	<b>Crop maturity stage<sup>m</sup></b>	<b>Post harvest<sup>n</sup></b>
<b>Continuous high rainfall in a short span leading to water logging</b>				
Paddy	1.Not a major problem	1.Provide drainage If possible	1.Drain out excess water, harvest immediately at physiological maturity	1.Shifting to a safer place 2.Threshing and drying in sunny weather and stored in well ventilated room
Maize	1. Provide drainage and plant protection measures based on	1. Provide drainage and plant protection measures.	1.Drain out excess water, harvest immediately at	1Shifting to a safer place 2.Shelling and drying

	disease and pest incidence.		physiological maturity	in sunny weather and stored in well ventilated space
Pulse (Green gram/ Soybean/Arahar)	1.Provide proper drainage system	1.Provide drainage	1.Drain out excess water, harvest at physiological maturity	1.Shifting to a safer place 2.Dry in shade in a well ventilated space
<b>Horticulture</b>				
Khasi mandarin,	1.Drainage. 2.Earthing up of plant base/root zone 3.In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss	1.Drainage, 2.Application of hormones, nutrient, sprays to prevent flower drop.	1,While picking, the stem end should be cut close to the fruit without damaging the rind. Hence avoiding fungal infection. 2.Collect the good fruits and store them. Damaged fallen fruits to be disposed off	1.Shift to safer place, grading, marketing and storing in well ventilated space 2.Storing at 8 – 10 0 C with 85 – 90 % RH is preferred.
Large cardamom	1.It grows luxuriantly in moist and humid climate. So continuous rain is not a problem during its vegetative growth. 2.Provide adequate drainage 3.Spraying of insecticides and fungicide	1.Rain during flowering is detrimental. So water logging should be avoided. 2.Proper drainage system should be followed. 3.Shade regulation may be taken up providing 50-60% shade.	1.Proper drainage system should be followed.	1.Collect and dry the produce in fuel kiln overnight at 50°-60°C or in drier for 14-18 hours at 45°-50°C
Crop 3 Cucurbitaceous crops	1.Drainage	1.Drainage , 2.Application of hormones, nutrient, sprays to prevent flower drop	1.Fruits to be harvested immediately without causing injury to fruits	1. Harvesting of the produce before the rain occurs. 2. Shifting of the produce to drier place, Cold storage.

<b>Heavy rainfall with high speed winds in a short span<sup>2</sup></b>				
<b>Horticulture</b>				
Khasi Mandarin	<ol style="list-style-type: none"> <li>1. Earthling up of young plants to avoid uprooting due to wind.</li> <li>2. Provide proper drainage facilities.</li> <li>3. In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss</li> <li>4. Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection</li> <li>5. Proper nutrient management to be followed</li> </ol>	<ol style="list-style-type: none"> <li>1. Wind break around the orchard to protect crop from wind damage.</li> <li>2. Provide proper drainage.</li> <li>3. Nutrient management to be followed along with foliar spray of micronutrient to avoid flower drop.</li> </ol>	<ol style="list-style-type: none"> <li>1. Propping heavy bearing tree and weak tree by bamboo pole.</li> <li>2. Harvesting of matured fruits.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fruits are to be stored in well aerated farm shed or house to avoid losses.</li> <li>2. Pack the fruit in perforated polythene bag, boxes, crates, etc. and store at temperature of 10-11°C &amp; 92 % RH.</li> </ol>
Large cardamom	<ol style="list-style-type: none"> <li>1. For newly planted crops, staking should be provided.</li> <li>2. Provide adequate drainage</li> <li>3. Spraying of insecticides and fungicide.</li> <li>4. Follow proper nutrient management</li> </ol>	<ol style="list-style-type: none"> <li>1. Proper drainage system should be followed.</li> <li>2. Follow proper nutrient management</li> <li>3. Earthing up to prevent uprooting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest at physiological maturity stage or can be delayed</li> <li>2. Proper drainage system should be followed</li> </ol>	<ol style="list-style-type: none"> <li>1. Collect the harvest and dry the produce in fuel kiln overnight at 50°-60°C or in drier for 14-18 hours at 45°-50°C</li> </ol>
Ginger	<ol style="list-style-type: none"> <li>1. Provide proper drainage channels to avoid stagnation of water</li> <li>2. Earthing up to be done at proper soil moisture</li> </ol>	<ol style="list-style-type: none"> <li>1. Provision of drainage to remove excess water.</li> <li>2. Earthing up should be followed by manuring.</li> <li>3. Field bunding to prevent entry of water from surrounding areas.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest at physiological maturity stage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Shifting of the produce to a drier place.</li> <li>2. Drying to remove excess moisture of produce (moisture</li> </ol>

