State: Assam

Agriculture Contingency Plan for District: Kokrajhar

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	Eastern Himalayas, Warm Perhumid Eco-Region (16.1), Assam And Bengal Plain, Hot Subhumid To Humid (Inclusion of Perhumid) Eco-Region.(15.3)			
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region (II)			
	Agro Climatic Zone (NARP)	Lower Brahmaputra Valley Zone (AS-4)			
	List all the districts or part thereof falling under the NARP Zone	Kamrup, Nalbari, Barpeta, Bongaigaon, Baksa, Chirang, Kokrajhar, Dhubri ans Goalpara			
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**	
		26.19" N to 26.54" N	89.46' E to 90.38' E	48.12mMSL	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station, Gossaigaon			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Kokrajhar, Telipara, Gossaiagaon – 783360, Dist: - Kokrajhar, BTC, Assam			
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	AWS at KVK, Kokrajhar (Gossaigaon) and ASS, IMD at RARS, Gossaigaon, Telipara, Kokrajhar BTC 783360			
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):	2767.0	93	1st week of June	4th week of September
	NE Monsoon(Oct-Dec):	115.6	9	-	-
	Winter (Jan- March)	0.0	0	-	-
	Summer (Apr-May)	580.5	37	-	-
	Average Annual	3463.1	139	-	-

1.3	**Land use-pattern of the district** (latest statistics)	Geographical area (‘000 ha)	Cultivable area (‘000 ha)	Forest area (‘000 ha)	Land under non-agricultural use (‘000 ha)	Permanent Pastures (‘000 ha)	Cultivable wasteland (‘000 ha)	Land under Misc. tree crops and groves (‘000 ha)	Barren and uncultivable land (‘000 ha)	Current Fallows (‘000 ha)	Other fallows (‘000 ha)	Land put or non agricultural use
	Area (‘000 ha)	398.635	92.259	17.4124	25.959	18.307	2.239	5.000	55.797	2.948	3.037	18.965

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area (‘000 ha)**	**Percent (%) of total**
	Clayey soil	93.658	23.49
	Sandy loam soil	162.962	40.88
	Sandy soil	20.758	5.20
	Alluvial soils	37.824	9.40

1.5	**Agricultural land use**	**Area (‘000 ha)**	**Cropping intensity %**
	Net sown area	89.784	169.0%
	Area sown more than once	22.446	
	Gross cropped area	177.394	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	21.846		
	Gross irrigated area	44.892		
	Rainfed area	**67.938**		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**% of total irrigated area**
	Canals**	11	4.695 ha	21.49%
	Tanks **	-	0.141	0.64%
	Open wells**	-	9.551	43.71%
	Bore wells**	-	8.552	39.14%
	Lift irrigation schemes**	3 nos.	0.113	0.51%
	Micro-irrigation**		-	
	Other sources (please specify)**		0.142	0.65%
	Total Irrigated Area		21.846 ha	
	Pump sets (Diesel and Electrical)	8000 Nos.		
	No. of Tractors	200 Nos.		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)**	**No. of blocks/ Tehsils**	**(%) area**	**Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)**
	Over exploited	-	-	-
	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%**				

** information not available

1.7 Area under major field crops & horticulture (2007-08)

1.7a	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
	Winter Rice	-	54.496	54.496					54.496
	Autumn Rice	-	-					28.744	28.744
	Rape and Mustard	-	-				18.051		18.051
	Summer Rice	-	-					8.110	8.110
	Jute	-	-	4.953					4.953
	Wheat	-	-				2.123		2.123
	Mesta	-	-					1.211	1.211
	Maize	-	-					1.200	1.200
	Niger	-	-				0.995		0.995
	Black gram	-	-	0.949					0.949
	Lentil	-					0.826		0.826
	Sesamum	-	0.710	0.710					0.710
	Linseed	-					0.419		0.419
	Pea						0.340		0.340

1.7b	Horticulture crops - Fruits	Total	Irrigated	Rainfed ('000 ha)
	Jack Fruit	1.513	-	1.513
	Banana	1.271	-	1.271
	Papaya	0.383	-	0.383
	Pineapple	0.311	-	0.311
	Assam Lemon	0.188	-	0.188
	Orange	0.185	-	0.185

1.7c	**Horticulture crops - Vegetables**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**		**Rainfed area ('000 ha)**
	Rabi Vegetables (Cabbage, cauliflower, brinjal, potato, Tomato, chili etc.)	4.083			
	Kharif Vegetables (Bean , pumpkin. Ridge gourd, Okra, Ash gourd)	2.971	-		
Others	**Spices& condiments**				
	Chilli	0.718			
	Turmeric	0.403			
	Ginger	0.615			
1.7d	**Medicinal and Aromatic crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**		**Rainfed area ('000 ha)**
	Aonla	0.033	**-**		0.033
	Silikha	0.028	**-**		0.028
Others					
1.7e	**Plantation crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**		**Rainfed area ('000 ha)**
	Coconut	0.435	**-**		
	Arecanut	0.091	-		
	Black Pepper	0.044			
Others (Specify)	Eg., industrial pulpwood crops etc.				
1.7f	**Fodder crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**	**Re marks**
					Information not available
Others (Specify)					
1.7g	**Grazing land**				**Information not available**
1.7h	**Sericulture etc**	0.248 ha			
1.7i	**Others (specify)**				

