State: Jharkhand

Agriculture Contingency Plan for District: Koderma

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Northern Plain, Hot Subhumib (Dry) Eco-Region (9.2)		
	Agro-Climatic Zone (Planning Commission)	Eastern Plateau And Hills Region (VII)		
	Agro Climatic Zone (NARP)	South Bihar Alluvial Plain Zone (BI-3)		
	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
		23.29^0	86.09^0	210
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Research Station (ZRS), Dumka, Birsa Agricultural University, Ranchi		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Jainagar, Distt. Koderma-825324		
	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)	956		3rd week of June	3rd week of September
	NE Monsoon(Oct-Dec)	88			
	Winter (Jan- Feb)	24		-	-
	Summer (Mar-May)	67		-	-
	Annual	1135		-	-

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)	132	18.4	53.8	14.7	-	-	-	-	-	12.4

1. 4	Major Soils	Area ('000 ha)	Percent (%) of total
	Red lateritic solis (Ultic Paleustalfs)		
	Loam soils (Haplustalfs)		
	Fine Loam (Rhodustlafs) solis		
	Fine mixed Loam (Paleustalfs) soils		

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	18.4	121%
	Area sown more than once	3.9	
	Gross cropped area	22.3	

1.6	Irrigation	Area ('000 ha)

	Net irrigated area	1.9		
	Gross irrigated area			
	Rainfed area			
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		0.1	
	Tanks		0.2	
	Open wells		0.8	
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (Check Dam)		0.7	
	Total Irrigated Area			
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water
	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 (as per latest figures)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice			4.8					4.8
	Maize			3.5			0.4		3.9
	Pigeonpea			2.5					2.5
	Blackgram			1.2					1.2
	Greengram			0.1					0.1
	Wheat						3		3

	Chick pea						0.9		0.9
	Pea						1.04		1.04
	Lentil						1.01		1.01

	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Cauliflower	1.1		
	Cabbage	1.0		
	Tomato	0.09		
	Brinjal	0.4		
	Chilli	0.07		
	Ladies finger	0.6		
	Bottle gourd	0.35		
	Bitter gourd	0.6		
	Cucumber	0.7		
	Ridge gourd	0.3		
	Sponge gourd	0.4		
	French bean	0.		
	Medicinal and Aromatic crops			
	Plantation crops			
	Fodder crops			
	Total fodder crop area			
	Grazing land			
	Sericulture etc			

1.8	**Livestock**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)			144.7
	Improved cattle			
	Crossbred cattle			
	Non descriptive Buffaloes (local low yielding)			
	Descript Buffaloes			37
	Goat			90.9
	Sheep			0.7
	Others (Camel, Pig, Yak etc.)			6.2
	Duckery			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	

	Commercial		
	Backyard		95.9

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) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**

B. Culture

	Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**
i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)			
ii) **Fresh water** (Data Source: Fisheries Department)			

1.11 Production and Productivity of major crops

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops identified based on total acreage)										
	Rice	6.6	1380					6.6	1380	
	Maize	4.9	1400	0.347	1640			5.3	1520	

