State: WEST BENGAL

Agriculture Contingency Plan for District: DAKSHIN DINAJPUR

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Assam And Bengal Plain, Hot Subhumid To Humid (Inclusion Of Perhumid) Eco-Region. (15.1)		
	Agro-Climatic Zone (PlanningCommission)	Lower Gangetic Plain Region (III)		
	Agro Climatic Zone (NARP)	Old Aluuvial Zone (WB-3)		
	List all the districts falling under the NARP Zone*(*>50% area falling in the zone)	Murshidabad, Malda, Uttar Dinajpur, Nadia, Cooch Behar, 24 Paranganas, Darjiling, Jalpaiguri,		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		$25^0$10'26.35"N	$88^0$75'36.77'' E	53 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research Station (Old Alluvial Zone), UBKV, Majhian, Patiram – 733 133, Dakshin Dinajpur, West Bengal		
	Mention the KVK located in the district with address	Dakshin Dinajpur Krishi Vigyan Kendra, UBKV, Majhian, Patiram – 733 133, Dakshin Dinajpur, West Bengal		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	AgroMet Field Unit, Regional Research Station(Old Alluvial Zone), UBKV, Majhian, Patiram – 733 133, Dakshin Dinajpur, West Bengal		

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-September):	1549.8	71	1st week of June	4th week of September
	NE Monsoon(October-December):	18.8	3	-	-
	Winter (Jan- February)	73.6	6		
	Summer (March-May)	205.6	11		
	Annual	1847.8	91		

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under nonagricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows/ Land use
	Area ('000 ha)	221.9	204.85	0.9	28.2	0.01	0.02	0.7	0.2	3.2	13.05

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total geographical area**
	Very deep Clay loam soils	54.3	24.5
	Deep Clay soils	42.9	19.3
	Deep Loamy soils	29.9	13.5
	Sandy soils	26.7	12.0
	Sandy loam soils	21.8	9.8

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	188.6	176
	Area sown more than once	143.3	
	Gross cropped area	331.9	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	82.54		
	Gross irrigated area	135.23		
	Rainfed area	93.08		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	Nil	-	-
	Tanks	10756	10.36	11.2
	Open/Dug wells	125	0.04	0.004
	Bore wells/Shallow tube well	25095	53.3	57.8
	Lift irrigation schemes	256	22.4	24.34
	Micro-irrigation	Nil	-	-
	Other sources (Deep Tube well)	167	5.5	5.9
	Total Irrigated Area		92.00	
	Pump sets	-		
	No. of Tractors	-		

	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	-	-	-
	Critical	-	-	-
	Semi- critical	-	-	-
	Safe	All blocks	-	-
	Wastewater availability and use	-	-	-
	Ground water quality	-		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

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

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif (aman)			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice	163.14		163.14	10.32	-	10.32	66.835	240.295
	Wheat	-	-	-	23.950	-	23.950	-	23.950
	Jute	-	-		-	-	-	18.72	18.72
	Mustard	-	-	-	18.658	-	18.658	-	18.658
	Potato	-	-	-	16.660	-	16.660	-	16.660
	Horticulture crops - Fruits	**Area ('000 ha)**							
		Total							
	Mango	1.3							
	Banana	0.4							
	Pineapple	0.1							
	Papaya	0.2							
	Jackfruit	0.3							
	Guava	0.2							
	Horticulture crops - Vegetables	**Total**							
	Tomato	0.01							

	Cabbage	4.0
	Cauliflower	2.1
	Peas	0.5
	Brinjal	6.6
	Onion	0.7

(Source: Office of DDA, Department of Agriculture, Govt. of WB)

1.8	**Livestock (2007-08)**	**Male ('000 number)**	**Female ('000 number)**	**Total ('000 number)**
	Non descriptive Cattle (local low yielding)	251.3	306.4	557.7
	Crossbred cattle	2.9	13.4	16.3
	Non descriptive Buffaloes (local low yielding)	19.7	0.2	19.9
	Goat	-	-	424.4
	Sheep	-	-	16.3
	Others (Camel, Pig, Yak etc.)	18.7	22.1	40.8
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (number)**	
	Fowl	-	1063986	
	Duck	-	313008	