1.8	**Livestock (in number)**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			353.253
	Crossbred cattle			0.536
	Non descriptive Buffaloes (local low yielding)			14.983
	Graded Buffaloes			-
	Goat			159.979
	Sheep			13.686
	Others (Camel, Pig, Yak etc.)			
	(i) Pig			98.970
	(ii) Mithun			-
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial		6.116
	Backyard		268.173

1.10 Fisheries (Data source: Chief Planning Officer of district)

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)	
	Not applicable					

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**	**No of ponds& tanks**
	1850		**1550**	**1850**

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)			

	Others			

1.11 Production and Productivity of major crops (Average of last 5 years: **2004, 05, 06, 07, 08**)

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder ('000 tons)**
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Winter Rice	69.621	12.97							
	Autumn Rice					24.649	8.71			
	Rape and Mustard			10.229	5.67					
	Summer Rice					15.955	19.67			
	Jute	57.158	20.77							
	Wheat			2.481	11.68					
	Mesta									
	Maize					0.598	5.20			
	Niger			0.496	5.0					
	Black gram	0.545	5.75							
	Lentil			0.403	4.88					
	Sesamum	0.421	5.92							
	Linseed	0.207	4.93							
12	Pea			0.180	5.31					
Major Horticultural crops (Crops to be identified based on total acreage)										
	Banana							20.165	158.66	
	Pineapple							4.652	149.60	
	Orange							0.018	92.49	
	Papaya							5.753	150.22	
	Assam Lemon							1.380	77.40	
	Jack fruit							10.820	96.93	
	Chilli			0.514	7.16					

	Turmeric							0.315	7.81	
	Zinger							4.569	74.30	
	Corianders			0.343	9.20					
Others										

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Paddy**	**Rapeseed/ mustard Potato**	**Jute**	**Wheat**	**Mesta**
	Kharif- Rainfed	June -July		Feb- March		Feb- March
	Kharif-Irrigated					
	Rabi- Rainfed		Oct.- Nov.		Nov-Decemb**er**	
	Rabi-Irrigated	Nov. Dec.	Oct.- Nov.			

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought		✓	
	Flood	✓		
	Cyclone		✓	
	Hail storm	✓		
	Heat wave			✓
	Cold wave			✓
	Frost			✓
	Sea water intrusion			✓
	Pests and disease outbreak (specify) Stem borer, fruit and shoot borer Blast, wilt, blight	✓		
	Others (specify)			

6 out of 10 years = Regular

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

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation – The monsoon is normally not delays, however the contingency plan is prepared

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** **June 3rd week**	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/Rabi Vegatables	Rice (DS)/ Jute – Toria/ wheat/Maize /Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice	Development of water harvesting structure under MNREGS • National food security mission (NFSM) as source of seed • Technology showcasing as seed source
		Summer vegetables/ blackgram/ Sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ blackgram/ sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth.	
	Rainfed medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ wheat/ potato/ rabi vegetables **Rice** -Growing of medium duration Sali rice varieties such as Satyaranjan, Vasundara, Baismuthi etc	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
		Rice (Kharif) monocropping	**Rice** (Kharif) monocropping- Growing of HYV like Ranjit, Bahadur, Mashuri, Keteki Joha, Swarna Mahsuri etc	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	

	Flood prone	Summer vegetables - Toria/ Lentil/ Potato/ Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	• Late Sali rice-- If transplanting is possible within july, select suitable varieties like Ranjit, Bahadur, Mahsuri etc • If flood water recedes early and transplanting can be done by mid August select varieties like Kushal, Prasad Bhog etc	• Select suitable varieties such as Luit & Kopilee (transplanting upto the last part of August) where flood water is expected to recede by the last part of August • In chronically flood affected areas select submergence tolerant rice varieties such as Jolosri, Jolkuwari & Plaban (12 to 15 days submergence tolerance) which can be transplanted in July- August • Spraying of Chlorophyriphos/ monocropophos @ 2ml/l against caseworm and leaf folder infestation in rice. • Use of trichocard against stem borer pest	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks **July 1st week**	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/Rabi Vegatables	Rice (DS)/ Jute – Toria/ Wheat/Maize /Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Supplementary irrigation in the nursery bed of rabi vegetables	Development of water harvesting structure under MNREGS for life saving irrigation • National food security mission (NFSM) as source of seed • Technology showcasing as seed source
		Summer vegetables/ Blackgram/ Sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Supplementary irrigation in the nursery bed of rabi vegetables	

