State: West Bengal

Agriculture Contingency Plan for District: CoochBehar

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. (15.3)				
	Agro-Climatic Zone (Planning Commission)	Lower Gangetic Plain Region (III)				
	Agro Climatic Zone (NARP)	New Alluvial Zone (WB-4)				
	List all the districts or part thereof falling under the NARP Zone	CoochBehar, Jalpaiguri, Malda, Murshidabad, Nadia, Uttar dinajpur				
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude		
		$26^0$19'03.39" North	$89^0$27'18.97" East	37 m		
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research Station (Terai region), UBKV, CoochBehar-736165, West Bengal				
	Mention the KVK located in the district	CoochBehar Krishi Vigyan Kendra, UBKV, CoochBehar-736165, West Bengal				
	Name and Address of the nearest Agromet Field Unit(AMFU, IMD) for Agro-advisoriesin the zone	Agromet Field Unit, Pundibari, UBKV, CoochBehar-736165, 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):	1900	60	First week of June	Last week of September	
	NE Monsoon(October-December):	284	10	-	-	
	Winter (January- February)	134	11			
	Summer (March-May)	596	26			
	Annual	2914	107			

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000ha)	338.7	253.8	5.7	60.8	0.2	3.3	10.3	10.7	2.2	3.5

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	1. Sandy	49.1	1.4
	2. Coarse loamy	1061.3	31.3
	3. Deep to very deep Fine loamy	1812.0	53.4
	4. Fine	260.3	7.7
	5. Miscellaneous	204.3	6.2

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	248.1	189
	Area sown more than once	221.6	
	Gross cropped area	469.7	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	79.4		
	Gross irrigated area	301		
	Rainfed area	168.7		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		1.6	2.5
	Tanks	-	5.8	9.0
	Open wells	-	-	-
	Bore wells/ Tube wells	76	-	-
	Lift irrigation schemes	111	33.3	51.5
	Micro-irrigation		-	-
	Other sources	-	20.4	31.5
	Total Irrigated Area		64.8	
	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	-	-
	Wastewater availability and use	-	-	-
	Ground water quality	Normal		
*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 2009-10)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice	-	215.0	215.0	46.0	-	46.0	52.0	313.0
	Jute	-	-	-		-	-	48.0	48.0
	Mustard	-	-	-	40.0	-	40.0	-	40.0
	Potato	-	-	-	26.7	-	26.7	-	26.7
	Tobacco	-	-	-	12.0	-	12.0	-	12.0
	Horticulture crops - Fruits	**Area ('000 ha)**							
		Total							
	Banana	1.9							
	Jackfruit	1.1							
	Mango	1.0							
	Litchi	0.3							
	Guava	0.3							
	Horticulture crops - Vegetables	**Total**							
	Chilli	7.8							
	Brinjal	5.3							
	Cabbage	4.5							
	Cauliflower	4.4							
	Radish	2.1							
	Medicinal and Aromatic crops	-							
	Plantation crops	**Total**							
	Arecanut	2.1							
	Coconut	1.3							

	Betel vines	0.2
	Fodder crops	**Total**
	Total fodder crop area (ha)	30.9
	Grazing land	-
	Sericulture etc	-
	Others (specify)	-

1.8	**Livestock (2007-08)**		**Male (number)**	**Female (number)**		**Total (number)**
	Non descriptive Cattle (local low yielding)		446.4	535.0		981.4
	Crossbred cattle		13.4	55.9		69.4
	Non descriptive Buffaloes (local low yielding)		2.6	1.7		4.3
	Goat		-	-		522.1
	Sheep		-	-		122.2
	Others (Camel, Pig, Yak etc.) Pig		8.1	11.5		19.6
	Commercial dairy farms (Number)					
1.9	**Poultry**		**No. of farms**	**Total No. of birds ('000)**		
	Commercial		-	1335.8		
	Backyard		-	-		
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)
		Not applicable	-	-	-	-
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**	**No. of village tanks**	
		No. of Farmer: 6414 Area of Pond (ha.) : 2103.342		Nil	Record not available	
	B. Culture					
			Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**	
	i) **Brackish water** (Data Source: MPEDA/		ha. (Beel)		ton prawn	

