

## State: Jharkhand

### Agriculture Contingency Plan for District: Ranchi

<b>1.0 District Agriculture profile</b>				
<b>1.1</b>	<b>Agro-Climatic/Ecological Zone</b>			
	Agro Ecological Sub Region (ICAR)	Eastern plateau (chotanagpur) And Eastern Ghats, Hot Sub humid Eco-Region (12.3), Moderately To Gently Sloping Chattisgarh Mahanadi Basin, Hot Moist/Dry Sub humid Transitional ESR With Deep Loamy To Clayey Red And Yellow Soils (11.0)		
	Agro-Climatic Zone (Planning Commission)	Eastern Plateau And Hills Region (VII)		
	Agro Climatic Zone (NARP)	Central And North Eastern Plateau Zone (BI-4)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Bokaro, Chatra, Deogarh, Dhanbagh, Giridh, Godda, Hazaribagh, Jamtara, Khunthi		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		23.35°N	85.33°E	651 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Birsa Agricultural University, Ranchi		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, PO. Morabadi, Distt. Ranchi-834008		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Birsa Agricultural University, Ranchi		

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)	1090		2 <sup>nd</sup> week of June	1 <sup>st</sup> week of October
	NE Monsoon(Oct-Dec)	103		2 <sup>nd</sup> week of October	3 <sup>rd</sup> week of December
	Winter (Jan- Feb)	38		-	-
	Summer (Mar-May)	99		-	-
	Annual	1323		-	-

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)	758.2	255	159.1	74.5	2.0	26.3	10.7	39.5	124.0	66.2

1.4	Major Soils	Area ('000 ha)	Percent (%) of total
	Red lateritic soils		
	Loam soil soils		
	Fine Loam soils		
	Fine mixed Loam soils		

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	255	107%
	Area sown more than once	17	
	Gross cropped area	272	

1.6	Irrigation	Area ('000 ha)

	Net irrigated area	32.1		
	Gross irrigated area			
	Rainfed area			
	<b>Sources of Irrigation</b>	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		9.9	
	Tanks		2.4	
	Open wells		16.0	
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (Check Dam)		3.8	
	Total Irrigated Area			
	Pump sets			
	No. of Tractors			
	<b>Groundwater availability and use* (Data source: State/Central Ground water Department /Board)</b>	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	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

1.7	Major field crops cultivated	Area ('000 ha)							Grand total
		Kharif			Rabi			Summer	
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
Rice			159.2					159.2	
Maize			9.1			0.6		9.7	
Pigeonpea			8.0					8.0	
Blackgram			6.8					6.8	
Greengram			0.9					0.9	
Wheat						2.8		2.8	
Pea						2.0		2.0	
Chick pea						1.1		1.1	
Lentil						0.4		0.4	
<b>Horticulture crops - Fruits</b>		<b>Area (acre)</b>							
		<b>Total</b>		<b>Irrigated</b>			<b>Rainfed</b>		
Mango		2351.4							
Jack fruit		177.8							
Guava		129.9							
Banana		0.4							
Litchi		36.1							
others		204,41							
<b>Horticulture crops - Vegetables</b>		<b>Total</b>		<b>Irrigated</b>			<b>Rainfed</b>		
Potato		5892							
Onion		2137							
Peas		2017.6							
Ginger		2733							
Tomato		1894							
Cauliflower		2762							
Cabbage		1952							
Okra		3603							
Others		9500							
<b>Spices</b>		<b>Total</b>		<b>Irrigated</b>			<b>Rainfed</b>		

	Coriander	43.2		
	Ginger	83.8		
	Garlic	317.8		
	Chilli	101.7		
	<b>Medicinal and Aromatic crops</b>			
	<b>Plantation crops</b>			
	<b>Fodder crops</b>			
	<b>Total fodder crop area</b>			
	<b>Grazing land</b>			
	<b>Sericulture etc</b>			