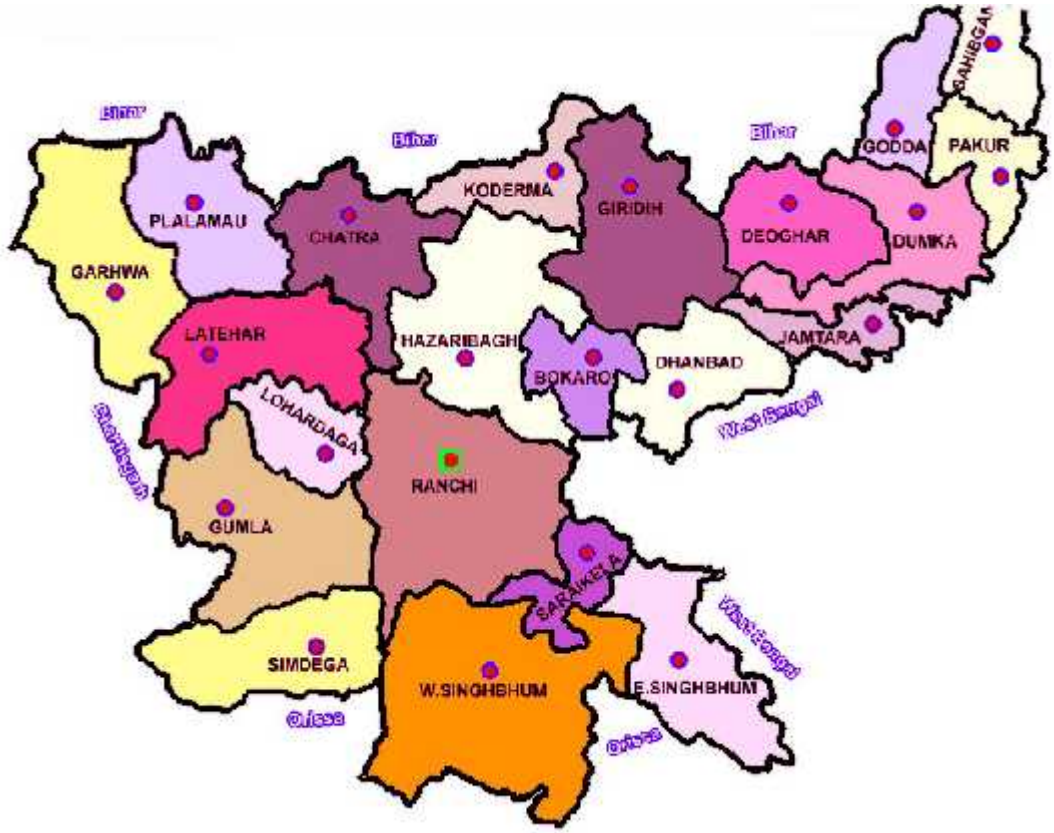
	Pigeonpea	1.5	600					1.5	600	
	Blackgram	0.4	350					0.4	350	
	Greengram							6.6	1380	
	Wheat			4.9	1650			4.9	1650	
	Chick pea			0.9	1000			0.9	1000	
	Pea			0.8	700			0.8	700	
	Lentil			0.4	350			0.4	350	
Major Horticultural crops (Crops identified based on total acreage)										
	Cauliflower	21.3	0.1					21.3	0.1	
	Cabbage	17.3	0.2					17.3	0.2	
	Tomato	18.8	0.21					18.8	0.21	
	Brinjal	15.8	0.2					15.8	0.2	
	Chilli	0.4	0.08					0.4	0.08	
	Ladies finger	5.7	0.1					5.7	0.1	
	Bottle gourd	67	0.1					67	0.1	
	Bitter gourd	79.3	0.1					79.3	0.1	
	Cucumber	16.4	0.1					16.4	0.1	
	Ridge gourd	35.1	0.1					35.1	0.1	
	Sponge gourd	4.4	0.1					4.4	0.1	
	French bean	14.3	0.9					14.3	0.9	

1.12	**Sowing window for 5 major field crops**	**Rice**	**Blackgram**	**Pigeon pea**	**Maize**	**Wheat**
	Kharif- Rainfed	4th week of June to 4th week of July	3rd week of June to 4th week of June	3rd week of June to 2nd week of July	3rd week of June to 4th week of July	
	Kharif-Irrigated	2nd week of June to 3rd week of June				
	Rabi-Rainfed					3rd week of October to 4th week of October
	Rabi-Irrigated					3rd week of November to 4th week of December