1.10	**Fisheries** (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		-	-	-	-		-
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		No. of Farmer: 12459 Area of Pond (ha.) : 5660.06		Nil		Record not available	

	B. Culture			
		Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	Nil		ton prawn
	ii) **Fresh water** (Data Source: Fisheries Department)	Culturable area: 5910.03 ha. Semi-Derelict area: 1056.00 ha. Derelict area: 1294.00 ha. Total area: 8260.03 ha.	From Ponds under FFDA Scheme= 4.4 t/ ha.	36528 ton Fish (2008-09) Fish Seed Production (08-09)= million
	Others	(River) 145.94 ha. (Canal) 114.18 ha. (Beel/Baor) 486.02 ha.		

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

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**	
		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)								
	Rice	415.898	2549	22.601	2190	223.585	3345	662.084	2755
	Wheat	-	-	58.893	2459	-	-	58.893	2459
	Mustard	-	-	17.45	935	-	-	17.45	935
	Jute			-	-	76.55	2725	76.55	2725
	Potato	-	-	344.061	20652	-	-	344.061	20652
	Major Horticultural crops (Crops to be identified based on total acreage)								
	Mango	-	-	-	-	6.7	12000	6.7	12000
	Banana	-	-	7.0	-	7.0	-	7.0	-
	Pineapple	-	-	-	-	3.3	-	3.3	-

	Papaya	-	-	10.2	-	-	-	10.2	-
	Jackfruit	-	-	-	-	4.6	-	4.6	-

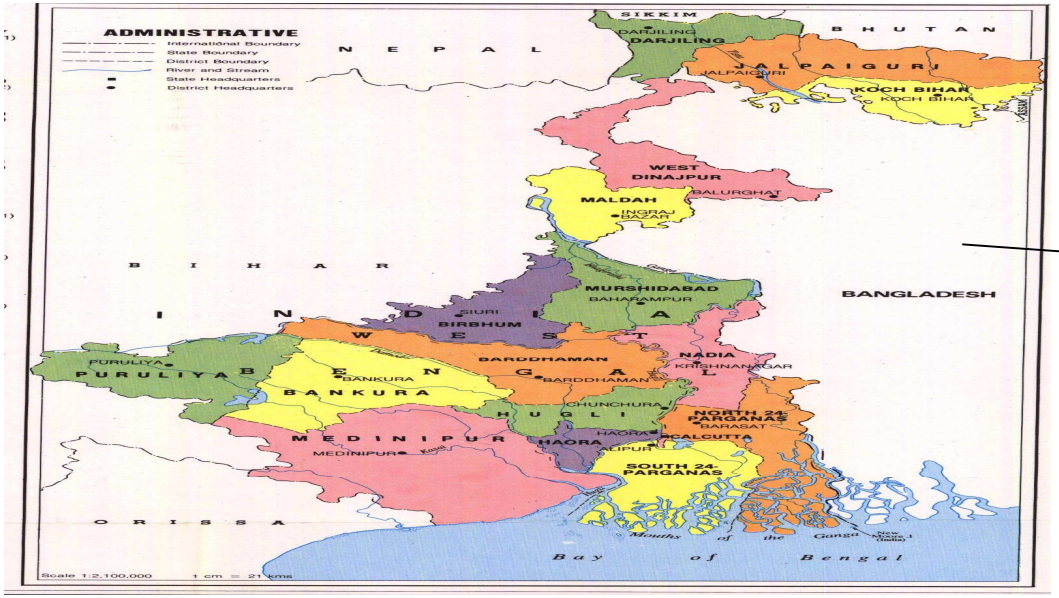
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period	**Rice**	**Wheat**	**Jute**	**Mustard**	**Potato**
	Kharif- Rainfed	July 1St week to Aug 2nd week (transplanting)				
	Kharif-Irrigated					
	Rabi- Rainfed					
	Rabi-Irrigated		Nov 2nd week to Dec 3rd week		Oct 4th week to Nov 2nd week	Nov 1st week to Dec 4th week
	Summer / Pre-kharif	Boro rice – Jan 3rd week to Feb 2nd week		March 4th week to April 3rd week		