	Rainfed medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables **Rice-**Growing of medium duration Sali rice varieties such as Satyaranjan, Vasundara, Baismuthi etc	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10m x1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
		Rice (Kharif) monocropping	• **Rice (Kharif)** monocropping- Growing of HYV like Ranjit, Bahadur, Mashuri, Keteki Joha, Swarna Mahsuri etc	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
	Flood prone	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	**Late Sali Rice**-- If transplanting is possible within july, select suitable varieties like Ranjit, Bahadur, Mahsuri etc • If flood water recedes early and transplanting can be done by mid August select varieties like Kushal, Prasad Bhog etc	• Select suitable varieties such as Luit & Kopilee (transplanting upto the last part of August) where flood water is expected to recede by the last part of August • In chronically flood affected areas select submergence tolerant rice varieties such as Jolosri, Jolkuwari & Plaban (12 to 15 days submergence tolerance) which can be transplanted in July- August • Spraying of Chlorophyriphos/ monocrotophos @ 2ml/l against caseworm and leaf folder infestation in rice. • Use of trichocard against stem borer pest	

Condition			**Suggested Contingency measures**		
Early season	**Major**	**Normal Crop/cropping**	**Change in crop/cropping**	**Agronomic measures[d]**	**Remarks on**

drought(delayed onset)	Farming situation[a]	system[b]	system[c]		Implementation[e]
Delay by **6 weeks** **July 3rd week**	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/ Rabi Vegatables	Rice (DS)/ Jute – Toria/ Wheat/ Maize / Lentil/ Potato/ Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Supplementary irrigation in the nursery bed of rabi vegetables	Development of water harvesting structure under MNREGS for life saving irrigation • National food security mission (NFSM) as source of seed
		Summer vegetables/ BLackgram/ Sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ Blackgram/ Sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Supplementary irrigation in the nursery bed of rabi vegetables	
	Rainfed medium/ medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi Vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables **Rice**-Growing of medium duration Sali rice varieties such as Satyaranjan, Vasundara, Baismuthi etc	• Prepare dry, well bunded • flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
		Rice (Kharif) monocropping	• **Rice (Kharif)** monocropping- Growing of HYV like Ranjit, Bahadur, Mashuri, Keteki Joha, Swarna Mahsuri etc	• Growing of HYV like Ranjit, Bahadur, Mashuri, Keteki Joha, Swarna Mahsuri etc • Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
	Flood prone	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	**Late Sali rice-** If transplanting is possible within july, select suitable	• If flood water recedes early and transplanting can be done by mid August select varieties like Kushal, Prasad Bhog etc	

			varieties like Ranjit, Bahadur, Mahsuri etc	• Select suitable varieties such as Luit & Kopilee (transplanting upto the last part of August) where flood water is expected to recede by the last part of August • In chronically flood affected areas select submergence tolerant rice varieties such as Jolosri, Jolkuwari & Plaban (12 to 15 days submergence tolerance) which can be transplanted in July- August • Spraying of Chlorophyriphos/ monocropophos @ 2ml/l against caseworm and leaf folder infestation in rice. • Use of trichocard against stem borer pest	

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 (Specify month) **August 1st week**	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/Rabi Vegatables	Rice (DS)/ Jute – Toria/ wheat/Maize /Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Supplementary irrigation in the nursery bed of rabi vegetables	Development of water harvesting structure under MNREGS for life saving irrigation • National food security mission (NFSM) as source of seed
		Summer vegetables/ Blackgram/ sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ blackgram/ sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Supplementary irrigation in the nursery bed of rabi vegetables	
	Rainfed medium/ medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables **Rice-** Growing of medium duration Sali rice varieties such as Vasundara, Luit & Kopilee etc(transplanting upto last part of August) • **Potato-** Kufri Sinduri and Kufri Megha	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice • Rabi vegetables like tomato, brinjal, chilli can be grown with suitable varieties • Supplementary irrigation in the nursery bed of rabi vegetables	

		Rice (Kharif) monocropping	**Rice (Kharif) monocropping-** Growing of HYV like Ranjit, Bahadur, Mashuri, Keteki Joha, Swarna Mahsuri etc	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice	
	Flood prone	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	**Late Sali rice-** If transplanting is possible within july, select suitable varieties like Ranjit, Bahadur, Mahsuri etc. • If flood water recedes early and transplanting can be done by mid August select varieties like Kushal, Prasad Bhog etc	• Select suitable varieties such as Luit & Kopilee (transplanting upto the last part of August) where flood water is expected to recede by the last part of August • In chronically flood affected areas select submergence tolerant rice varieties such as Jolosri, Jolkuwari & Plaban (12 to 15 days submergence tolerance) which can be transplanted in July- August • Spraying of Chlorophyriphos/ monocrotophos @ 2ml/l against caseworm and leaf folder infestation in rice. • Use of trichocard against stem borer pest • Where bacterial leaf blight appears in rice avoid top dressing of N fertilizer and apply K fertilizer @10kg/ha as top dressing or 5kg/ha foliar spray	