	<p>level</p> <p>3.Nutrient management to be followed</p> <p>4.Field bunding to prevent entry of water from surrounding areas.</p> <p>5.Spraying of insecticides and fungicide</p>			level 10
Vegetables (cucurbits)	<p>1. Provision of drainage to remove excess water.</p> <p>2.Earthing up to be followed</p> <p>3.Ensure proper staking of crop wherever required</p> <p>4.Field bunding to prevent entry of water from surrounding areas.</p>	<p>1. Drainage.</p> <p>2. Application of hormones, nutrient, sprays to prevent flower drop.</p> <p>3.Take up appropriate plant protection measures</p>	<p>1.Fruits to be harvested immediately without causing injury to fruits</p> <p>2.Remove all damaged fruit</p> <p>3.Take up appropriate plant protection measures</p>	<p>1.Shifting of the produce to drier place</p> <p>2.The fruits can be stored for 2-3 weeks at 15-20°C and RH 75% in a well-ventilated chamber.</p>
<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Paddy				

<b>1.Blast</b>	<p>1.Proper drainange.</p> <p>2.Spray the nursery with Carbendazim 25 g or Edifenphos 25 ml.</p> <p>3.Spray the main field with Edifenphos 250 ml or Iprobenphos 500 ml or Carbendazim 250 g or Tricyclazole 400 g or Thiophanate Methyl 500 g or Pyroquilon 500 g/ha.</p>	<p>1. Proper drainage.</p> <p>2. Spray the main field with Edifenphos 250 ml or Iprobenphos 500 ml or Carbendazim 250 g or Tricyclazole 400 g or Thiophanate Methyl 500 g or Pyroquilon 500 g/ha.</p>	<p>1. Maturity may be hastened by 3-4 days by spraying 20% NaCl a week before harvest to escape monsoon rains.</p> <p>2. When 80% of the panicles turn straw colour, then harvest the grain.</p>	<p>1.Shift the produce to a dry place or 12% moisture level.</p>
<b>Bacterial leaf blight</b>	<p>1. Avoid clipping of tip of seedling at the time of transplanting. And provide drainage to flooded conditions.</p> <p>2.Spray Streptomycin sulphate and tetracycline combination 300 g + Copper oxychloride 1.25 g/ha</p>	<p>1.Avoid clipping of tip of seedling at the time of transplanting. And provide drainage to flooded conditions.</p> <p>2.Spray Streptomycin sulphate and tetracycline combination 300 g + Copper oxychloride 1.25 g/ha</p>	<p>1.Maturity may be hastened by 3-4 days by spraying 20% NaCl a week before harvest to escape monsoon rains.</p> <p>2. When 80% of the panicles turn straw colour, then harvest the grain.</p>	
<b>Crop2- Maize</b>				
<b>Leaf blight</b>	<p>1.Avoid free water of the leaf , as Infection takes place early in the wet season.</p> <p>2.Spray Mancozeb 1.25 kg or Captan 1 kg/ha.</p>	<p>1.Avoid free water of the leaf , as Infection takes place early in the wet season.</p> <p>2.Spray Mancozeb 1.25 kg or Captan 1 kg/ha.</p>	<p>1.Harvest when sheath covering the cob turns yellow and dry.</p>	<p>1.Thresh the cob after sun drying the grains</p>
<b>Tomato</b>				
<b>Buck eye rot of tomato</b>	<p>1.Water-logged soil and high rainfall favour the disease thus proper</p>	<p>1.Water-logged soil and high rainfall favout the disease thus proper drainage should be provided</p>	<p>1.Pick the tomatoes when its in peak of its redness or even a tad</p>	<p>1.Wash and dry the harvest tomatoes and store in cool place.</p>