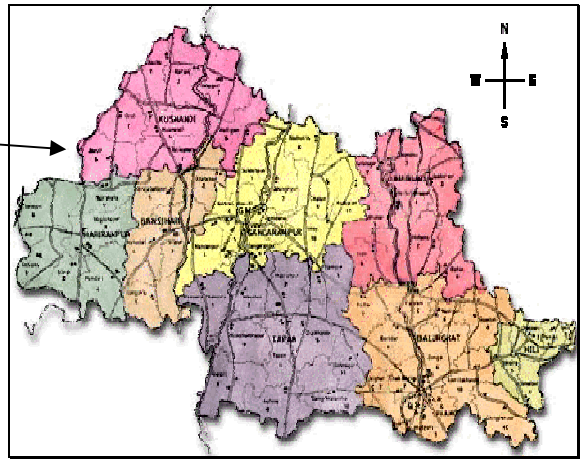
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought	-	√	-
	Flood	-	√	-
	Cyclone	-	-	√
	Hail storm	-	-	√
	Heat wave	-	-	√
	Cold wave	-	-	√
	Frost	-	-	√
	Sea water intrusion	-	-	√
	Pests and disease outbreak (specify)	√ Potato late blight. Kharif rice- Stem borer, Leaf folder, Sheath blight, rice blast, stems rot. Jute-Stem rot, Bihar Hairy Caterpillar, Mite Mustard_ Aphid, Club root, Leaf spot .Wheat – Stem borer	-	-
	Others (specify)		-	√

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Fig. 1 Yes
		Mean annual rainfall as Annexure 2	Enclosed: Fig. 2 Yes
		Soil map as Annexure 3	Enclosed: Fig. 3 Yes

Annexure - 1

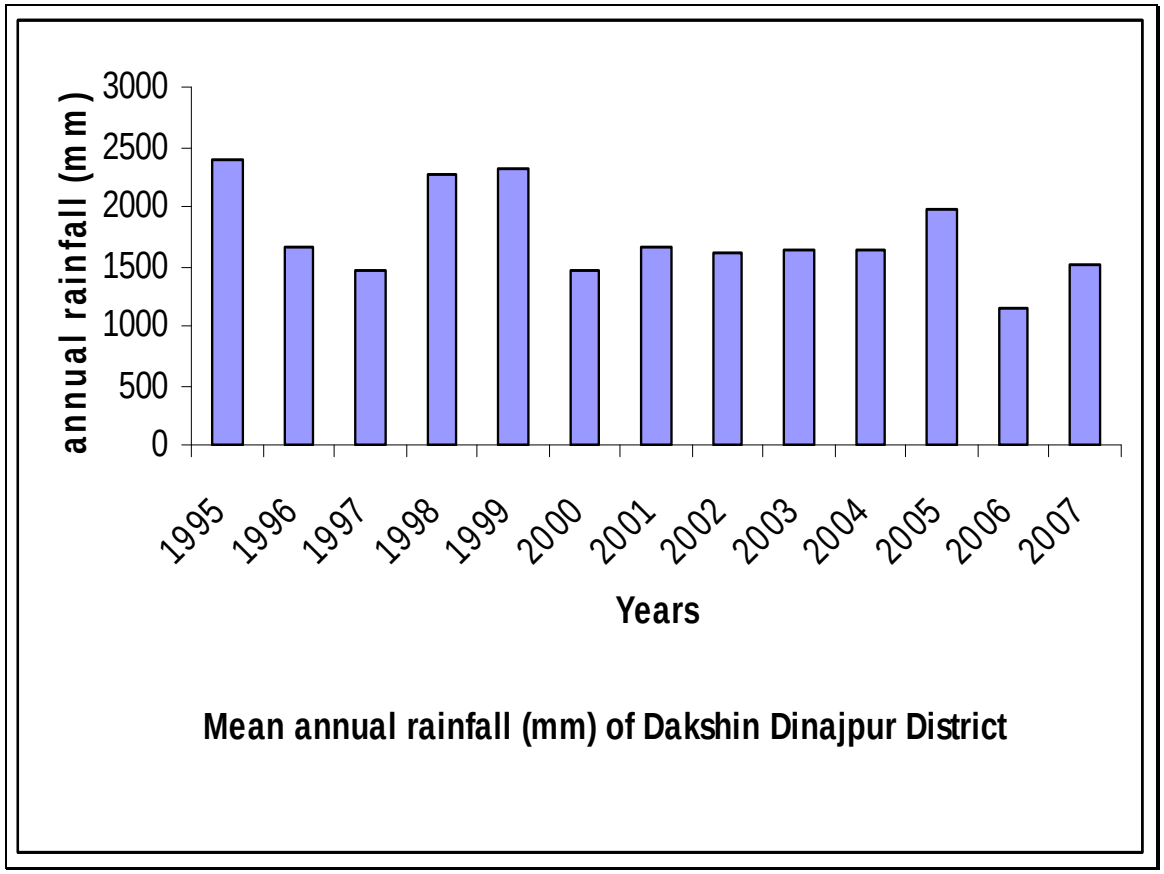
Location map of Dakshin Dinajpur District