	Fisheries Department)			
	ii) **Fresh water** (Data Source: Fisheries Department)	Culturable area: 567.86 ha. Semi-Derelict area: 990.76 ha. Derelict area: 327.44 ha. Total area: 1886.06 ha.	From Ponds under FFDA Scheme= 4.4 t/ ha.	21165 ton Fish (2008-09) Fish Seed Production (08-09)= million
	Others	(River) 1181.66 ha. (Beel/Baor) 2932.28 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	550.5	2450	195.8	2856	51.1	2725	797.4	2677
	Jute	-	-	-	-	959.6	11637	959.6	11637
	Mustard	-	-	40.0	1000	-	-	40.0	1000
	Potato	-	-	700.0	25455	-	-	700.0	25455
	Tobacco	-	-	18.1	1503	-	-	18.1	1503
	Major Horticultural crops (Crops to be identified based on total acreage								
	Chilli	4.2	2274	63.1	10641	-	-	67.3	6457
	Cabbage	-	-	130.5	28872	-	-	130.5	28872
	Cauliflower	-	-	125.0	6118.05	-	-	125.0	6118.05
	Brinjal	13.8	10695	50.5	19053	15.2	11343	79.5	13697
	Arecanut	-	-	-	-	-	-	3.2	1542

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Rice**	**Jute**	**Mustard**	**Potato**	**Tobacco**
	Kharif- Rainfed	June 3rd week to Aug 3rd week	March 3rd week to April 4th week	-	-	-
	Kharif-Irrigated	June 3rd week to Aug 3rd week	-	-	2nd week of Nov to Dec 4th week	-
	Rabi- Rainfed	-	-	-	-	-

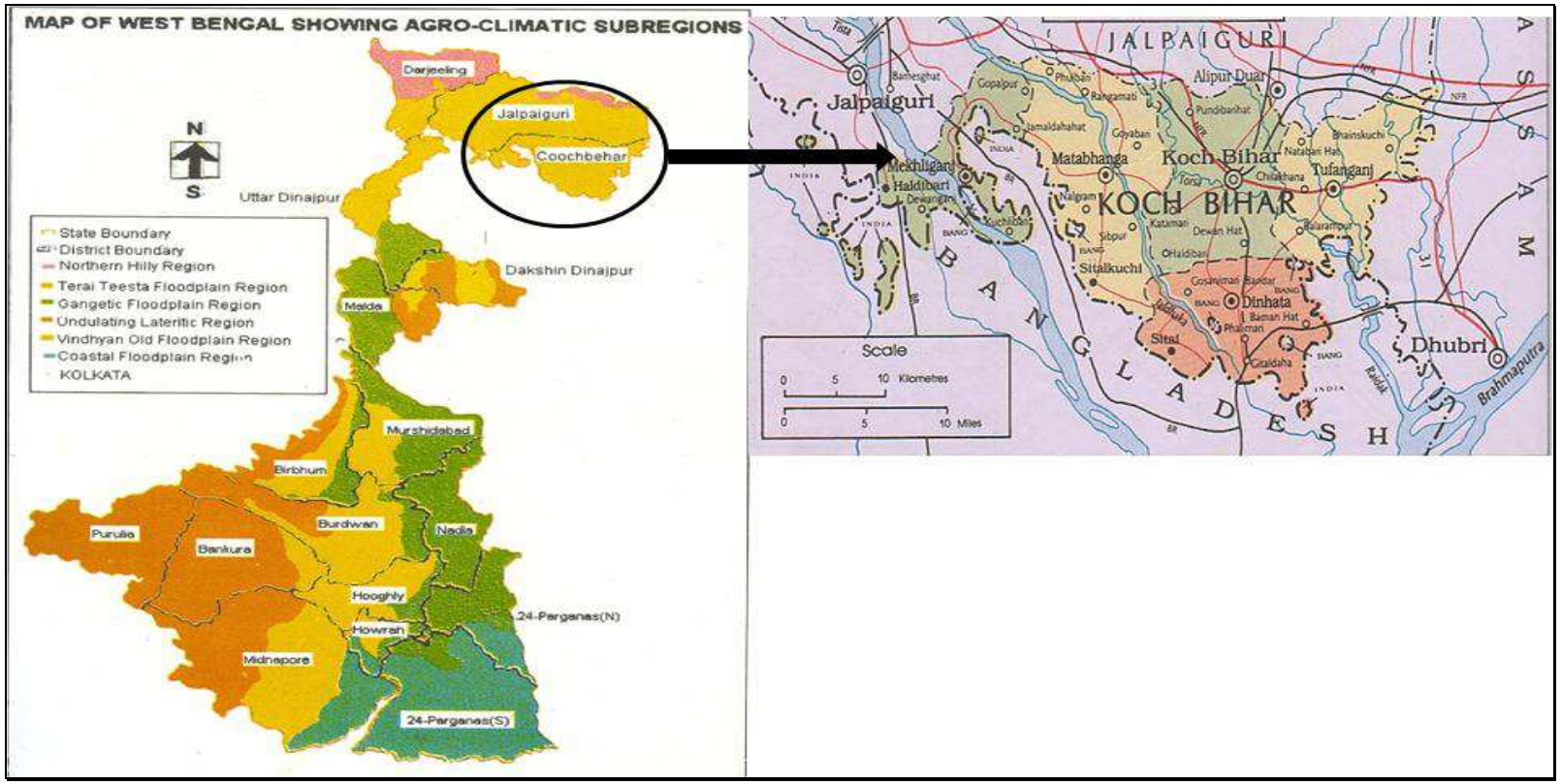
	Rabi-Irrigated	March 2rd week to April 4th week	-	Oct 3rd week to Nov 2nd week	Sep 4th week to Oct 4th week	Oct 3rd week to Nov 4th week