	<p>drainage should be provided to control the disease.</p> <p>2.Spray dithiocarbomates, captafol, chlorothalonil etc at regular intervals.</p>	<p>to control the disease.</p> <p>2.Spray dithiocarbomates, captafol, chlorothalonil etc at regular intervals.</p>	<p>before.</p>	
<b>Pea</b>				
<b>Foot rot and blight of Pea</b>	<p>1.Frequent rain with abundance of water on the leaves favour disease.</p> <p>2.Proper drainange is needed.</p> <p>3.Spraying mancozeb 0.25%</p>	<p>1.Frequent rain with abundance of water on the leaves favour disease.</p> <p>2.Proper drainange is needed.</p> <p>3.Spraying mancozeb 0.25%</p>	<p>1. Harvest/pick the mature pea, as if not it may cause less flowering and less pods.</p>	<p>1. Harvest the pea and place in cool place.</p>
<b>Large Cardamom</b>				
<b>Capsule rot in Large Cardamom</b>	<p>1. Remove diseased and dead parts.</p> <p>2.Drench soil with 1% Bordeaux mixtre (4L) or 0.3% Aliette (1L) per clump 2 to times.</p> <p>3.Fresh mulch of infected clump.</p> <p>4.Provide adequate drainage and remove dampness.</p>	<p>1. Remove diseased and dead parts.</p> <p>2.Drench soil with 1% Bordeaux mixtre (4L) or 0.3% Aliette (1L) per clump 2 to times.</p> <p>3.Fresh mulch of infected clump.</p> <p>4.Provide adequate drainage and remove dampness.</p>	<p>1. Harvest the capsule at right maturity.</p>	<p>1. After harvesting dry the capsule and keep it in a cool place.</p>
<b>Ginger</b>				
<b>Rhizome rot of Ginger</b>	<p>1. Provide adequate aeration with a wooden plank placed as a cover, provided with holes.</p> <p>2.When symptoms appear drench with 0.3% Dithane M-45 or Cheshunt compound for soft rot</p>	<p>1.Provide adequate aeration with a wooden plank placed as a cover, provided with holes.</p> <p>2.When symptoms appear drench with 0.3% Dithane M-45 or Cheshunt compound for soft rot</p>	<p>1.Harvest at maturity i.e. When the leaves are yellow and the stem falls over.</p>	<p>1.Wash and dry the harvest ginger and store in cool place.</p>

	<ol style="list-style-type: none"> <li>1. Rotting and excessive shedding of immature nuts</li> <li>2. Spray 1% Bordeaux mixture with Adhesive</li> <li>3. Improve drainage facility</li> <li>4. Avoid close spacing</li> </ol> <p>Maintain good sanitation</p>	<ol style="list-style-type: none"> <li>1. Rotting and excessive shedding of immature nuts</li> <li>2. Spray 1% Bordeaux mixture with Adhesive</li> <li>3. Improve drainage facility</li> <li>4. Avoid close spacing</li> </ol> <p>Maintain good sanitation</p>	<ol style="list-style-type: none"> <li>1. Harvest at maturity i.e. When the leaves are yellow and the stem falls over.</li> </ol>	<ol style="list-style-type: none"> <li>1. Wash and dry the harvest ginger and store in cool place.</li> </ol>
<b>Foxtail Millets</b>				
1. Smut	<ol style="list-style-type: none"> <li>1. Sees treatment with Carbendazim @ 2 kg/seeds.</li> <li>2. Remove diseased and dead parts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sees treatment with Carbendazim @ 2 kg/seeds.</li> <li>2. Remove diseased and dead parts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest at physiological maturity i.e when there is a presence of dark spot at the bottom of the grain.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest and store in a cool place.</li> </ol>
2. Downy Mildew	<ol style="list-style-type: none"> <li>1. Collection and removal of infected plant debris.</li> <li>2. Seed treatment with Ridomil @ 3g/kg of seeds.</li> </ol>	<ol style="list-style-type: none"> <li>1. Collection and removal of infected plant debris.</li> <li>2. Seed treatment with Ridomil @ 3g/kg of seeds.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest at physiological maturity i.e when there is a presence of dark spot at the bottom of the grain.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest and store in a cool place.</li> </ol>
<b>Colocasia</b>				
1. Root Rot	<ol style="list-style-type: none"> <li>1. Drainage of excess water.</li> <li>2. Application of copper fungicides.</li> <li>3. Early Planting to avoid heavy rainfall season.</li> </ol>	<ol style="list-style-type: none"> <li>1. Drainage of excess water.</li> <li>2. Application of copper fungicides.</li> <li>3. Early Planting to avoid heavy rainfall season.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ready to harvest at 6m- 8 months,</li> <li>2. Harvest when there is reduce in plant height and yellowing of leaves occur.</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest and store in a cool place.</li> </ol>
<b>Tapioca</b>				
1. Mosaic	<ol style="list-style-type: none"> <li>1. Adoption of Resistant varieties like</li> </ol>	<ol style="list-style-type: none"> <li>1. Adoption of Resistant varieties like Muktakeshi , Jankeshi.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ready to harvest at 6- 8 months,</li> </ol>	<ol style="list-style-type: none"> <li>1. Harvest and store in a cool place.</li> </ol>