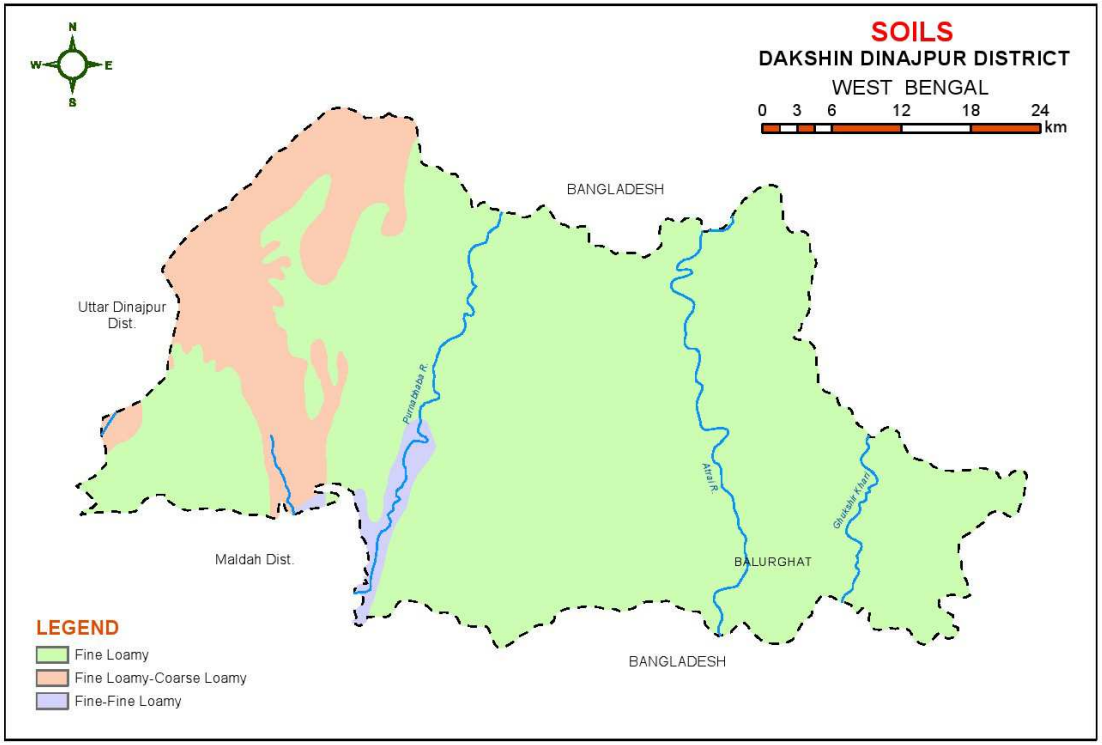
Annexure – II

Mean annual rainfall of Dakshin Dinajpur District



Annexure – III

Soil map of Dakshin Dinajpur District



Source: NBSS & LUP Regional Centre, Kolkata

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 3rd week of June	Deep to Very deep clay loam soils (Low land)	Rice	No change. Prefer varieties like manasasarover,swamadhan, suresh,dinesh	Normal transplanting of 2-3 seedlings/ hill	Linkage with Agricultural Farms under Department of Agriculture, Govt. of WB, Regional Research Station, UBKV and DDKVK at Majhian for supply of seed
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	No change. Prefer varieties like likeManasasarover,swamadhan, suresh,dinesh	-do-	
		Jute-Rice	No change	Normal package of practices given by UBKV	
	Lateritic and sandy soils (UpLand)	Rice	No change, prefer varieties like Rasi,khitish,kiron ,bhupen and anjali	Normal transplanting of 2-3 seedlings/ hill	
		Jute-Rice	No change	Normal package of practices given by UBKV	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks	Deep to Very deep clay loam soils	Rice	No change.	Transplanting with 4-5 seedling / hill	• Linkage with Agricultural Farms under

1st week of July	(Low land)				Department of Agriculture, Govt. of WB, Regional Research Station, UBKV and DDKVK at Majhian for supply of seed • Link watersheds and NREGS for the support of farm pond technology
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	No change, Prefer varieties like tall Indica and IET 5656 or Sabita (long duration)	Adopt SRI method of cultivation	
		Jute-Rice	No change, prefer varieties like BaisakhiAAUoj-1, Bidhan JRc-532,JRo-632	• Inter cultivation • Direct sowing using drum seeder in medium to high land in Rice	
	Lateritic and sandy soils (Up Land)	Rice-	No change , prefer varieties like tall Indica and IET 5656 or Sabita (long duration)	Inter cultivation/ weed control	
		Jute-Rice	No change, prefer varieties likeJRC-517,Upc-94,JR0-204,Jro-632,JRo-878	Inter cultivation	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks 3rd week of	Deep to Very deep clay loam soils (Low	Rice	No change. Prefer tall Indica variety of paddy or	Transplanting with 4-5 seedling / hill in case of long duration variety (Lalat, Sabita, Swarna masuri)	• Linkage with Agricultural Farms under Department of Agriculture, Govt. of

July	land)		long duration high yielding variety such as IET 5656 or Sabita		WB, Regional Research Station, UBKV and DDKVK at Majhian for supply of seed
