

State: ASSAM

Agriculture Contingency Plan for District: SONITPUR

1.0 District Agriculture profile*				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	Region: North Bank Plain Zone		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region		
	Agro Climatic Zone (NARP)	Lower Brahmaputra Valley Zone (AZ47)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Darrang, Sonitpur, Nagaon, Morigaon		
	Geographic coordinates of district headquarters	Latitude 26.30-27.01 degree north	Longitude 92.16 to 93.43 degree east	Altitude 21 m AMSL
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RARS, North Lakhimpur, Assam Agricultural University, District: Lakhimpur		
	Mention the KVK located in the district with full address	KVK, Sonitpur, AAU, Napam, District - Sonitpur Assam, PIN:		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	RARS, North Lakhimpur, Assam Agricultural University, District: Lakhimpur		
1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)
	SW monsoon (June-Sep):			June 1 st week
	NE Monsoon(Oct-Dec):			
	Winter (Jan- March)			
	Summer (April-May)			
	Annual	1355 – 2348	122 – 134	

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)	532.4	165.13	154.00	165.04	10.64	21.29	5.32	-	-	-	

1.4	Major soil series identified by NBSS and LUP, Jorhat centre in Sonitpur District (Source NBSS Publ. 101)	Area ('000 ha)	Parentage of Total
1	<p>Balipara series (Order: Inceptisols)</p> <p>Light Yellowish Brown (10 YR 6/4 M) in colour, Soils are very deep with clay loam texture, moderate to medium sub-angular blocky structure. Moderately suitable for rice, rapeseed, tomato, beans, pea and cowpea. Suitable for cabbage, potato and wheat</p> <p>Physiographic position: Very gently slopping flood plain</p> <p>Classification: Fine loamy, mixed, Hyperthermic family of <i>Dystric Fluventic Eutrudepts</i></p>	14.274	8.3
2	<p>Bharali series (Inceptisols)</p> <p>Grey (10YR 5/1 M) in colour, Soils are very deep with clay loam texture, moderate to medium sub-angular blocky structure. Suitable for rice, cabbage, potato and wheat. Moderately suitable for rapeseed, tomato, beans, pea and cowpea</p> <p>Physiographic position: Very gently slopping alluvial lowland.</p> <p>Classification: Fine loamy, mixed hyperthermic family of <i>Fluvaquentic Endoaquepts</i></p>	28.514	16.67
3	<p>Tezpur series (Inceptisols)</p> <p>Black (10 YR 2/1 M) in colour, Soils are very deep with clay loam texture, moderate to medium sub-angular blocky structure. Moderately suitable for rice, rapeseed, potato and beans. Marginally suitable for cabbage, wheat, tomato pea and cowpea</p> <p>Physiographic position: Nearly level to gently slopping lowlands of the flood plain.</p> <p>Classification: Fine loamy, mixed hyperthermic family of <i>Humic Endoaquepts</i>.</p>	36.334	21.25

4	<p>Sonitpur series (Entisols)</p> <p>Very dark brown (10 YR 2/2 M) in colour, Sandy loam in texture, Structure is weak medium subangular blocky. Marginally suitable for rice and potato. Not suitable for Mustard, cabbage, tomato, wheat, beans, pea and cowpea.</p> <p>Physiographic position: Gently sloping recent flood plain. Classification : Mixed, hyperthermic Family of <i>Typic Udipsamments</i></p>	9.527	5.57
5	<p>Maroa Series (Inceptisols)</p> <p>Grey (10 YR 6/1 M) in colour, silty clay loam in texture, Moderate medium sub angular blocky structure. Soils are very deep. Suitable for potato and beans, moderately suitable for rice, rapessed, tomato, wheat and cowpea, Marginally suitable for cabbage and pea.</p> <p>Physiographic position: Very gently sloping alluvial plain Classification: Fine loamy,mixed, hyperthermic family of <i>Aeric Endoaquepts</i>.</p>	20.197	11.81
6	<p>Goraimara Series (Entisols)</p> <p>Greyish brown (2.5 Y 5/2 M) in colour, sandy clay loam in texture. Moderate to medium subangular blocky in structure. Marginally suitable for rice, wheat, rapeseed, cabbage, tomato, potato, beans, pea and cowpea.</p> <p>Physiographic position: Very gently sloping alluvial plains Classification: Coarse loamy,mixed, hyperthermic <i>Typic Fluvaquents</i></p>	62.160	36.35

1.5	Agricultural land use	Area (*000 ha)	Cropping intensity %
	Net sown area	147.0	185.0
	Area sown more than once	93.0	
	Gross cropped area	241.0	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	16.63		
	Gross irrigated area	18.55		
	Rainfed area	146.0		
	Sources of Irrigation	Number	Area ('000 ha)	% of total irrigated area
	Canals**		6.38	
	Tanks **	5	0.008	
	Open wells**			
	Bore wells**	8053	16.1	
	Lift irrigation schemes**	8	0.028	
	Micro-irrigation**			
	Other sources (please specify)**		0.47	
	Total Irrigated Area		16.63	
	Pump sets	756		
	No. of Tractors	1250		
	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