	Muktakeshi , Jankeshi. 2.Rough out the disease plant. 3.Use disease free planting materials.	2.Rough out the disease plant. 3.Use disease free planting materials.	2.Harvest when there is reduce in plant height and yellowing of leaves occur.	
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### 1.3.Floods

Condition	Suggested Contingency Measures <sup>0</sup>			
Transient water logging/partial inundation <sup>1</sup>	Seeding/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	1.Drainage of the Nursery bed. 2.Re -sowing if not possible. 3.Dapog method of nursery.	1. Drainage of excess water. 2.Gap filling In partially damaged Field by redistributing the tillers. 3.Management of pests and diseases	1. Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. 3. Utilization of residual soil moisture and use of recharged soil profile for growing pulses.	1. Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. 3. Utilization of residual soil moisture and use of recharged soil profile for growing pulses.
<b>Horticulture</b>				

Vegetables (cucurbits)	<ol style="list-style-type: none"> <li>1. Proper drainage of the nursery bed, If not possible go for re-sowing.</li> <li>2. Raised bed method should be followed in the nursery.</li> <li>3. Earthing up to be followed</li> <li>4. Ensure proper staking of crop wherever required</li> <li>5. Field bunding to prevent entry of water from surrounding areas.</li> </ol>	<ol style="list-style-type: none"> <li>1. Proper drainage of the nursery bed, If not possible go for</li> <li>2. Re-sowing.</li> <li>2. Earthing up to be followed</li> <li>3. Ensure proper staking of crop wherever required</li> <li>4. Field bunding to prevent entry of water from surrounding areas.</li> <li>5. Follow appropriate nutrient management practices.</li> </ol>	<ol style="list-style-type: none"> <li>1. Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops</li> <li>2. Growing of cole crops or winter vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif vegetables.</li> </ol>	<ol style="list-style-type: none"> <li>1. Shifting of the produce to drier place and store fruits in a well-ventilated chamber</li> </ol>
Orange	Early planting	<ol style="list-style-type: none"> <li>1. Drain out of stagnating water and making field bunds.</li> <li>2. Re-planting</li> <li>3. Earthing up of plant base/root zone</li> </ol>	<ol style="list-style-type: none"> <li>Drain out of stagnating water and making field bunds</li> <li>Shift to safer place.</li> </ol>	<ol style="list-style-type: none"> <li>1. Shift to safer place.</li> </ol>
<b>Continuous submergence for more than 2 days</b>				
<b>Orange</b>	Early planting	<ol style="list-style-type: none"> <li>1. Drain out of stagnating water and making field bunds.</li> <li>2. Re-planting</li> <li>3. Earthing up of plant base/root zone</li> </ol>	<ol style="list-style-type: none"> <li>Drain out of stagnating water and making field bunds</li> <li>Shift to safer place.</li> </ol>	<ol style="list-style-type: none"> <li>1. Shift to safer place.</li> </ol>
<b>Vegetables</b>	<ol style="list-style-type: none"> <li>1. Proper drainage of the nursery bed, If not possible go for re-sowing.</li> <li>2. Raised bed method</li> </ol>	<ol style="list-style-type: none"> <li>1. Proper drainage of the nursery bed, If not possible go for</li> <li>Re-sowing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Drainage of excess water. If flood comes during reproductive stage,</li> </ol>	<ol style="list-style-type: none"> <li>1. Shifting of the produce to drier place and store fruits in a well-ventilated chamber</li> </ol>