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)	-	-	√

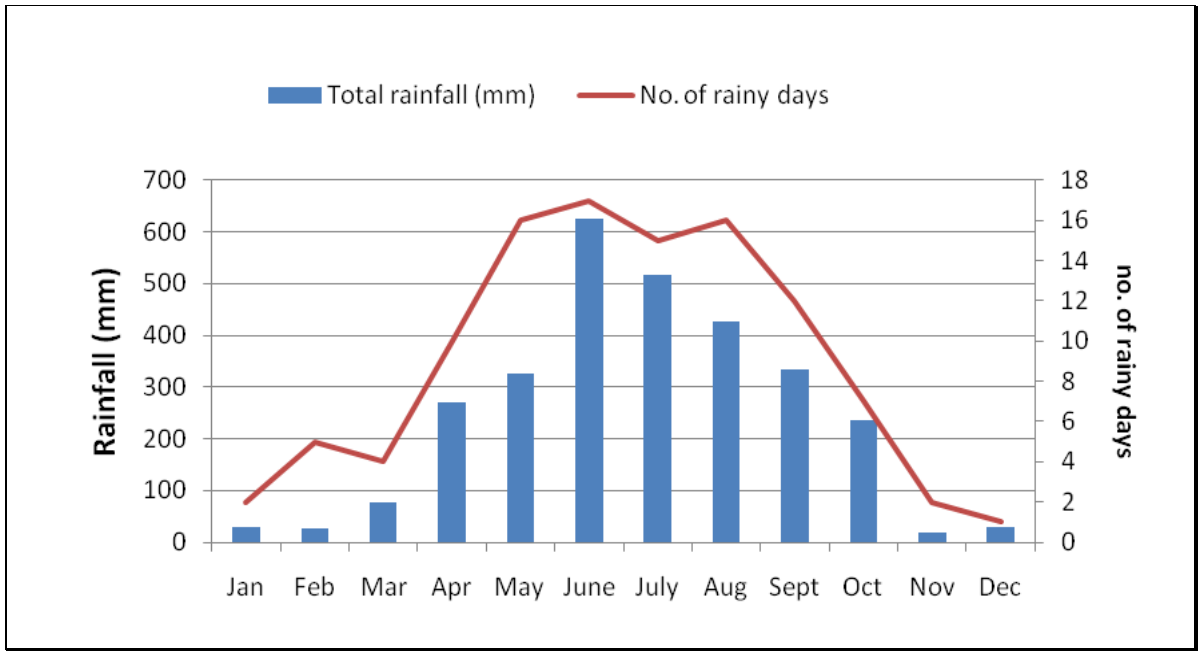
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure I