1.6.1 Season-wise Consumption of Fertilizer in Sonitpur District , 2009-10:

(in Tonnes)

Kharif				Rabi			
N	P	K	Total	N	P	K	Total
1087	561	449	2147	1789	689	1197	3675

Source: Statistical Handbook, Assam 2010

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 2008-09)

1.7a	Major field crops cultivated	Area ('000 ha)							
		<i>Kharif</i>			<i>Rabi</i>			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
	Paddy	-	125.15	125.15	16.7	-	16.7	32.44	174.29
	Wheat	-	-	-	-	3.99	3.99	-	3.99
	Maize	-	0.67	0.67	-	-	0.67	-	-
	Linseed	-	-	-	-	-	-	-	-
	Rapeseed/mustard	-	-	-	-	16.50	16.50	-	16.50
	Black gram	-	2.44	-	-	-	2.44	-	2.44
	Green gram	-	0.54	-	-	-	0.54	-	0.54
	Arahar	-	0.40	-	-	-	-	-	0.40
	Lentil	-	-	-	-	0.96	0.96	-	0.96
1.7b	Horticulture crops – Fruits	Total			Irrigated			Rainfed ('000 ha)	
	Pineapple	0.54			-			0.54	
	Banana	2.88			-			2.88	
	Lemon	-			-			-	
	Orange	0.12			-			0.12	
	Arecanut	4.34			-			4.34	
	Coconut	1.30			-			1.30	

	Litchi	0.51	-	0.51	
	Guava	0.22	-	0.22	
	Jackfruit	0.10	-	0.10	
1.7c	Horticulture crops - Vegetables	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
	<i>Kharif</i> vegetables	5.91	-	5.91	
	<i>Rabi</i> vegetables	17.00	17.00	-	
	Chilli	0.840	-	0.840	
	Onion	452.0	-	452.0	
	Garlic	325.0	-	325.0	
1.7d	Medicinal and Aromatic crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
1	Medicinal and Aromatic crops	128.0		128.0	
	Others				
1.7e	Plantation crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
	Turmeric	0.915	-	0.915	
	Ginger	0.84	-	0.84	
	Black pepper	0.18	-	0.18	
1.7f	Fodder crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	Remarks
1.7g	Grazing land				Information not available
1.7h	Sericulture etc				
1.7i	Others (specify)				

1.8	Livestock (in number)	Male ('000)	Female ('000)	Total ('000)				
	Non descriptive Cattle (local low yielding)	NA	NA	489.409				
	Crossbred cattle	NA	NA	24.269				
	Non descriptive Buffaloes (local low yielding)	NA	NA	33.845				
	Graded Buffaloes	NA	NA	0.404				
	Goat	NA	NA	192.276				
	Sheep	NA	NA	7.645				
	Others (Camel, Pig, Yak etc.)							
	(i) Pig	NA	NA	86.173				
	(ii) Mithun	NA	NA					
	Commercial dairy farms (Number)							
1.9	Poultry	No. of farms	Total No. of birds ('000)					
	Commercial	393	240.850					
	Backyard	36	5.710					
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
		13076				1066		14142
	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)		1593.95	2395.80 kg/ha	381.88			
	Others							
* Source: Office of the DFDO, Sonitpur, 2012								

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)										
	Paddy	186.27 (winter paddy)	1500.0 (winter paddy)	22.39 (boro paddy)	1760.0 (boro paddy)	24.37 (autumn paddy)	1050.0 (autumn paddy)	233.03	1436.70	
	Oilseeds	0.40	500.0	12.37	750.0			12.77	625.0	
	Pulses	2.20	667.0	1.82	610			4.02	638.50	
	Wheat			3.47	1100.0			3.47	1100.0	
	Sugarcane	185.0 (cane)	42000.0 (cane)					185.0	42000.0	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Banana							37.40	13000.0	
	Papaya							4.58	13000.0	
	Arecanut							3.73	8600.0	
	Coconut							9.10	7000.0	
	Turmeric							6.40	7000.0	
	Chilli							6.30	7500.0	
	Black pepper							2.90	1600.0	
	Kharif vegetables							47.30	8000.0	
	Rabi vegetables							255.0	15,000.0	
	Others									

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Jhum paddy	TRC/WRC Paddy	Maize	Soybean	Linseed	Rapeseed/mustard
	Kharif- Rainfed	May 4 th week- Jun 1 st week	-	Aug 4 th week- Sep 1 st week	May 2 nd week- Jun 2 nd week	Aug 2 nd week- Sep 1 st week	-
	Kharif-Irrigated	-	-	-	-	-	-
	Rabi- Rainfed	Nov 1 st week- Nov 3 rd week (summer) Mar 2 nd week- Apr 2 nd week (autumn)	Nov 1 st week- Nov 4 th week	Feb 2 nd week- Mar 1 st week	-	-	Nov 1 st week- Nov 4 th week
	Rabi-Irrigated	Nov 1 st week- Nov 3 rd week (summer) Mar 2 nd week- Apr 2 nd week (autumn)	Nov 1 st week- Nov 4 th week	Feb 2 nd week- Mar 1 st week	-	-	Nov 1 st week- Dec 1 st week