	<p>should be followed in the nursery.</p> <p>3.Earthing up to be followed</p> <p>4.Ensure proper staking of crop wherever required</p> <p>5. Field bunding to prevent entry of water from surrounding areas.</p>	<p>2.Earthing up to be followed</p> <p>3. Ensure proper staking of crop wherever required</p> <p>4.Field bunding to prevent entry of water from surrounding areas.</p> <p>5. Follow appropriate nutrient management practices.</p>	<p>emphasis should be given on forthcoming rabi crops</p> <p>2.Growing of cole crops or winter vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif vegetables.</p>	
<b>Horticulture</b>				
<b>Orange</b>	<p>1.Early planting</p>	<p>1.Drain out of stagnating water and making field bunds.</p> <p>2. Re- planting</p> <p>3.Earthing up of plant base/root zone</p>	<p>1.Drain out of stagnating water and making field bunds</p> <p>2.Shift to safer place.</p>	<p>1.Shift to safer place.</p>
<b>Vegetables</b>	<p>1.Proper drainage of the nursery bed, If not possible go for re-sowing.</p> <p>2.Raised bed method should be followed in the nursery.</p> <p>3.Earthing up to be followed</p> <p>4.Ensure proper staking of crop wherever required</p> <p>5. Field bunding to prevent entry of water from surrounding areas.</p>	<p>1.Proper drainage of the nursery bed, If not possible go for Re-sowing.</p> <p>2.Earthing up to be followed</p> <p>3. Ensure proper staking of crop wherever required</p> <p>4.Field bunding to prevent entry of water from surrounding areas.</p> <p>5. Follow appropriate</p>	<p>1. Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops</p> <p>2.Growing of cole crops or winter vegetables after receding flood water and adoption of integrated farming system to obtain more income</p>	<p>Shifting of the produce to drier place and store fruits in a well-ventilated chamber</p>

		nutrient management practices.	and to compensate the loss during kharif vegetables.	
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## 2.4 Extreme events: Heat wave/ Cold wave/ Frost/ Hailstorm/ Cyclone

Extreme event type	Suggested Contingency Measures <sup>r</sup>			
	Seeding/ nursery stage	Vegetative stage	Reproductive stage	At harvest
<b>Heat Wave</b>				
Field crops	1.Provide shade	1.Irrigate, provide shade, white wash on tree trunks	1.Apply growth hormones to prevent fruit drop, maintain water balance to avoid fruit cracking	1.Harvest at morning hours, pre cooling is important
<b>Horticulture</b>				
Fruit crops	1.Provide shade	1.Irrigate, provide shade, white wash on tree trunks	1.Apply growth hormones to prevent fruit drop, maintain water balance to avoid fruit cracking	1.Harvest at morning hours, pre cooling is important
Kharif vegetables	1.Provide shade	1.Life saving irrigations	1.Life saving irrigations	1.Harvest at morning hours, pre cooling is important
Ginger and turmeric	-	1.Life saving irrigations		
<b>Cold Wave<sup>q</sup></b>				
Fruit crops	1.Provide shade	1.Provide wind break	-	-
Winter vegetables	1.No effect	1.No effect	1.No effect	1.No effect
Ginger and turmeric	1.No effect	1.No effect	.No effect	.No effect
<b>Frost</b>				
<b>Horticulture</b>				
Fruit crops	1.Provide shade	1.Provide wind break, irrigate regularly	1.Small trees cover with grasses, irrigate regularly	-
Winter vegetables	1.Provide shade	1.Irrigate regularly	1.Irrigate regularly	-
<b>Hailstorm</b>				
<b>Agriculture</b>				
Paddy and Maize	1.Re-sowing the crop if heavy damage,	1.Stacking where possible, provision for wind break	1.Stacking where possible, provision for wind break	.Harvest at physiological

	2. Gap filling to maintain optimum population			maturity of the crops
<b>Horticulture</b>				
Fruit crops	1. Providing thatch grass roof.	1. Re planting 2.Direct seeding including seed availability Shift to safer place		1.Shift to safer place
<b>Cyclone</b>				
Crop 1 (spe	NA	NA	NA	NA
Crop 5	NA	NA	NA	NA
<b>Horticulture</b>				
Crop 1 (specify)	NA	NA	NA	NA
\	NA	NA	NA	NA