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	No change	Prefer SRI System of cultivation	
		Jute-Rice	No change	Intercultivation	
	Lateritic and sandy soils (Up Land)	Rice	Rice/Vegetable	Intercultivation to control weeds	
		Jute-Rice	No change, prefer varieties likeJRC-517,Upc-94,JR0-204,Jro-632,JRo-878	Intercultivation to control weeds	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks 1st week of	Deep to Very deep clay loam soils (Low land)	Rice	No change	Transplanting with 4-5 seedling / hill in case of short duration variety	• Linkage with Agricultural Farms under Department of

August	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	Prefer short duration pulses like Black gram (Sarda, Pant U 19-31)/ Green gram (Samrat, Bireshwar, Sukumar)/ Vegetable like Brinjal /Chilli	Prefer SRI System of cultivation	Agriculture, Govt. of WB, Regional Research Station, UBKV and DDKVK at Majhian for supply of seed
		Jute-Rice	- do -	Timely weed control (mechanical/herbicides)	
	Lateritic and sandy soils (Up Land	Rice	- do -	Direct sowing using drum seeder in medium to high land in Rice	
		Jute-Rice	- do -	Timely weed control (mechanical/herbicides)	

Condition			**Suggested contingency measures**	
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop Management**	**Soil nutrient & moisture conservation measures**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep to Very deep clay loam soils (Low land)	Rice	Tranplant with seedlings of same variety raised from community nurseries • Timely weed control (mechanical / herbicides)	• Postpone top dressing with N • Supplemental irrigation
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	-do-	-do-
		Jute-Rice	• Gap filling with improved varieties of seeds within the rows if the population is below 75% • Interculture to control weeds	• Apply foliar spray with 2% Urea or MOP during the dryspell • Avoid top dressing of N during dry spell
	Lateritic and sandy soils (Up Land)	Rice	• Supplemental irrigation • Transplant the seedlings raised from community nurseries • Timely weed control (mechanical /	• Postpone top dressing with N • Supplemental irrigation

			herbicides)	
		Jute-Rice	• Gap filling with improved varieties of seeds within the rows if the population is below 75% • Intercultivation to control weeds	• Apply foliar spray with 2% Urea • Avoid top dressing of N during dry spell