Location map of the district of Cooch Behar



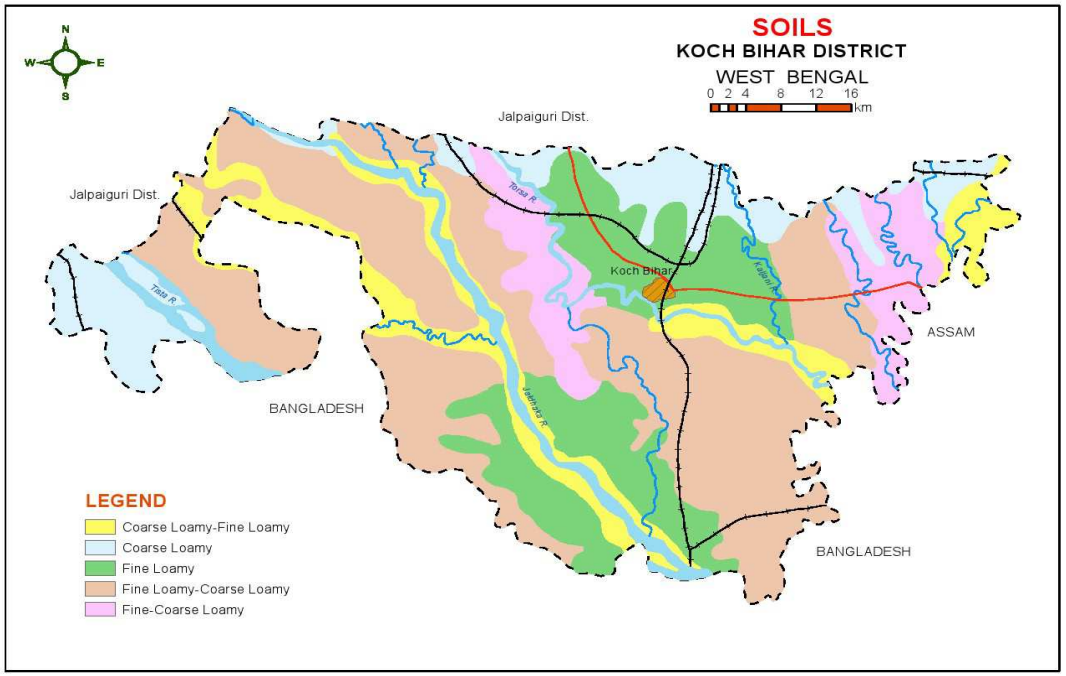
Annexure II



Mean monthly rainfall of coochbehar district

Annexure III

Soil Map of Coochbehar 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 fine loamy to clayey soils	Jute – Rice	No change	Normal package of practices given by UBKV	Link with Govt. farm of department of agriculture, NSC, WBSC, RRS Pundibari farm UBKV.for good quality seed
		Rice – Toria	No change prefer varieties Rasi.khitish,kiron and bhupen,and Anjali	Normal transplanting of 2-3 seedlings/ hill	
	Deep to very deep sandy loam soils	Jute – Rice	No change change prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	Normal package of practices given by UBKV	
		Rice – Toria	No change Rasi.khitish,kiron and bhupen,and Anjali	Normal transplanting of 2-3 seedlings/ hill	
	Coarse sandy soils in uplands	Jute - Rice	No change change prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	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 1st week of July	Deep to very deep fine loamy to clayey soils	Jute – Rice	No change. Prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	• Intercultivation in between the rows of jute • Increase the seed rate by10%	Link with Govt. farm of department of agriculture, NSC, WBSC, RRS Pundibari farm UBKV for good quality of seed
		Rice – Toria	No change. Prefer varieties like Rasi. khitish, kiron bhupen,and Anjali	Transplant 2-3 seedlings per hill	
	Deep to very deep sandy loam soils	Jute – Rice	No change. Prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	• Intercultivation in between the rows of jute • Increase the seed rate by10%	
		Rice – Toria	No change. Prefer varietieslike Rasi. Khitish ,kiron and bhupen,and Anjali	Direct sowing using drum seeder in medium to high land	
	Coarse sandy soils in uplands	Jute - Rice	No change. Prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	• Intercultivation in between the rows of jute • Increase the seed rate by10%	