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.	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/ Rabi Vegatables	Rice (DS)/ Jute – Toria/ wheat/ Maize / Lentil/ Potato/ Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Application of sufficient quantity of FYM or compost in	Development of water harvesting structure under MNREGS for life saving irrigation • National food security mission (NFSM) as source of

				the main field • Top dressing of additional quantity of K fertilizer in rice • Supplementary irrigation in the nursery bed of rabi vegetables	seed • Development of water harvesting structure under MNREGS • Arrangements of pumpsets under NFSM & RKVY
		Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ Blackgram/ Sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Application of sufficient quantity of FYM or compost in the main field • Supplementary irrigation in the nursery bed of rabi vegetables • 2-3 sprays of Dimethoate @ 2ml/l starting from 10 days after germination at 15 days interval against YMV in blackgram/greengram • Spraying of chloropyriphos @1ml/l or application of 5% dust @20-25hg/ha against termite attack	
	Rainfed medium/ medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry	

		Rice (Kharif) monocropping	Rice (Kharif) monocropping	it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice • Application of FYM or compost in the nursery bed and main field • Green manuring practice • Resowing of rice seed if germination is severely affected • Spraying of Mancozeb @2.5g/l or carbendazim @1gm/l against brown spot diesiease in rice	
	Flood prone	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	Late Sali rice	• Prepare dry, well bunded, flat seedbed with adequate FYM (30kg), 80 gm urea, 80 gm SSP & 80 gm Mop / bed of 10mx1.25m • The gap of 30cm between 2 beds may be converted into channel water to keep the raised bed moist in the event of drought • Seed treatment with 4% MOP (600ml/kg of seed) for 24hrs, dry it in shade for 24hrs and sowing • Supplementary irrigation in the nursery bed of rice • Where germination is severely affected, resowing of rice may be recommended	

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	Rainfed upland	Rice (DS)/ Jute – Toria/ Lentil/ Potato/Rabi Vegatables	Rice (DS)/ Jute – Toria/ wheat/Maize/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Application of sufficient quantity of FYM or compost in the main field • Top dressing of additional quantity of K fertilizer in rice	• Development of water harvesting structure under MNREGS for life saving irrigation Arrangements of pumpsets under NFSM & RKVY • Development of water harvesting structure under MNREGS
		Summer vegetables/ Blackgram/ Sesame(Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ Blackgram/ Sesame (Kharif) / Finger millets - Toria/ Lentil Potato/ Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Application of sufficient quantity of FYM or compost in the main field • Thinning to maintain optimum plant population • 2-3 sprays of Dimethoate @ 2ml/l starting from 10 days after germination at 15 days interval against YMV in blackgram/ greengram • Spraying of chloropyriphos @1ml/l or application of 5% dust @20-25hg/ha against termite attack	
	Rainfed medium/medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	• Top dressing of additional quantities of MOP @ 37.5kg/bigha & incorporation is recommended in rice • Spraying of 2% KCl solution on leaves of rice if & when drought	

		Rice (Kharif) monocropping	Rice (Kharif) monocropping	appears • Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of critical crop growth • Life saving supplementary irrigation at the critical stages of crop growth • Spraying of Mancozeb @2.5g/l or cardendezim @1gm/l against brown spot diesiease in rice • Sparying of carbendezim @ 1gm/l followed by Mancozeb @ 2.5gm/l against sheath rot disease of rice	
	Flood prone	Summer vegetables - Toria/ Lentil/ Wheat/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ wheat/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	
		Sali rice (Kharif) as monocropping	Late Sali rice	• Application of sufficient quantity of FYM or compost in the nursery bed and main field • Life saving supplementary irrigation at critical stages of crop growth • Top dressing of additional quantity of MOP @ 37.5kg/bigha & incorporation is recommended in rice • Spraying of 2% KCl solution on leaves of rice if & when drought appears • Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of critical crop growth	