Condition				
	Major Farming situation	**Normal Crop / Cropping system**	**Crop Management**	**Soil nutrient & moisture conservation measures**
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) At vegetative stage	Deep to Very deep clay loam soils (Low land)	Rice	• Supplemental irrigation • Transplant the seedlings in gaps raised from community nurseries • Timely weed control (mechanical / herbicides) • Protection against leaf folder with chlorpyriphos @2ml/l	• Postpone top dressing with N • Topdressing of 20-30kg N/ha after relief from the dryspell • Supplemental irrigation
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	-do-	-do-
		Jute-Rice	• Gap filling with improved varieties of seeds within the rows if the population is below 75% • Inter cultivation to control weeds	• Apply foliar spray with 2% Urea • Avoid top dressing of N during dry spell • Top dressing of 20-30 kgN/ha after relief from dry spell
	Lateritic and sandy soils (Up Land)	Rice	• Supplemental irrigation • Gap filling with seedlings from community nurseries • Timely weed control (mechanical /herbicides)	• Postpone top dressing with N • Topdressing of 20-30kg N/ha after relief from the dry spell • Supplemental irrigation
		Jute-Rice	• Gap filling with improved varieties of seeds within the rows if the population is below 75% • Inter cultivation to control weeds	• Apply foliar spray with 2% Urea • Avoid top dressing of N during dry spell • Open conservation furrows for every 3 rows

Condition				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop Management**	**Soil nutrient & moisture conservation measures**
At flowering stage	Deep to Very deep clay loam soils (Low land)	Rice	• Supplemental irrigation • Gap filling with seedlings from community nurseries Timely weed control (mechanical /herbicides)-	• Supplemental irrigation • Top dressing of 30-50 kg N/ha after the relief of dry spell
	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	--do-	• Supplemental irrigation • Top dressing of 20-30 kg N/ha after the relief of dry spell
		Jute-Rice	--do-	-do-
	Lateritic and sandy soils (Up Land)	Rice	-do-	• Supplemental irrigation • Top dressing of 30-50 kg N/ha after the relief of dry spell
		Jute-Rice	-do-	• Supplemental irrigation • Apply foliar spray with 2% Urea • Top dressing of 20-30 kg N/ha after the relief of dry spell

Condition				
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop Management**	**Rabi crop planning**
	Deep to Very deep clay loam soils (Low land)	Rice	• Life saving irrigation • Harvest at physiological maturity	Rabi fallow

	Deep clay / Loamy soils / Sandy loam soils (Medium Land)	Rice-Mustard	-do-	Prepare land for mustard
		Jute-Rice	-do-	Prepare land for rice if damage is very severe
	Lateritic and sandy soils (Up Land)	Rice	-do-	-
		Jute-Rice	-do-	Prepare land for rice if damage is very severe

2.1.2 Drought - Irrigated situation – Not applicable

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

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

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

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

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	NA				

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Shallow tube well irrigated loamy / clay soils (medium land)	Rice-Wheat / Mustard	No change	• Adopt SRI method for rice cultivation • Irrigation at critical crop growth stages • Adopt alternate furrow irrigation or micro irrigation systems if feasible	Link watersheds and NREGS for the support of farm pond technology
		Rice-Potato	-do-	-do-	
		Rice-Vegetable	-do-	-do-	
	Deep tube well irrigated fine loamy / clay soils (up land)	Rice -Rice	Rice-Wheat / Mustard	• Irrigation at critical crop growth stages • Adopt alternate furrow irrigation	
		Rice-Wheat / Mustard	No change	-do-	
		Rice-Potato-Vegetable	-do-	-do-	