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)			
	Non descriptive Cattle (local low yielding)			671.17			
	Improved cattle						
	Crossbred cattle						
	Non descriptive Buffaloes (local low yielding)						
	Descript Buffaloes			155.0			
	Goat			642.7			
	Sheep			81.4			
	Others (Camel, Pig, Yak etc.)			127.0			
	Commercial dairy farms (Number)						
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial						
	Backyard		2105				
1.10	Fisheries (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	

	ii) <b>Inland</b> (Data Source: Fisheries Department)	<b>No. Farmer owned ponds</b>		<b>No. of Reservoirs</b>		<b>No. of village tanks</b>
	<b>B. Culture</b>					
			<b>Water Spread Area (ha)</b>		<b>Yield (t/ha)</b>	<b>Production ('000 tons)</b>
	i) <b>Brackish water</b> (Data Source: MPEDA/ Fisheries Department)					
	ii) <b>Fresh water</b> (Data Source: Fisheries Department)					

### 1.11 Production and Productivity of major crops

1.11	Name of crop	<b>Kharif</b>		<b>Rabi</b>		<b>Summer</b>		<b>Total</b>		<b>Crop residue as fodder ('000 tons)</b>
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
<b>Major Field crops (Crops identified based on total acreage)</b>										
	Rice	216.7	1361					216.7	1361	
	Maize	11.7	1300	1.0	1422			12.7	1361	
	Pigeonpea	6.4	800					6.4	800	
	Blackgram	5.5	800					5.5	800	
	Greengram	0.6	600					0.6	600	
	Wheat			4.1	1485			4.1	1485	

	Chick pea			1.0	1018			1.0	1018	
	Pea			2.3	1157			2.3	1157	
	Lentil			0.1	447			0.1	447	
<b>Major Horticultural crops (Crops identified based on total acreage)</b>										
	Cauliflower	44192	16.0					44192	16.0	
	Potato	52894	8.9					52894	8.9	
	Cabbage	31232	16.0					31232	16.0	
	Tomato	36340	20.0					36340	20.0	
	Brinjal	54660	20.0					54660	20.0	
	Chilli	23196	12.0					23196	12.0	
	Ladies finger	50442	14.0					50442	14.0	
	Bitter gourd	1122	6.0					1122	6.0	
	Ridge gourd	606	6.0					606	6.0	
	Sponge gourd	8172	12.0					8172	12.0	

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Rice	Pigeonpea	Maize	Wheat
	Kharif- Rainfed	4 <sup>th</sup> week of June to 4 <sup>th</sup> week of July	3 <sup>rd</sup> week of June to 2 <sup>nd</sup> week of July	3 <sup>rd</sup> week of June to 4 <sup>th</sup> week of July	

	Kharif-Irrigated	2 <sup>nd</sup> week of June to 3 <sup>rd</sup> week of June			
	Rabi-Rainfed				3 <sup>rd</sup> week of October to 4 <sup>th</sup> week of October
	Rabi-Irrigated				3 <sup>rd</sup> week of November to 4 <sup>th</sup> week of December

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		✓	

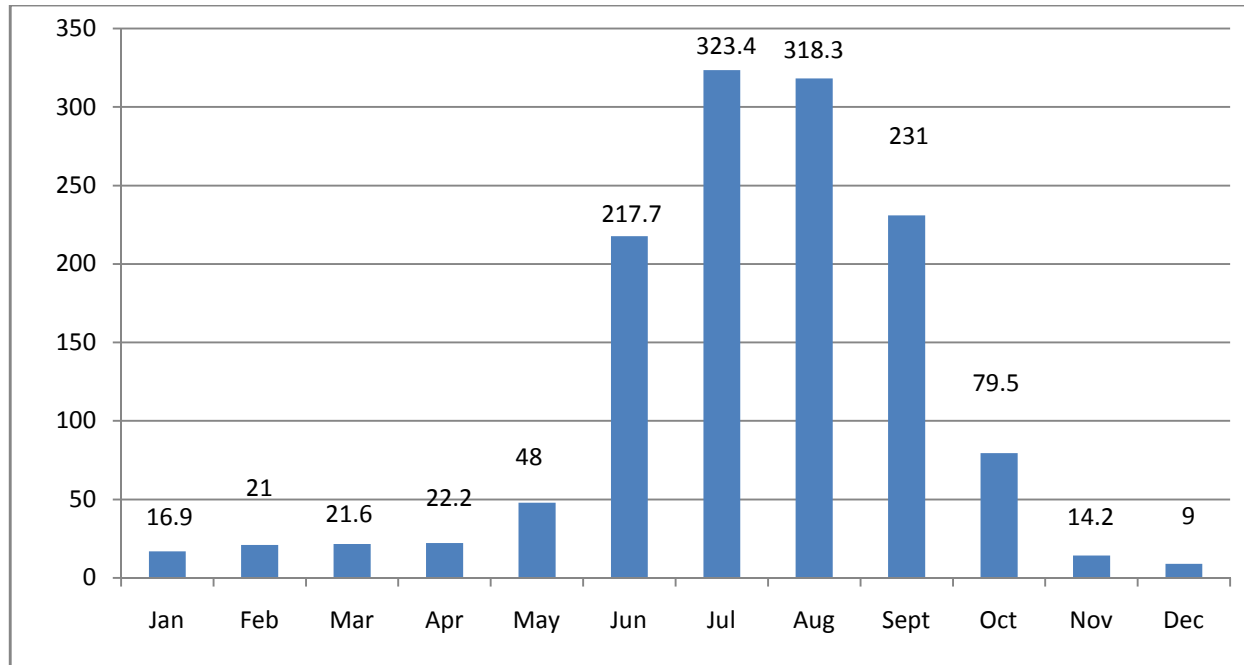
1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure II	Enclosed: Yes
		Soil map as Annexure III	Enclosed: Yes