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 measrues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	**Rainfed upland**	Rice (DS) – Toria/ Lentil/ Potato/ Rabi Vegatables	Rice (DS)/ Jute – Toria/ wheat/Maize /Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of growth of direct seeded rice • Application of sufficient quantity of FYM or compost in the main field • Top dressing of additional quantity of K fertilizer in rice	• Development of water harvesting structure under MNREGS for life saving irrigation • Arrangements of pumpsets under NFSM & RKVY
		Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	Summer vegetables/ Blackgram/ Sesame (Kharif) / Finger millets - Toria/ Lentil Potato/Rabi Vegatables	• Life saving supplementary irrigation • Weeding at critical stages of crop growth. • Application of sufficient quantity of FYM or compost in the main field • Thinning to maintain optimum plant population • 2-3 sprays of Dimethoate @ 2ml/l starting from 10 days after germination at 15 days interval against YMV in blackgram/ greengram • Spraying of chloropyriphos @1ml/l or application of 5% dust @20-25hg/ha against termite attack	
	Rainfed medium/medium lowland	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	Rice (Kharif) – Toria/ Wheat/ Potato/ Rabi vegetables	• Top dressing of additional quantities of MOP @ 37.5kg/bigha & incorporation is recommended in rice • Spraying of 2% KCl solution on leaves of rice if & when drought appears • Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of critical crop growth • Life saving supplementary irrigation at the critical stages of crop growth	• Development of water harvesting structure under MNREGS for life saving irrigation • Arrangements of pumpsets under NFSM & RKVY
		Rice (Kharif) monocropping	Rice (Kharif) monocropping		

	Flood prone	Summer vegetables - Toria/ Lentil/ Wheat/ Potato/Rabi Vegatables	Summer vegetables - Toria/ Lentil/ Wheat/ Potato/Rabi Vegatables	• Life saving supplementary irrigation at critical stages of crop growth	• Development of water harvesting structure under MNREGS
		Sali rice (Kharif) as monocropping	Late Sali rice	• Application of sufficient quantity of FYM or compost in the nursery bed and main field • Life saving supplementary irrigation at critical stages of crop growth • Top dressing of additional quantity of MOP @ 37.5kg/bigha & incorporation is recommended in rice • Spraying of 2% KCl solution on leaves of rice if & when drought appears •Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of critical crop growth	• Development of water harvesting structure under MNREGS

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]**
	Rainfed upland	Rice (DS) – Toria/ Lentil/ Potato/Rabi Vegatables	•Life saving supplementary irrigation •Pre sowing irrigation for nursery raising and life saving irrigation after transplanting	•Early rabi cropping with cabbage (Golden Acre, Pride of India) & Cauliflower (Pusa Deepali, Early Kunwari) •Growing of tomato, brinjal & leafy vegetables like spinach, raddish etc. •Growing of rabi filed crops like toria, lentil, wheat in time with pre sowing irrigation if required	• Arrangement of seed under National Horticultural Mission •Arrangements of pumpsets under NFSM & RKVY • Arrangement of seed under National Horticultural Mission

		Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/ Lentil/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Harvesting of kharif crops at physiological maturity stage • Presowing irrigation for nursery raising & life saving irrigation after transplanting • Select quick growing sesame varieties such as Madhavi, Gauri & Vinayak • Spraying of Mancozeb @2.5g/l or cardendazim @1gm/l against leaf blight disease in oilseed & pulse crop	• Growing of cole crops like cabbage, cauliflower, tomato, brinjal, chilli etc • Growing of rabi field crops like toria, lentil, wheat in time with presowing irrigation.	
	Rainfed medium/medium lowland	Rice (Kharif) – Toria/ Lentil/ Wheat/ Potato/ Rabi vegetables	• Life saving supplementary irrigation • Harvesting of kharif crops at physiological maturity stage • Presowing irrigation for nursery raising & life saving irrigation after transplanting	• Growing of cole crops like cabbage, cauliflower, tomato, brinjal, chilli etc • Growing of rabi field crops like toria, lentil, wheat in time with presowing irrigation.	
		Rice (Kharif) monocropping	• Life saving supplementary irrigation • Harvesting of kharif crops at physiological maturity stage		
	Flood prone	Summer vegetables - Toria/ Lentil/ wheat/ Potato/Rabi Vegatables	• Life saving supplementary irrigation • Presowing irrigation for nursery raising & life saving irrigation after transplanting	• Growing of cole crops like cabbage, cauliflower, tomato, brinjal, chilli etc • Growing of rabi field crops like toria, lentil, wheat in time with presowing irrigation if required.	
		Sali rice (Kharif) as monocropping			

2.1.2 Drought - Irrigated situation-- Not applicable

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]**
Delayed release of water in canals due to low rainfall					
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed 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			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage[k]**	**Flowering stage[l]**	**Crop maturity stage[m]**	**Post harvest[n]**
Paddy	i) Provide drainage Gap filling in damaged patches if seedlings are available ii) Top dressing of urea after the recess of rains	i) Provide drainage Provide necessary control measures against outbreak of caseworm, gundi bug and stem borer.	Drain out Harvesting at physiological maturity stage	Shift to safer place Dry in shade in a well ventilated space and turn frequently.
Black gram	i) Provide drainage Re-sowing of short duration late variety.	Provide drainage	Drain out Harvesting at physiological maturity stage and Harvest of rajmah for vegetable purpose Use as fodder	Shift to safe place. Dry in shade and turn frequently
Potato	Provide drainage Take protective measures	Provide drainage Take protective measures against	Drain out excess water Harvest at physiological maturity stage	Dry in shade. Safe storage against storage pests and