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)			✓
	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 / No
------	--	---	--------------------

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation - The monsoon is normal not delayed

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 (Specify month)* June 3 rd week	Rainfed upland	Summer vegetables/ Blackgram/Sesame (<i>kharij</i>) - Toria/ Wheat/Potato/ <i>Rabi</i> vegetables/chilli/pea	NO Change Summer vegetables – Okra, Cucumber, Pumpkin, Ridge gourd <i>etc.</i> Blackgram - Pant U 19, T-9, KU-301, T-27 Toria - TS-36, TS-38, TS-67, TS-48 Wheat- DBW-14, HDR-77 Potato-K.Chandramukhi, K.Jyoti, K.Ashoka, K.Megha Sesame-Punjab Tall No-1 , ST 1683	i) Weeding at critical stages of growth. ii) Addition of sufficient organic matter in the soil at the time of land preparation iii) Use of recommended dose of fertilizer iv) Life saving supplemental irrigation through low cost irrigation system. v) Use of organic mulch	-Development of water harvesting structure under NREGS for life saving irrigation -Development of water harvesting structure under NREGS for life saving irrigation
		Sugarcane as mono crop	No change Sugarcane variety: Barak, Kolong <i>etc</i>	i) Life saving supplemental irrigation	
	Rainfed Medium/ medium low land	Winter paddy – fallow	i) Winter paddy – <i>rabi</i> crops	i) Growing of medium duration rice varieties such as Satyaranjan, Basundhara, Mulagabharu, TTB 404 <i>etc</i> ii) Maximum use of organic manure	

		Jute/Rice(<i>Kharif</i>)- Torja/Lentil/ Wheat//Rabi vegetables/Chilli	<p>i) Rice (<i>Kharif</i>)- Toria Rice- Ranjit, Bahadur <i>etc.</i></p> <p>Toria- Ts-46, TS-67</p> <p>ii) Rice-wheat Rice- Ranjit, Bahadur <i>etc.</i></p> <p>Wheat- HDR-77, DBW-14</p>	i) Sowing delay, irrigation for timely sowing at nursery bed	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>
		Rice (<i>Kharif</i>) monocropping	Rice (<i>Kharif</i>) monocropping	<p>i) Addition of sufficient organic matter in the soil at the time of land preparation</p> <p>ii) Use of pre germinated seeds.</p> <p>iii) Growing of high yielding varieties like Ranjit, Bahadur, Mahsuri, Satyaranjan, Basundhara, Ketekijoha <i>etc.</i></p> <p>iv) Prepare dry, well banded, flat seedbed with adequate FYM(30 kg), 80g urea, 80g SSP and 80g MOP per bed of 10mx1.25m</p> <p>v) Seed treatment with 4% MOP (600ml/kg of seed) for 24 hrs, dry it in shade for 24 hrs and sowing</p> <p>vi) Supplemental irrigation in the nursery bed of rice</p>	i)Technology showcasing programme/ seed production programme of AAU

		Blackgram (Kharif) + Toria + summer vegetables Blackgram(Kharif) + Toria + summer vegetables	No Change Summer vegetables – Okra, Cucumber, Pumpkin, Ridge gourd <i>etc</i>	i) Weed management ii) Supply of minimum irrigation, iii) Proper Nutrient management	Low cost polyhouses for off-season vegetables
		Winter paddy—summer / autumn paddy Autumn rice- Govind, IR-50, Lachit, Luit Winter rice- Ranjit, Bahadur, Kushal, Moniram, Rangelee	Tranplanting with 60 days old seedling upto the end of August with Monoharsali, Prafulla, Gitesh Direct seeding with Luit, Kapilee etc.	i) Weed management ii) Staggered planting, iii) Closer spacing	

The monsoon is normal not delayed

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)					
Delay by 4 weeks (Specify month) July 1st week	Rainfed landup	Summer vegetables/ Blackgram/Sesame (<i>kharif</i>) - Toria/ Wheat/Potato/ <i>Rabi</i> vegetables/chilli	Summer vegetables/ Blackgram/Sesame (<i>kharif</i>) - Toria/Chilli/ Wheat/Potato/ <i>Rabi</i> vegetables	i) Life saving supplemental irrigation ii) Weeding at critical stages of growth. iii) Supplemental irrigation in the nursery bed of <i>Rabi</i> vegetables iv) Addition of sufficient organic matter in the soil at the time of land preparation	