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

Condition - Continuous high rainfall in a short span leading to water logging				
Crop	**Suggested contingency measure**			
	Vegetative stage	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Rice	• Drain excess water • Postpone topdressing N fertilizers till water recedes • Transplant the seedlings raisedfrom community nurseries or by splitting the tillers from surviving hills	• Drain excess water • Apply recommended dose of nutrients (30-50 kg N/ha) after receding of water	• Drain excess water • Spray 2% brine solution to prevent premature germination in field • Allow the crop to dry completely before harvesting	• Shift produce to safer place • Spread the sheaves loosely in the field or field bunds where there is no stagnation • Spray 2% brine solution • Dry the grain to proper moisture content before bagging and storage
Jute	• Drain excess water • Take intercultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds	• Drain excess water • Take intercultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds	• Drain excess water • Allow the crop to dry completely before harvesting	Shift the produce to the safer place
Wheat	-do-	-do-	-do-	• Allow the crop to dry completely before harvesting • Dry the grain to proper moisture content before bagging and storing storage
Mustard	-do-	-do-	-do-	-do-
Horticulture				
Mango	Drain excess water as soon possible	• Drain excess water as soon possible • Spray carbendazim @ 1 g/l	• Drain excess water as soon possible • Spray carbendazim @ 1 g/l • Harvest the mature produce on a clear sunny day • Fallen fruits may be collected, graded and marketed if feasible	• Store fruits in well ventilated temporary structures before marketing • Market the fruits as soon as possible
Potato	• Drain excess water • Postpone topdressing N	Drain excess water as soon possible	• Drain excess water as soon possible	-

	fertilizers till water recedes • Earthing up to provide good support		• Spray mancozeb @ 3g/l	
Heavy rainfall with high speed winds in a short span				
Rice	• Drain excess water • Postpone topdressing N fertilizers till water recedes	• Drain excess water • Postpone topdressing N fertilizers till water recedes	• Drain excess water • Spray 2% brine solution to prevent premature germination in field	• Spray 2% brine solution to prevent premature germination in field • Allow the crop to dry completely before harvesting • Dry the grain to proper moisture content before bagging and storage
Jute	• Drain excess water • Take intercultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds	• Drain excess water • Take intercultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds	• Drain excess water • Allow the crop to dry completely before harvesting	Shift the produce to the safer place
Wheat	-do-	-do-	-do-	-do-
Mustard	-do-	-do-	-do-	-do-
Horticulture				
Mango	Drain excess water as soon possible	• Drain excess water as soon possible • Spray carbendazim@ 1 g/l	• Drain excess water as soon possible • Spray carbendazim@ 1 g/l • Harvest the mature produce on a clear sunny day • Fallen fruits may be collected, graded and marketed if feasible	• Store fruits in well ventilated temporary structures before marketing • Market the fruits as soon as possible
Potato	• Drain excess water • Postpone topdressing N fertilizers till water recedes • Earthing up to provide good support	• Drain excess water	• Drain excess water as soon possible • Spray mancozeb @ 3g/l	-
Outbreak of pests and diseases due to unseasonal rains				
Rice	Protection against leaf	Protect against sheath blight with	Protect against neck blast/false smut	-

	blast/Sheath blight with tricyclazole @ 0.5 g/l of water	hexaconazole @ 1ml/l of water or edphenphos@1 ml of water.	or to prevent seed disculouration / grain spot with carbendezim@1 g/l of water	
Horticulture				
Potato	Spray metalaxyl + mancozeb mixture @ 2.5 g/l twice at 7 days interval to protect against late blight disease	Spray metalaxyl + mancozeb mixture @ 2.5 g/l twice at 10 days interval to protect against late blight disease	Spray metalaxyl + mancozeb mixture @ 2.5 g/l twice at 10 days interval to protect against late blight disease	• Shift produce to safer place • Severely infested produce is unfit for seed purpose

2.3 Floods

Condition - Transient water logging/ partial inundation & Continuous submergence for more than 2 days				
Crop	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Drain excess water	Drain excess water	Plan for alternate crops like Kalai, Mustard, Wheat, Lentil, Potato, Gram, Maize and Boro paddy For early flood, supply of seed/fertilizer minikit as follows: Paddy seed@5 kg/kit, Urea @10 kg/kit	• Early harvest • Drain out excess water • Spray 2% brine solution to prevent premature germination in field • Allow the crop to dry completely before harvesting • Dry the grain to proper moisture content before bagging and storage