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 July	Deep to very deep fine loamy to clayey soils	Jute – Rice	No change. Prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	Intercultivation in between the rows of jute Increase the seed rate by10%	Link with Govt. farm of department of agriculture, NSC, WBSC, RRS Pundibari farm UBKV for good quality seed
		Rice – Toria	No change	Transplanting with 4-5 seedling / hill in case of long duration variety (Lalat, Sabita, swarna masuri)	
	Deep to very deep sandy loam soils	Jute – Rice	No change	Intercultivation in between the rows of jute Increase the seed rate by 10%	
		Rice – Toria	No change	Transplanting with 4-5 seedling / hill in case of long duration variety (Lalat, Sabita, swarna masuri) Direct sowing using drum seeder with short / medium variety (Khitish, Satabdi)	
	Coarse sandy soils in uplands	Jute - Rice	No change. Prefer varieties likeJRO66,8462,128,204, andAAU-oj1 and JBO2003	Inter cultivation in between the rows of jute Increase the seed rate by10%	

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 August	Deep to very deep fine loamy to clayey	Jute – Rice	No change	• Timely weed control in jute • Increase the seed rate by10%	Link with Govt. farm of department of agriculture, NSC, WBSC, RRS Pundibari farm UBKVfor good quality seed
		Rice – Toria	No change	• Transplant 4-5 seedlings/hill	

	soils				
	Deep to very deep sandy loam soils	Jute – Rice	No change	• Timely weed control in jute	
		Rice – Toria	No change	• Transplant 4-5 seedlings/hill	
	Coarse sandy soils in uplands	Jute - Rice	No change or alternatively go for Black gram (Sarda, sulata, Pant U 19-31)/ Green gram (Samrat, Bireshwar, Sukumar) or or Vegetable like Brinjal /Chilli	• Apply 30-50 kg of N /ha to jute after relief of dry spell • Need based plant protection measures to jute • If damage is severe to jute, shift to crops like Blackgram/greengram/vegetables	

Condition				
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 fine loamy to clayey soils	Jute – Rice	Gap filling with improved variety in the row if population is less than 75% of optimum Weeding	Postpone top dressing with N Supplemental irrigation at least 5cm
	Deep to very deep sandy loam soils	Rice – Toria	Gap filling with the seedlings @ 2-3 per hill from community nurseries / split the tillers from surviving hills	-do-
		Jute – Rice	Gap filling with improved variety in the row if population is less than 75% of optimum Weeding	-do-
	Coarse sandy soils in uplands	Rice – Toria	Gap filling with the seedlings @ 2-3 per hill from community nurseries / split the tillers from surviving hills	-do-
		Jute - Rice	Gap filling with improved variety in the row if population is less than 75% of optimum Weeding	-do-

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 fine loamy to clayey soils	Jute – Rice	• Gap filling with improved variety in the row if population is less than 75% of optimum • Weeding	• Postpone top dressing with N • Apply foliar spray with 2% Urea • Supplemental irrigation at least 5cm
	Deep to very deep sandy loam soils	Rice – Toria	• Gap filling with the seedlings @ 4-5 per hill from community nurseries / split the tillers from surviving hills • Protection against leaf folder with chlorpyriphos 2ml/l	-do-
		Jute – Rice	• Gap filling with improved variety in the row if population is less than 75% of optimum • Weeding	-do-
	Coarse sandy soils in uplands	Rice – Toria	• Gap filling with the seedlings @ 4-5 per hill from community nurseries / split the tillers from surviving hills • Protection against leaf folder with chlorpyriphos 2ml/l	-do-
		Jute - Rice	• Gap filling with improved variety in the row if population is less than 75% of optimum • Weeding	-do-