		Rice- Potato/pea a) Winter rice + Potato b) Winter rice + Pea	Winter rice - Medium duration variety such as <i>Satyranjan</i> , <i>Basundhar</i> , <i>Mulagabharu</i> , <i>TTB404</i> Winter rice - Ranjit, Bahadur, Kushal, Moniram Potato - Kufri Chandramukhi, K. Jyoti, K. Sindhuri, K. Megha Pea – Boneville, Rachna, HUP a	i. Weed management, ii. Supply of minimum irrigation iii. Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying	
	Rainfed medium land	Sugarcane as mono crop Wiinter paddy – fallow Winter paddy – summer / autumn paddy Winter paddy – rabi crops	i) Late sown/ transplanted winter paddy variety like <i>Gitesh</i> , <i>Prafulla</i> etc. --- summer / autumn paddy ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i> , <i>Luit</i> etc. . --- summer / autumn paddy / rabi crops iii) Traditional paddy varieties like <i>Monohar Sali</i> , <i>Sial Sali</i> etc. for late sown condition --rabi crops	i) Delayed sowing with high seed rate / transplanting ii) Timely sowing but delayed transplanting of winter paddy iii) Closure spacing during transplanting iv) Increase no. of seedlings / hill v) Mulching in sugarcane & <i>kharif</i> vegetables vi) Use of organic manure vii) Minimise no. of top dressing of fertilizer (not during dry spell)	i) Seed production of suitable varieties so that these can be made available in time ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy iii) Identification & evaluation of suitable varieties specific to prevailing situation iv) Demonstration programme in real field situation for farmers' motivation

	Rainfed low land	Winter paddy—fallow	<p>i) Late sown/ transplanted winter paddy variety like <i>Gitesh</i>, <i>Prafulla</i> etc. --- summer / autumn paddy</p> <p>ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i>, <i>Luit</i> etc. . --- summer / autumn paddy / rabi crops</p> <p>iii) Traditional paddy varieties like <i>Monohar Sali</i>, <i>Sial Sali</i> etc. for late sown condition --rabi crops</p>	<p>i) Delayed sowing with high seed rate / transplanting</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p>
--	------------------	---------------------	---	--	--

The monsoon is normally not delayed. However, the contingency crop plan is given below for preparedness

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
<p>Early season drought(delay ed onset)</p> <p>Delay by 6 weeks</p> <p>July 3rd week</p>	Rainfed upland	Summer vegetables/ Blackgram/Sesame (kharif) - Toria/ Wheat/Potato/Rabi vegetables/chilli	Summer vegetables/ Blackgram/Sesame (kharif) - - Toria/Chilli/ Wheat/Potato/Rabi vegetables	<p>i) Life saving supplemental irrigation</p> <p>ii) Weeding at critical stages of growth.</p> <p>iii) Supplemental irrigation in the nursery bed of Rabi vegetables</p>	

	Rainfed medium / low land	<p>i) Winter paddy—fallow</p> <p>ii) Winter paddy—summer / autumn paddy</p> <p>iii) Winter paddy—rabi crops/ vegetables</p>	<p>i) Late sown/ transplanted winter paddy variety like <i>Gitesh</i>, <i>Prafulla</i> etc. --- summer / autumn paddy</p> <p>ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i>, <i>Luit</i> etc. . --- summer / autumn paddy / rabi crops</p> <p>iii) Traditional paddy varieties like <i>Monohar Sali</i>, <i>Sial Sali</i> etc. for late sown condition --rabi crops</p>	<p>i) Delayed sowing with high seed rate / transplanting</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic mulches in kharif vegetables</p> <p>vi) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p> <p>viii) Advocating mat nursery for raising tender aged seedling</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>
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
<p>Delay by 8 weeks (Specify month)</p> <p>August 1st week</p>	Rainfed medium / low land	<p>Winter paddy—fallow</p> <p>Winter paddy—summer / autumn paddy</p> <p>Winter paddy—<i>rabi</i> crops/ vegetables</p>	<p>i) Late sown/ transplanted winter paddy variety like <i>Gitesh</i>, <i>Prafulla</i> summer/autumn paddy</p> <p>ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i>, <i>Luit</i> etc. summer / autumn paddy / <i>rabi</i> crops</p> <p>iii) Traditional paddy varieties like <i>Monohar Sali</i>, <i>Andrew Sali</i> etc. for late sown condition -- <i>rabi</i> crops</p>	<p>i)Delayed sowing with high seed rate / transplanting</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic mulches in <i>rabi</i> vegetables</p> <p>vi) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p> <p>viii) Advocating mat nursery for raising tender aged seedling</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>

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 high / medium land	Sugarcane as mono crop Winter paddy – fallow <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops Winter paddy – summer / autumn paddy Winter paddy – <i>rabi</i> crops	i) Maximum use of organic manure ii) Use of organic mulch	i) Seed production of suitable varieties ii) promote Community nursery for traditional as well as HY short duration/ late planted varieties of paddy iii) Identification & evaluation of suitable varieties i)Seed production of suitable varieties so that these can be made available in time ii) Promote Community nursery for traditional as well as HY short duration/ late planted varieties of paddy iii) Identification & evaluation suitable varieties	i) Seed production of suitable varieties so that these can be made available in time ii) promote Community nursery for traditional as well as HY short duration/ late planted varieties of paddy iii) Identification & evaluation of suitable varieties specific to prevailing situation