Annexure I



### Annexure II



### Annexure III



Source: SAMETI, Jharkhand

## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset) Delay by 2 weeks June 4 <sup>th</sup> week	Sandy lateritic soils  UPLAND	Pigeonpea, Groundnut, Upland rice, Maize Pigeonpea+ Groundnut Pigeonpea + Maize  Vegetables- Brinjal, Tomato, Sponge gourd	Pigeonpea, Groundnut, Maize, upland rice, Blackgram  Pigeonpea + Blackgram Pigeonpea + Upland rice  Vegetables- Brinjal, Tomato, Sponge gourd, Cucurbits, Cow pea, Bean	Wider spacing (90x25 cm) for Pigeonpea	

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 4 weeks July 2 <sup>nd</sup> week	Sandy lateritic soils	Pigeonpea, Groundnut, Upland rice, Blackgram, Greengram  Vegetables- Brinjal, Tomato, Sponge gourd	Pigeonpea + Bhendi Maize + Beans  Pigeonpea : Birsa A- 1, UPAS- 120, Asha (ICPL- 87119) ICPH- 2671  Vegetables- Brinjal, Tomato, Sponge gourd, Cucurbits, Cow pea, Bean, Bhendi, Chilli		

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 6 weeks July 4 <sup>th</sup> week	Sandy lateritic acidic soils	Sweet potato, French bean, Bhendi, Tomato, Brinjal	Sweet potato, Blackgram, Niger, Horsegram, Finger millet		

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 8 weeks August 2 <sup>nd</sup> week	Sandy lateritic soils	Niger, Horsegram	Niger, Horsegram, Toria		

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> including variety	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)					
Delay by 2 weeks June 4 <sup>th</sup> week	Sandy loam soils  MID LAND	Rice	Rice	-	-

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 4 weeks July 2 <sup>nd</sup> week	Sandy loam soils	Rice	Rice	Nursery raising by wet method Sowing may be done behind the plough with 50-60 kg seed/ha	Promotion of SRI technique through RKVY

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 6 weeks July 4 <sup>th</sup> week	Sandy soils	Rice	Rice		

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 8 weeks August 2 <sup>nd</sup> week	Sandy loam soils	Transplanting of Rice	Transplanting of Rice, Blackgram (PU-19), Early Toria(T-9, PT- 303)	Transplanting with 5-6 seedling/hill	

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> including variety	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)					
Delay by 2 weeks June 4 <sup>th</sup> week	Sandy clay loam soils  LOW LAND	Rice	Rice		

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 4 weeks July 2 <sup>nd</sup> week	Sandy clay loam soils	Rice	Rice		

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Early season drought (delayed onset)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Change in crop/cropping system<sup>c</sup></b>	<b>Agronomic measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
Delay by 6 weeks July 4 <sup>th</sup> week	Sandy clay loam soils	Transplanting of Rice	Transplanting of lowland Rice varieties		