	against late blight of potato.	late blight of potato.		diseases
Toria	Provide drainage Re-sowing of short duration late variety	Provide drainage Take protective measures against aphids.	Drain out excess water Harvest at physiological maturity stage Use as leafy vegetables	Dry in shade. Safe storage against storage pests and diseases
Pea	Provide drainage Resowing of short duration late variety.	Provide drainage	Drain out excess water Harvest for vegetable purpose Use as animal fodder	Dry in shade and turn frequently. Safe storage against storage pest and disease
Horticulture				
Summer vegetables	Provide drainage Re-sowing of short duration late variety Need based protective measures against pests and diseases.	Provide drainage	Drain out Harvesting at physiological maturity stage Use as fodder	Segregation of infested vegetables & destruction Use as fodder
Winter vegetables	Provide drainage Re-sowing of short duration late variety Need based protective measures against pests and diseases.	Provide drainage Need based protective measures against pests and diseases.	Drain out Harvesting at physiological maturity stage Use as animal feed	Segregation of infested vegetables & destruction Use as animal feed
Chilli	Provide drainage Re-sowing of short duration late variety Need based protective measures against pests and diseases.	Provide drainage Need based protective measures against pests and diseases.	Drain out Harvesting at physiological maturity stage Harvest for processing	Segregation of infested vegetables & destruction Dry in well ventilated space.
Heavy rainfall with high speed winds in a short span[2]	**Not Applicable**			
Outbreak of pests and diseases due to unseasonal rains				
Paddy	i) Application of chloropyriphos or	Application of chlorpyriphos or Monocrotophos against case		Safe storage against storage pest and diseases

	Monocrotophos against hispa, stem borer and case worm	worm		
Rajmah	Application of dimethoate or malathion against aphids, jassids & beetles.	Application of dimethoate or malathion against aphids, jassids & beetles.		Safe storage against storage pest and diseases
Potato	Application of metaxyl alternating with mancozeb for late blight of potato Application of MOC to reduce infestation of red & white ants.	Application of metaxyl alternating with mancozeb for late blight of potato		Safe storage against storage pest and diseases
Toria	Application of chlorpyriphos against insect-pests	Application of chloropyriphos against insect-pests		Safe storage against storage pest and diseases
Pea	Application of dichlorovos 100 EC or malathion 50 EC against pod borer, leaf miner and aphids. Spray wettable sulphur or tridemorph or dinocap for powder mildew.	Application of dichlorovos 100 EC or malathion 50 EC against pod borer, leaf miner and aphids. Spray wettable sulphur or tridemorph or dinocap for powder mildew.		Safe storage against storage pest and diseases
Horticulture				
Summer vegetables	Spray malathion 50 EC against fruit fly, malathion 5% dust for cut worm, and 1% Bordeaux mixture against downy mildew and Bavistin 0.1% against powdery mildew.	i) Spray malathion 50 EC against fruit fly, malathion 5% dust for cut worm, and 1% Bordeaux mixture against downy mildew and Bavistin 0.1% against powdery mildew.	Use as fodder	Segregation of infested vegetables & destruction Use as fodder
Winter vegetables	i) Spray malathion 50 EC against caterpillar and fruit and shoot borer, malathion 5% dust for cut worm. ii) Application of metaxyl alternating with mancozeb against late blight o tomato	i) Spray malathion 50 EC against caterpillar, malathion 5% dust for cut worm, ii) Application of metaxyl alternating with mancozeb against late blight o tomato		Segregation of infested vegetables & destruction Use as animal feed
Chilli		Spray captan 50 WP against fruit or anthracnose disease		Segregation of infested vegetables & destruction

2.3 Floods:

	Suggested contingency measure[o]			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Paddy	Drainage of the Nursery bed, If not possible go for re -sowing	i) Drainage of excess water. Apply 50% N + 50% K_2O as top dressing during the tillering stage. ii) In partially damaged field. Gap filling may be done by redistributing the tillers. iii) Wet seeding of sprouted seeds (@75-80 kg/ha) of Kmj 1-19-1, Kmj 1-17-2, Dhirendra, Mitrasali, Andrewsali and Monoharsali. iv) If transplanting is not possible before mid September, then early varieties such as Sonamukhi, Luit, Culture 1, Chandmoni may be grown as direct seeded rice. v) Closure planting to check late tillers in case of late planting. vi) Management of pests & diseases	i) Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. ii) Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds iii) Growing of vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif.	i) Drainage of excess water. If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops ii) Supply of seeds and other agro-inputs of *rabi* crops at subsidized rate, provision of bank loan etc. Wet seeding of short duration iii) Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds iv) Growing of boro rice after receding of flood water
Black gram	NA			
Potato	NA			
Toria	NA			
Pea	NA			
Horticulture	**NA**			
Continuous submergence				