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	Rainfed high / medium land	Sugarcane as mono crop Winter paddy – fallow <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops	i) Delayed transplanting ii) Increasing no. of seedling / hill iii) Closure spacing of transplanting	i) Maximum use of organic manure ii) Use of organic mulch in <i>kharif</i> vegetables/sugarcane	i) Identification & evaluation of suitable varieties specific to prevailing situation ii) Demonstration programme in real field situation for farmers'

		Winter paddy – summer/ autumn paddy	iv) See for alternative source of water		motivation
		Winter paddy – <i>rabi</i> crops	v) Top dressing of fertilizer is delayed & minimized only when there is water/ available moisture		iii) Identification of ITK if any
	Rainfed medium / low land	Winter paddy—fallow	i) Delayed transplanting	i) Maximum use of organic manure	i) Identification & evaluation of suitable varieties specific to prevailing situation
		Winter paddy—summer / autumn paddy	ii) Increasing no. of seedling / hill	ii) Use of organic mulch in vegetables	ii) Demonstration programme in real field situation for farmers’ motivation
		Winter paddy— <i>rabi</i> crops/	iii) Closure spacing of transplanting	iii) Minimising no. of top dressing (not during dry spell)	iii) Identification of ITK if any
		<i>Kharif</i> vegetables – <i>rabi</i> vegetables			

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measrues	Remarks on Implementation
Mid season drought (long dry spell)					
At flowering/ fruiting stage	Rainfed high / medium land	Sugarcane as mono crop	i) Weeding at critical stages.	i) Maximum use of organic manure	i) Method demonstration
		Winter paddy – fallow	ii) See for alternative sources of water	ii) Use of organic mulch in <i>kharif</i> vegetables / sugarcane	ii) Identification & evaluation of suitable varieties specific to prevailing situation
		<i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops			iii) Identification of ITK

		Winter paddy – summer / autumn paddy		iii) Minimising no. of top dressing (not during dry spell)	if any
		Winter paddy – <i>rabi</i> crops			
	Rainfed medium / low land	Winter paddy—fallow Winter paddy—summer/ autumn paddy iii) Winter paddy— <i>rabi</i> crops/vegetables iv) <i>Kharif</i> vegetables – <i>rabi</i> vegetables	i) Weeding at critical stages ii) See for alternative sources of water such as low cost irrigation system (Treadle pump)	i) Maximum use of organic manure ii) Use of organic mulch in vegetables iii) Minimising no. of top dressing (not during dry spell)	i) Method demonstration ii) Identification & evaluation of suitable varieties specific to prevailing situation iii) Identification of ITK if any

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought (Early withdrawal of monsoon)	Rainfed high / medium land	Sugarcane as mono crop	i) See for alternative sources of water	i) Zero-tillage / optimum tillage cultivation of <i>rabi</i> crops	i) Method demonstration
		Winter paddy – fallow	ii) Application of water through low cost irrigation system such as treadle pump.	ii) Practice of relay cropping	ii) Identification & evaluation of suitable varieties specific to prevailing situation iii) Identification of ITK if any
		<i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops		ii) Use of organic mulch in <i>rabi</i> vegetables / crops	
		iii) Winter paddy – summer / autumn paddy		iii) Application of organic manures as much as possible	

		Winter paddy – <i>rabi</i> crops			
	Rainfed medium / low land	<p>Winter paddy—fallow</p> <p>Winter paddy—summer / autumn paddy</p> <p>Winter paddy—<i>rabi</i> crops/ vegetables</p> <p><i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) See for alternative sources of water</p> <p>ii) Avoid burning of leftovers of paddy after harvest</p>	<p>i) Zero-tillage / optimum tillage cultivation of <i>rabi</i> crops (Relay cropping of lentil, Lathyrus with rice)</p> <p>ii) Avoid burning of leftovers of paddy after harvest & incorporation in the field during ploughing</p> <p>ii) Use of organic mulch in <i>rabi</i> vegetables / crops</p> <p>iii) Application of organic manures as much as possible</p>	<p>i) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>ii) Demonstration programme in real field situation for farmers’ motivation</p> <p>v) Identification of ITK if any</p>

2.1.2 . Drought - Irrigated situation-- not applicable

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of water in canals due to low rainfall	1) Farming Situation	Not applicable			
	2) Farming Situation	Not applicable			
Limited release of water in canals due to low rainfall	1) Farming Situation	Not applicable			
Non release of water in canals under delayed onset of monsoon in catchment	1) Farming Situation	Not applicable			