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Early season drought (delayed onset)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Change in crop/cropping system<sup>c</sup></b>	<b>Agronomic measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
Delay by 8 weeks 2 <sup>nd</sup> week of August	Sandy clay loam soils	Rice	Transplanting of short duration Rice varieties	Reduce fertility dose by 20 % (80:40:20 Kg) NPK/ha. Increase number of seedling (5-6/hill) Transplanting at closer spacing of 15x10 cm	

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Early season drought (Normal onset)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>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.	Sandy red lateritic soils  UP LAND	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize	Inter cultivation Gap filling and Thinning Re sowing		

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell, consecutive 2 weeks rainless (&gt;2.5 mm) period)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
At vegetative stage	Sandy red lateritic soils	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize	Inter cultivation Gap filling and Thinning Re sowing		Rain water harvesting structure should made through watershed programme MNREGA

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
At flowering/ fruiting stage	Sandy soils	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize	Intercultivation Weeding Thining		Rain water harvesting structure should made through MNREGA

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Terminal drought (Early withdrawal of monsoon)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Rabi Crop planning<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>



	Sandy loam soils	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize	1. Life saving irrigation of vegetables 2. Upland rice harvested for straw purpose 3. Harvesting Groundnut at physiological maturity stage	Toria Potato, Niger, Horsegram	1. Farm ponds through watershed management programme
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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>
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Sandy loam soils  MID LAND	Rice	1- life saving irrigation 2- Direct sowing of rice	Weeding, Split application of Nitrogen	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	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 vegetative stage	Sandy loam soils	Rice	Life saving irrigation through well, ponds, check dams	Weeding, Foliar spray of Urea	

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

				<b>measures<sup>d</sup></b>	
At flowering/ fruiting stage	Sandy loam soils	Rice	Life saving irrigation with harvested water	Weeding	

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Terminal drought (Early withdrawal of monsoon)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Rabi Crop planning<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
		Rice	Rice	Toria, Chick pea (P- 256, PL- 406) Lentil , Mustard (Shicani, Pusa Agrani), Linseed (Shubhra, T- 397)	

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Early season drought (Normal onset)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>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.	LOW LAND  Sandy clay loam soils	Rice			Ponds, check dam through water shed management & MNREGA scheme

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell, consecutive 2 weeks rainless (&gt;2.5 mm) period)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>

At vegetative stage	Sandy clay loam soils	Rice	Life saving irrigation	Weeding, Foliar spray of Urea	Ponds, Check dam through water shed management & MNREGA scheme
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<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Soil nutrient &amp; moisture conservation measures<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
At flowering/ fruiting stage	Sandy clay loam soils	Rice	Life saving irrigation	Weeding, Foliar spray of Urea	

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Terminal drought (Early withdrawal of monsoon)</b>	<b>Major Farming situation<sup>a</sup></b>	<b>Normal Crop/cropping system<sup>b</sup></b>	<b>Crop management<sup>c</sup></b>	<b>Rabi Crop planning<sup>d</sup></b>	<b>Remarks on Implementation<sup>e</sup></b>
	Sandy clay loam soils	Rice	Life saving irrigation, Crop harvested at physiological maturity	Early sowing of wheat, Mustard, Chick pea, Intercropping of Wheat+ Mustard	

### 2.1.2 Drought - Irrigated situation

<b>Condition</b>			<b>Suggested Contingency measures</b>		
	<b>Major Farming situation<sup>f</sup></b>	<b>Normal Crop/cropping system<sup>g</sup></b>	<b>Change in crop/cropping system<sup>h</sup></b>	<b>Agronomic measures<sup>i</sup></b>	<b>Remarks on Implementation<sup>j</sup></b>
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed					

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					
Insufficient groundwater recharge due to low rainfall					

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

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
<b>Continuous high rainfall in a short span leading to water logging</b>				
Pigeonpea	Ridge making	Provide drainage		
Blackgram	Ridge making	Provide drainage		
Rice	Bund making	Provide drainage	Provide drainage	
<b>Horticulture</b>				
Cucurbits	Staking	Provide drainage	Provide drainage	
Vegetables	Sowing on ridge			