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

Extreme event type	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave	NA			
Cold wave	NA			
Frost	NA			

Hailstorm	NA
Cyclone	NA
Sea water intrusion	NA

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1. Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	Preserve the surplus feeds and fodder through hay and silage making	Provide , hay, silage and urea straw treated feed to dairy animals	Grow drought tolerant fodder variety in barren land to meet crisis
Drinking water	Store hygienic drinking water and make silage of fodder to retain water	Provide fresh water and green fodder as silage to reduce the water intake	Supply adequate fresh water to avoid heat strokes
Health and disease management	Vaccination of dairy animals against infectious diseases.	Keep animal in cool place to avoid heat stress and strokes.	Give antistress drug and preventive medicinal supplement to dairy animals.
Floods			
Feed and fodder availability	Store the feed and fodder in upland through silage	Avoid damp and moldy feed and fodder to dairy animals.	Dry the stored dampy feeds and fodder before feeding to dairy animals.
Drinking water	Store hygienic drinking water for dairy animals	Provide hygienic and chlorinated water to dairy animals.	Supply chlorinated fresh water to avoid dihorea and dysentery to dairy animals.
Health and disease management	Vaccination of dairy animals against infectious diseases.	Keep the animals in upland areas to avoid drowning.	Provide preventive anti diahorea vitamin supplement.
Cyclone	-	-	-
Heat wave and cold wave	-	-	-

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Preserve the surplus feed ingredient of concentrate feed	Provide the low cost CF with locally available resources	-	-
Drinking water	Store plenty of fresh water	Supply stored fresh and chlorinated water	-	-
Health and disease management	Vaccination of poultry against infectious diseases	Keep birds in cool and shady place to avoid heat strokes and stress.	Give anti stress drug and medicinal supplement.	-
Floods				-
Shortage of feed ingredients	- do -	- do -	- do -	-
Drinking water	- do -	- do -	- do -	-
Health and disease management	- do -		- do -	-
Cyclone	-	-	-	-
Shortage of feed ingredients	- do -	- do -	- do -	-
Drinking water	- do -	- do -	- do -	-
Health and disease management	- do -	- do -	- do -	-
Heat wave and cold wave				-
Shelter/environment management	- do -	- do -	- do -	-
Health and disease management	- do -	- do -	- do -	-

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Drought			
B. Aquaculture	-	-	-
(i) Shallow water in ponds due to insufficient rains/inflow	Reduce stocking density & harvesting fish	Apply KMNO4	Supply water from other ponds and water sources.
2) Floods			
B. Aquaculture			
(i) Inundation with flood water	Harvesting fish or reduce stocking density & pen erected	Netting and keep in cage	Application of lime
(ii) Water contamination and changes in water quality	Application of lime@200kg/hawater body	Netting and keep in cage	Application of lime@200kg/hawater body
(iii) Health and diseases	Application of CIFAX@1 lit/ha-m of water	-	Application of CIFAX@1 lit/ha-m of water
(iv) Loss of stock and inputs (feed, chemicals etc)	Feed and chemicals should be stocked in room with care.	-	Purchase low cost input
(v) Infrastructure damage (pumps, aerators, huts etc)	Keep in concrete house or protected area.	-	Repair infrastructure
(vi) Any other			
3. Cyclone / Tsunami			
B. Aquaculture			
(i) Overflow / flooding of ponds	Harvesting or reducing stocking density, dyke may be constructed.		Application of lime
(ii) Changes in water quality (fresh water / brackish water ratio)	-	-	-
(iii) Health and diseases	Application of CIFAX or lime		Application of CIFAX or lime
(vi) Any other	-	-	-
4. Heat wave and cold wave			
B. Aquaculture			
(i) Changes in pond environment (water quality)	Application of lime, stop manuring	-	Application of lime, harvesting fish

(ii) Health and Disease management	Provide shade	Provide shade	Application of CIFAX & Lime
(iii) Any other	-	-	-