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			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	Upland / medium land	<p>Winter paddy – fallow</p> <p><i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p> <p>Winter paddy – summer / autumn paddy</p> <p>Winter paddy – <i>rabi</i> crops</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – <i>kharif</i> oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero/minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from tank</p> <p>ix) Economic use of water at critical stage of crop</p>	

	Medium / low land	<p>Winter paddy—fallow</p> <p>Winter paddy—summer / autumn paddy</p> <p>Winter paddy—<i>rabi</i> crops/ vegetables</p> <p><i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – <i>kharif</i> oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much as possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero ? minimum tillage cultivation</p> <p>vii) Avoidance of use of agro- chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from tank</p> <p>ix) Economic use of water at critical stage of crop</p>	
--	----------------------	---	---	--	--

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	Upland / medium land	<p>Winter paddy – fallow</p> <p><i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p> <p>Winter paddy – summer / autumn paddy</p> <p>Winter paddy – <i>rabi</i> crops</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – kharif oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero / minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from well & distribution loss through delivery pipes</p> <p>ix) Economic use of water at critical stage of crop</p>	
	Medium / low land	<p>Winter paddy—fallow</p> <p>Winter paddy—summer / autumn paddy</p> <p>Winter paddy—<i>rabi</i> crops/ vegetables</p> <p><i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – kharif oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero/ minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from well & distribution loss through delivery pipes</p> <p>ix) Economic use of water at critical stage of crop</p>	

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations) Not applicable

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
Heavy rainfall with high speed winds in a short span ²				

2.3 Floods:

Condition	Suggested Contingency Measures ^o			
Transient water logging/partial inundation	Seeding/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Crop 1 :Rice	-Drain out excess water by clearing the existing drains Pump out excess water if possible.	-Drain out excess water. -Brushing - Need based plant protection measure. -Gap filling with more no of seedling per hill - Replanting /Direct seeding with the photo insensitive short duration variety like Luit (If the crop is totally damaged) -Avoid top dressing of Urea	-Drain out excess water. - Need based plant protection measure. - Direct seeding with the photo insensitive short duration variety like Luit (If the crop is totally damaged)	-Harvest the crop at physiological maturity stage - Shift the bundles to drier place and Hang the bundles on bamboo line for sun drying -Sun drying of grains to attain proper moisture content
Crop 2 :Black gram, Green gram, Sesame	Drain out excess water. Resowing of the crop	-Drain out excess water. - Need based plant protection measure	-Drain out excess water. - Need based plant protection measure	--Harvest the crop at physiological maturity stage - Shift the bundles to drier place like roof top for drying -Sun drying to attain proper moisture level of grains.

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone: Not Applicable

Extreme event type	Suggested contingency measure ^r			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave ^p				
Cold wave ^q				
Frost				
Hailstorm				
Cyclone				

Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

Condition	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Feed and fodder availability	<ul style="list-style-type: none"> a. Increasing animal feed reserves in the district. b. Increase cultivation of perennial fodder varieties. c. Consideration of a larger area under fodder cultivation. d. Selection and plantation of deep rooted, drought tolerant bushes, trees & grasses for feeding livestock. e. Utilization of waste lands for fodder cultivation. f. Improving yield & quality of non- 	<ul style="list-style-type: none"> a. Feeding of occasional surplus grains or grains damaged during processing b. Harvesting & use of all failed field crops as animal feed. c. Use of harvested tree/top of fodder as feed for livestock animals. d. Processing and preservation of fodders as hay & silage e. Feeding of UMMB, hay conc, vitamins & mineral mixtures f. Adopting special care and feed 	<ul style="list-style-type: none"> a. Cultivation of short duration fodder crops (sorghum, maize) b. Providing concentrates to all animals supplementary feed. c. Feeding of molasses d. Allowing rest to selected pastures or delay grazing in all pastures periodically.

	<p>conventional fodder available in drought prone areas.</p> <p>g. Raising drought tolerant perennial grasses, trees, shrubs & bushes in field boundaries</p> <p>h. Creation of fodder bank and fodder seed banks.</p> <p>i. Preventing the practice of burning paddy straw, maize stover and sugarcane tress.</p> <p>j. Preservation of processed fodders.</p> <p>k. Backyard production of Azolla for animal feed.</p> <p>l. Improvement of the cattle feed manufacturing units to cope up with the demand of concentrate feed.</p> <p>m. Production of hay and silage</p>	<p>management measures for lactating, pregnant & productive animals</p> <p>g. Feeding of concentrates like oilseed cakes as supplementary feed.</p> <p>h. Utilization of crop byproducts like sugarcane tops and bagasse for animal feeding.</p> <p>i. Feeding of Molasses</p> <p>j. Use of herbaceous or tree legumes as supplements</p>	
	<p>o. Balancing animal numbers with available feed resources and reducing animal numbers through destocking of unproductive livestock.</p> <p>p. Maintenance of emergency pastures that can only be used during the emergency.</p>		
Drinking water	<p>a. Identification of natural water resources and their use in a planned way.</p> <p>b. Creation of water reserves in grazing land.</p> <p>c. Rain water harvesting for water</p>	<p>a. Prevent water wastage</p> <p>b. Prevent wallowing by animals in water bodies/ resources</p>	<p>a. Identification of place/ area for establishment of drinking water reserves</p>