for more than 2 days[2]				
Paddy	Drainage of the Nursery bed, If not possible go for re -sowing	Drainage of excess water. In partially damaged field. gap filling may be done by redistributing the tillers. Management of pests & diseases	Drainage of excess water. Growing of vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif.	Drainage of excess water. If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops Supply of seeds and other agro-inputs of *rabi* crops at subsidized rate, provision of bank loan etc. Wet seeding of short duration Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds Growing of boro rice after receding flood water
Black gram	Re sowing	Provide drainage Re sowing of late varieties Use as fodder	Harvest for vegetable purpose Use as fodder	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Potato	Re sowing	Provide drainage Re sowing of late varieties	Provide drainage	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Toria	Re sowing	Provide drainage Re sowing of late varieties	Provide drainage Use as fodder	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Pea	Re sowing	Provide drainage Re sowing of late varieties	Provide drainage Use as fodder	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Horticulture				

Summer vegetables	Re sowing	Provide drainage Re sowing of late varieties	Provide drainage Use as animal feed	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Winter Vegetable	NA			
Chilli	NA			
Sea water intrusion[3]	NA			

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

Extreme event type	**Suggested contingency measure**[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]	NA			
Cold wave[q]	NA			
Frost	NA			
Hailstorm	Resowing /replanting	1. Uproot damaged plant, protect partially damaged plant by net 2. Resowing/ replanting if time permits.	Uproot damaged plant, protect partially damaged plant by net	Harvest at biological maturity
Cyclone	Resowing /replanting	1. Uproot damaged plant, protect partially damaged plant by net 2. Resowing/ replanting if time permits.	Uproot damaged plant, protect partially damaged plant by net	Harvest at biological maturity

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	i) Insurance of Livestock (cattle/buffalo/goat/sheep etc) ii) Encourage perennial fodder on bunds and waste land on community basis & near rivers iii) Establishing fodder banks, encouraging fodder crops in irrigated area. iv) On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted. v) Use excess fodder as silage/hay. vi) Training & awareness camp among extension personnel for needful at time of exigencies vii) Database and contact information of private fodder grower in the district and outside.	i) Utilizing fodder from perennial trees and Fodder bank reserves ii) Utilizing fodder stored in silos iii) Transporting excess fodder from adjoining districts iv) Use of feed mixtures v) Utilizing the existing crops which fail due to drought vi) Use of unconventional livestock feed such as banana plant, crop residues, water hyacinth and other like tree pods and seeds etc. iv) Improving poor quality roughages by ammonia treatment, urea treatment, urea molasses, mineral block etc and feeding them.	i) Availing Insurance ii) Culling unproductive livestock
Drinking water	i) Preserving water in the tank for drinking purpose with proper sanitation. ii) Excavation of ponds & Bore wells. iii) Training & awareness camp among extension personnel	i) Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose ii) Animals not to be exposed to sun and they should be commonly stall fed.	
Health and disease management	i) Preserving water in the tank for drinking purpose with proper sanitation. ii) Excavation of ponds & Bore wells. iii) Training & awareness camp among extension personnel	i) Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose i) Animals not to be exposed to sun and they should be commonly stall fed.	
Floods			
Feed and fodder availability	i) Insurance of Livestock (cattle/buffalo/goat/sheep etc ii) Encourage perennial fodder on bunds and waste land on community basis & near rivers iii) Establishing fodder banks, encouraging fodder crops in irrigated area.	i) Priorities wise feeding like suckling animals followed by nursing mothers, producing and working animals, sick and old animals, adult stovers that got soaked during floods need not be thrown away out right. ii) They can be fed to animals as long as rotting or fungal	Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals.

	iv) On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted. v) Establish fodder bank with dry straw &dry feed at least for 2 weeks. vi) Training & awareness camp among extension personnel for needful at time of exigencies.	growth has not set in. Partial drying chuffing and sprinkling available concentrate mixture can improve intake and utility.	
Drinking water	i) Preserve safe drinking water in community tanks which is not prone to seepage of rain or flood water, Arrange chlorine tablets for sanitization of water and bleaching powder for disinfection of habitats & shelter places , Training & awareness camp among extension personnel	Drinking water is made available to the animals in any kind of clean container available with the farmer.	Provision of clean drinking water.
Health and disease management	i) Prior construction of shelter places in elevated points, ii) Vaccination of livestock iii) Keep the emergency service kit (first Aid Requisites) along with surgical kit if available. Consult the veterinary doctors in emergency. iv) The necessary animal treatment facilities (contingent items) should be made available in the village level.	i) There should be one veterinarian with 3 to 4 village to work with the help of local volunteers. The team should be well equipped with contingent items like bandages, tourniquet ropes, drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs etc. ii) Keep the animals loose in paddock (sheltered or unsheltered) iii) Releasing animals from the unnatural and harmful position or situation, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, Performing euthanasia on hopelessly injured and suffering animals with the consent of their owners.	Prompt and appropriate attention to injuries by providing necessary medicines to the livestock owners. Vaccination campaign against common endemic diseases of the areas (like H.S. B.Q, Anthrax etc.) must be taken up urgently. Necessary steps should be taken for the control of non-specific digestive and respiratory infections in consultation of local veterinary personals. Improving shed hygiene especially