## 2.5 Contingent strategies for Livestock, Poultry & Fisheries

### 2.5.1 Livestock

	Suggested contingency measures		
	Before the event <sup>s</sup>	During the event	After the event
<b>Drought</b>			
Drinking water	1.Construction of community pond and other water harvesting tank in the village for conservation of excess water during monsoon period.	1. Use of water from water reservoir/natural stream 2. Using water from reserved tanks for only drinking purpose.	1.Preserve drinking water for future. 2. Cleaning and disinfection of water source with suitable water purifying agent, available in the area as per the recommended dose.
Feed and fodder availability	1. Raising drought tolerant perennial grasses and fodders like congosignal, guinea, oat etc. as permanent source of fodder. 2. Stocking of concentrate feed ingredients in sufficient quantities. I3. Awareness on fodder cultivation & identification of locally available, natural fodder of area.	1.Feeding of locally available jungle tree leaves like <i>Azadirachta indica</i> , <i>Dalbergia sissoo</i> for ruminant. 2. Feeding of crop residues (rice straw).	1. Avail the benefits of schemes under drought, from state or central for feeds and fodder. 2.Cultivation of high yielding and drought tolerant varieties of grasses and fodder like oat, congo signal, guinea, para and napier grasses. 3. Introduction of fodder trees, bushes and grasses as rehabilitation option on all kinds of wasted and

			abandoned lands.
Health and Disease management	1.Ensure livestock insurance Deworming to reduce worm load. 2.Stocking of veterinary medicines, vitamin and mineral supplements.	1. Mass awareness cum Health camp and symptomatically prompt treatment accordingly. 2. Supplementary feeding of vitamin and mineral to improve general body health.	I. Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ii. Culling unproductive and sick livestock.
<b>Floods</b>			
Feed and fodder availability	i.Advance early warning system through Agromet advisories. ii. Proper storage of feeds and fodder in well constructed house iii.Planting of trees as a wind break in farm area iv.Excess fodder may be stored as hay/silage or converted into feed block in the flush season, for lean period.	i.Do not allow the animals for free grazing. ii.Use storage feed and fodder. iii.Supply of concentrated feed	1. Avail the benefits of schemes under flood, from state or central for feeds and fodder.
Drinking water	1.Storage of safe drinking water in community tanks / water harvesting structures. 2. Advance early warning system through Agromet advisories for preparedness to combat the situation.	I.Chlorination of the drinking water and use of sand filter. 2. Provide fresh potable water	1.Cleaning of water storage tanks, canals and drainage system. 2.Cleaning and disinfection of water source with suitable water purifying agent, available in the area as per the recommended dose.
Health and Disease management	2.Ensure livestock insurance 2. Deworming to reduce worm load 3..Stocking of veterinary medicines, vitamin and mineral supplements. 4.Training of paravets and identifying key man in each village to combat the situation if arise. 5. Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. 6. Providing available communication and transportation facilities in every dispensary / clinic for consultations.	i.Mass awareness cum Health camp and symptomatically prompt treatment accordingly. 2..Supplementary feeding of vitamin and mineral to improve general body health.	I.Immediate attention to the ailing animals. 2..Selective culling of injured animal
<b>Cyclone</b>	NA	NA	NA

Feed and fodder availability			
Drinking water			
Health and Disease management			
<b>Heat wave and cold wave</b>	NA	NA	NA
Shelter/ environment management			
Health and Disease management			