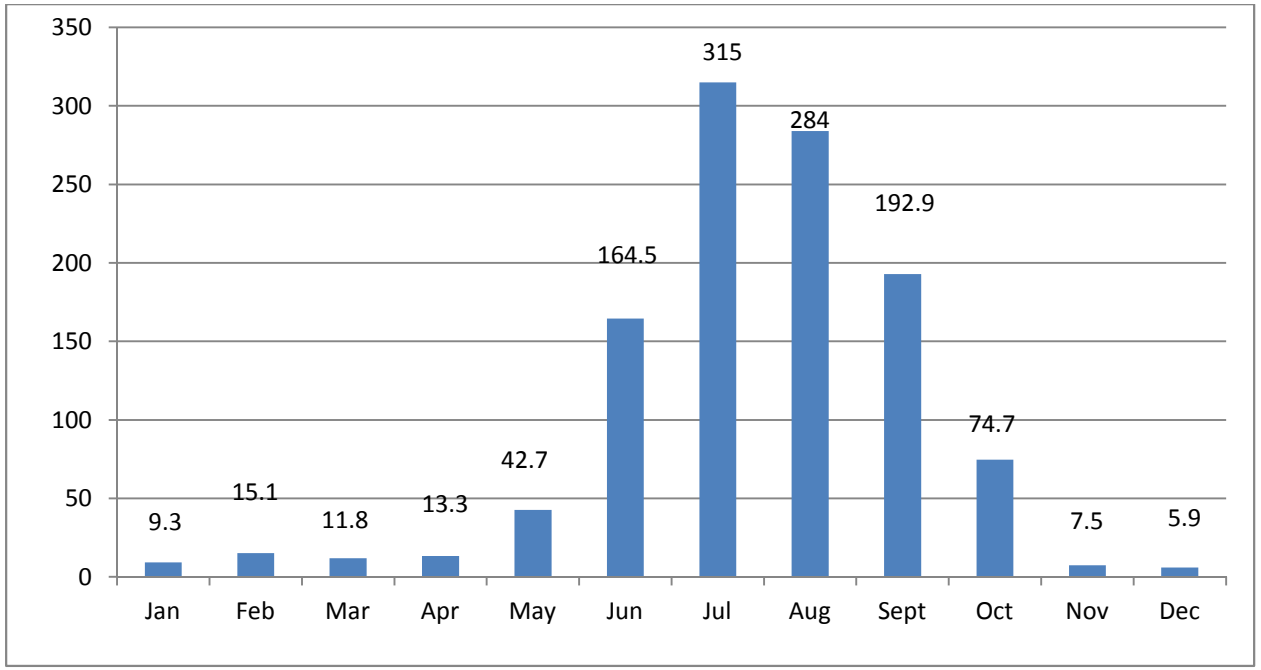
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought	✓		
	Flood			✓
	Cyclone			✓
	Hail storm			✓
	Heat wave		✓	
	Cold wave		✓	
	Frost		✓	
	Sea water intrusion			✓
	Pests and disease outbreak		✓	

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

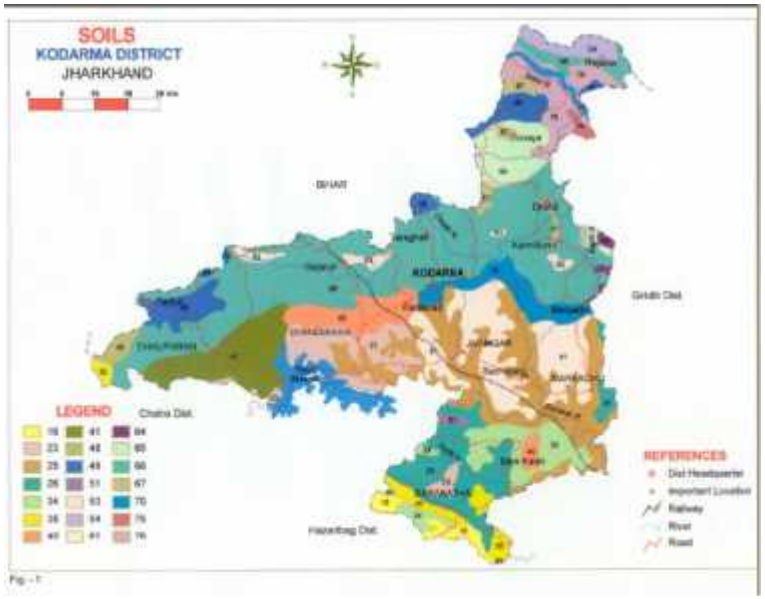

Bihar
Bihar
Bihar
GODDA
PAKUR
KODERMA
GIRIDH
PALAMAU
CHATRA
DEOGHAR
DUMKA
GARHWA
LATEHAR
HAZARIBAGH
BOKARO
DHANBAD
JAMTARA
LOHARDAGA
RANCHI
GUMLA
SIMDEGA
W.SINGHBHUM
E.SINGHBHUM
Orissa
Orissa