			in the farmers household through cleaning and disinfection
Cyclone	NA		
Heat wave and cold wave	NA		

[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	i) Insurance of poultry birds ii) Ensure procurement of feed ingredients sufficiently ahead of incidence iii) Establish feed serve bank	Utilizing from feed serve banks	i) Availing insurance ii) Strengthening feed Reserve Banks	
Drinking water	i) Check water source for ensuring sufficient potable water during draught	Attempt will be made to provide sanitized drinking water	Availability of water will be ensured by digging of bore well	
Health and disease management	i) Procurement of vaccines and medicines and anti-stress agent. ii) Feeding antibiotics Procurement of litter materials	i) Campaign and Mass Vaccination ii) Continue feeding of anti-stress agent	Culling affected birds	

Floods				
Shortage of feed ingredients	i) Ensure procurement of feed ingredients / compound feed sufficiently ahead as feed supply to the farm because road connectivity may be hampered due to submergence/land slide	Supply the compound feed to the poultry farm under submerged area	Supply will continue till the situation is improved	
Drinking water	Protect the water sources from submergence	Attempt will be made to provide sanitized drinking water	Water sources will sanitized with bleaching powder or any water sanitizer	
Health and disease management	i) Procurement of vaccines and medicines. ii) Feeding antibiotics Procurement of litter materials	i) Continue feeding antibiotics Prevent entrance of flood water to the shed ii) Replace wet litter iii) Proper disposal of dead birds if any	i) Disinfection of the farm premises. ii) Feeding antibiotics And defoaming. iii) Replace wet litter iv) Disinfection of sheds. Proper disposal of dead birds if any	
Cyclone	NA			
Heat wave and cold wave	NA			

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Drought			
A. Capture			

Marine	NA		
Inland			
(i) Shallow water depth due to insufficient rains/inflow	i) Supplementary water harvest structures like pond and tanks have to be developed. ii) Renovation and maintenance of existing water harvest structures iii) Control of water seepage measures should be taken well in advance iv) Growing of horticultural crops on bund to provide shade and to reduce evaporation loss.	i) Restrict lifting of water for irrigation purpose. ii) Partial harvest of the stock, market the produce to reduce the density of population in ponds. iii) Training to the farmers, extension functionaries and NGOs.	i) Excavate the ponds to increase the depth. ii) Try to release water into the pond if it rains in off-season
(ii) Changes in water quality	Prepare to release water into the habitat	Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	Monitoring the water quality and health of aquatic organisms
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow			
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine			
Inland			
(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. Aquaculture			
(i) Inundation with flood water	i) Construction of humane shelter. ii) Storage of sand filled bags for emergency use. iii) Repair and maintenance of bunds. Preparedness for relief iv) Insurance coverage provision for life and property	i) Timely broadcast and telecast and other types of announcement warning about the danger level with respect to water level. ii) Evacuation of people to flood shelter areas. iii) Relief operation.	i) Continue relief operation ii) Immediate care of health of affected people iii) Settlement of insurance. iv) Financial support to other people.
(ii) Water contamination and changes in water quality	i) Take appropriate measures to check seepage into pond e.g. Raising bunds to prevent entry of water	Check the water quality & take appropriate action	Application of lime and geolite. Application of Alum. Application of $KMnO_4$
(iii) Health and diseases	Stock medicines, vaccines etc for preventive measures	Prevent influx of diseased fish from outside source, Check through nets Administer medicines through random catch Disinfect water by lime , $KMnO_4$	Application of lime and $KMnO_4$. Assessment of the health status of fish and accordingly control measure should be taken. Control on transport of brooders and seeds.
(iv) Loss of stock and inputs (feed, chemicals etc)	Insurance coverage provision for life and property		Relief operation
(v) Infrastructure damage (pumps, aerators, huts etc)	Insurance coverage provision for life and property		Relief operation

(vi) Any other			
3. Cyclone / Tsunami	NA		
4. Heat wave and cold wave	NA		

[a] based on forewarning wherever available

Annexure I: Location map of district within State

Annexure 2: Mean annual rainfall of Kokrajhar district (2005-2010)