	<p>conservation.</p> <p>d. Improvement of natural pastures/ grazing land by <i>in situ</i> rain water conservation</p> <p>e. Use of drip irrigation in agriculture to prevent wastage of ground water.</p>		
Health and disease management	<p>a. Prompt recognition of endemic animal diseases and timely vaccination against them.</p> <p>b. Regular de-worming of animals to minimize the parasitic burden and improve the productivity of farm livestock.</p> <p>c. Popularizing the concept of animal insurance and its implementation.</p> <p>d. Constituting efficient team of workers to act as a Rapid Action Force during emergencies</p> <p>e. Collaboration of the district veterinary officials to handle endemic animal diseases.</p> <p>f. Creation of repositories to store a sizeable stock of veterinary medicines for emergencies.</p> <p>g. Provision for preservation of thermolabile animal and poultry vaccines with maintenance of the cold chain.</p> <p>h. Provision for maximizing the use of thermostable animal and poultry vaccines which are often handy at the field level.</p>	<p>a. Prompt response in emergencies to save the lives of productive livestock.</p> <p>b. Organizing mass animal health camps wherever necessary.</p> <p>c. Vaccination of animals against all the endemic diseases.</p> <p>d. Providing anthelmintics and mineral mixtures to productive animals.</p> <p>e. Balanced feeding of the productive animals by inclusion of suitable concentrates to maintain sound health condition.</p> <p>f. Segregation of suspicious and disease animals from the herd and their early treatment.</p> <p>g. Regular health monitoring of the animal herd within the endemic areas.</p>	<p>a. Organizing need based animal health camps.</p> <p>b. Organizing mass animal de-worming camps</p> <p>c. Minimizing cases of anestrous and repeat breeding in productive animals by organizing mass animal fertility camps.</p> <p>d. Vaccination of animals against endemic diseases.</p> <p>e. Culling of unproductive livestock to improve economic status of livestock owners.</p>
	<p>i. Establishing well-organized quarantine facilities for disease suspected and affected animals.</p>		

Floods			
Feed and fodder availability			
Drinking water	NA	NA	NA
Health and disease management			
Cyclone			
Feed and fodder availability			
Drinking water			
Health and disease management	NA	NA	NA
Heat wave and cold wave			
Shelter/environment management			
Health and disease management			

^s based on forewarning wherever available

2.5.2. Poultry

Condition	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	<ul style="list-style-type: none"> i) Culling of unproductive poultry for efficient utilization of poultry feed. ii) Storage of household grains like broken rice, maize, pulses, oilseeds etc. iii) Use of good quality poultry feed to obtain optimum growth, body weight gain and productivity. 	<ul style="list-style-type: none"> i) Supplementation of household grains to poultry. ii) Supplementation of shell girit/ calcium to the laying birds iii) Utilization of kitchen wastes for feeding small sized backyard poultry flocks iv) Prompt marketing of the meat type birds with optimum body weight gain. v) Selling of poultry wastes and gunny bags to contribute for the feed costs. vi) Minimizing the feed wastage. 	<ul style="list-style-type: none"> i) Supplementation of household grains to the birds. ii) Use of good quality poultry feed to obtain optimum growth iii) Proper storage of poultry feed. 	<ul style="list-style-type: none"> i) Various training programmes ii) OFTs & FLDs
Drinking water	<ul style="list-style-type: none"> i) Rain water harvesting. ii) Provision for storage of drinking water. iii) Utilization of ground water reserves for drinking purposes after purification. 	<ul style="list-style-type: none"> i) Judicious use of drinking water. ii) Minimizing wastage of drinking water. 	<ul style="list-style-type: none"> i) Providing water ad-libitum. ii) Developing drinking water storage facilities. 	<ul style="list-style-type: none"> i) Training programmes.
Health and disease management	<ul style="list-style-type: none"> i) Culling of weak and diseased birds. ii) Timely de-worming. iii) Vaccination against endemic diseases especially Ranikhet disease. iv) Insurance of birds. v) Arrangement of brooding facilities for young chicks. vi) Construction of good quality poultry houses or farms to minimize disease incidences and to avoid predation by carnivores. vii) Proper waste disposal system in poultry farms possessing large flocks. vii) Provision for balanced feeding of 	<ul style="list-style-type: none"> i) Regular supplementation of necessary vitamins to the birds for improving productivity. ii) Immediate segregation of disease affected and suspicious birds from the flock. iii) Maintenance of proper hygiene and sanitation in the commercial poultry farms. iv) Regular cleaning of poultry houses to minimize disease incidence. v) Restricting trade of poultry, poultry meat and eggs during outbreak of a disease having potential to take an epidemic form.e.g. Bird flu. 	<ul style="list-style-type: none"> i) Maintenance of proper hygiene and sanitation in the poultry sheds. ii) Disposal of dead birds by burning or by deep burial with lime in pits of optimum sizes. iii) Timely vaccination of all the birds. iv) Culling of unproductive poultry. vii) Timely marketing of meat type poultry and poultry eggs to minimize losses due to mortality. 	<ul style="list-style-type: none"> i) Various training programmes ii) OFTs & FLDs