<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Pulses	Leaf hoper/caterpillar Control- Monocrotophos @ 1 ml/lit			
Maize	Stem borer Control- Phorate 10G@ 20 kg/ha	Sheath blight Control- Hexaconazole 1.0 lit in 500 lit water/ha		
Rice		Blast diseases Control- Tricyclazole (0.05 %)	False Smut Control- Propiconazole 0.1 % or Copper oxy chloride -50 (2 kg/ha)	
Bhendi		YVM Control- Carbofuran 3G @ 3 gm/m <sup>2</sup>		
French bean	Rust disease Control- Mancozeb 2.5 kg/ ha			

### 2.3 Floods

Condition	Suggested contingency measure <sup>o</sup>			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation <sup>1</sup>				
Continuous submergence for more than 2 days <sup>2</sup>		Not Applicable		
Sea water intrusion <sup>3</sup>				

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

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest

<b>Hailstorm</b>	Not applicable			
<b>Heat Wave</b>				
Wheat	Life saving irrigation	Life saving irrigation	Life saving irrigation (Terminal heat)	
<b>Cold wave</b>				
Wheat	Irrigation  Balanced fertilizer application  Foliar spray of nutrients	Light irrigation Mulching with crop residue \ weeds Fertilizer application	Irrigation, fertilizer application	
Vegetables	Raising of seedling in Poly house, re sowing if damaged	Light irrigation Mulching with crop residue \ weeds Disease and pest control, care for chilling injury or replanting	Quick harvesting	Grading, quick disposal for marketing
Pigeonpea		Light irrigation Mulching with crop residue \ weeds		
<b>Frost</b>				
Wheat		Light irrigation Mulching with crop residue \ weeds		
Pigeonpea	Exposure of crop to smoke by burning waste material during night time	Exposure of crop to smoke by burning waste material during night time, Light sprinkler irrigation	Exposure of crop to smoke by burning waste material during night time, Light sprinkler irrigation	Exposure of crop to smoke by burning waste material during night time
Tomato & Potato		Earthing up, Irrigation,		Harvest in dry weather
Horticultural crops (fruit	Light frequent irrigation may be practiced wherever irrigation facilities are available, mulching, thatching and creating			

crops)	smoke screens and lighting of fire is also practiced where irrigation facilities are not available
<b>Cyclone</b>	Not applicable

## 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>			
Feed and fodder availability	Preservation of surplus fodder, encourage fodder cultivation and tree plantation and also encourage supply of molasses to cattle feed plants.	Arrangement of feeds and fodder from adjoining areas, exploitation of non conventional feed resources, use of urea treated straw and feed blocks.	Promotion of fodder seed production, cultivation and storage, establishment of fodder block making machines in fodder surplus areas.
Drinking water	Repairs of tube wells, clear off the sludge in the canals and local water catchments and clean the water tanks, large ponds and lakes	Harnessing water through the existing reservoirs and exploitation of groundwater.	To strengthen reservoirs by promoting recharging of water and rain water harvesting during rainy season.
Health and disease management	Mass vaccination and de worming	Provide shades to animals and water as much as possible. Treatment of diseased animals and proper disposal of carcasses.	Treatment of diseased animals and provide vitamin and mineral supplement to regain strength and vigour.

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

### 2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event <sup>a</sup>	During the event	After the event	
<b>Drought</b>				
Shortage of feed ingredients	Storage of feed	Provide non conventional feed, supplement anti oxidant and anti		

		stress		
Drinking water	Storage of water in tanks	Add vit-C and other anti stress ingredients with water		
Health and disease management	Regular vaccination	Vaccination and treatment of diseased one	Disposal of dead birds	

<sup>a</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>			
Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Plough the pond and apply lime @ 250kg/ha	Reduce the stocking density from 25000 fry (1 inches size) to 10000-15000/ ha	Remove the fishes of bigger size(0.5 kg)
(ii) Impact of salt load build up in ponds / change in water quality		Apply lime @ 50 kg on every 15-30 days. Aerate the water as per need	Apply lime as per need @ 50 kg/ha
<b>2. Heat wave and cold wave</b>			
Aquaculture			
(i) Changes in pond environment (water quality)	Reduce application of organic manure and supplementary feeds	Reduce/stop application of feed	Harvest the bigger fishes, reduce/stop application of supplementary feed. Apply lime @ 50 kg/ha and potassium permanganate in perforated plastic ball 5-10g in each ball
(ii) Health and Disease management	Apply lime	Apply lime/salt as per need	Apply lime/salt as per need.

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