Annexure II



Mean annual rainfall (mm)

Annexure III



Legend Information:-

16-Very deep, imperfectly drained fine soils
23-Very deep, moderately well drained fine loamy soils
25-Very deep, imperfectly drained, fine soils
26- Deep, Well Drained, Fine Soils.
34- Very deep, well drained, fine loamy soils with severe erosion
35- shallow, well drained, gravelly loamy soils
40- Deep, moderately well drained, undulating, fine loamy soils
41- Very deep, well drained, coarse loam soils
48-Shallow excessively drained gravelly loam soils.
49- Deep, well drained, fine loamy soils
51-Very deep well drained fine loamy soils
53- Deep, moderately well drained, fine loamy soils
54- Shallow moderately well drained loamy soils
61-Deep moderately well drained fine soils
64- Shallow well drained loamy soils
65- Shallow well drained loamy soils
66- Deep well drained gravelly loamy soils
67-Very deep well drained coarse loamy soils
70-Very deep well drained fine loamy soils
75- Very deep moderately well drained fine soils
76- Deep moderately well drained fine loamy soils

Source: SAMETI, Jharkhand

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 1st week of July	UPLAND Sandy lateritic soils	Pigeonpea, Groundnut, Upland Rice, Maize Pigeonpea+ Groundnut Pigeonpea + Maize Vegetables- Brinjal, tomato, sponge gourd	Pigeonpea, Groundnut, Maize, upland Rice, Black gram Pigeonpea + Blackgram Pigeonpea + Upland Rice Vegetables- Brinjal,tomato, sponge gourd, cucurbits, cow pea, bean	Wider spacing (90x25 cm) for pigeonpea	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks 3rd week of July	Sandy lateritic soils	Pigeonpea, Groundnut, Upland Rice, Blackgram, Greengram Vegetables- Brinjal, Tomato, Sponge gourd	Pigeonpea, Groundnut, Upland Rice, Blackgram, Greengram Pigeonpea + Bhendi Maize + Beans Vegetables- Brinjal,Tomato, Sponge gourd, Cucurbits, Cow pea, Bean, Bhendi, chilli	Intercropping in standing crop like Maize, Pigeonpea	

Condition			**Suggested Contingency measures**		
Early season drought	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**

(delayed onset)					
Delay by 6 weeks 1st week of August	Sandy lateritic acidic soils	Sweet potato French bean, Bhendi, Tomato, Brinjal	Sweet potato Blackgram, Niger, Horsegram Finger millet French bean, Bhendi,Tomato, Brinjal, Chilli, Cowpea		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks 3rd week of August	Sandy lateritic soils	Niger, Horsegram	Continue Niger & Horse Gram, Toria		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 1st week of July	MID LAND Sandy loam soils	Rice	Rice (Var- 64449)		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation[e]**
Delay by 4 weeks 3rd week of July	Sandy loam soils	Rice	Rice (Var- IR- 64, Lalat, Navin, Hybrid- 6444)	Nursery raising by wet method Sowing may be sown behind the plough with 50-60 kg seed/ha (direct dry method of sowing)	Promotion of SRI technique through RKVY

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks 1st week of August	Sandy soils	Rice	Rice (Anjali, Bandana, Abhisekh, Birsa Vikas Dhan-9 &10)		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	Sandy loam soils	Transplanting of Rice	Rice	Transplanting with 5-6 seedling/hill if age of seedlings more than 30 days	