### 2.5.2 Poultry

	Suggested contingency measures		
	Before the event <sup>s</sup>	During the event	After the event
<b>Drought</b>			
Drinking water	1.Creation of alternate drinking water bodies	1.Use of water from water reservoir/stream	1. Development of watershed based poultry farming. 2. Harvesting of rain water through Jalkund.
Shortage of food ingredients	1.Establishment of permanent storage facilities for feed ingredients. 2.Raising drought tolerant non conventional grasses, crops, bushes like Job tears, Buck wheat, Jack beans, Stylosanthenes etc as permanent feed ingredients for poultry.	1.Feeding of non conventional feed and forage resources	1.Cultivation of non conventional grasses, crops, bushes like Job tears, Buck wheat, Jack beans, Stylosanthenes etc as permanent feed ingredients for poultry.
Health and Disease management	1.Precautionary measures like vaccination and deworming of animals should be done.	1.Health checkup of bird particularly for dehydration which may cause death of birds	1. Deworming and vaccination against common diseases should be done. 2. Supplementation of minerals and vitamins in feed for few days .
<b>Floods</b>			
Drinking water	Creation of alternate drinking water bodies	Use of water from water reservoir/stream	1.Development of watershed based poultry farming. 2. Harvesting of rain water through Jalkund.

Shortage of food ingredients	1.Establishment of permanent storage facilities for feed ingredients. 2.Raising drought tolerant non conventional grasses, crops, bushes like Job tears, Buck wheat, Jack beans, Stylosanthenes etc as permanent feed ingredients for poultry.	1.Feeding of non conventional feed and forage resources	1.Cultivation of non conventional grasses, crops, bushes like Job tears, Buck wheat, Jack beans, Stylosanthenes etc as permanent feed ingredients for poultry.
Health and Disease management	1.Precautionary measures like vaccination and deworming of animals should be done.	1.Health checkup of bird particularly for dehydration which may cause death of birds	1. Deworming and vaccination against common diseases should be done. 2. Supplementation of minerals and vitamins in feed for few days .
<b>Cyclone</b>	NA		
Shortage of food ingredients	1.Preserve feed ingredient at village level	1.Do not allow the bird to move pout side Use stored feed ingredients	1.Feed regeneration programme
Drinking water	1.Preserve drinking water in tanks	1.Supply of clean drinking water	1.Supply of clean and treated water
Health and Disease management			
<b>Heat wave and cold wave</b>			
Shelter/ environment management	1.Prepare shelter shed with all precautionary measure at village level	1.Shift the birds to shelter shed	1.Prepared scientific poultry house with locally available materials
Health and Disease management	1.Prepare medicine and vaccines etc. at village. Veterinary sub center/ dispensary.	.Organized health camp	1.Organized health camp

<sup>s</sup> based on forewarning wherever available

### 2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event <sup>a</sup>	During the event	After the event
<b>1) Drought</b>			
<b>A. Capture</b>			
Marine			
Inland			
(i) Shallow water depth due to insufficient rains/ inflow	1.Water supply from other sources	1.Water supply from other sources/Reduce stock	1.Partial harvesting & lime application
(ii) Changes in water quality		1.Undulation of water surface to increase the dissolved Oxygen	
(iii) Any other			
<b>B. Aquaculture</b>			

(i) Shallow water depth due to insufficient rains/ inflow	1.Deepening of ponds 1.5 to 2 m, Desilting, repair of bunds, restrictd use of manures and fertilizers	1.Integrated farming, air breathing finsh to be practised	1.Early harvesting of crop
(ii) Impact of salt load build up in ponds/ change in water quality	1.Rain water harvesting, deepening, desilting of existing water bodies		1.Control feeding to avoid water accumulation and eutrofication
<b>2) Floods</b>			
<b>A. Capture</b>			
Marine			
Inland	1.Pan culture, nursery raising of seeds	1.Water quality monitoring	1.Water quality monitoring
(i) Average compensation paid due to loss of human life			
(ii) No. of boats/ nets damaged			
(iii) No. of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and Diseases			
<b>B. Aquaculture</b>			
(i) Inundation with flood water			
(ii) Water continuation and changes in water quality			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals, etc)			
(v) infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
<b>3) Cyclone/ Tsunami</b>			
<b>A. Capture</b>			
Marine			
(i) Average compensation paid due to loss of fishermen lives			
(ii) Average no. of boats/ nets damaged			
(iii) Average mo. of houses damaged			
Inland			
<b>B. Aquaculture</b>			
(i) Overflow/ flooding of ponds			

(ii) Changes in water quality (fresh water/ brackish water ratio)			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps. Aerators, shelters/huts etc)			
(vi) Any other			
<b>4. Heat wave and cold wave</b>			
<b>A. Capture</b>			
Marine			
Inland			
<b>B. Aquaculture</b>			
(i) Changes in pond in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other			