	productive birds.	vi) Restriction against needless movement of individuals in the farm premises. vii) Use of fly proof netting in poultry sheds to prevent arthropod borne diseases. viii) Use of foot baths in front of the farm entrance to minimize disease transmission.		
Floods	NA	NA	NA	NA
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management				
Health and disease management				

^a based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

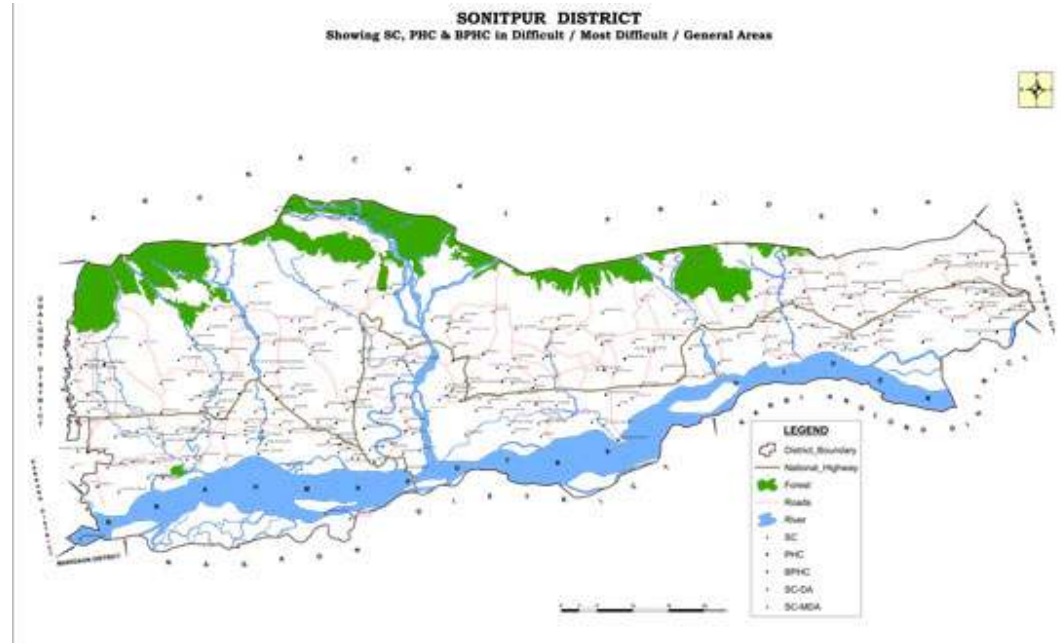
Condition	Suggested contingency measures		
	Before the event	During the event	After the event
1) Drought			
A. Capture			
Marine	NA	NA	NA
Inland			
(i) Shallow water depth due to insufficient rains/inflow			
(ii) Changes in water quality			
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	<ul style="list-style-type: none"> i) Capturing some amount of fishes and keeping few to minimize quantity of fishes in the pond ii) Digging of ponds to increase depth iii) Follow measures like addition of cow dung etc. to stop/minimize downward percolation of water iv) Enquiring alternative water sources to add to the ponds 	<ul style="list-style-type: none"> i) Digging of ponds/ middle of ponds to increase depth for saving life of the fishes ii) Add water to the ponds from alternative source if available iii) Minimizing quantity of fishes 	<ul style="list-style-type: none"> i) Cleaning and digging of ponds to increase depth ii) Use of clay material in pond beds to minimize water loss through percolation
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine	NA	NA	NA

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	Dyke should be strongly constructed above the maximum flood level.	Encircling the fishery with fish net to prevent the escaping of fishes.	Dyke should be renovated strongly above the maximum flood level.
(ii) Water contamination and changes in water quality	Dyke should be strongly constructed above the maximum flood level.	Use disinfectant	Use disinfectant, Remove all unwanted exotic fishes
(iii) Health and diseases	Provided vitamin, mineral with feed,	Provided vitamin, mineral, protein with feed, use bactericide	Use bactericide and disinfectant and feed with balance diets.
(iv) Loss of stock and inputs (feed, chemicals etc)	Dyke should be strongly constructed above the maximum flood level.	Catch the some amount of fishes to reduce the stock.	Dyke should be strongly renovated and apply disinfectant and fish out the unwanted exotic fishes
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine	NA	NA	NA
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			
(iii) Avg. no. of houses damaged			
Inland			

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

^a based on forewarning wherever available

Location map of district within State as Annexure I



Soil map of district within State as Annexure III