Condition				
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**
Mid season drought (long dry spell) At flowering/ fruiting stage	Deep to very deep fine loamy to clayey soils	Jute – Rice	• Timely weeding • Plan for *rabi* rice if damage is very severe	Supplemental irrigation with farm pond water / other sources
	Deep to very deep sandy loam soils	Rice – Toria	• Timely weeding • Plan for *rabi* toria if damage is very severe	-do-
		Jute – Rice	• Timely weeding • Plan for *rabi* rice if damage is very severe	-do-
	Coarse sandy soils in uplands	Rice – Toria	• Timely weeding • Plan for *rabi* toria if damage is very severe	-do-
		Jute - Rice	• Timely weeding • Plan for *rabi* rice if damage is very severe	-do-

Condition				
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**
	Deep to very deep fine loamy to clayey soils	Jute – Rice	Land preparation for *rabi* rice	Supplemental irrigation with farm pond water / other sources
	Deep to very deep sandy loam soils	Rice – Toria	Rabi planning for Toria	-do-
		Jute – Rice	Land preparation for *rabi* rice	-do-
	Coarse sandy soils in uplands	Rice – Toria	*Rabi* planning for Toria	-do-
		Jute - Rice	Land preparation for *rabi* rice	-do-

2.1.2 Drought - Irrigated situation-

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**
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**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Shallow tube well irrigated Deep to very deep fine loamy to clayey soils	Rice – Rice/ Potato/ Mustard/Late Vegetable	Rice- Potato-/ Mustard/Late Vegetable	• Adopt SRI method for rice cultivation • Adopt alternate furrow irrigation for potato / mustard / Vegetable	Link farm pond technology with watersheds, NREGS
	Shallow tube well irrigated Deep to very deep sandy loam soils	Rice- early potato/Tobacco/ Mustard/ Vegetable	No Change	-do-	

	Shallow tube well irrigated Coarse sandy soils in uplands	Rice-early potato/ vegetable/tobacco/potato	No Change	-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 • Top dressing of 20kgN/ha after receding water to gain vigour	Drain excess water Top dressing of 20kgN/ha after receding water to gain vigour	• Drain excess water • Spray 2% brine solution to prevent premature germination in field	• Shift produce to safer place • Maintain optimum moisture of the grain followed by bagging and marketing
Potato	• Drain t excess water • Postpone topdressing N fertilizers till water recedes	Drain excess water	Drain excess water	-
Jute	Drain excess water	Drain excess water	Drain excess water	-
Tobacco	• Drain out the excess water • Avoid the topdressing and spraying schedule until the water recedes • Spray Mancozeb (2 gm per litre of water) as fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol EC (3ml per litre of water) against the insect pest attack.	• Drain out the excess water • Avoid the topdressing and spraying schedule until the water recedes • Spray Mancozeb (2 gm per litre of water) fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol EC (3ml per litre of water) against the insect	• Drain out the excess water. • Harvesting process should be completed at the earliest and they should be carried out to the safer places quickly to dry out the produce.	Earliest arrangement should be done to dry out and sale out the post harvest product
Horticulture				
Vegetables	• Drain the excess water • Spray Mancozeb (2 g / l of water) and	• Drain the excess water. • Spray Mancozeb (2 gm per litre	Drain the excess water.	Earliest arrangement should be done to dry out and sale

	Copper oxychloride (4 g/ l of water) alternately as fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml /l of water) and Dicofol 18.5 EC (3ml / l of water) against the insect pest attack	of water) and Copper oxychloride (4 gm per litre of water) alternately as fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol 18.5 EC (3ml per litre of water) against the insect pest attack.		out the post harvest product
Condition-Heavy rainfall with high speed winds in a short span				
Rice	• Drain excess water • Postpone topdressing N fertilizers till water recedes	Drain excess water	• Drain excess water • Spray 2% brine solution to prevent premature germination in field	Shift produce to safer place
Potato	• Drain excess water • Postpone topdressing N fertilizers till water recedes	Drain excess water	Drain excess water	
Jute	Drain excess water	Drain excess water	Drain excess water	
Tobacco	• Drain the excess water • Avoid the topdressing and spraying schedule until the water recedes • Spray Mancozeb (2 gm per litre of water) as fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol 1805 EC (3ml per litre of water) against the insect pest attack.	• Drain the excess water • Avoid the topdressing and spraying schedule until the water recedes • Spray Mancozeb (2 gm per litre of water) fungicide against the damping off disease. • Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol 1805 EC (3ml per litre of water) against the insect	Drain the excess water.	Earliest arrangement should be done to dry out and sale out the post harvest product
Horticulture				
Vegetables	• Drain the excess water. • Spray Mancozeb (2 gm per litre of water) and Copper oxychloride (4 gm per litre of water) alternately as fungicide against the damping off disease.	• Drain the excess water. • Spray Mancozeb (2 gm per litre of water) and Copper oxychloride (4 gm per litre of water) alternately as fungicide against the damping off disease.	Drain the excess water.	Earliest arrangement should be done to dry out and sale out the post harvest product

	• Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol 18.5 EC (3ml per litre of water) against the insect pest attack.	• Spray Dimethoate 30 EC (2ml per litre of water) and Dicofol 18.5 EC (3ml per litre of water) against the insect pest attack.		
Condition-Outbreak of pests and diseases due to unseasonal rains				
Potato	-	Spray metalaxyl + mancozeb mixture @ 1.5 g/l twice at 10 days interval to protect against late blight disease	Spray metalaxyl + mancozeb mixture @ 1.5 g/l twice at 10 days interval to protect against late blight disease	• Dehaulming of affected parts and destroy • Severely infested produce is unfit for seed purpose
Paddy	Protection against leaf blast with tricyclazole @1 ml/l	Protect against bacterial leaf blight with hexaconazole @1ml/l	• Protect against bacterial leaf blight with hexaconazole 1ml/l • Spray carbendazim 0.1% to prevent seed discolouration / grain spot	
Jute	-	-	-	-
Tobacco	-	-	-	-
Horticulture				
Chilli	Spraying of profenofos @ 1 ml/l /Diafenthiuron @ 1 g/l / Propargite @ 1g/l for the control of thrips and mites at 15-20 days interval	-	Spray the crop with Hexaconazole 0.1% followed by 0.3% blitox after removal of the infected twigs at 10 days interval for the control of dieback of anthracnose	-
Brinjal	-	-	-	-
Cabbage	-	-	-	-
Cauliflower	-	-	-	-

2.3 Floods

Condition- Transient water logging/ partial inundation				
Crop	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Aman Rice	• Drain the excess water after recession of flood	• Drain the excess water after recession of flood	• Drain the excess water after recession of flood	Early harvest

	• Gap filling with seedlings raised from upland nursery • Grow the varieties like IET 5656 and NC 490 which can withstand submergence to some extent and suitable for late transplanting	• Double transplanting with aged seedling maybe done from upland to medium and low land • May go for alternate crop like black gram or green gram	• Spray 2% brine solution to prevent premature germination in field • If damage is severe, plan for alternate crops like Kalai, Mustard, Wheat, Lentil, Potato, Gram, Maize and Boro paddy	
Sea water intrusion	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	**NA**			
Cold wave	**NA**			
Frost	**NA**			
Hailstorm				
Boro Rice	Preserve extra amount of seed for raising second seedbed	Gap filling in early vegetative stage	-	-
Jute	If the field is completely affected by hail storm plough down the field and go for any late variety of jute(Baishakhi, JRO-66) use the unaffected plants as leafy vegetable	-	-	-
Tobacco	-	-	-	Harvest the crop quickly and curing process should be started after proper gradation
Cyclone	**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 food and fodder through hay and silage making	Provide hay, silage and urea straw treated feed to dairy animals	Grow drought tolerant 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 damp feed and fodder before feeding the dairy animals
Drinking water	Store hygienic drinking water and make silage of fodder to retain water	Provide hygienic and chlorinated water to dairy animals	Supply chlorinated fresh water to avoid diahorea and dysentery of 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 stroke and stress	Provide 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-	-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-	-	-	-
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	-	-	-
2) Floods	-	-	-
B. Aquaculture	-	-	-
(i) Inundation with flood water	Harvesting fish to reduce stocking density and pen erected	Netting and keeping in cage	Application of lime
(ii) Water contamination and changes in water quality	Application of lime@ 200 kg/ha water body	Netting and keeping in cage	Application of lime@ 200 kg/ha water body
(iii) Health and diseases	Application of CIFAX @ 1lit/ha-m of water	-	Application of CIFAX @ 1lit/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
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 or lime
(iii) Any other	-	-	-