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks 1st week of July	LOW LAND Sandy clay loam soils	Rice	Rice (Var- MTU- 7029, BPT- 5204, Rajendra mansuri), Dapog method of seedling		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks 3rd week of July	Sandy clay loam soils	Rice	Rice (Lalat, Navin, Arize -6444)		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks 1st week of August	Sandy clay loam soils	Transplanting of Rice	Transplanting of lowland Varieties		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	Sandy clay loam soils	Rice	Rice	Reduce fertilizer dose by 20 % (80:40:20 Kg) NPK/ha Increase no. of seedling (5-6/hill) Transplanting at closer spacing of 15x10 cm	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
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, Cow pea, Maize + Pigeonpea Groundnut+ Pigeonpea Bhendi + Maize Vegetables	1. Inter culturing in standing crop with thinning & gap filling 2. Re sowing of Pigeonpea (UPAS- 120, Asha, ICPL-87109) Maize(Suwan- 1, HQPM-1 BVM-2, Kanchan) Groundnut (TG-22, Birsa GN-2) Re sowing of Brinjal, Tomato	Intercultivation	

			, Cucurbits		

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At vegetative stage	Sandy red lateritic soils	Upland Rice, Maize, Cow pea, Maize + Pigeonpea Groundnut+ Pigeonpea Bhendi + Maize Vegetables	1. Interculturing in standing crop with thinning & gap filling 2. Life saving irrigation to vegetable crops		Rain water harvesting structure should made through watershed programme/ MNREGA

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

At flowering/ fruiting stage	Sandy red lateritic soils	Upland Rice, Maize, Cow pea, Maize + Pigeonpea Groundnut+ Pigeonpea Bhendi + Maize Vegetables	1. Interculture in standing crop with thinning & gap filling 2.Life saving irrigation to vegetable crops		Rain water harvesting structure should made through watershed programme

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
	Sandy loam soils	Upland Rice, Maize, Cow pea, Maize + Pigeonpea Groundnut+ Pigeonpea Bhendi + Maize Vegetables	1. Life saving irrigation of vegetables 2. Upland Rice harvested for straw purpose 3. Harvesting of groundnut at physiological maturity stage	Toria, Early cultivation of potato	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**

Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Sandy loam soils MID LAND	Rice	Life saving irrigation	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[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At vegetative stage	Sandy loam soils	Rice	Life saving irrigation	Weeding, Foliar spray of Urea	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	Sandy loam soils	Rice	Life saving irrigation	Weeding	

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

	Sandy loam soils	Rice	Life saving irrigation	Sowing of Toria, Chick pea (P- 256,PL- 406) Lentil, Mustard , (Shicani, Pusa Agrani) Linseed (Shubhra, T- 397)	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	LOW LAND Sandy clay loam soils	Rice	Resowing of Rice with MTU- 7029, BPT- 5204, Rajendra, Hybrid- Arize- 6444		Ponds, check dam through water shed management & MNREGA scheme

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At vegetative stage	Sandy clay loam soils	Rice	Life saving irrigation	Weeding, foliar spray of Urea	Ponds, check dam through water shed management & MNREGA scheme

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

At flowering/ fruiting stage	Sandy clay loam soils	Rice	Life saving irrigation	Weeding, foliar spray of Urea	

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

2.1.2 Drought - Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall					

Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Non release of water in canals under delayed onset of monsoon in catchment					

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Insufficient groundwater recharge due to low rainfall					

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

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Pigeonpea	Ridge making	Provide drainage		
Blackgram	Ridge making	Provide drainage		
Rice	Bund making	Provide drainage	Provide drainage	
Horticulture				
Cucurbits	Staking	Provide drainage	Provide drainage	
Vegetables	Sowing on ridge			
Outbreak of pests and diseases due to unseasonal rains				
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^2		
French bean	Rust disease Control- Mancozeb 2.5 kg/ ha			

2.3 Floods

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

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**
Hailstorm	Not applicable			
Heat Wave				
Wheat	Life saving irrigation	Life saving irrigation	Life saving irrigation (Terminal heat)	
Cold wave				

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		
Frost				
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		Earth up to 15cm ht. Irrigation Intercultivation, Mulching with weeds		Harvest in dry weather
Horticultural crops (fruit crops)	Light frequent irrigation may be practiced wherever irrigation facilities are available, mulching, thatching and creating smoke screens and lighting of fire is also practiced where irrigation facilities are not available			
Cyclone	Not applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
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 deworming	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.

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event[a]	**During the event**	**After the event**	
Drought				
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	

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1. Drought			
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
2. Heat wave and cold wave			
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.

[a] based on forewarning wherever available